Abstract

Cochlear implant: risks and benefits

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Introduction: A cochlear implant is an implanted electronic hearing device designed to produce useful hearing sensations to a person with severe to profound nerve deafness by electrically stimulating nerves inside the inner ear.
Material and method: We used some retrospective studies that showed all the risks that a patient who will undergo a cochlear implantation will be subjected to, but also all the benefits. We need to consider and explain to the patient about the risks of general anesthesia, about the risks from the surgical implant procedure and other risks associated with the use of cochlear implant.
Results: Despite of all these risks, the benefits can be wonderful. For example, the patients can understand speech, can talk or hear music, can make phone calls, increasing the quality of life. In one words, the patients with cochlear implant can hear, thus enjoying life.
Conclusions: There are risks involved to take the cochlear implantation, as well as happiness after that. That's why it is important to balance, and talk to a doctor to perform a search about the implant before making the decision.

How to manage complications after cochlear implantation

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Introduction: Cochlear implantation represents an effective way of treatment of severe and profound sensory-neural hearing loss. Because it is a complex surgical procedure, some of the patients that undergo cochlear implantation can suffer postoperative complications.
Aim: The purpose of our study is to analyze the short and long term postoperative complications that can occur after cochlear implantation and how to manage them in the shortest time and at the lowest cost.
Material and method: We have conducted a prospective study of 12 patients who were admitted as diagnosed with severe or profund sensory-neural deafness, and later on implanted in the E.N.T. Clinic of Tirgu Mures County Hospital during 2014-2017.
Results: After cochlear implantation, the complications that occur more often are the minor ones, such as flap swelling, minor wound infections, acute otitis, hematoma, or temporary facial weakness. This type of complications can be easily managed with conservative treatment or minor intervention. Rarely, there can appear major postoperative complications, such as device failure, misplaced electrodes, flap necrosis, or meningitis. This kind of major complications are rare, and they often require reintervention. In our study, there was one patient with flap necrosis, another one with cerebro-spinal fluid gusher, and a third one with device failure that needed to be reimplanted.
Discussions: Cochlear implantation is an efficient way to treat sensory-neural deafness. Careful preoperative and postoperative preparations are required. Although this is a major surgery, complications occur rarely. However, patients can still present with minor complications that be managed by conservative treatment, and that is why, long-term follow-up is needed.

Implantable bioelectrical system for blink restoration in experiment

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Different implantable electrical neuro- and myostimulators and electromyographic (EMG) recording systems are used in clinical practice and experimental investigations. Symmetrical innervation of mimic facial muscles provides clinicians with a natural trigger for an implantable mimic muscle microstimulator in patients with facial palsy. The goal of our investigation is to define the ability to use implantable bioelectrical systems for restoration of complete and synchrone blinking in case with unilateral facial injury. Moreover, our goal is to define optimal stimulation parameters which will allow obtaining the state of complete short- and longtime eye-lid closure.

Materials and methods: Experimental part was performed in adult rabbits, which have undergone full transection of main trunk of facial nerve, implantation EMG recording electrodes into healthy OOM, and stimulating electrodes in paralyzed side. This system consists of EMG recording electrodes which implanted in healthy orbicularis oculi muscle, EMG amplifier, DAC, microcontroller, which detects EMG pattern and triggers the microstimulator with electrodes which evoke contraction orbicularis oculi muscle in paralyzed side. The bioelectrical system of blinking was implanted in the back of animals under the skin. The device was activated. There was established complete synchronous eye closure in all of animals, after tuning the parameters of stimulation. We performed comparison of different stimulation`s parameters: mono- and biphasic impulses, single and serial impulses with different frequencies and amplitudes.

Results: Using biphasic serial impulses for stimulation with frequency 50 Hz, amplitude 2 mA, and impulse duration 2 ms allowed complete synchronous eye closure in all the animals.

Conclusion:

1. Proposed implantable bioelectrical system allows reaching complete closure of the eye by direct stimulation of denervated orbicular oculi muscle, which is triggered from healthy side.
2. Optimal pattern for stimulation is a series of biphasic impulses with frequency of 40-50 Hz, amplitude of 2mA, and impulse duration of 2 ms.
3. The software for proposed system allows detecting blinking in healthy side in more than 80% cases, that permits sufficiently synchronize detection and stimulation in bioelectric system of blinking.

Three-dimensional evaluation of the semicircular canals, vestibule and cochlea and their surgical neuroanatomy: a radioanatomical study

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Objective: Three dimensional volume-rendered computed tomography images have been used widely to demonstrate the anatomy of the temporal bone. This anatomical knowledge helps to understand complex anatomy and improves the ability to evaluate pathologic conditions. Knowing the morphological relation of semicircular canals, vestibule, and cochlea and their anatomical relations allow to discuss their importance regarding surgical planning and this will provide more safe surgeries for many approaches. The aim of study was to evaluate semicircular canals, vestibule, and cochlea and related neuroanatomical structures with three dimensional reconstruction of radiological images and its anatomical confirmation on cadavers.

Material and Methods: Three dimensional reconstructions were performed on selected 20 computed tomography scans from 20 patients with no intracranial pathology and the images were imported into the imaging software OsiriX v.3.7.1. Three dimensional reconstructed colored images of cochlea, semicircular canals and internal acoustic canal were created using Osirix software. For anatomical confirmation, important morphological parameters and related anatomical structures on five cadavers were evaluated.

Results: Representations of the corresponding structures were obtained step by step. Preoperative important morphological relations were determined for surgical planning. In cadavers, the three dimensional course was evaluated and reconfirmed anatomically. The three dimensional reconstruction of the complex shape of the osseous labyrinth was accepted as satisfactory. This gave an opportunity to observe the reconstructed structures at various angles and to show anatomical structures

embedded in bone. This combination model is a useful tool for postgraduate education of surgeons and for further morphometrical studies. Precise understanding and this novel combination allows to correlate and to confirm the relation of the neuroanatomical structures before surgery.

Conclusion: Preoperative knowledge of the relations of the inner ear structures is useful for the surgical approaches especially when preserving the otic capsule. The identification of semicircular canals, vestibule, and cochlea and their relation with petrous bone landmarks can be useful to get a general orientation and a better knowledge of the three dimensional anatomy. This easy preoperative evaluation tool can help surgeon to be navigated and to understand the complicated anatomy and relations for each patient.

Adenoidectomy and otitis media

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Adenoid enlargement has traditionally been considered a factor in otitis media; adenoid size, however, does not appear to be correlated with otitis media occurrence. Presence of pathogenic bacteria in the adenoids of children with otitis media has been shown, and adenoidectomy appears to affect the middle ear primarily by removal of the source of infection in the nasopharynx. Three recent randomized, controlled studies showed the efficacy of adenoidectomy in the treatment of chronic secretory otitis media. In one study comparing no treatment, adenoidectomy, and adenotonsillectomy, a significant benefit was seen with adenoidectomy that was not enhanced by tonsillectomy. Another study that compared adenoidectomy, tympanostomy tubes, and a combination of the two showed a significant reduction in effusion time and less surgical retreatment over two years in both adenoidectomy groups. The third study demonstrated the effect of adenoidectomy in children with recurrent chronic otitis media with effusion after failure of tympanostomy tube insertion. All three studies showed that the effect of adenoidectomy was independent of adenoid size. This review discusses current concepts of adenoid physiology and pathology, the major adenoidectomy studies, and indications for the procedure.

Petrous bone cholesteatoma

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These are epidermoid cyst of the petrous temporal bone. They can occur anywhere in the middle ear, mastoid, petrous apex or CPA. They constitute 4-24% of all petrous bone pathologies. There is a male predominance [2-3:1]. They are usually silent for a variable length of time and can present at any age. The usual presentation is a complication. They are mainly diagnosed radiologically and the surgeons must have a very high index of suspicion when faced with a patient presenting with unexplained otological/neurotological signs and symptoms. This presentation includes our institution's experience of 52 petrous bone cholesteatomas and highlights the diagnostic and therapeutic challenges this pathology represents. All the cases were surgically treated and the approach differed according to the anatomical location and hearing status of the patient. There were no mortalities in the series and no additional neurological deficits. In most cases, an additional conductive hearing loss was incurred in patients with residual hearing especially with subtotal petrosectomy.

Why the newborn hearing screening programs are important?

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The aim of the newborn hearing screening is to understand if the baby has hearing loss, as soon as possible. In the literature, the rate of the congenital hearing loss has been reported around 0.1-0.3%. As a congenital problem, this is a very high rate. It is desired to determine congenital hearing loss as soon as possible and if it necessary, to perform early rehabilitation. It is very important for the language skills; social, emotional, and cognitive development. According to the World Health Organization, newborn hearing screening tests should be done within the first three months after the birth. Today's technology let us to perform these tests very easily. In this lecture, with some examples, the importance of newborn hearing screening tests and the situation in the world will be discussed.

One technique for all kind of perforations: cartilage rod tympanoplasty

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Cartilage rod tympanoplasty, defined by Uzun in 2008, is a modification of cartilage palisade tympanoplasty. Cartilage with perichondrium at both sides is cut into thin cartilage rods which has piece of perichondrium at sides. The rods are placed side by side so that perichondriums adhere and stabilize the reconstruction. This technique can be done either in underlay, onlay and over-under manner and also be applied in ossiculoplasty cases. The long-term graft intake rate is 95% when all kind of perforations and diseases such as cholesteatoma, non-cholesteatoma, tympanosclerosis, etc. are considered. In this presentation, those three techniques will be explained and recent long-term result will be given.

Pediatric patient with petrositis: A case report

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Petrous apicitis is an infectious osteitis resulting most often from adjacent spread of otomastoiditis, usually in the setting of a pneumatized petrous apex. The osteitis may cause Gradenigo's syndrome, a rare and potentially fatal condition defined as the clinical triad of ipsilateral acute otitis media (AOM), abducens nerve palsy and pain in the distribution of the ophthalmic and maxillary branches of the trigeminal nerve.
Case report: A 7-year-old girl presented at the Emergency Department on January 3rd with a month-long history of fatigue, headache since December 24th, eyelid edema of the left side since December 29th, retrobulbar pain in the left eye and febrility starting from today. In November 2016, the patient has had an episode of pain in the left ear, discharge from the ear lasting for three days, and rhinitis. Neurological examination on January 4th revealed positive meningeal symptoms such as neck stiffness, upper Brudzinski sign. No pathology of eye movements and after ear-nose-throat examination was detected. The diagnosis was serous meningitis and suspected encephalitis. The therapy administered was Dexamethasone and Acyclovir. Patient's health status worsened: multiple fever episodes daily and episodes of photophobia. The patient became agitated and reacted negatively to examination. Laboratory findings (January 9th): white blood cells 23,08x103/µL, IL-6 69,0 pg/mL, and D-dimers 1764 ng/mL. Head magnetic resonance imaging (MRI) (January 9th): basal meningeal infiltration without signs of abscess, possible lesion of left pyramid apex, bilateral stenosing arteritis of carotid arteries at the petrous and sinus parts. Head computed tomography (CT) findings (January 9th): left pyramidal apex posterior wall destruction that corresponds to infiltrate in posterior cranial fossa, osteomyelitis and effusion in the middle ear. These findings were consistent with petrositis and Gradenigo syndrome. Antimicrobial therapy with Meropenem and Vancomycin was administered. Patient's health status improved, although febrile episodes and headache remained. Because of the raised D-dimer concentration (1764 ng/mL), prophylactic antithrombotic therapy with Enoxaparin was started. Tuberculosis and autoimmune pathology was excluded. Microbial blood culture showed Streptococcus intermedius. On January 18th, antibacterial therapy was changed to Cefepime and Vancomycin. Since January 11th onwards, there were no headache or dizziness anymore. The patient became more active, although regular mood swings were still present. D-dimer concentration remained elevated – 1279 ng/mL. On January 24th, control head MRI revealed subdural empyema of the right (contralateral to the affected pyramid) temporal and parietal region. Urgent osteoplastic trepanation of right frontotemporal area and subdural empyema evacuation surgery was performed. After one week, patient's health status noticeably improved, no mood swings were observed, she became lively and positive; MRI and CT showed positive dynamics. Patient received antibacterial monotherapy with Cefepime and after six weeks, she was discharged from hospital. It can be concluded that despite the highly developed medical technologies it is still challenging to determine the cause of cephalgia, excluding differential diagnosis and working in a multidisciplinary team. Gradenigo syndrome is reasonably rare. In many cases, manifestation of this syndrome is atypical. That is why the otorhinolaryngologist should always be cautious of it. Development of subdural empyema in this case was asymptomatic as patient's mother only reported changes in daughter's mood and behaviour. This might had happened due to the broad-spectrum antibacterial therapy the patient initially received. With the availability of antibiotics, control of petrous apex infection is more effective. However, spread of the infection beyond that area is still observed in some patients. Patients who fail to improve or develop progressive symptoms despite medical management may require surgical treatment. When necrotic bone is apparent, surgical drainage is a necessary adjunct to IV antibiotic therapy. Surgical approaches to an inflamed petrous apex depend on the patient's hearing status and temporal bone anatomy and on the surgeon's training and include the infralabyrinthine, transcanal infracochlear, transsphenoidal, translabyrinthine or subtotal petrosectomy, and middle fossa approaches. In this case the patient would benefit from transsphenoidal approach surgery performed after the petrous apex lesion was noticed.

Modern world, modern problems – adapting to life in the digital age

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Due to contemporary life style, we have people at any age that are spending most of their time on digital devices. Yes this makes our life easy, more interesting and substitutes for anything from book to real adventure, from calculator to complicated software analysis, from shopping to selling a product all over the world and much more… Of course anything is for a price and spending most of the time looking at digital device has well known consequences such as eye strain, red eye, vision fluctuation, symptoms of dryness and more. Recent research demonstrated that indoor time and close up work is correlated with myopia progression. This, however, is not just another negative effect, as the morbidity potential of myopia is significant, especially over time.

Where we are in year 2017?

Take your phone and make a list of activities and task for which you are using it. Certainly they would be more time in staring then in hearing. We use the phone virtually as portable computer, substitute of any electronic device… and even more, the social environment is pushing each of us to use it more and in more versatile ways. So might be the I-phone developers were thinking in prospective and really had an EYE-phone in mind… And may be our evolution led from Homo erectus to Homo sapiens and from Homo sapiens to Phono sapiens…

What can we do?

First of all we cannot live without our phones… so we must adapt to the situation. There are short term and long term considerations regarding to this adaptation process. The first group is related to instantaneous comfort and to well seeing, brighter eyes. That includes entire phone using population and requires specific measures such as precise refraction, proper correction, dry eye prophylaxis, balance of accommodative efforts and sufficient periods for eye recovery. The situation is more complex when the patient is a contact lens user. Some possibilities for improving the homeostasis of the ocular surface will be discussed. More complex is however, the option for preventing the long term complications mostly related to myopia. Our knowledge for myopia progression and management are limited and unfortunately are locked in a vicious circle. Currently, to control myopia practitioners use three modalities: special lenses (designed for the purpose of myopia control,) off label lenses (distant design multifocals) and ortho-K lenses. None of those is followed for long enough time and cannot be recommended for each and every case of myopia progression. The prevalence of myopia, however, increases leading to more and more negative consequences…

The future prospective…

Usage of digital devices is going to increase not only everyday but also lifetime. The users are going to be increasingly younger but also significantly older. This will increase the challenge of addressing protective and rehabilitation measures related to eye impact. The situation is going to be complicated by application of additional devices such as projecting glasses and lenses, virtual reality and other digital means that the future bring to us… One fact is certain that the eye health is in the hands of the each and every eye care practitioner and we must use the best of our up to date knowledge to promote, prevent and treat eye problems of the digital era…

Jugular bulb anatomy for lateral skull base approaches

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Objective: The jugular bulb is a dynamic structure that develops after the age of two years and reaches its definite size in adulthood. The relationship of the jugular bulb with the otic capsule has great importance during the lateral transmastoid skull base approaches. This study was designed to define the detailed anatomical relations of the jugular bulb with the facial nerve, sigmoid sinus, otic capsule and internal acoustic canal allowing the safe management of the jugular bulb via the lateral skull base approaches.

Material and Methods: Thirty-five formalin-perfused cadaveric temporal bones that had well mastoid and petrous pneumotization without any neurovascular variations on computed tomography scan were selected for the study. The bones were dissected via translabyrinthine approach.

Results: The dome of the jugular bulb was located under the facial nerve in 21 of the cases (60 %), in the mastoid cavity in 8 of the cases (22.9 %) and in the tympanic cavity in 6 of the cases (17.1%). The average distance between the dome of the jugular bulb and cochlea when the dome was located in the tympanic cavity was 6.13±3.22 and the average distance between the dome of the jugular bulb and internal acoustic canal when the dome was located in the mastoid cavity was 8.22±3.84. No statistically significant correlation was detected between the radiological measurements and the position of the jugular bulb.

Conclusion: Adequate exposure has always been a major concert in skull base and petrous lesions. Major advantage of the translabyrinthine and infralabyrinthine approaches includes the absence of brain retraction whereas the neurovascular structures and the otic capsule are of great concern. The pre-operative verification of the JB radiologically is essential to avoid the problems associated with its variations and to decide the approach individually.

Publication ethics and misconduct cases

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Publication ethics is important for all researchers, scientists and authors. Unfortunately, education on publication ethics is not sufficient. In this presentation, the author will explain the international rules of publication ethics and will give some examples on several misconducts. Depending on his editorship experience, the author will explain the reasons of misconducts in our region and he will suggest how to avoid them in the academic world.

Systemic steroid therapy as a single modality in sudden hearing loss

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Objective: The aim of the study is to analyze the demographic features of patients with sudden hearing loss and their response to single systemic steroid therapy regiment as a primary treatment.
Methods: The study included patients who referred to the Department of Otolaryngology, Kırıkkale University Faculty of Medicine, with primarily idiopathic sudden unilateral hearing loss. Patient's charts were retrospectively analyzed from the database.
Results: Patients' mean age was 46.9 years. Among the patients, 58.3% were females and 41.7% were males. Dizziness was one of the main complaints in 70.8% of the patients whereas 83.3% of the patients complained of tinnitus. Pure tone average of the patients before treatment was 64.45 dB. Complete, remarkable and moderate healings were observed in 8.3%, 37.5% and 20.8% of the patients, respectively. Pure tone average didn't change with the initial treatment in 33.3% of the patients.
Conclusion: Despite of the recently published guidelines, the treatment protocols of idiopathic sudden hearing loss were not randomized. Each specialist had his protocol for the different clinical entities of sensorineural hearing loss. Prognostic factors associated with hearing improvement include mainly age, severity of initial hearing loss, duration from onset to treatment, initial speech discrimination score and initial pure tone threshold. Recovery rates could have been impacted by inadequate or insufficient treatment.

Eustachian tube function in patients with chronic tubotympanic suppurative otitis media with Eustachian tube dysfunction after tympanoplasty

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Actuality: In the treatment of chronic tubotympanic suppurative otitis media, one of the main conditions for a successful treatment is a sufficient function of the Eustachian tube (ET). Earlier, the fifth stage of ET function was considered a contraindication for tympanoplasty. The inflation-deflation test allows accurately assess the degree of dysfunction of the ET and optimize surgical tactics.
Aim of the study: To determine the dynamic changes in ET function in patients with chronic tubotympanic suppurative otitis media with ET dysfunction after tympanoplasty according to the inflation-deflation test.
Material and Methods: We examined 105 patients aged 19 to 56 years, 57 were women and 48 men. At the first- fourth grade of ET function according to inflation-deflation test, the result was interpreted as normal – patients underwent tympanoplasty without ventilation tubes (VT). At the fifth stage of ET function, the result was interpreted as abnormal (ET dysfunction) – patients underwent tympanoplasty with teflon or silicone VT. Inflation-deflation test was performed in all patients postoperatively after 3, 6, and 12 months. With ET function improvement (changing grade from fifth to first- fourth), the VT was removed.

Results and discussion: Was found that in men, the 5th grade of ET dysfunction is observed less often (37.5%) than in women (52.6%). ET function improvement in patients with teflon VT is faster than in patients with silicone VT. At the same time, restoration of the tympanic membrane leads to decrease of the fifth grade of the ET function when comparing between the third and sixth and 12th months, and also between the sixth and 12th months after surgery in both groups of men and women.
Conclusions: Tympanoplasty in patients with chronic tubotympanic suppurative otitis media improves the ET function. The inflation-deflation test is an objective method and should be the basic examining the ET in the candidate for tympanoplasty.

Surgery in vertigo

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Surgery in vertigo is uncommon but indication exists and represents in such specific cases the best and safe solution.
The decision making requires two prerequisites:
1. Incapacitating vertigo unresponsive to medical treatment,
2. Strict peripheral pathology
   - Therefore the main indication is: the incapacitating Meniere' s disease with failure of medical or transtympanic treatment. This situation is often underestimated. The different techniques will be mentioned but the key procedure to cure such recurrent disorder is the vestibular neurotomy. Our results, on 539 patients operated between 1974 to 2014 (on a average of one case per month), demonstrate that vestibular neurotomy is the unique treatment offering no anymore vertigo attack, preserving hearing function and reducing the risk of bilateral form.
   - Endolymphatic shunt did not prove its efficiency, but balloon endolymphatic sac represents a new option in bilateral hydrops
   - Exceptional recurrent BPPV after several maneuvers could be lead to semicircular canal obliteration.
   - Rare minor syndrome with dehiscent superior canal can be operated using endoscopic procedure.
   - Finally, surgery of vertigo by vascular loop compression of the VIII cranial nerves will be shown and discussed.

The objective tool for quality of life assessment in patients with chronic otitis media: our results

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Introduction. The problem of quality of life assessment is caused by a frequent mismatch between the pattern of disease perceived by the patient and the pattern of disease, based on objective data. This situation is particularly relevant to otology, where there are several forms of chronic otitis media (COM), each of which is characterized by peculiarities of courses and outcomes. This is a widespread disease that affects, according to various sources, 65-330 million people (2% of the population) worldwide, with a greater number of cases observed mainly in developing countries. The Chronic Otitis Media Questionnaire -12 (COMQ-12) was developed initially in the UK to assess the patient-reported health-related quality of life (HRQoL) due to chronic otitis media.
The aim of this study is to determine whether this tool is applicable to the Russian population, which has a materially different healthcare system.
Material and methods: The Russian version of the COMQ-12 (RCOMQ-12) was obtained through a formal process of translation and back-translation. Some 140 patients with different forms of COM completed the RCOMQ-12 before surgical intervention and then 3 months and 1 year after that. Sixty healthy volunteers also completed the RCOMQ-12. We took into account such anamnesis data: type of previous surgery, unilateral or bilateral COM, the presence of the open mastoid cavity, smoking, concomitant nose pathology, the presence and level of sensorineural hearing loss.
Results: The main group included 140 patients: 63 men (45%) and 77 women (55%), ranging in age from 16 to 84 years. RCOMQ-12 scores ranged from 4 to 43 among all respondents. The average score was 19.61 (SD 7.97). Some 121 patients (86,4%) achieved a score of 10 or more. For the RCOMQ-12 Cronbach's alpha was equal to 0.860. We evaluated the correlation between anamnesis data and RCOMQ-12 scores. We calculated objective data that affect the patient's quality of life and satisfaction with surgery.

Conclusions: The Russian version of the COMQ-12 is found to be a reliable tool for assessment of HRQoL in patients with chronic otitis media. This study allowed us to determine the parameters that need to be considered before surgical intervention. This allows us to obtain a more complete and objective picture of the studied disease.

Contemporary management of the tinnitus patient in an interdiscplinary setting

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Tinnitus is a common disorder in adults and represents the perception of phantom sound in the absence of a corresponding external source. Most cases are caused by cochlear injury that leads to peripheral deafferentation, which results in adaptive changes in the central nervous system. Tinnitus pathophysiology is complex. There are no specific findings in the otologic examination and this condition persists after auditory nerve dissection. A common association with sensorineural hearing loss has been proved. A multidisciplinary approach is essential for diagnosis and therapy of tinnitus. The steps in tinnitus management in an interdisciplinary Tinnitus Clinic consist in the identification of an interested audiologist and of an interested psychiatrist/psychologist; comprehensive consultations involving otolaryngologists as well as interdisciplinarily-minded specialists such as dentists, otoneurologists, physiotherapists, etc. Regular monitoring of patient's status and eventual modification of the management plan is required. Otolaryngologist's perspective includes timely acquisition of basic understanding of tinnitus pathophysiology, first point of contact for many tinnitus patients apart from general practitioner/audiologist (depending on the health care system in a given country) and capability of differentiating between acute versus chronic tinnitus as well as between subjective versus objective one. Core competence for the detection of underlying otological/somatic diseases is of utmost importance. Diagnosis of tinnitus involves a detailed case history, an assessment of tinnitus severity, an otorhinolaryngologic and an audiologic examination. Diagnostic procedures should always be accompanied by empathic and insightful counseling according to the guidelines redommended by the Americal Academy of Otolaryngology. Pulsatile tinnitus requires specific diagnostic assessment. Further diagnostic steps depend on comorbidities. Usage of questionnaires is helpful. Causally oriented treatment of specific pathologies should be prioritized. Symptomatic treatment involves cognitive behavioural therapy, psychopharmacology (corticosteroids), hearing aids, sound therapy, and neuromodulation. Treatment of ear infections and elective ear surgery can be condsidered, too.

Audiological results of middle ear surgery: open versus closed tympanoplasty

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Background: There are no universally accepted opinions about the choice of surgical technique, and outcome of surgery for cholesteatoma in different age and localizations.
Methods: Prospective study of 758 patients with cholesteatoma was performed. They were divided in three age groups: children younger than nine years, adolescents aged ten to 16 years, and adults. Cholesteatoma was classified as: attic, sinus and tensa cholesteatoma. Classical canal wall up, or wall down tympanoplasty was performed in all the cases, and reoperation was done later if needed. Anatomical and functional results were followed up regularly, and evaluated three years after the operations.
Results: During postoperative course after three years retraction of neomembrane was found in 23,8% of younger children, 27,6% of adolescents, and in 9,9% of adults. Recurrent cholesteatoma were more than twice as frequent in children (19,0%) than in adults (9,4%). Reoperation was performed in 38,1% of children and in 9,4% adults In one fourth of pediatric cholesteatoma reoperations conversion to open tympanoplasty was done. Retraction and recurrent disease were present in about 10% of attic and sinus cholesteatoma, and in 15,5% of tensa cholesteatoma.
Conclusion: Postoperative audiological results of cholesteatoma surgery in children are comparable to adults. Retraction pockets, recurrent cholesteatoma and reoperations are twice as frequent in the pediatric group than in adults. The worst anatomical and functional results are achieved in tensa cholesteatoma. The age of the patient and localization of cholesteatoma are very important factors that determine the type of surgical procedure and the results of surgery for middle ear cholesteatoma. Closed technique is better for attic and sinus cholesteatoma, while in tensa cholesteatoma opened technique seems more appropriate.

The importance of the neonatal hearing screening

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Sensorineural hearing loss is a common disease in newborn population, with a high prevalence 1-3 cases / 1000 newborns according to the data provided by NIDCD. The universal newborn hearing screening program is a reality nowadays.
Currently there are audiological tests simple, non-invasive and short duration such as otoacoustic emissions – otoacoustic rmissions (OEA) and automatic evoked auditory potentials AABR that allow efficient screening (99,7% negative predictive value). The aim of the paper is to highlight the factual situation of the newborn hearing screening in Oradea, Romania, to establish the importance of the risk factors for hearing loss and to analyze these risk factors. This program includes all the children born in the hospital with/without risk factors for hearing impairment. The correct application of the protocol of screening allows early detection of uni- or bilateral hearing loss enabling the early diagnosis and appropriate treatment for an improved intellectual, linguistic, emotional and social outcome.

Structural damage of the conjunctiva after UV exposure – insights by in vivo confocal microscopy

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Introduction: Ultraviolet (UV) light damage of the eye is an undeniable fact, but there is insufficient information yet about the exact mechanisms and pathological changes of the anterior eye surface and eyelids.
Methods: The goal of the study is to understand the microstructural alterations of the ocular surface associated with UV exposure, evaluate the UV protection habits, encounter eventual microstructural changes and follow their dynamics using in vivo confocal microscopy. During a period of 4 months, 50 randomly selected young subjects (100 eyes) have been examined before and after the summer season. All the subjects repeated the examination procedure in one-year time interval and served as a self-control group. Laser scanning in vivo confocal microscopy was performed as followed: nasal, temporal, superior and inferior conjunctiva; and superior lid from the conjunctival side.
Results: Analysis of the bulbar conjunctiva demonstrated characteristic cystic lesions with dark centers and bright borders, encountered only in 6 eyes (6 %) before summer season, and after the summer season their presence increased affecting 29 eyes (29%). From the affected eyes, 16 were right (RE) and 13 left (LE), however, the number of encountered cysts was very similar for both eyes (49 RE and 51 LE). The size of the cysts also increased from 12-78 μm at baseline up to 14-174 μm after the summer sun exposure. Cysts also had a specific topographic representation, with higher distribution within the interpalpebral fissure. The total area of the lesions was calculated before and after the summer sun exposure, and was enlarged by 20 times. The total affected area after sun exposure returned within the normal range in one-year time interval. The analysis of the upper lid conjunctiva revealed round lesions with dark center and bright borders with significantly increased size and number after the summer period. Total cyst area after summer increased by 5 times. The total affected area after sun exposure in these control eyes increased by 6 times after the sun exposure and returned within the normal range after one year.
Conclusion: Summer sun exposure for one season leads to subclinical, transient microstructural changes on the bulbar and palpebral conjunctiva. The eye care practitioners must pay clinical attention to the potential causative factors of ocular surface disease and educate their patients for proper sun protection.

Vestibular rehabilitation

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Vestibular rehabilitation (VR) is indispensable dimension in treatment of vestibular disorders even if it is unilateral and peripheral. For success, the disease should be in the state of sequela. While VR mostly succeeds with the peripheral disorders as well as psychological types, the response to the treatment by central vestibular disorders generally resists. The treatment is based on the recovery of central compensation with the adaptive mechanisms of vestibule-ocular and vestibule-spinal reflexes.
The cases are selected by carrying out the full videonystagmographic tests as well as video head impulse test (VHIT) and VEMP's. The state of dysfunction is evaluated and monitored by dynamic posturography. The presence of associated neurological disorders is screened by magnetic resonance imaging (MRI). The post-treatment anteroposterior somatosensorial, anteroposterior global, mediolateral visual (MLVI), and mediolateral global values and anteroposterior and mediolateral tri-

als and conditions are evaluated by dynamic posturography. Vestibular rehabilitation was effective in patients with bilateral vestibular dysfunction. As VR duration increased, so did the efficacy of the treatment.

Modified hypoglosso-facial anastomosis: techniques and results

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Background: Hypoglosso-facial anastomosis (HFA) is the only method of facial muscles reanimation in the absence of access to the proximal end of the facial nerve. This anastomosis produces very good and stable results, but has certain disadvantages associated with the intersection of the main trunk of the hypoglossal nerve. This leads to tongue hemiatrophy, impaired swallowing, articulation and chewing. To prevent these complications, jumping anastomosis is proposed, when the facial nerve is sutured with the nerve interposition to the side of the hypoglossal nerve. Another modification of classical HFA is reinnervation of the hypoglossal nerve with its descending branch.
Material and methods: During the period 1994-2015, 75 operations were performed in patients with facial paralysis in Kolomyichenko Otolaryngology Institute, of which 36 patients underwent classical HFA, 18 had jumping and 21 had a modified anastomosis. Patients' age ranged from 6 to 68 years (an average of 34.3), observation periods from 2 to 21 years (an average of 8.6). The results of restoration of the function of the facial nerve were evaluated after 2 years or more after the surgery. To assess the function of the facial nerve, three grading systems were used: Haus-Brackmann (HB), Yanagihara and May. We also evaluated the state of the tongue, the function of swallowing, articulation and chewing.
Results: On the scales of HB and May, there were no significant differences between the three methods of anastomosis, while, according to the Yanagihara scale, the results were significantly better after the modified anastomosis. Disturbance of swallowing and / or chewing was noted in 63.9%, a difficulty of articulation was noted in 33.3% of cases after classical HFA and only 4.8% after modified and 5.6% after jumping anastomosis. All patients after classical HFA had hemiatrophy of the tongue, but after modified anastomosis only in 9.5% of cases and after jumping anastomosis – in 5.6% of cases.
Conclusions: HFA anastomosis allows restore the tone of the facial muscles and the symmetry of the face at rest. Modified and jumping HFA anastomoses preserve the trophic of the tongue, while articulation, swallowing and chewing do not suffer. Unlike jumping anastomosis after a modified HFA, the tonus of the facial muscles and active movements are more fully restored.

Functional infralabyrinthine approach to the jugular foramen in type C1-C2 paragangliomas

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Introduction: Paragangliomas are benign vascular neoplasms which are often found in the jugular foramen of the skull. In most cases, the size of this pathology of the jugular foramen, when diagnosed, corresponds to types C1-C2 according to U.Fisch classification. Surgery remains the method of choice in the treatment of paragangliomas. The infratemporal fossa Type A is the classical approach. A functional impairment of the low cranial nerves, the facial nerve, hearing and equilibrium, due to the peculiarities of this approach may happen.
Methods: As distinct from the traditional technique used on type C1-C2 jugular foramen tumours, we have applied the functional infralabyrinthine approach. This approach is provided through the temporal bone with sygmoid sinus exposure. The prebulbar space is exposed retrofacially. The infralabyrinthine space is opened with the preservation of the wall of the external ear canal. This approach provides access to the jugular foramen and its exposure through the lateral and posterior walls. The infralabyrinthine area, the hypotympanum up to promontory level, the posterior tympanic synus, the area of the vertycal portion of the internal carotid artery were exposed. The advantages of the above approach are as follows: 1) There is no need for facial nerve mobilization; 2) The middle ear and the labyrinth are preserved.
Results: This approach was used in 30 patients for removal of type C1-C2 glomus tumours. All the resections were total. The early postoperative period demonstrated complete preservation of cranial nerves and hearing ability.
Conclusion: Use of inralabyrinthine approach to the jugular foramen in type C1-C2 paragangliomas pas gives the opportunity to fully preserve the function of cranial nerves, and the labyrinth. The integrity and the function of the middle ear are also preserved. The total removal of type C1-C2 tumours and control of the affected area are possible.

Adhesive otitis media

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Retraction is a general term of medially displaced position of the tympanic membrane. It can be globally or partly. If it is not global, it may be related to only pars flaccida or pars tensa; in the latter, it may be limited to only one quadrant i.e. posterior-superior, anterior superior, or more. There are some other definitions of retraction refer to some features of retraction. For example, retraction pouche or pocket is used to define that the tympanic membrane locally displaced to medial from its normal position. Retracted tympanic membrane may be movable or not by changing the pressure in the external canal actively with pneumatic otoscopy or passively in the middle ear by Valsalva or Toynbee maneuvers. If it moves, it is mobile otherwise it is fixed. Adhesion is a term of advanced stage of retraction and defines the condition of retracted tympanic membrane touches and adheres to the medial element like promontorium or long process of the incus, which is normally not. It is the last stage of the continuing process of inflammatory process in the middle ear. Adhesive otitis media is the penultimate stage of long-lasting inflammatory process in the middle ear; otitis media with effusion at the beginning point and cholesteatoma at the end. It is a sequela of otitis media, which causes conductive type hearing loss. Tympanic membrane retraction is very frequently seen ear pathology in daily practice. It has a clinical importance due to it creates cholesteatoma risk and causes hearing loss by destructing functional elements and/or changing middle ear impedance. Many classifications have been proposed for the tympanic membrane retraction. In a general view, authors, in their classifications, have tried to draw attention to some features of retraction such as mobility by Valsalva or Toynbee maneuvers, or pneumatic otoscopy, visibility of boundaries, debris accumulation in or edge of retraction pocket, perforation, otorrhea and cholesteatoma. So, those features of retraction are very important for the prognosis and choice of treatment. Sade, in 1993, classified retraction into four stages: Stage 1: slightly retraction, Stage 2: retraction, Stage 3: atelectasis, Stage 4. adhesion. He added one more stage a few years later: Stage 5: perforation. According to this commonly used classification, tympanic membrane retraction in adhesive otitis media is in advanced stage (stage 4). There is also severe and chronic problem of middle ear ventilation. As previously mentioned before, the main reason of retraction, adhesion and cholesteatoma formation is always pre-existing otitis media with effusion. The surgeon should keep in their minds that some important alterations exist in the middle ear. Structure of the tympanic membrane is impaired and middle ear mucosa is not normal in adhesive otitis media. Those ears may represent infection, ossicular erosion, cholesteatoma, hearing loss and/or tympanic membrane perforation. Medical or surgical treatment may be used for those ears. Antibiotics may be helpful if there is infection. Nevertheless, medical treatment may have a very limited role in the general treatment strategy for adhesive otitis media. Surgical treatment is the main strategy for this sequel of otitis media. Impaired structure of the tympanic membrane, cholesteatoma, if it exists, conductive hearing loss even infection resistant to medical treatment can be treated surgically. Steps of preoperative evaluation are taking a detailed history, careful physical examination including head and neck, cardiovascular and pulmonary systems, otoscopy, otoendoscopy, otomicroscopy; audiometry, and imaging studies. There is not a specific surgical treatment modality for adhesive otitis media. Suitable tympanoplasty techniques are used for reconstruction of impaired tympanic membrane and eroded ossicular chain. If cholesteatoma exists, excision by using convenient techniques of tympanomastoid surgery is preferable. Classically term of cartilage tympanoplasty is used for reconstructive procedures for adhesive otitis media treatment because of using cartilage as the reconstructive material. Cartilage is preferred material for reconstruction because risks of reperforation and infection is lower due to metabolism of cartilage is lower/slower, and it resists to tendency of retraction due to its hardness and thickness.

Cartilage is used in different forms like island, composite, palisade, block or mosaic for the reconstruction of the tympanic membrane. Results of surgical treatment depend on some factors such as aeration of the middle ear and presence of cholesteatoma. Unfortunately, aeration expectation of the middle ear is not high because middle ear mucosa and Eustachian tube function have already been impaired in those ears. The other technical difficulty is dissecting adhesive segment of the tympanic membrane from the medial element. As it is well known, results of ossicular reconstruction in an ear totally depend on the aeration of the middle ear in the postoperative period. Dressing and protection is important for postoperative care. Antibiotics are used if infection present. Analgesics may be ordered if the patient is not comfortable due to pain. It is not a rule, but Valsalva exercises may be suggested the patients starting from postoperative 3rd week. First audiometric evaluation is performed at the 6th week of surgery. Complications of surgical treatment are effusion in the middle ear, re-retraction / adhesion, infection, granulation, re-perforation, external ear canal stenosis, and hearing loss.

Use of cartilage in ear surgery

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Use of cartilage in ear surgery has a long story. First reported use of cartilage in ear surgery was in 1958 by Jansen for ossicular chain reconstruction. Just a few years later, in 1963 Salen and Jansen reported the first usage of cartilage for tympanic

membrane reconstruction. Then during the last two decades cartilage usage in ear surgery has gradually become more and more popular by especially studies of Heermann et al. Cartilage, as a reconstruction material, can be used different reconstructive procedures in ear surgery. Structural and metabolic features of cartilage make itself desirable for reconstructive ear surgery and mastoid obliteration. Metabolism of cartilage is lower and slower than the other alternative reconstruction materials. It is also strong and thick enough. Those metabolic and structural characteristics of cartilage provide some advantages such as lower re-perforation and infection risk and more resistance to retraction tendency in ear surgery. Preventing retraction, and reducing re-perforation and prosthesis extrusion risks make cartilage itself a desirable material for tympanic membrane reconstruction. Cartilage may also be used in ossicular chain reconstruction to reduce risk of prosthesis extrusion and to complete continuity of the ossicular chain. There are several materials described for reconstruction or restoration of the external ear canal. Cartilage is also the most popular material for those indications. Not for only reconstructive procedures, but also for obliteration of either open or closed mastoid cavities is the other indication for use of cartilage in ear surgery.

Cartilage Harvesting

Cartilage can be harvested from the auricle or nasal septum. Auricle is always first choice. Depending on the necessity of amount of cartilage material, it can be obtained from the tragus or concha and cymba or both. Author personally prefers the tragus as donor site for reconstructive procedures, and concha and cymba for obliteration. Tragal cartilage is a very useful material for reconstruction due to suitable thickness, smoothness and diameters. Concha is provides enough amount of cartilage material for obliterative procedures. If amount of cartilage in the auricle on the operated side is not enough, the surgeon may take it from the other auricle or nasal septum. Cartilage harvesting from the tragus is a very simple procedure. Just for more acceptable cosmetic result, skin incision may be done 1 mm posterior to the free edge of the tragus. In this way, skin incision scar is not seen from anterior view. Dissection is easier on the posterior surface than on the anterior. So, if the surgeon needs the tragal cartilage with only one side perichondrium, anterior dissection between anterior surface perichondrium and cartilage, which is a very easy procedure, is preferable. If all tragal cartilage is not necessary, 1 mm free edge segment of the cartilage is left in place to prevent tragal collapse postoperatively. Cartilage harvesting procedure, regardless of from tragal, conchal or nasal septal, has some other potential complications, rather than cosmetic deformity or hematoma, such as infection, bleeding, crumbling the graft away.

Sculpturing Cartilage

Cartilage taken from the tragus is prepared and sculptured according to the technique and intended purpose. Several techniques have been described in literature regarding cartilage usage for reconstructive ear surgery. Palisade, island, block, shield, butterfly are some of those techniques for tympanic membrane reconstruction. Double block, triple block, long and short columellae are for ossicular chain reconstruction.

Use of Cartilage in Tympanic Membrane Reconstruction

The mean reasons of cartilage usage in tympanic membrane reconstruction are to prevent postoperative retraction or to reduce the risks of re-perforation or alloplastic prosthesis extrusion. A lot of materials have been used for tympanic membrane reconstruction in literature. Author mostly prefers to use perichondrium for tympanic membrane reconstruction. Nevertheless, cartilage is the second most frequently used material. The other materials are temporalis fascia, chondro-perichondrial composite graft, vein, lyophilized dura, fat, and periosteum. As it is mentioned above, cartilage provides some advantages to the surgeon. As a reconstruction material, cartilage is more resistant to retraction in the postoperative period than other optional materials. If the surgeon expects postoperative retraction, considering the Eustachian function and middle ear mucosal damage, cartilage is the material of choice. In fact, the author has never seen re-perforation with perichondrium, it is clear that cartilage is stronger material than perichondrium or other alternative materials for reconstruction of the tympanic membrane. In spite of not giving a guarantee, cartilage over an alloplastic prosthesis serves a good prevention against extrusion. For just this advantage, cartilage may be chosen as a material of tympanic membrane reconstruction in such cases. According to these explanations, cartilage may be chosen as a graft material for tympanic membrane reconstruction in tympanic membrane retraction, cholesteatoma and revision cases, and also ears with high reoperation risk. Many techniques have been described in literature for cartilage tympanoplasty. Cartilage can be used as an island graft, cartilage block, palisade, shield or butterfly in tympanic membrane reconstruction. Surgeons will choice one of these techniques according to their experience, surgical philosophy and also ear pathology. Disadvantages of the cartilage are opacity of the graft making difficult to get information about the condition in the tympanic cavity postoperatively. Rigidity is another issue. This has been proposed that it is a reason for lower functional gain. Lastly harvesting and handling have been proposed as a time consuming procedure.

Use of Cartilage in Ossicular Chain Reconstruction

To reduce the risk of prosthesis extrusion may be a reason to use cartilage in ossiculoplasty. Cartilage can be used like prosthesis or reshaped ossicle to complete the ossicular chain. A piece of free cartilage may be put over the prosthesis and under the tympanic membrane or the graft to prevent direct contact between prosthesis and the tympanic membrane. Sometimes this cartilage piece may displace or migrate from its place in the early or late postoperative period. Full thickness cartilage can be sutured to top of the prosthesis to prevent such migration or displacement. If the tympanic membrane also has to be reconstructed at the same stage, cartilage may be chosen for reconstruction of the tympanic membrane. Cartilage plays the same role as the free piece of cartilage to prevent direct contact in such condition. Different graft alternatives to reconstruct the ossicular chain have been reported. Ossicle, bone cement, titanium and some other metals, cortical bone, and metal-

hydroxylapatite combinations are some of them. In addition of these, cartilage can be reshaped as prosthesis to provide continuity of the ossicular chain in the presence of ossicular erosion either partial or complete. For example, cartilage can be reshaped similar to Appelbaum prosthesis to reconstruct lenticular process defect or partial incus replacement prosthesis for long process defects. Author used to use cartilage for those indications in the early years of his career with only short-term success. Nowadays he prefers other materials and techniques for those indications. Luetje has described double and triple cartilage block techniques. It works if it is used in convenient cases. Author uses some kind of modification of this technique in certain cases. According to the defect, he may sutured two or three pieces of cartilage in gradually increasing diameters to each other to create a kind of conic shaped short columella TORP to put over intact and mobile footplate in the absence of stapes superstructure. In the presence of shallow tympanic cavity at the end of an open cavity surgery, this technique is useful. The author may also create an acetabulum on a piece of tragal cartilage and place it over the stapes head like a PORP if there is only intact and mobile stapes in the tympanic cavity. If a second look operation is planned in extensive cholesteatoma cases, this may be a good alternative to PORP.

Use of Cartilage in External Ear Canal Reconstruction

In the presence of a defect on the bony external ear canal, cartilage is a good material for reconstruction. Bony external canal can be destructed by cholesteatoma or sometimes by a surgeon during drilling. In the presence of bony external canal destruction, reconstruction of the canal is obligatory to prevent cholesteatoma. Many graft materials such as titanium, perichondrium, fascia, bone cement, bone-pate, cortical bone, have been used for this procedures. Cartilage is the most useful material in the list. Cartilage reconstruction of the canal may prevent retraction of the canal skin, which is very risky for cholesteatoma development or recurrence. Keeping a closed cavity or creating a closed cavity after canal wall-down procedure is possible by this reconstruction.

Use of Cartilage in Mastoid Obliteration

As it is well known, obliteration is a quite commonly used procedure in tympanomastoid surgery. Cartilage is considered as a best option as obliteration material in both closed and open cavities. Some authors believe that closed cavity is not functional and may pose a risk for retraction and even cholesteatoma postoperatively. On the basis of this opinion, they obliterate closed cavities by using some materials like fat, calcium phosphate, silicon block, synthetic bone graft, bioactive glass, hydroxyapatite, cortical bone, different flaps, and cartilage. Classically obliteration is used to reduce mastoid cavity volume to avoid postoperative cavity problems in open cavities. Cartilage is mostly used material for all kind of obliteration procedures. Depending on the available amount of cartilage, cavity can be obliterated completely or partially if complete obliteration is not possible and/or necessary. The technique is very simple. The cavity is filled with cartilage pieces.

Possibilities for application of the social corporate responsibility in pharmaceutical companies offering products in the field of otology and neuro-otology in Bulgaria

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Introduction: Social responsibility is an element of the corporate culture that requires fulfillment of voluntary commitments by companies, in which private gains and private corporate interests take second place and a new vision of corporate values is established. Corporate social responsibility means companies to work voluntarily, without being forced by law, to achieve social and environmental goals in their day-to-day business activities. The purpose of the article is to present good international practices and opportunities for application of corporate social responsibility when implementing the business strategies of pharmaceutical companies, offering products in the field of otology and neuro-otology of the Bulgarian pharmaceutical market.

Material and Methods: The study includes theoretical considerations and qualitative research methods – in-depth interviews with managers of successful pharmaceutical companies operating on the Bulgarian pharmaceutical market.

Results and Discussion: One of the most important documents defining the scope and the specificities of the corporate social responsibility in the European Union, including in the pharmaceutical sector, is the European Parliament resolution on the corporate social responsibility, promoting society's interests and a route to sustainable and inclusive recovery. The comparative review of the examples of social corporate responsibility in the business strategies of pharmaceutical companies in Bulgaria, offering products in the field of otology and neuro-otology, complies with the principles set out in these international documents and official reports of the European Parliament, the European Commission, the World Health Organization and the United Nations.

Conclusions: When talking about strategies for social corporate responsibility, we need to keep in mind that a key stakeholder is also the consumer (patient). In this respect, it is necessary that pharmaceutical companies operating in Bulgaria,

including of products in the field of otology and neuro-otology, to include activities aimed at supporting programs related to the strengthening of patients' organizations and the opportunities for their voice to be heard. Furthermore, it is necessary to strengthen and expand the capacity of the non-governmental organizations and consumer organizations to conduct independent research on products and services and to bring the results to the attention of broad categories of consumers by providing resources and methodological assistance for such research. On a broader scale, work is being done to extend consumer organizations' capabilities to lodge a collective claims against unfair producers, traders and monopolists by using legal aid to strengthen their position in the social dialogue; development of a national campaign to raise awareness among consumers, patients and their relatives about the benefits of the social responsibility activities and promotion of sustainable consumption patterns to improve the health and quality of life of people with vestibular disorders.

The role of the international partnerships for transfer of knowledge and experience in the field of otology and neuro-otology

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Introduction: The diagnostics, the innovative treatment methods and the maintenance of good quality of life for people with vestibular disorders are a priority in the work of the academic and medical teams in the field of otology and neuro-otology in Bulgaria and worldwide. In this regard, the process of acquisition, exchange and application of knowledge, experience and results of scientific research at national and international level is important. Thanks to their functions to conduct training of future and current medical professionals as well as to carry out scientific and applied research, universities are an important part of the healthcare ecosystem, in particular in the field of otology and neuro-otology. The effectiveness and the results are increasing through international teamwork and partnerships, and the main goal is to achieve good health and complex care for people with vestibular disorders. The objective of this article is to present examples of good practices for international partnerships from the experience of the Medical University of Varna and the International Black Sea Association of Otology and Neuro-otology for application of innovative diagnostic, treatment and training methods in this field.
Material and Methods: This study includes theoretical statements and practical case studies on the establishment, activation and sustainable development of international partnerships in the field of Otology and Neuro-otology.
Results and Discussion: Examples of international exchanges between academic partners are considered with regard to training and knowledge transfer, and examples of complex and innovative practices in different international teams are presented in relation to the medical care for patients with vestibular disorders.
Conclusions: The synergy of the international partnerships at the academic, scientific and practical level is an important factor for the development of the contemporary otology and neuro-otology. It leads to a faster adoption of new treatment methods, more effective outcomes in the processes of training and practice and a better patients' access to complex healthcare. For the proper, well-timed diagnosis and treatment of vestibular disorders, collaboration between among various specialists such as otorhinolaryngologists, neurologists, cardiologists, psychiatrists, and psychologists is needed. The international partnerships are an active field for joint multidisciplinary work and for successful solution of complex cases and innovations.

Cochlear implantation in the ossified cochlea

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Ossification of the cochlea in candidates for cochlear implantation is often. During the last four years, we have treated two patients with ossified cochlea. Herewith we present our surgical experience in these cases with cochlear ossification. Clinical case reports demonstrate that results are often similar to those expected for implantation of the non-ossified cochlea, particularly when the electrode insertion is, in principle, possible.

Subjective and objective assessment of patients with new couplers of the Vibrant Soundbridge system

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New universal couplers for the Vibrant Soundbridge system are applied in hearing disorders of various etiology, congenital and acquired, in pediatric and adult patients. Depending on the ear pathology and patient's status, the Floating Mass Transducer (FMT) is attached in different placements. In case of sensorineural hearing loss, the FMT is usually attached either to short, or to long process of the incus whereas in case of conductive or mixed hearing loss, the couplers are either attached to the stapes head, or are fixed on the round window. The functional results of new Vibrant Soundbridge (VSB) new couplers implanted in 10 patients (aged 12-67 years) between 2014 and 2017 in the World Hearing Center, Kajetany, Poland, were analyzed. The patients had different hearing losses ranging from mild to profound and of various etiology. Most often, the coupler placed on the short process of the incus was used. Audiological assessment was conducted according to the following schedule: appointment 1 (preoperatively), system activation (6-8 weeks postoperatively), appointment 3 (5-7 months postoperatively), and appointment 4 (11-13 months postopeartively). The patients were thoroughly examined with pure-tone audiometry, free field pure-tone audiometry, speech audiometry and free field speech audiometry. Vibrogram in situ was performed in every patient. The sound was presented straight from the device. The results from ABHAB questionnaire filled-in by the patients prior to and after operation were analyzed. Based on the results of the free field pure-tone audiometry, the authors confirmed a significant improvement after the procedure of VSB implantation when compared to the preoperative results. It was also confirmed that the patients had better speech understanding using the speech processor. The postoperative pure-tone audiometry results (wearing headphones) and Vibrograms in the implanted ear were usually stable in the observed frequencies that allowed the statement that the implant fixation was correct and not displaced. The analysis of these patients indicates that VSB system considerably improves patient's auditory skills in case of middle ear congenital hearing loss or coexisting external and middle ear defects if classic hearing aids can't be used. Based on the audiological results and questionnaire assessments it is concluded that there is a noticeable gain from VSB implant application.

Dizziness and epileptic seizures

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Objective: Reviewing the correlation between vertigo and epileptic seizures and definition of the term of 'epileptic seizures'.
Discussion: From ancient times dizziness and epileptic seizures have been linked conceptually and diagnostically. Today it is clear that there are many common associations between dizziness and epileptic seizures. The epileptic discharges in the area of the sensory representation in the vestibular system which representation is localized in the area of sulcus interparietalis and the posterior parts of gyrus temporalis superior can lead to vertigo. The vertigo can remain an isolated phenomenon or it will become a first symptom of a psychomotory (complex partial) epileptic seizure, sometimes with a second generalization to a generalized tonic-clonic seizure. Even though the dizziness has been recognized as a manifestation by Jackson and Growers more than 100 years ago, the possibility of short episodes of dizziness which come from epilepsy hadn't been recognized. Today it is well known that epilepsy is an important reason for a short dizziness. The epileptic vertigo is not a rare form of partial epileptic seizures as a consequence of the past epileptic activity of the cortex whereat the vestibular system is located: parietal, temporal and frontal cortex. The epileptic vertigo is a diagnostic problem when the patient does not have symptoms of an epileptic seizure, basically there are not convulsions, psychomotory symptoms or spasmatic characteristics of the classical partial or a generalized fit. The most important diagnostic tests are EEG and MRI of the brain. Vestibular epilepsy is diagnosed with abnormal EEG. Though many healthy individuals have got slightly abnormal EEG tests, which tests depend on the functional status of the body. The abnormal EEG might be a main criterion for the diagnostic outcome. In many patients' cases there are registered abnormal temporal or bi temporal focal points with sharp or slow waves whereat in some cases they can be associated with generalized discharges.

Conclusion: The correlation between vertigo and epilepsy which had been known for centuries, today it has been incorrect interpretated and debated. Within last few years this correlation has been established with the beginning of seizures in the posterior temporal neo cortex, temporo-parietal region and also seizures which begin in the frontal area where upon there are many well registered examples. Modern conceptions regarding the links between vertigo and epileptic seizures give to the term 'epileptic vertigo' much more different meaning than the simple correlation between vertigo symptoms and epilepsy. Today this is brought in for a diagnostic and a physiology discussion by a point of view of the changeable medical and social conception of both diseases.

Tinnitus – modern concepts and therapy

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Aim: Presenting modern neurophysiological concepts for diagnosis and treatment of tinnitus
Discussion: Tinnitus is defined as a subjective feeling of hearing sounds without external sound stimulation. So far there is little knowledge of the causes that lead to the occurrence of tinnitus and the therapy is unclear and strictly individual. The pathophysiological theories vary from a cochlear lesion on the synaptic level to an increased spontaneous activity of the central auditory pathways and the auditory cortex. It should not be forgotten that tinnitus can be generated at any part of the hearing system from the ear to the CNS and is subjected to modification from any of the brain structures. The patients with tinnitus and normal hearing present with increased auditory sensitivity due to auditory cortex hyperactivity. In patients with tinnitus and hearing loss, the frequency of tinnitus often corresponds to the frequency of the hearing loss. The hyperacusis is a common complaint from these patients and this suggests that both symptoms have a common origin. The reduced sensory information from the cochlea and the auditory nerve leads to a resetting of the CNS and from there to abnormally increased neuronal activity, quick fire rates and rise of the neuronal asynchronization. Abnormal EEG activity in the central auditory pathways has been reported in experimental animals after hearing trauma and later confirmed in patients with tinnitus. These deviations can be explained through the mechanisms of the homeostatic plasticity and reorganization at different levels of the auditory pathways with the aim to reduce the impairment of the auditory functions. The increased brain activity in patients with tinnitus is demonstrated by γ-activity in the auditory cortex on the EEG. The occurrence of this γ-activity is believed to be the result of inhibition incapability of the auditory cortex and leads to decreased α-activity. The assessment of patients with tinnitus begins with an interview that consists of guiding questions to help the specialist understand the characteristics of the patient's tinnitus. The interview is followed by audiological tests and additional consultations and examinations are performed when needed. The influence of tinnitus on the quality of life is typically assessed through questionnaires that contain similar but different questions for optimal objectivity of the results. The most commonly used tests are the Tinnitus Handicap Inventory, the questionnaire of Goebel & Hiller, the Hyperacusis questionnaire and others. The usage of validated questionnaires for clinical assessment of patients with tinnitus allows objectively following the patient's condition in the course of treatment.
Conclusion: Comparing the results from preliminary chosen questionnaires with the data from neurophysiological examinations is from significant importance in the making of a medical diagnosis and a therapeutic strategy in patients with tinnitus. After the high penetration of the rTMS for the focal modulation of the cortical activity, it is accepted that it can influence the tinnitus-related abnormal neuronal activity and thus change the patient's perception of tinnitus. The low-frequency rTMS is applied in order to reduce tinnitus through reducing the hyperactivity in the auditory cortex.

Cartilage rim augmented fascia tympanoplasty (CRAFT): An effective composite graft model over temporalis fascia tympanoplasty

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Objectives: To validate a newly introduced cartilage rim augmented temporalis fascia tympanoplasty technique by statistically comparing it with the morphological and audiological outcomes of traditional temporalis fascia tympanoplasty.
Methods: A Prospective analytical study was conducted on 115 patients who underwent tymapnoplasty during the period between 2013 and 2015. Some 58 patients were enrolled in the temporalis fascia tympanoplasty group and 57 were subjected to cartilage rim augmented fascia tympanoplasty.
Results: In the temporalis fascia group, the grafts take up was 70%, whereas in cartilage fascia group, the healing of graft achieved in 94.7% of the cases. In those with normal ossicular chain, the post-operative air bone gap was within 20 dB in 92.6% of the cases in the cartilage fascia group, whereas, in temporalis fascia, it was 70% which was statistically significant.

Among the ossicular defective cases, in the cartilage fascia group, the post-operative air bone gap was 69.2% as against 57.1% in temporalis fascia group.

Conclusion: The cartilage rim augmented temporalis fascia tympanoplasty has definite advantage over the temporalis facia technique in terms of superior graft take up and statistically significant hearing gain in those with normal ossicular mobility.

Surgical management of chronic rhinosinusitis. An analytical review

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The modern opinion of cronic rhinosinusitis (CRS) treatment is stated in the article from a position of evidence medicine. The review of studies concerning the medical therapy of CRS and evidence for surgery management is given. The endoscopic sinus surgery is widely used today in CRS treatment, however, recent investigations show that FESS doesn't warrant the absolute recovery. A comprehensive treatment paradigm should entail medical therapy to control inflammation and infection and targeted surgery when indicated in medically recalcitrant cases. Surgery does not represent a cure to CRS but rather one key intervention in the overall management paradigm of CRS.

Endoscopic ear surgery

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After the introduction of the operation microscope into middle ear surgery in the fifties of the last century, microscopic surgery was successfully applied for the different operations in the temporal bone and the adjacent skull base. Using the microscope, the surgeon has a three dimensional view to the operation site, may apply a stepless amplification and use both hands for surgical manipulations. However, the microscope only provides a straight ahead view. To visualize hidden areas such as the sinus tympani or the antrum region, the covering bone (canal wall, attic wall etc.) has to be removed. To reduce the trauma of access and to improve the angle of view into anatomically hidden areas inside the cavum tympani and the mastoid, endoscopic techniques are increasingly used and refined for a few years. Besides extra thin endoscopes, special instruments with integrated suction have been developed for one hand surgery. In the Bochum Department of Otorhinolaryngology, slimline endoscopes are used in addition to the microscope to completely inspect operation sites e.g. after cholesteatoma removal.

Different surgeons such as Panetti or Presutti have changed their operation technique to exclusive endoscopical procedures e.g. in otosclerosis or certain cases of cholesteatoma surgery. They developed the terms 'otoendoscopy' or 'EES (endoscopic ear surgery)'. In the present lecture, I will describe the different techniques of endoscopic ear surgery and discuss advantages and disadvantages of these procedures.

Facial nerve palsy caused by viruses and bacteria affecting the intratemporal course of the facial nerve – case reports. Immunologic aspects

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Introduction: Facial Nerve Palsy (FNP) is caused by certain types of viruses and bacteria, the infection with which lead to acute and chronic otitis media (with or without cholesteatoma) with different pathophysiologic mechanisms including changes in the number or function of the lymphocyte populations and subpopulations. We analyze FNP case reports that has occurred after an affection of the intratemporal course of the facial nerve. The facial deformation, caused by FNP, is an alarming and a worrying symptom that requires an immediate examination of the patient, discovering the type and the cause of the paralysis, as well as choosing an appropriate treatment and immunotherapy.

Aim: Based on our own experience and literature data, we present our clinical behavior in FNP cases. In the future, we want to develop an assessment of the preoperative risk by using the following criteria: for how many years has the ear been affect-

ed, the type of the ear discharge (smelly or not), the treatment that has been conducted, the result from the treatment, previous surgical interventions, appearance of vertigo and nausea, to explore the levels of lymphocyte populations and subpopulations in peripheral blood, common serum immunoglobulin classes and the tests made up to the moment of the paralysis.

Material and metods: We present 9 patients with otitis media that has progressed to FNP. To diagnose the FNP we used the following methods: otoscopy, audiometry, microbiology, preoperative and postoperative EMG, CT scan of the mastoid, pyramis, the middle and posterior cranial fossa, turbidimetry for serum levels of common immunoglobulins and flow cytometry of blood sample. While performing the otologic surgery, we used IOFNM, with which we identified the nerve and which helped in the removal of the granulations or the cholesteatoma (if any dehiscence or erosion of the facial canal was present). In three of the patients, one with Bell's palsy, one with a Herpes zoster oticus infection, and one with CSOM (who denied operative treatment), medicamentous treatment was conducted. Four of the patients were operated depending on the pathologic process in the middle ear (two of them were treated with CWU and the other two were treated with CWD). One of the patients developed a FNP in the other, non-operated ear, that required operative treatment. Fresh venous blood was drawn into sodium-heparin tubes and the results were obtained within 2 hours. Leukocytes were analyzed by using a dual-laser FACS Calibur cytometer (Becton Dickinson, Heidelberg, Germany) and Cell Quest Pro software (Becton Dickinson). Briefly, blood cells were stained with fluorescence-conjugated antibodies (FITC and PE). After lysis of erythrocytes (Lysis buffer; Becton Dickinson) and two washes, stained PBMC were re-suspended and fixed with CellFIX (BD Biosciences). Ten thousands of lymphocytes were collected in a forward scatter/side scatter (FSC/SSC) lymphocyte gate and saved together with the monocytes and granulocytes. Data is presented as a percentage of the lymphocyte gate. The cytometer was calibrated daily with appropriate single-stained samples for setting compensation and acquired data was analyzed by FACSComp software©2007 Becton Dickinson. Fluorescence conjugated antibodies by Becton Dickinson Pharmingen™ were used to identify cell populations CD3 T-lymphocytes , CD19 B-cells, CD8 T-cytotoxic, CD4 T-helpers and CD3/CD16+56 NK-cells.

Results: The full recovery of facial nerve function in our clinical cases demonstrates that the facial nerve damage corresponded to first to second degree according to Sunderlan and mild to moderate facial dysfunction with following recovery according to House Brackmann facial grading system. In terms of immunological status was observed significant deviations from the reference values in patients with Bell's palsy. At the time of recording was decreased total T-lymphocytes, T-cytotoxic lymphocytes, B lymphocytes and increased NK cells refer to changes caused by viral infection and requirement for immunostimulating therapy. These degrees of facial nerve damage were identified preoperatively and postoperatively with EMG, thus confirming our treatment choice.

Conclusions: The use of modern diagnostic methods contributes for the specification of the type and reason of FNP occurrence. The cell-mediated and humoral immunity play an important role in protection against viruses and bacteria. Contemporary immunological laboratory tests should be not only the diagnostic tool but also define appropriate administration of immunotherapeutic agents in the course of treatment. Depending on the reasons of occurrence, there are certain types of nerve injury: neuropraxia, axontemesis, neurontemesis. The tympanic segment и SGA of the intratemporal course of the facial nerve are the most vulnerable structures in the middle ear during otologic surgery. Yester et al. have found 83% dehiscent facial canal in patients with facial paralysis due to chronic otitis media, with the most common sites being at the second genu and the horizontal portion. The incidence of iatrogenic facial nerve injury is reported as 0.6- 3.6 % in all otologic surgical procedures, and increases up to 4-10% in revision surgery. In these cases, the IOFNM method is useful. It can contribute in 93% of the cases for the surgical anatomic identification, which helps for the prevention of iatrogenic facial nerve injury.

Key words: intratemporal course of the facial nerve, congenital dehiscence, facial nerve palsy, IOFNM, immunotherapy.

Дехисценция на преден полуокръжен канал (SSCD syndrome) – съвременна диагноза и лечение

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Дехисценцията на предния полуокръжен канал (SSCD, superior semicircular canal syndrome) е сравнително нова нозологична единица, дефинирана за първи път от Minor et al. (1998). Част от симптоматиката обаче е добре позната на специалистите като симптом на Тулио. Въпреки това при определянето на това заболяване съществуват сериозни диагностични затруднения. През последните няколко години в практиката се въведоха нови методи за диагноза и лечение на това заболяване. Представени са резултатите от 5 пациенти, изследвани и лекувани в клиниката в рамките на последната година. Диагнозата е поставена въз основа на рутинни отоневрологични и аудиометрични тестове и регистрация на шийни и окуларни VEMP's , а след това е верифицирана с помощта на КТ с висока резолюция – 0,625 мм. Дискутирани са резултатите от VEMP-тестовете, като се отбелязва високата диагностична информативност на тези проби. На двама от пациентите в клиниката е приложено най-новото и щадящо лечение – оклузия на кръглото прозорче. Докладваме предварителните резултати след хирургичното лечение.

Active middle ear implants for the rehabilitation of patients with sensineural, mixed and conductive hearing losses – long term experience after 10 years

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Introduction: The Vibrant Soundbridge offers an alternative treatment option for patients suffering from sensorineural, conductive or mixed hearing loss. The advantages over traditional hearing aids in sensorineural hearing loss have been demonstrated in numerous clinical studies and include improved sound quality without distortion, high amplification without feedback or occlusion, very good speech understanding even in situations with background noise, and improved comfort. In conductive or mixed hearing losses, the active floating mass transducer (FMT) is positioned in direct contact with the inner ear bypassing the external ear canal and the middle ear.
Material and Methods: We report about our experience with the Vibrant Soundbridge Implant program after 10 years of personal experience. Altogether 275 patients suffering from sensorineural and mixed hearing losses were treated so far and implanted by the first author. The FMT was placed in on the long process of the incus in sensorineural hearing losses, on the head of the stapes or on the round window in mixed hearing losses. New couplers have been used in order to make surgery more easy and feasible. The placement of the FMT depends on the grade of the hearing loss, on the pathology and the anatomy of the patients. The quality of the coupling of the FMT to the ossicular chain or to the inner ear is evaluated based either on comparative reverse transfer function (RTF) or on electrocochleography measurements. Both measurements will be presented in the lecture.
Results: In 273 cases, residual hearing was preserved indicating that the surgical techniques are safe. Surgical techniques and audiological results under headphone and in free field in the unaided and aided condition with Vibrant Soundbridge of all activated patients are presented.
Conclusion: The Vibrant Soundbridge represents an innovative treatment option for sensorineural, conductive and mixed hearing losses. Especially for pathologies that are difficult to treat, issues with the reconstruction of the middle ear can be solved by directly applying mechanical energy to the inner ear. Intraoperative measurements like the reverse transfer function help the surgeon to achieve proper audiological postoperative results.

Management of acute otitis media with purulent intracranial complications

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Changes in approaches to surgical treatment of purulent intracranial complications (meningitis, brain abscess, and ventriculitis) combined with acute otitis media are driven by emergence of such complications not only during purulent but also during non-purulent inflammation in the ear. Enlarged mastoidectomy combined with exposure of the dura and sinus often looses its actuality. Positive results of treatment with intensive medical therapy has proven, and in doubtful cases – diagnostic antrotomy or mastoidotomy. Both CT scan and MRI exclude necessity of cerebrum puncture of infected zone through undamaged dura and support neurosurgical approach. According to our clinical study, positive treatment results for patients suffering from acute otitis media combined with purulent intracranial diseases can be achieved: in 61% of cases with non-purulent (mostly viral) disease and in 29% – with purulent disease without any surgeries. In 44% of purulent inflammation cases, processes are formed simultaneously in the cranial cavity, in parallel, rather then as a result of acute otitis media. They should be called combined processes.

Piquant situations in ossiculoplasty – how i do iit!

V. Honnurappa

Principles of Hearing Reconstruction: Tympanic membrane being the most important contributor for sound transmission, it should be reconstructed as near as possible when healed with free movements.
Requirements for Primary Ossiculoplasty:
1) Presence of normal or minimally hypertrophied mucosa
2) Patent Eustachian tube
3) Mobile stapes footplate
Primary or Staged Ossiculoplasty?

Grafts used for ossicular reconstruction:

- Autograft/Allografts
- Remnant Incus
- Malleus
- Septal Spur cartilage and other materials

Septal Spur cartilage is present along the floor where the cartilage flares up over maxillary crest. It is harvested in septoplasty surgery. Cartilage is preserved in 70% alcohol or autograft.

The objective of this presentation is understanding the long term results of Ossiculoplasty using Septal Spur Cartilage and Demonstrating long term viability.

The use of self stabilizing septal spur cartilage for middle ear reconstruction brings several advantages, it can be sculptured into an appropriate shape and size and has no extrusion rate.

Stable hearing with time tested results.I am using septal spur cartilage since last 25 years without any failure or problems.

Present results give evidence that sculptured septal spur cartilage is capable of reaching two major goals of every Ossiculoplasty – 1) a satisfactory hearing gain and 2) Stability.

Creutzfelt-Jacob disease or H.I.V. have never been reported in any literature after transplantation of Autograft. Biomaterials known for high extrusion rates and are expensive. Comparative Histopathological study of fresh and revision case cartilage shows same number of Chondrocytes with nucleus. There is no risk of extrusion and it is cost effective.

Based on this I recommend this type of reconstruction for all types of ossiculoplasty.

Temporal bone dissection approaches to lateral skull base

V. Honnurappa

Understanding Skull Base Surgery:

The key to study lateral skull base surgery is in understanding the classification

The lateral skull base approaches are classified based on two crieteria:

1) The location of the target lesion eg. IAC, CP angle, Clivus, Petrous Apex, Jugular bulb etc. Generally chapters in skull base textbooks are divided based on the location of the target lesion.

2) The route taken by the approach in relation to the otic capsule.

When the route goes through the otic capsule the approaches are- (Hearing preservation is not feasible)

1) Translabyrinthine approach – The SCC and vestibule are breached. The cochlea is not drilled though the function is lost.

2) Transcochlear approach – In addition, cochlea is breached this approach involves posterior transposition of facial nerve.

3) Transotic approach – The cochlea, vestibule and SCC are drilled without transposing the facial nerve.

The lateral skull base approach may take route avoiding breach of otic capsule (hearing preservation surgery)

1) Superior to otic capsule – middle cranial fossa approach

2) Posterior to otic capsule – retrolabyrinthine and retrosigmoid approach

3) Inferior to otic capsule – Fisch infratemporal fossa type A approach. This involves anterior transposition of facial nerve

4) Anterior to otic capsule – involves dealing with Intrapetrous Internal carotid artery. Fisch infratemporal fossa approaches type B, C, and D fall in this category.

Here I am discussing the following five approaches to lateral skull base:

1) Translabyrinthine approach

2) Transcochlear approach type A

3) Retrosigmoid approach

4) Retrolabyrinthine approach

5) Infratemporal fossa type A approach.

Traumatic facial nerve paralysis – new innovative technique of transcanal facial nerve decompression

V. Kumar

In our experience, as being tertiary referral centre for facial nerve disorders, 117 cases of traumatic facial nerve palsy have been performed. If the patient has grade V to VI facial nerve (FN) paralysis, he needs surgical intervention. In longitudinal fracture, the patient will have bleeding from ear canal or tympanic membrane rupture or haemotympanum with conductive hearing loss. In transverse fracture, the patient will have severe giddiness, vomiting, and sensorineural hearing loss. I have popularized a transcanal FN decompression for longitudinal fracture causing FN paralysis. It is a very easy and safe tech-

nique done under local anesthesia in adults. In 95% of cases, the lesion will be around perigeniculate ganglion. Schirmer's test is very important clue. In 95% of cases, it is positive, there is neither lacrimation, nor reduced lacrimation compared to opposite eye. Otherway round in cases of unrecovered Bell's palsy, it is negative. This gives excellent clue that greater superficial petrosal nerve (GSPN) is involved. Through postauricular approach, tympanomeatal flaps are created. Invariably, a fracture line is seen crossing over the posterior bony meatal wall from squamous part of temporal bone extending over the attic. We perform wide canalplasty. If ossicular chain is intact, we disarticulate the incudostapedial joint, incus is removed, malleus is amputated at the neck, head is pushed posteriorly into attic, handle of malleus is retained with the flap. Then horizontal FN segment is clearly observed. Multiple fragments of supralabyrinthine bone pieces can be seen compressing the geniculate ganglion (GG), GSPN and labyrinthine segment. To get best results it is mandatory to decompress GG, GSPN and labyrinthine segment, and then incise the epineurium from the second genu to GG. Primary ossicular reconstruction – myringostapediopexy with attic reconstruction is done in all the cases. In all the patients, if surgery is performed early timingly, there is a complete recovery from FN paralysis. A video presentation will be delivered.

Sun, UV rays and quality of life of our patients ...

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Purpose: Ultraviolet (UV) exposure is beneficial for the normal functioning of the human body, but excessive and uncontrolled radiation can have deleterious effects and lead to damage, including malignancies. The aim of our study was to test the level of people's knowledge about the risk of UV damage of the eyes, as well as objectively measure the changes on the anterior surface following UV exposure.
Methods: The study was based on a validated questionnaire on the effect of UV radiation on the eyes, including the role of the seasons. In order to objectively measure the changes on the ocular surface all 200 subjects was photographed with a specially designed UV camera (based on autofluorescence). Data were analyzed with a statistical package to find a correlation between unhealthy habits and surface damage.
Results: The average age of the respondents (200 subjects) was 33 years (18-63). The results confirm that there is a low awareness among tested population about the UV effect on the eyes. Only 18% of respondents used on regular basis, adequate protection, and 75% believe that UV damage occurs only during the summer season. Correlation between the ultraviolet damage of the anterior eye surface and the knowledge and protection habits was identified.
Conclusion: It is necessary to develop educational programs to increase knowledge about the harmful effects of UV radiation and the use of protective measures. In the future should be organized screening prophylaxis for early diagnosis and sub-clinical damage of the anterior ocular surface.

Otalgia treatment with therapeutic contact lenses – where is the catch?

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Purpose: Pain in the ear and the surrounding area is one of the most common complaints in the outpatient care. Otalgia is primary (the pathology is in the ear) and secondary (the pathology is outside of the ear). The purpose of this retrospective study is to demonstrate the effect of therapeutic contact lenses in patients with trigeminal pain of corneal origin.
Methods: Retrospectively were reported 28 cases with ear pain and 'wet eye'. Patients were referred for eye examination and when corneal pathology was diagnosed, the treatment was with topical therapy and/or therapeutic contact lenses according to our centre approved methodology.
Results: In 27 cases, a corneal defect/recurrent corneal erosion was observed. From the cases with epithelial defects, 17 presented bilateral, epithelial dystrophy of Cogan. One case was with moderate, evaporative dry eye. No clinical signs of active inflammation have been identified. Corneal defects in accordance with the indications (17 eyes) were treated with a therapeutic contact lens following approved methodology. The pain relieve was immediate in patients with therapeutic contact lenses and was encountered as 4 times better at three months follow up, based on subjective pain assessment with 10 item questionnaire.

Abstract

Cochlear implant: risks and benefits

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Introduction: A cochlear implant is an implanted electronic hearing device designed to produce useful hearing sensations to a person with severe to profound nerve deafness by electrically stimulating nerves inside the inner ear.
Material and method: We used some retrospective studies that showed all the risks that a patient who will undergo a cochlear implantation will be subjected to, but also all the benefits. We need to consider and explain to the patient about the risks of general anesthesia, about the risks from the surgical implant procedure and other risks associated with the use of cochlear implant.
Results: Despite of all these risks, the benefits can be wonderful. For example, the patients can understand speech, can talk or hear music, can make phone calls, increasing the quality of life. In one words, the patients with cochlear implant can hear, thus enjoying life.
Conclusions: There are risks involved to take the cochlear implantation, as well as happiness after that. That's why it is important to balance, and talk to a doctor to perform a search about the implant before making the decision.

How to manage complications after cochlear implantation

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Introduction: Cochlear implantation represents an effective way of treatment of severe and profound sensory-neural hearing loss. Because it is a complex surgical procedure, some of the patients that undergo cochlear implantation can suffer postoperative complications.
Aim: The purpose of our study is to analyze the short and long term postoperative complications that can occur after cochlear implantation and how to manage them in the shortest time and at the lowest cost.
Material and method: We have conducted a prospective study of 12 patients who were admitted as diagnosed with severe or profund sensory-neural deafness, and later on implanted in the E.N.T. Clinic of Tirgu Mures County Hospital during 2014-2017.
Results: After cochlear implantation, the complications that occur more often are the minor ones, such as flap swelling, minor wound infections, acute otitis, hematoma, or temporary facial weakness. This type of complications can be easily managed with conservative treatment or minor intervention. Rarely, there can appear major postoperative complications, such as device failure, misplaced electrodes, flap necrosis, or meningitis. This kind of major complications are rare, and they often require reintervention. In our study, there was one patient with flap necrosis, another one with cerebro-spinal fluid gusher, and a third one with device failure that needed to be reimplanted.
Discussions: Cochlear implantation is an efficient way to treat sensory-neural deafness. Careful preoperative and postoperative preparations are required. Although this is a major surgery, complications occur rarely. However, patients can still present with minor complications that be managed by conservative treatment, and that is why, long-term follow-up is needed.

Implantable bioelectrical system for blink restoration in experiment

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Different implantable electrical neuro- and myostimulators and electromyographic (EMG) recording systems are used in clinical practice and experimental investigations. Symmetrical innervation of mimic facial muscles provides clinicians with a natural trigger for an implantable mimic muscle microstimulator in patients with facial palsy. The goal of our investigation is to define the ability to use implantable bioelectrical systems for restoration of complete and synchrone blinking in case with unilateral facial injury. Moreover, our goal is to define optimal stimulation parameters which will allow obtaining the state of complete short- and longtime eye-lid closure.

Materials and methods: Experimental part was performed in adult rabbits, which have undergone full transection of main trunk of facial nerve, implantation EMG recording electrodes into healthy OOM, and stimulating electrodes in paralyzed side. This system consists of EMG recording electrodes which implanted in healthy orbicularis oculi muscle, EMG amplifier, DAC, microcontroller, which detects EMG pattern and triggers the microstimulator with electrodes which evoke contraction orbicularis oculi muscle in paralyzed side. The bioelectrical system of blinking was implanted in the back of animals under the skin. The device was activated. There was established complete synchronous eye closure in all of animals, after tuning the parameters of stimulation. We performed comparison of different stimulation`s parameters: mono- and biphasic impulses, single and serial impulses with different frequencies and amplitudes.

Results: Using biphasic serial impulses for stimulation with frequency 50 Hz, amplitude 2 mA, and impulse duration 2 ms allowed complete synchronous eye closure in all the animals.

Conclusion:

1. Proposed implantable bioelectrical system allows reaching complete closure of the eye by direct stimulation of denervated orbicular oculi muscle, which is triggered from healthy side.
2. Optimal pattern for stimulation is a series of biphasic impulses with frequency of 40-50 Hz, amplitude of 2mA, and impulse duration of 2 ms.
3. The software for proposed system allows detecting blinking in healthy side in more than 80% cases, that permits sufficiently synchronize detection and stimulation in bioelectric system of blinking.

Three-dimensional evaluation of the semicircular canals, vestibule and cochlea and their surgical neuroanatomy: a radioanatomical study

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Objective: Three dimensional volume-rendered computed tomography images have been used widely to demonstrate the anatomy of the temporal bone. This anatomical knowledge helps to understand complex anatomy and improves the ability to evaluate pathologic conditions. Knowing the morphological relation of semicircular canals, vestibule, and cochlea and their anatomical relations allow to discuss their importance regarding surgical planning and this will provide more safe surgeries for many approaches. The aim of study was to evaluate semicircular canals, vestibule, and cochlea and related neuroanatomical structures with three dimensional reconstruction of radiological images and its anatomical confirmation on cadavers.

Material and Methods: Three dimensional reconstructions were performed on selected 20 computed tomography scans from 20 patients with no intracranial pathology and the images were imported into the imaging software OsiriX v.3.7.1. Three dimensional reconstructed colored images of cochlea, semicircular canals and internal acoustic canal were created using Osirix software. For anatomical confirmation, important morphological parameters and related anatomical structures on five cadavers were evaluated.

Results: Representations of the corresponding structures were obtained step by step. Preoperative important morphological relations were determined for surgical planning. In cadavers, the three dimensional course was evaluated and reconfirmed anatomically. The three dimensional reconstruction of the complex shape of the osseous labyrinth was accepted as satisfactory. This gave an opportunity to observe the reconstructed structures at various angles and to show anatomical structures

embedded in bone. This combination model is a useful tool for postgraduate education of surgeons and for further morphometrical studies. Precise understanding and this novel combination allows to correlate and to confirm the relation of the neuroanatomical structures before surgery.

Conclusion: Preoperative knowledge of the relations of the inner ear structures is useful for the surgical approaches especially when preserving the otic capsule. The identification of semicircular canals, vestibule, and cochlea and their relation with petrous bone landmarks can be useful to get a general orientation and a better knowledge of the three dimensional anatomy. This easy preoperative evaluation tool can help surgeon to be navigated and to understand the complicated anatomy and relations for each patient.

Adenoidectomy and otitis media

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Adenoid enlargement has traditionally been considered a factor in otitis media; adenoid size, however, does not appear to be correlated with otitis media occurrence. Presence of pathogenic bacteria in the adenoids of children with otitis media has been shown, and adenoidectomy appears to affect the middle ear primarily by removal of the source of infection in the nasopharynx. Three recent randomized, controlled studies showed the efficacy of adenoidectomy in the treatment of chronic secretory otitis media. In one study comparing no treatment, adenoidectomy, and adenotonsillectomy, a significant benefit was seen with adenoidectomy that was not enhanced by tonsillectomy. Another study that compared adenoidectomy, tympanostomy tubes, and a combination of the two showed a significant reduction in effusion time and less surgical retreatment over two years in both adenoidectomy groups. The third study demonstrated the effect of adenoidectomy in children with recurrent chronic otitis media with effusion after failure of tympanostomy tube insertion. All three studies showed that the effect of adenoidectomy was independent of adenoid size. This review discusses current concepts of adenoid physiology and pathology, the major adenoidectomy studies, and indications for the procedure.

Petrous bone cholesteatoma

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These are epidermoid cyst of the petrous temporal bone. They can occur anywhere in the middle ear, mastoid, petrous apex or CPA. They constitute 4-24% of all petrous bone pathologies. There is a male predominance [2-3:1]. They are usually silent for a variable length of time and can present at any age. The usual presentation is a complication. They are mainly diagnosed radiologically and the surgeons must have a very high index of suspicion when faced with a patient presenting with unexplained otological/neurotological signs and symptoms. This presentation includes our institution's experience of 52 petrous bone cholesteatomas and highlights the diagnostic and therapeutic challenges this pathology represents. All the cases were surgically treated and the approach differed according to the anatomical location and hearing status of the patient. There were no mortalities in the series and no additional neurological deficits. In most cases, an additional conductive hearing loss was incurred in patients with residual hearing especially with subtotal petrosectomy.

Why the newborn hearing screening programs are important?

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The aim of the newborn hearing screening is to understand if the baby has hearing loss, as soon as possible. In the literature, the rate of the congenital hearing loss has been reported around 0.1-0.3%. As a congenital problem, this is a very high rate. It is desired to determine congenital hearing loss as soon as possible and if it necessary, to perform early rehabilitation. It is very important for the language skills; social, emotional, and cognitive development. According to the World Health Organization, newborn hearing screening tests should be done within the first three months after the birth. Today's technology let us to perform these tests very easily. In this lecture, with some examples, the importance of newborn hearing screening tests and the situation in the world will be discussed.

One technique for all kind of perforations: cartilage rod tympanoplasty

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Cartilage rod tympanoplasty, defined by Uzun in 2008, is a modification of cartilage palisade tympanoplasty. Cartilage with perichondrium at both sides is cut into thin cartilage rods which has piece of perichondrium at sides. The rods are placed side by side so that perichondriums adhere and stabilize the reconstruction. This technique can be done either in underlay, onlay and over-under manner and also be applied in ossiculoplasty cases. The long-term graft intake rate is 95% when all kind of perforations and diseases such as cholesteatoma, non-cholesteatoma, tympanosclerosis, etc. are considered. In this presentation, those three techniques will be explained and recent long-term result will be given.

Pediatric patient with petrositis: A case report

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Petrous apicitis is an infectious osteitis resulting most often from adjacent spread of otomastoiditis, usually in the setting of a pneumatized petrous apex. The osteitis may cause Gradenigo's syndrome, a rare and potentially fatal condition defined as the clinical triad of ipsilateral acute otitis media (AOM), abducens nerve palsy and pain in the distribution of the ophthalmic and maxillary branches of the trigeminal nerve.
Case report: A 7-year-old girl presented at the Emergency Department on January 3rd with a month-long history of fatigue, headache since December 24th, eyelid edema of the left side since December 29th, retrobulbar pain in the left eye and febrility starting from today. In November 2016, the patient has had an episode of pain in the left ear, discharge from the ear lasting for three days, and rhinitis. Neurological examination on January 4th revealed positive meningeal symptoms such as neck stiffness, upper Brudzinski sign. No pathology of eye movements and after ear-nose-throat examination was detected. The diagnosis was serous meningitis and suspected encephalitis. The therapy administered was Dexamethasone and Acyclovir. Patient's health status worsened: multiple fever episodes daily and episodes of photophobia. The patient became agitated and reacted negatively to examination. Laboratory findings (January 9th): white blood cells 23,08x103/µL, IL-6 69,0 pg/mL, and D-dimers 1764 ng/mL. Head magnetic resonance imaging (MRI) (January 9th): basal meningeal infiltration without signs of abscess, possible lesion of left pyramid apex, bilateral stenosing arteritis of carotid arteries at the petrous and sinus parts. Head computed tomography (CT) findings (January 9th): left pyramidal apex posterior wall destruction that corresponds to infiltrate in posterior cranial fossa, osteomyelitis and effusion in the middle ear. These findings were consistent with petrositis and Gradenigo syndrome. Antimicrobial therapy with Meropenem and Vancomycin was administered. Patient's health status improved, although febrile episodes and headache remained. Because of the raised D-dimer concentration (1764 ng/mL), prophylactic antithrombotic therapy with Enoxaparin was started. Tuberculosis and autoimmune pathology was excluded. Microbial blood culture showed Streptococcus intermedius. On January 18th, antibacterial therapy was changed to Cefepime and Vancomycin. Since January 11th onwards, there were no headache or dizziness anymore. The patient became more active, although regular mood swings were still present. D-dimer concentration remained elevated – 1279 ng/mL. On January 24th, control head MRI revealed subdural empyema of the right (contralateral to the affected pyramid) temporal and parietal region. Urgent osteoplastic trepanation of right frontotemporal area and subdural empyema evacuation surgery was performed. After one week, patient's health status noticeably improved, no mood swings were observed, she became lively and positive; MRI and CT showed positive dynamics. Patient received antibacterial monotherapy with Cefepime and after six weeks, she was discharged from hospital. It can be concluded that despite the highly developed medical technologies it is still challenging to determine the cause of cephalgia, excluding differential diagnosis and working in a multidisciplinary team. Gradenigo syndrome is reasonably rare. In many cases, manifestation of this syndrome is atypical. That is why the otorhinolaryngologist should always be cautious of it. Development of subdural empyema in this case was asymptomatic as patient's mother only reported changes in daughter's mood and behaviour. This might had happened due to the broad-spectrum antibacterial therapy the patient initially received. With the availability of antibiotics, control of petrous apex infection is more effective. However, spread of the infection beyond that area is still observed in some patients. Patients who fail to improve or develop progressive symptoms despite medical management may require surgical treatment. When necrotic bone is apparent, surgical drainage is a necessary adjunct to IV antibiotic therapy. Surgical approaches to an inflamed petrous apex depend on the patient's hearing status and temporal bone anatomy and on the surgeon's training and include the infralabyrinthine, transcanal infracochlear, transsphenoidal, translabyrinthine or subtotal petrosectomy, and middle fossa approaches. In this case the patient would benefit from transsphenoidal approach surgery performed after the petrous apex lesion was noticed.

Modern world, modern problems – adapting to life in the digital age

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Due to contemporary life style, we have people at any age that are spending most of their time on digital devices. Yes this makes our life easy, more interesting and substitutes for anything from book to real adventure, from calculator to complicated software analysis, from shopping to selling a product all over the world and much more… Of course anything is for a price and spending most of the time looking at digital device has well known consequences such as eye strain, red eye, vision fluctuation, symptoms of dryness and more. Recent research demonstrated that indoor time and close up work is correlated with myopia progression. This, however, is not just another negative effect, as the morbidity potential of myopia is significant, especially over time.

Where we are in year 2017?

Take your phone and make a list of activities and task for which you are using it. Certainly they would be more time in staring then in hearing. We use the phone virtually as portable computer, substitute of any electronic device… and even more, the social environment is pushing each of us to use it more and in more versatile ways. So might be the I-phone developers were thinking in prospective and really had an EYE-phone in mind… And may be our evolution led from Homo erectus to Homo sapiens and from Homo sapiens to Phono sapiens…

What can we do?

First of all we cannot live without our phones… so we must adapt to the situation. There are short term and long term considerations regarding to this adaptation process. The first group is related to instantaneous comfort and to well seeing, brighter eyes. That includes entire phone using population and requires specific measures such as precise refraction, proper correction, dry eye prophylaxis, balance of accommodative efforts and sufficient periods for eye recovery. The situation is more complex when the patient is a contact lens user. Some possibilities for improving the homeostasis of the ocular surface will be discussed. More complex is however, the option for preventing the long term complications mostly related to myopia. Our knowledge for myopia progression and management are limited and unfortunately are locked in a vicious circle. Currently, to control myopia practitioners use three modalities: special lenses (designed for the purpose of myopia control,) off label lenses (distant design multifocals) and ortho-K lenses. None of those is followed for long enough time and cannot be recommended for each and every case of myopia progression. The prevalence of myopia, however, increases leading to more and more negative consequences…

The future prospective…

Usage of digital devices is going to increase not only everyday but also lifetime. The users are going to be increasingly younger but also significantly older. This will increase the challenge of addressing protective and rehabilitation measures related to eye impact. The situation is going to be complicated by application of additional devices such as projecting glasses and lenses, virtual reality and other digital means that the future bring to us… One fact is certain that the eye health is in the hands of the each and every eye care practitioner and we must use the best of our up to date knowledge to promote, prevent and treat eye problems of the digital era…

Jugular bulb anatomy for lateral skull base approaches

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Objective: The jugular bulb is a dynamic structure that develops after the age of two years and reaches its definite size in adulthood. The relationship of the jugular bulb with the otic capsule has great importance during the lateral transmastoid skull base approaches. This study was designed to define the detailed anatomical relations of the jugular bulb with the facial nerve, sigmoid sinus, otic capsule and internal acoustic canal allowing the safe management of the jugular bulb via the lateral skull base approaches.

Material and Methods: Thirty-five formalin-perfused cadaveric temporal bones that had well mastoid and petrous pneumotization without any neurovascular variations on computed tomography scan were selected for the study. The bones were dissected via translabyrinthine approach.

Results: The dome of the jugular bulb was located under the facial nerve in 21 of the cases (60 %), in the mastoid cavity in 8 of the cases (22.9 %) and in the tympanic cavity in 6 of the cases (17.1%). The average distance between the dome of the jugular bulb and cochlea when the dome was located in the tympanic cavity was 6.13±3.22 and the average distance between the dome of the jugular bulb and internal acoustic canal when the dome was located in the mastoid cavity was 8.22±3.84. No statistically significant correlation was detected between the radiological measurements and the position of the jugular bulb.

Conclusion: Adequate exposure has always been a major concert in skull base and petrous lesions. Major advantage of the translabyrinthine and infralabyrinthine approaches includes the absence of brain retraction whereas the neurovascular structures and the otic capsule are of great concern. The pre-operative verification of the JB radiologically is essential to avoid the problems associated with its variations and to decide the approach individually.

Publication ethics and misconduct cases

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Publication ethics is important for all researchers, scientists and authors. Unfortunately, education on publication ethics is not sufficient. In this presentation, the author will explain the international rules of publication ethics and will give some examples on several misconducts. Depending on his editorship experience, the author will explain the reasons of misconducts in our region and he will suggest how to avoid them in the academic world.

Systemic steroid therapy as a single modality in sudden hearing loss

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Objective: The aim of the study is to analyze the demographic features of patients with sudden hearing loss and their response to single systemic steroid therapy regiment as a primary treatment.
Methods: The study included patients who referred to the Department of Otolaryngology, Kırıkkale University Faculty of Medicine, with primarily idiopathic sudden unilateral hearing loss. Patient's charts were retrospectively analyzed from the database.
Results: Patients' mean age was 46.9 years. Among the patients, 58.3% were females and 41.7% were males. Dizziness was one of the main complaints in 70.8% of the patients whereas 83.3% of the patients complained of tinnitus. Pure tone average of the patients before treatment was 64.45 dB. Complete, remarkable and moderate healings were observed in 8.3%, 37.5% and 20.8% of the patients, respectively. Pure tone average didn't change with the initial treatment in 33.3% of the patients.
Conclusion: Despite of the recently published guidelines, the treatment protocols of idiopathic sudden hearing loss were not randomized. Each specialist had his protocol for the different clinical entities of sensorineural hearing loss. Prognostic factors associated with hearing improvement include mainly age, severity of initial hearing loss, duration from onset to treatment, initial speech discrimination score and initial pure tone threshold. Recovery rates could have been impacted by inadequate or insufficient treatment.

Eustachian tube function in patients with chronic tubotympanic suppurative otitis media with Eustachian tube dysfunction after tympanoplasty

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Actuality: In the treatment of chronic tubotympanic suppurative otitis media, one of the main conditions for a successful treatment is a sufficient function of the Eustachian tube (ET). Earlier, the fifth stage of ET function was considered a contraindication for tympanoplasty. The inflation-deflation test allows accurately assess the degree of dysfunction of the ET and optimize surgical tactics.
Aim of the study: To determine the dynamic changes in ET function in patients with chronic tubotympanic suppurative otitis media with ET dysfunction after tympanoplasty according to the inflation-deflation test.
Material and Methods: We examined 105 patients aged 19 to 56 years, 57 were women and 48 men. At the first- fourth grade of ET function according to inflation-deflation test, the result was interpreted as normal – patients underwent tympanoplasty without ventilation tubes (VT). At the fifth stage of ET function, the result was interpreted as abnormal (ET dysfunction) – patients underwent tympanoplasty with teflon or silicone VT. Inflation-deflation test was performed in all patients postoperatively after 3, 6, and 12 months. With ET function improvement (changing grade from fifth to first- fourth), the VT was removed.

Results and discussion: Was found that in men, the 5th grade of ET dysfunction is observed less often (37.5%) than in women (52.6%). ET function improvement in patients with teflon VT is faster than in patients with silicone VT. At the same time, restoration of the tympanic membrane leads to decrease of the fifth grade of the ET function when comparing between the third and sixth and 12th months, and also between the sixth and 12th months after surgery in both groups of men and women.
Conclusions: Tympanoplasty in patients with chronic tubotympanic suppurative otitis media improves the ET function. The inflation-deflation test is an objective method and should be the basic examining the ET in the candidate for tympanoplasty.

Surgery in vertigo

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Surgery in vertigo is uncommon but indication exists and represents in such specific cases the best and safe solution.
The decision making requires two prerequisites:
1. Incapacitating vertigo unresponsive to medical treatment,
2. Strict peripheral pathology
   - Therefore the main indication is: the incapacitating Meniere' s disease with failure of medical or transtympanic treatment. This situation is often underestimated. The different techniques will be mentioned but the key procedure to cure such recurrent disorder is the vestibular neurotomy. Our results, on 539 patients operated between 1974 to 2014 (on a average of one case per month), demonstrate that vestibular neurotomy is the unique treatment offering no anymore vertigo attack, preserving hearing function and reducing the risk of bilateral form.
   - Endolymphatic shunt did not prove its efficiency, but balloon endolymphatic sac represents a new option in bilateral hydrops
   - Exceptional recurrent BPPV after several maneuvers could be lead to semicircular canal obliteration.
   - Rare minor syndrome with dehiscent superior canal can be operated using endoscopic procedure.
   - Finally, surgery of vertigo by vascular loop compression of the VIII cranial nerves will be shown and discussed.

The objective tool for quality of life assessment in patients with chronic otitis media: our results

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Introduction. The problem of quality of life assessment is caused by a frequent mismatch between the pattern of disease perceived by the patient and the pattern of disease, based on objective data. This situation is particularly relevant to otology, where there are several forms of chronic otitis media (COM), each of which is characterized by peculiarities of courses and outcomes. This is a widespread disease that affects, according to various sources, 65-330 million people (2% of the population) worldwide, with a greater number of cases observed mainly in developing countries. The Chronic Otitis Media Questionnaire -12 (COMQ-12) was developed initially in the UK to assess the patient-reported health-related quality of life (HRQoL) due to chronic otitis media.
The aim of this study is to determine whether this tool is applicable to the Russian population, which has a materially different healthcare system.
Material and methods: The Russian version of the COMQ-12 (RCOMQ-12) was obtained through a formal process of translation and back-translation. Some 140 patients with different forms of COM completed the RCOMQ-12 before surgical intervention and then 3 months and 1 year after that. Sixty healthy volunteers also completed the RCOMQ-12. We took into account such anamnesis data: type of previous surgery, unilateral or bilateral COM, the presence of the open mastoid cavity, smoking, concomitant nose pathology, the presence and level of sensorineural hearing loss.
Results: The main group included 140 patients: 63 men (45%) and 77 women (55%), ranging in age from 16 to 84 years. RCOMQ-12 scores ranged from 4 to 43 among all respondents. The average score was 19.61 (SD 7.97). Some 121 patients (86,4%) achieved a score of 10 or more. For the RCOMQ-12 Cronbach's alpha was equal to 0.860. We evaluated the correlation between anamnesis data and RCOMQ-12 scores. We calculated objective data that affect the patient's quality of life and satisfaction with surgery.

Conclusions: The Russian version of the COMQ-12 is found to be a reliable tool for assessment of HRQoL in patients with chronic otitis media. This study allowed us to determine the parameters that need to be considered before surgical intervention. This allows us to obtain a more complete and objective picture of the studied disease.

Contemporary management of the tinnitus patient in an interdiscplinary setting

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Tinnitus is a common disorder in adults and represents the perception of phantom sound in the absence of a corresponding external source. Most cases are caused by cochlear injury that leads to peripheral deafferentation, which results in adaptive changes in the central nervous system. Tinnitus pathophysiology is complex. There are no specific findings in the otologic examination and this condition persists after auditory nerve dissection. A common association with sensorineural hearing loss has been proved. A multidisciplinary approach is essential for diagnosis and therapy of tinnitus. The steps in tinnitus management in an interdisciplinary Tinnitus Clinic consist in the identification of an interested audiologist and of an interested psychiatrist/psychologist; comprehensive consultations involving otolaryngologists as well as interdisciplinarily-minded specialists such as dentists, otoneurologists, physiotherapists, etc. Regular monitoring of patient's status and eventual modification of the management plan is required. Otolaryngologist's perspective includes timely acquisition of basic understanding of tinnitus pathophysiology, first point of contact for many tinnitus patients apart from general practitioner/audiologist (depending on the health care system in a given country) and capability of differentiating between acute versus chronic tinnitus as well as between subjective versus objective one. Core competence for the detection of underlying otological/somatic diseases is of utmost importance. Diagnosis of tinnitus involves a detailed case history, an assessment of tinnitus severity, an otorhinolaryngologic and an audiologic examination. Diagnostic procedures should always be accompanied by empathic and insightful counseling according to the guidelines redommended by the Americal Academy of Otolaryngology. Pulsatile tinnitus requires specific diagnostic assessment. Further diagnostic steps depend on comorbidities. Usage of questionnaires is helpful. Causally oriented treatment of specific pathologies should be prioritized. Symptomatic treatment involves cognitive behavioural therapy, psychopharmacology (corticosteroids), hearing aids, sound therapy, and neuromodulation. Treatment of ear infections and elective ear surgery can be condsidered, too.

Audiological results of middle ear surgery: open versus closed tympanoplasty

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Background: There are no universally accepted opinions about the choice of surgical technique, and outcome of surgery for cholesteatoma in different age and localizations.
Methods: Prospective study of 758 patients with cholesteatoma was performed. They were divided in three age groups: children younger than nine years, adolescents aged ten to 16 years, and adults. Cholesteatoma was classified as: attic, sinus and tensa cholesteatoma. Classical canal wall up, or wall down tympanoplasty was performed in all the cases, and reoperation was done later if needed. Anatomical and functional results were followed up regularly, and evaluated three years after the operations.
Results: During postoperative course after three years retraction of neomembrane was found in 23,8% of younger children, 27,6% of adolescents, and in 9,9% of adults. Recurrent cholesteatoma were more than twice as frequent in children (19,0%) than in adults (9,4%). Reoperation was performed in 38,1% of children and in 9,4% adults In one fourth of pediatric cholesteatoma reoperations conversion to open tympanoplasty was done. Retraction and recurrent disease were present in about 10% of attic and sinus cholesteatoma, and in 15,5% of tensa cholesteatoma.
Conclusion: Postoperative audiological results of cholesteatoma surgery in children are comparable to adults. Retraction pockets, recurrent cholesteatoma and reoperations are twice as frequent in the pediatric group than in adults. The worst anatomical and functional results are achieved in tensa cholesteatoma. The age of the patient and localization of cholesteatoma are very important factors that determine the type of surgical procedure and the results of surgery for middle ear cholesteatoma. Closed technique is better for attic and sinus cholesteatoma, while in tensa cholesteatoma opened technique seems more appropriate.

The importance of the neonatal hearing screening

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Sensorineural hearing loss is a common disease in newborn population, with a high prevalence 1-3 cases / 1000 newborns according to the data provided by NIDCD. The universal newborn hearing screening program is a reality nowadays.
Currently there are audiological tests simple, non-invasive and short duration such as otoacoustic emissions – otoacoustic rmissions (OEA) and automatic evoked auditory potentials AABR that allow efficient screening (99,7% negative predictive value). The aim of the paper is to highlight the factual situation of the newborn hearing screening in Oradea, Romania, to establish the importance of the risk factors for hearing loss and to analyze these risk factors. This program includes all the children born in the hospital with/without risk factors for hearing impairment. The correct application of the protocol of screening allows early detection of uni- or bilateral hearing loss enabling the early diagnosis and appropriate treatment for an improved intellectual, linguistic, emotional and social outcome.

Structural damage of the conjunctiva after UV exposure – insights by in vivo confocal microscopy

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Introduction: Ultraviolet (UV) light damage of the eye is an undeniable fact, but there is insufficient information yet about the exact mechanisms and pathological changes of the anterior eye surface and eyelids.
Methods: The goal of the study is to understand the microstructural alterations of the ocular surface associated with UV exposure, evaluate the UV protection habits, encounter eventual microstructural changes and follow their dynamics using in vivo confocal microscopy. During a period of 4 months, 50 randomly selected young subjects (100 eyes) have been examined before and after the summer season. All the subjects repeated the examination procedure in one-year time interval and served as a self-control group. Laser scanning in vivo confocal microscopy was performed as followed: nasal, temporal, superior and inferior conjunctiva; and superior lid from the conjunctival side.
Results: Analysis of the bulbar conjunctiva demonstrated characteristic cystic lesions with dark centers and bright borders, encountered only in 6 eyes (6 %) before summer season, and after the summer season their presence increased affecting 29 eyes (29%). From the affected eyes, 16 were right (RE) and 13 left (LE), however, the number of encountered cysts was very similar for both eyes (49 RE and 51 LE). The size of the cysts also increased from 12-78 μm at baseline up to 14-174 μm after the summer sun exposure. Cysts also had a specific topographic representation, with higher distribution within the interpalpebral fissure. The total area of the lesions was calculated before and after the summer sun exposure, and was enlarged by 20 times. The total affected area after sun exposure returned within the normal range in one-year time interval. The analysis of the upper lid conjunctiva revealed round lesions with dark center and bright borders with significantly increased size and number after the summer period. Total cyst area after summer increased by 5 times. The total affected area after sun exposure in these control eyes increased by 6 times after the sun exposure and returned within the normal range after one year.
Conclusion: Summer sun exposure for one season leads to subclinical, transient microstructural changes on the bulbar and palpebral conjunctiva. The eye care practitioners must pay clinical attention to the potential causative factors of ocular surface disease and educate their patients for proper sun protection.

Vestibular rehabilitation

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Vestibular rehabilitation (VR) is indispensable dimension in treatment of vestibular disorders even if it is unilateral and peripheral. For success, the disease should be in the state of sequela. While VR mostly succeeds with the peripheral disorders as well as psychological types, the response to the treatment by central vestibular disorders generally resists. The treatment is based on the recovery of central compensation with the adaptive mechanisms of vestibule-ocular and vestibule-spinal reflexes.
The cases are selected by carrying out the full videonystagmographic tests as well as video head impulse test (VHIT) and VEMP's. The state of dysfunction is evaluated and monitored by dynamic posturography. The presence of associated neurological disorders is screened by magnetic resonance imaging (MRI). The post-treatment anteroposterior somatosensorial, anteroposterior global, mediolateral visual (MLVI), and mediolateral global values and anteroposterior and mediolateral tri-

als and conditions are evaluated by dynamic posturography. Vestibular rehabilitation was effective in patients with bilateral vestibular dysfunction. As VR duration increased, so did the efficacy of the treatment.

Modified hypoglosso-facial anastomosis: techniques and results

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Background: Hypoglosso-facial anastomosis (HFA) is the only method of facial muscles reanimation in the absence of access to the proximal end of the facial nerve. This anastomosis produces very good and stable results, but has certain disadvantages associated with the intersection of the main trunk of the hypoglossal nerve. This leads to tongue hemiatrophy, impaired swallowing, articulation and chewing. To prevent these complications, jumping anastomosis is proposed, when the facial nerve is sutured with the nerve interposition to the side of the hypoglossal nerve. Another modification of classical HFA is reinnervation of the hypoglossal nerve with its descending branch.
Material and methods: During the period 1994-2015, 75 operations were performed in patients with facial paralysis in Kolomyichenko Otolaryngology Institute, of which 36 patients underwent classical HFA, 18 had jumping and 21 had a modified anastomosis. Patients' age ranged from 6 to 68 years (an average of 34.3), observation periods from 2 to 21 years (an average of 8.6). The results of restoration of the function of the facial nerve were evaluated after 2 years or more after the surgery. To assess the function of the facial nerve, three grading systems were used: Haus-Brackmann (HB), Yanagihara and May. We also evaluated the state of the tongue, the function of swallowing, articulation and chewing.
Results: On the scales of HB and May, there were no significant differences between the three methods of anastomosis, while, according to the Yanagihara scale, the results were significantly better after the modified anastomosis. Disturbance of swallowing and / or chewing was noted in 63.9%, a difficulty of articulation was noted in 33.3% of cases after classical HFA and only 4.8% after modified and 5.6% after jumping anastomosis. All patients after classical HFA had hemiatrophy of the tongue, but after modified anastomosis only in 9.5% of cases and after jumping anastomosis – in 5.6% of cases.
Conclusions: HFA anastomosis allows restore the tone of the facial muscles and the symmetry of the face at rest. Modified and jumping HFA anastomoses preserve the trophic of the tongue, while articulation, swallowing and chewing do not suffer. Unlike jumping anastomosis after a modified HFA, the tonus of the facial muscles and active movements are more fully restored.

Functional infralabyrinthine approach to the jugular foramen in type C1-C2 paragangliomas

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Introduction: Paragangliomas are benign vascular neoplasms which are often found in the jugular foramen of the skull. In most cases, the size of this pathology of the jugular foramen, when diagnosed, corresponds to types C1-C2 according to U.Fisch classification. Surgery remains the method of choice in the treatment of paragangliomas. The infratemporal fossa Type A is the classical approach. A functional impairment of the low cranial nerves, the facial nerve, hearing and equilibrium, due to the peculiarities of this approach may happen.
Methods: As distinct from the traditional technique used on type C1-C2 jugular foramen tumours, we have applied the functional infralabyrinthine approach. This approach is provided through the temporal bone with sygmoid sinus exposure. The prebulbar space is exposed retrofacially. The infralabyrinthine space is opened with the preservation of the wall of the external ear canal. This approach provides access to the jugular foramen and its exposure through the lateral and posterior walls. The infralabyrinthine area, the hypotympanum up to promontory level, the posterior tympanic synus, the area of the vertycal portion of the internal carotid artery were exposed. The advantages of the above approach are as follows: 1) There is no need for facial nerve mobilization; 2) The middle ear and the labyrinth are preserved.
Results: This approach was used in 30 patients for removal of type C1-C2 glomus tumours. All the resections were total. The early postoperative period demonstrated complete preservation of cranial nerves and hearing ability.
Conclusion: Use of inralabyrinthine approach to the jugular foramen in type C1-C2 paragangliomas pas gives the opportunity to fully preserve the function of cranial nerves, and the labyrinth. The integrity and the function of the middle ear are also preserved. The total removal of type C1-C2 tumours and control of the affected area are possible.

Adhesive otitis media

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Retraction is a general term of medially displaced position of the tympanic membrane. It can be globally or partly. If it is not global, it may be related to only pars flaccida or pars tensa; in the latter, it may be limited to only one quadrant i.e. posterior-superior, anterior superior, or more. There are some other definitions of retraction refer to some features of retraction. For example, retraction pouche or pocket is used to define that the tympanic membrane locally displaced to medial from its normal position. Retracted tympanic membrane may be movable or not by changing the pressure in the external canal actively with pneumatic otoscopy or passively in the middle ear by Valsalva or Toynbee maneuvers. If it moves, it is mobile otherwise it is fixed. Adhesion is a term of advanced stage of retraction and defines the condition of retracted tympanic membrane touches and adheres to the medial element like promontorium or long process of the incus, which is normally not. It is the last stage of the continuing process of inflammatory process in the middle ear. Adhesive otitis media is the penultimate stage of long-lasting inflammatory process in the middle ear; otitis media with effusion at the beginning point and cholesteatoma at the end. It is a sequela of otitis media, which causes conductive type hearing loss. Tympanic membrane retraction is very frequently seen ear pathology in daily practice. It has a clinical importance due to it creates cholesteatoma risk and causes hearing loss by destructing functional elements and/or changing middle ear impedance. Many classifications have been proposed for the tympanic membrane retraction. In a general view, authors, in their classifications, have tried to draw attention to some features of retraction such as mobility by Valsalva or Toynbee maneuvers, or pneumatic otoscopy, visibility of boundaries, debris accumulation in or edge of retraction pocket, perforation, otorrhea and cholesteatoma. So, those features of retraction are very important for the prognosis and choice of treatment. Sade, in 1993, classified retraction into four stages: Stage 1: slightly retraction, Stage 2: retraction, Stage 3: atelectasis, Stage 4. adhesion. He added one more stage a few years later: Stage 5: perforation. According to this commonly used classification, tympanic membrane retraction in adhesive otitis media is in advanced stage (stage 4). There is also severe and chronic problem of middle ear ventilation. As previously mentioned before, the main reason of retraction, adhesion and cholesteatoma formation is always pre-existing otitis media with effusion. The surgeon should keep in their minds that some important alterations exist in the middle ear. Structure of the tympanic membrane is impaired and middle ear mucosa is not normal in adhesive otitis media. Those ears may represent infection, ossicular erosion, cholesteatoma, hearing loss and/or tympanic membrane perforation. Medical or surgical treatment may be used for those ears. Antibiotics may be helpful if there is infection. Nevertheless, medical treatment may have a very limited role in the general treatment strategy for adhesive otitis media. Surgical treatment is the main strategy for this sequel of otitis media. Impaired structure of the tympanic membrane, cholesteatoma, if it exists, conductive hearing loss even infection resistant to medical treatment can be treated surgically. Steps of preoperative evaluation are taking a detailed history, careful physical examination including head and neck, cardiovascular and pulmonary systems, otoscopy, otoendoscopy, otomicroscopy; audiometry, and imaging studies. There is not a specific surgical treatment modality for adhesive otitis media. Suitable tympanoplasty techniques are used for reconstruction of impaired tympanic membrane and eroded ossicular chain. If cholesteatoma exists, excision by using convenient techniques of tympanomastoid surgery is preferable. Classically term of cartilage tympanoplasty is used for reconstructive procedures for adhesive otitis media treatment because of using cartilage as the reconstructive material. Cartilage is preferred material for reconstruction because risks of reperforation and infection is lower due to metabolism of cartilage is lower/slower, and it resists to tendency of retraction due to its hardness and thickness.

Cartilage is used in different forms like island, composite, palisade, block or mosaic for the reconstruction of the tympanic membrane. Results of surgical treatment depend on some factors such as aeration of the middle ear and presence of cholesteatoma. Unfortunately, aeration expectation of the middle ear is not high because middle ear mucosa and Eustachian tube function have already been impaired in those ears. The other technical difficulty is dissecting adhesive segment of the tympanic membrane from the medial element. As it is well known, results of ossicular reconstruction in an ear totally depend on the aeration of the middle ear in the postoperative period. Dressing and protection is important for postoperative care. Antibiotics are used if infection present. Analgesics may be ordered if the patient is not comfortable due to pain. It is not a rule, but Valsalva exercises may be suggested the patients starting from postoperative 3rd week. First audiometric evaluation is performed at the 6th week of surgery. Complications of surgical treatment are effusion in the middle ear, re-retraction / adhesion, infection, granulation, re-perforation, external ear canal stenosis, and hearing loss.

Use of cartilage in ear surgery

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Use of cartilage in ear surgery has a long story. First reported use of cartilage in ear surgery was in 1958 by Jansen for ossicular chain reconstruction. Just a few years later, in 1963 Salen and Jansen reported the first usage of cartilage for tympanic

membrane reconstruction. Then during the last two decades cartilage usage in ear surgery has gradually become more and more popular by especially studies of Heermann et al. Cartilage, as a reconstruction material, can be used different reconstructive procedures in ear surgery. Structural and metabolic features of cartilage make itself desirable for reconstructive ear surgery and mastoid obliteration. Metabolism of cartilage is lower and slower than the other alternative reconstruction materials. It is also strong and thick enough. Those metabolic and structural characteristics of cartilage provide some advantages such as lower re-perforation and infection risk and more resistance to retraction tendency in ear surgery. Preventing retraction, and reducing re-perforation and prosthesis extrusion risks make cartilage itself a desirable material for tympanic membrane reconstruction. Cartilage may also be used in ossicular chain reconstruction to reduce risk of prosthesis extrusion and to complete continuity of the ossicular chain. There are several materials described for reconstruction or restoration of the external ear canal. Cartilage is also the most popular material for those indications. Not for only reconstructive procedures, but also for obliteration of either open or closed mastoid cavities is the other indication for use of cartilage in ear surgery.

Cartilage Harvesting

Cartilage can be harvested from the auricle or nasal septum. Auricle is always first choice. Depending on the necessity of amount of cartilage material, it can be obtained from the tragus or concha and cymba or both. Author personally prefers the tragus as donor site for reconstructive procedures, and concha and cymba for obliteration. Tragal cartilage is a very useful material for reconstruction due to suitable thickness, smoothness and diameters. Concha is provides enough amount of cartilage material for obliterative procedures. If amount of cartilage in the auricle on the operated side is not enough, the surgeon may take it from the other auricle or nasal septum. Cartilage harvesting from the tragus is a very simple procedure. Just for more acceptable cosmetic result, skin incision may be done 1 mm posterior to the free edge of the tragus. In this way, skin incision scar is not seen from anterior view. Dissection is easier on the posterior surface than on the anterior. So, if the surgeon needs the tragal cartilage with only one side perichondrium, anterior dissection between anterior surface perichondrium and cartilage, which is a very easy procedure, is preferable. If all tragal cartilage is not necessary, 1 mm free edge segment of the cartilage is left in place to prevent tragal collapse postoperatively. Cartilage harvesting procedure, regardless of from tragal, conchal or nasal septal, has some other potential complications, rather than cosmetic deformity or hematoma, such as infection, bleeding, crumbling the graft away.

Sculpturing Cartilage

Cartilage taken from the tragus is prepared and sculptured according to the technique and intended purpose. Several techniques have been described in literature regarding cartilage usage for reconstructive ear surgery. Palisade, island, block, shield, butterfly are some of those techniques for tympanic membrane reconstruction. Double block, triple block, long and short columellae are for ossicular chain reconstruction.

Use of Cartilage in Tympanic Membrane Reconstruction

The mean reasons of cartilage usage in tympanic membrane reconstruction are to prevent postoperative retraction or to reduce the risks of re-perforation or alloplastic prosthesis extrusion. A lot of materials have been used for tympanic membrane reconstruction in literature. Author mostly prefers to use perichondrium for tympanic membrane reconstruction. Nevertheless, cartilage is the second most frequently used material. The other materials are temporalis fascia, chondro-perichondrial composite graft, vein, lyophilized dura, fat, and periosteum. As it is mentioned above, cartilage provides some advantages to the surgeon. As a reconstruction material, cartilage is more resistant to retraction in the postoperative period than other optional materials. If the surgeon expects postoperative retraction, considering the Eustachian function and middle ear mucosal damage, cartilage is the material of choice. In fact, the author has never seen re-perforation with perichondrium, it is clear that cartilage is stronger material than perichondrium or other alternative materials for reconstruction of the tympanic membrane. In spite of not giving a guarantee, cartilage over an alloplastic prosthesis serves a good prevention against extrusion. For just this advantage, cartilage may be chosen as a material of tympanic membrane reconstruction in such cases. According to these explanations, cartilage may be chosen as a graft material for tympanic membrane reconstruction in tympanic membrane retraction, cholesteatoma and revision cases, and also ears with high reoperation risk. Many techniques have been described in literature for cartilage tympanoplasty. Cartilage can be used as an island graft, cartilage block, palisade, shield or butterfly in tympanic membrane reconstruction. Surgeons will choice one of these techniques according to their experience, surgical philosophy and also ear pathology. Disadvantages of the cartilage are opacity of the graft making difficult to get information about the condition in the tympanic cavity postoperatively. Rigidity is another issue. This has been proposed that it is a reason for lower functional gain. Lastly harvesting and handling have been proposed as a time consuming procedure.

Use of Cartilage in Ossicular Chain Reconstruction

To reduce the risk of prosthesis extrusion may be a reason to use cartilage in ossiculoplasty. Cartilage can be used like prosthesis or reshaped ossicle to complete the ossicular chain. A piece of free cartilage may be put over the prosthesis and under the tympanic membrane or the graft to prevent direct contact between prosthesis and the tympanic membrane. Sometimes this cartilage piece may displace or migrate from its place in the early or late postoperative period. Full thickness cartilage can be sutured to top of the prosthesis to prevent such migration or displacement. If the tympanic membrane also has to be reconstructed at the same stage, cartilage may be chosen for reconstruction of the tympanic membrane. Cartilage plays the same role as the free piece of cartilage to prevent direct contact in such condition. Different graft alternatives to reconstruct the ossicular chain have been reported. Ossicle, bone cement, titanium and some other metals, cortical bone, and metal-

hydroxylapatite combinations are some of them. In addition of these, cartilage can be reshaped as prosthesis to provide continuity of the ossicular chain in the presence of ossicular erosion either partial or complete. For example, cartilage can be reshaped similar to Appelbaum prosthesis to reconstruct lenticular process defect or partial incus replacement prosthesis for long process defects. Author used to use cartilage for those indications in the early years of his career with only short-term success. Nowadays he prefers other materials and techniques for those indications. Luetje has described double and triple cartilage block techniques. It works if it is used in convenient cases. Author uses some kind of modification of this technique in certain cases. According to the defect, he may sutured two or three pieces of cartilage in gradually increasing diameters to each other to create a kind of conic shaped short columella TORP to put over intact and mobile footplate in the absence of stapes superstructure. In the presence of shallow tympanic cavity at the end of an open cavity surgery, this technique is useful. The author may also create an acetabulum on a piece of tragal cartilage and place it over the stapes head like a PORP if there is only intact and mobile stapes in the tympanic cavity. If a second look operation is planned in extensive cholesteatoma cases, this may be a good alternative to PORP.

Use of Cartilage in External Ear Canal Reconstruction

In the presence of a defect on the bony external ear canal, cartilage is a good material for reconstruction. Bony external canal can be destructed by cholesteatoma or sometimes by a surgeon during drilling. In the presence of bony external canal destruction, reconstruction of the canal is obligatory to prevent cholesteatoma. Many graft materials such as titanium, perichondrium, fascia, bone cement, bone-pate, cortical bone, have been used for this procedures. Cartilage is the most useful material in the list. Cartilage reconstruction of the canal may prevent retraction of the canal skin, which is very risky for cholesteatoma development or recurrence. Keeping a closed cavity or creating a closed cavity after canal wall-down procedure is possible by this reconstruction.

Use of Cartilage in Mastoid Obliteration

As it is well known, obliteration is a quite commonly used procedure in tympanomastoid surgery. Cartilage is considered as a best option as obliteration material in both closed and open cavities. Some authors believe that closed cavity is not functional and may pose a risk for retraction and even cholesteatoma postoperatively. On the basis of this opinion, they obliterate closed cavities by using some materials like fat, calcium phosphate, silicon block, synthetic bone graft, bioactive glass, hydroxyapatite, cortical bone, different flaps, and cartilage. Classically obliteration is used to reduce mastoid cavity volume to avoid postoperative cavity problems in open cavities. Cartilage is mostly used material for all kind of obliteration procedures. Depending on the available amount of cartilage, cavity can be obliterated completely or partially if complete obliteration is not possible and/or necessary. The technique is very simple. The cavity is filled with cartilage pieces.

Possibilities for application of the social corporate responsibility in pharmaceutical companies offering products in the field of otology and neuro-otology in Bulgaria

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Introduction: Social responsibility is an element of the corporate culture that requires fulfillment of voluntary commitments by companies, in which private gains and private corporate interests take second place and a new vision of corporate values is established. Corporate social responsibility means companies to work voluntarily, without being forced by law, to achieve social and environmental goals in their day-to-day business activities. The purpose of the article is to present good international practices and opportunities for application of corporate social responsibility when implementing the business strategies of pharmaceutical companies, offering products in the field of otology and neuro-otology of the Bulgarian pharmaceutical market.

Material and Methods: The study includes theoretical considerations and qualitative research methods – in-depth interviews with managers of successful pharmaceutical companies operating on the Bulgarian pharmaceutical market.

Results and Discussion: One of the most important documents defining the scope and the specificities of the corporate social responsibility in the European Union, including in the pharmaceutical sector, is the European Parliament resolution on the corporate social responsibility, promoting society's interests and a route to sustainable and inclusive recovery. The comparative review of the examples of social corporate responsibility in the business strategies of pharmaceutical companies in Bulgaria, offering products in the field of otology and neuro-otology, complies with the principles set out in these international documents and official reports of the European Parliament, the European Commission, the World Health Organization and the United Nations.

Conclusions: When talking about strategies for social corporate responsibility, we need to keep in mind that a key stakeholder is also the consumer (patient). In this respect, it is necessary that pharmaceutical companies operating in Bulgaria,

including of products in the field of otology and neuro-otology, to include activities aimed at supporting programs related to the strengthening of patients' organizations and the opportunities for their voice to be heard. Furthermore, it is necessary to strengthen and expand the capacity of the non-governmental organizations and consumer organizations to conduct independent research on products and services and to bring the results to the attention of broad categories of consumers by providing resources and methodological assistance for such research. On a broader scale, work is being done to extend consumer organizations' capabilities to lodge a collective claims against unfair producers, traders and monopolists by using legal aid to strengthen their position in the social dialogue; development of a national campaign to raise awareness among consumers, patients and their relatives about the benefits of the social responsibility activities and promotion of sustainable consumption patterns to improve the health and quality of life of people with vestibular disorders.

The role of the international partnerships for transfer of knowledge and experience in the field of otology and neuro-otology

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Introduction: The diagnostics, the innovative treatment methods and the maintenance of good quality of life for people with vestibular disorders are a priority in the work of the academic and medical teams in the field of otology and neuro-otology in Bulgaria and worldwide. In this regard, the process of acquisition, exchange and application of knowledge, experience and results of scientific research at national and international level is important. Thanks to their functions to conduct training of future and current medical professionals as well as to carry out scientific and applied research, universities are an important part of the healthcare ecosystem, in particular in the field of otology and neuro-otology. The effectiveness and the results are increasing through international teamwork and partnerships, and the main goal is to achieve good health and complex care for people with vestibular disorders. The objective of this article is to present examples of good practices for international partnerships from the experience of the Medical University of Varna and the International Black Sea Association of Otology and Neuro-otology for application of innovative diagnostic, treatment and training methods in this field.
Material and Methods: This study includes theoretical statements and practical case studies on the establishment, activation and sustainable development of international partnerships in the field of Otology and Neuro-otology.
Results and Discussion: Examples of international exchanges between academic partners are considered with regard to training and knowledge transfer, and examples of complex and innovative practices in different international teams are presented in relation to the medical care for patients with vestibular disorders.
Conclusions: The synergy of the international partnerships at the academic, scientific and practical level is an important factor for the development of the contemporary otology and neuro-otology. It leads to a faster adoption of new treatment methods, more effective outcomes in the processes of training and practice and a better patients' access to complex healthcare. For the proper, well-timed diagnosis and treatment of vestibular disorders, collaboration between among various specialists such as otorhinolaryngologists, neurologists, cardiologists, psychiatrists, and psychologists is needed. The international partnerships are an active field for joint multidisciplinary work and for successful solution of complex cases and innovations.

Cochlear implantation in the ossified cochlea

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Ossification of the cochlea in candidates for cochlear implantation is often. During the last four years, we have treated two patients with ossified cochlea. Herewith we present our surgical experience in these cases with cochlear ossification. Clinical case reports demonstrate that results are often similar to those expected for implantation of the non-ossified cochlea, particularly when the electrode insertion is, in principle, possible.

Subjective and objective assessment of patients with new couplers of the Vibrant Soundbridge system

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New universal couplers for the Vibrant Soundbridge system are applied in hearing disorders of various etiology, congenital and acquired, in pediatric and adult patients. Depending on the ear pathology and patient's status, the Floating Mass Transducer (FMT) is attached in different placements. In case of sensorineural hearing loss, the FMT is usually attached either to short, or to long process of the incus whereas in case of conductive or mixed hearing loss, the couplers are either attached to the stapes head, or are fixed on the round window. The functional results of new Vibrant Soundbridge (VSB) new couplers implanted in 10 patients (aged 12-67 years) between 2014 and 2017 in the World Hearing Center, Kajetany, Poland, were analyzed. The patients had different hearing losses ranging from mild to profound and of various etiology. Most often, the coupler placed on the short process of the incus was used. Audiological assessment was conducted according to the following schedule: appointment 1 (preoperatively), system activation (6-8 weeks postoperatively), appointment 3 (5-7 months postoperatively), and appointment 4 (11-13 months postopeartively). The patients were thoroughly examined with pure-tone audiometry, free field pure-tone audiometry, speech audiometry and free field speech audiometry. Vibrogram in situ was performed in every patient. The sound was presented straight from the device. The results from ABHAB questionnaire filled-in by the patients prior to and after operation were analyzed. Based on the results of the free field pure-tone audiometry, the authors confirmed a significant improvement after the procedure of VSB implantation when compared to the preoperative results. It was also confirmed that the patients had better speech understanding using the speech processor. The postoperative pure-tone audiometry results (wearing headphones) and Vibrograms in the implanted ear were usually stable in the observed frequencies that allowed the statement that the implant fixation was correct and not displaced. The analysis of these patients indicates that VSB system considerably improves patient's auditory skills in case of middle ear congenital hearing loss or coexisting external and middle ear defects if classic hearing aids can't be used. Based on the audiological results and questionnaire assessments it is concluded that there is a noticeable gain from VSB implant application.

Dizziness and epileptic seizures

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Objective: Reviewing the correlation between vertigo and epileptic seizures and definition of the term of 'epileptic seizures'.
Discussion: From ancient times dizziness and epileptic seizures have been linked conceptually and diagnostically. Today it is clear that there are many common associations between dizziness and epileptic seizures. The epileptic discharges in the area of the sensory representation in the vestibular system which representation is localized in the area of sulcus interparietalis and the posterior parts of gyrus temporalis superior can lead to vertigo. The vertigo can remain an isolated phenomenon or it will become a first symptom of a psychomotory (complex partial) epileptic seizure, sometimes with a second generalization to a generalized tonic-clonic seizure. Even though the dizziness has been recognized as a manifestation by Jackson and Growers more than 100 years ago, the possibility of short episodes of dizziness which come from epilepsy hadn't been recognized. Today it is well known that epilepsy is an important reason for a short dizziness. The epileptic vertigo is not a rare form of partial epileptic seizures as a consequence of the past epileptic activity of the cortex whereat the vestibular system is located: parietal, temporal and frontal cortex. The epileptic vertigo is a diagnostic problem when the patient does not have symptoms of an epileptic seizure, basically there are not convulsions, psychomotory symptoms or spasmatic characteristics of the classical partial or a generalized fit. The most important diagnostic tests are EEG and MRI of the brain. Vestibular epilepsy is diagnosed with abnormal EEG. Though many healthy individuals have got slightly abnormal EEG tests, which tests depend on the functional status of the body. The abnormal EEG might be a main criterion for the diagnostic outcome. In many patients' cases there are registered abnormal temporal or bi temporal focal points with sharp or slow waves whereat in some cases they can be associated with generalized discharges.

Conclusion: The correlation between vertigo and epilepsy which had been known for centuries, today it has been incorrect interpretated and debated. Within last few years this correlation has been established with the beginning of seizures in the posterior temporal neo cortex, temporo-parietal region and also seizures which begin in the frontal area where upon there are many well registered examples. Modern conceptions regarding the links between vertigo and epileptic seizures give to the term 'epileptic vertigo' much more different meaning than the simple correlation between vertigo symptoms and epilepsy. Today this is brought in for a diagnostic and a physiology discussion by a point of view of the changeable medical and social conception of both diseases.

Tinnitus – modern concepts and therapy

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Aim: Presenting modern neurophysiological concepts for diagnosis and treatment of tinnitus
Discussion: Tinnitus is defined as a subjective feeling of hearing sounds without external sound stimulation. So far there is little knowledge of the causes that lead to the occurrence of tinnitus and the therapy is unclear and strictly individual. The pathophysiological theories vary from a cochlear lesion on the synaptic level to an increased spontaneous activity of the central auditory pathways and the auditory cortex. It should not be forgotten that tinnitus can be generated at any part of the hearing system from the ear to the CNS and is subjected to modification from any of the brain structures. The patients with tinnitus and normal hearing present with increased auditory sensitivity due to auditory cortex hyperactivity. In patients with tinnitus and hearing loss, the frequency of tinnitus often corresponds to the frequency of the hearing loss. The hyperacusis is a common complaint from these patients and this suggests that both symptoms have a common origin. The reduced sensory information from the cochlea and the auditory nerve leads to a resetting of the CNS and from there to abnormally increased neuronal activity, quick fire rates and rise of the neuronal asynchronization. Abnormal EEG activity in the central auditory pathways has been reported in experimental animals after hearing trauma and later confirmed in patients with tinnitus. These deviations can be explained through the mechanisms of the homeostatic plasticity and reorganization at different levels of the auditory pathways with the aim to reduce the impairment of the auditory functions. The increased brain activity in patients with tinnitus is demonstrated by γ-activity in the auditory cortex on the EEG. The occurrence of this γ-activity is believed to be the result of inhibition incapability of the auditory cortex and leads to decreased α-activity. The assessment of patients with tinnitus begins with an interview that consists of guiding questions to help the specialist understand the characteristics of the patient's tinnitus. The interview is followed by audiological tests and additional consultations and examinations are performed when needed. The influence of tinnitus on the quality of life is typically assessed through questionnaires that contain similar but different questions for optimal objectivity of the results. The most commonly used tests are the Tinnitus Handicap Inventory, the questionnaire of Goebel & Hiller, the Hyperacusis questionnaire and others. The usage of validated questionnaires for clinical assessment of patients with tinnitus allows objectively following the patient's condition in the course of treatment.
Conclusion: Comparing the results from preliminary chosen questionnaires with the data from neurophysiological examinations is from significant importance in the making of a medical diagnosis and a therapeutic strategy in patients with tinnitus. After the high penetration of the rTMS for the focal modulation of the cortical activity, it is accepted that it can influence the tinnitus-related abnormal neuronal activity and thus change the patient's perception of tinnitus. The low-frequency rTMS is applied in order to reduce tinnitus through reducing the hyperactivity in the auditory cortex.

Cartilage rim augmented fascia tympanoplasty (CRAFT): An effective composite graft model over temporalis fascia tympanoplasty

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Objectives: To validate a newly introduced cartilage rim augmented temporalis fascia tympanoplasty technique by statistically comparing it with the morphological and audiological outcomes of traditional temporalis fascia tympanoplasty.
Methods: A Prospective analytical study was conducted on 115 patients who underwent tymapnoplasty during the period between 2013 and 2015. Some 58 patients were enrolled in the temporalis fascia tympanoplasty group and 57 were subjected to cartilage rim augmented fascia tympanoplasty.
Results: In the temporalis fascia group, the grafts take up was 70%, whereas in cartilage fascia group, the healing of graft achieved in 94.7% of the cases. In those with normal ossicular chain, the post-operative air bone gap was within 20 dB in 92.6% of the cases in the cartilage fascia group, whereas, in temporalis fascia, it was 70% which was statistically significant.

Among the ossicular defective cases, in the cartilage fascia group, the post-operative air bone gap was 69.2% as against 57.1% in temporalis fascia group.

Conclusion: The cartilage rim augmented temporalis fascia tympanoplasty has definite advantage over the temporalis facia technique in terms of superior graft take up and statistically significant hearing gain in those with normal ossicular mobility.

Surgical management of chronic rhinosinusitis. An analytical review

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The modern opinion of cronic rhinosinusitis (CRS) treatment is stated in the article from a position of evidence medicine. The review of studies concerning the medical therapy of CRS and evidence for surgery management is given. The endoscopic sinus surgery is widely used today in CRS treatment, however, recent investigations show that FESS doesn't warrant the absolute recovery. A comprehensive treatment paradigm should entail medical therapy to control inflammation and infection and targeted surgery when indicated in medically recalcitrant cases. Surgery does not represent a cure to CRS but rather one key intervention in the overall management paradigm of CRS.

Endoscopic ear surgery

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After the introduction of the operation microscope into middle ear surgery in the fifties of the last century, microscopic surgery was successfully applied for the different operations in the temporal bone and the adjacent skull base. Using the microscope, the surgeon has a three dimensional view to the operation site, may apply a stepless amplification and use both hands for surgical manipulations. However, the microscope only provides a straight ahead view. To visualize hidden areas such as the sinus tympani or the antrum region, the covering bone (canal wall, attic wall etc.) has to be removed. To reduce the trauma of access and to improve the angle of view into anatomically hidden areas inside the cavum tympani and the mastoid, endoscopic techniques are increasingly used and refined for a few years. Besides extra thin endoscopes, special instruments with integrated suction have been developed for one hand surgery. In the Bochum Department of Otorhinolaryngology, slimline endoscopes are used in addition to the microscope to completely inspect operation sites e.g. after cholesteatoma removal.

Different surgeons such as Panetti or Presutti have changed their operation technique to exclusive endoscopical procedures e.g. in otosclerosis or certain cases of cholesteatoma surgery. They developed the terms 'otoendoscopy' or 'EES (endoscopic ear surgery)'. In the present lecture, I will describe the different techniques of endoscopic ear surgery and discuss advantages and disadvantages of these procedures.

Facial nerve palsy caused by viruses and bacteria affecting the intratemporal course of the facial nerve – case reports. Immunologic aspects

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Introduction: Facial Nerve Palsy (FNP) is caused by certain types of viruses and bacteria, the infection with which lead to acute and chronic otitis media (with or without cholesteatoma) with different pathophysiologic mechanisms including changes in the number or function of the lymphocyte populations and subpopulations. We analyze FNP case reports that has occurred after an affection of the intratemporal course of the facial nerve. The facial deformation, caused by FNP, is an alarming and a worrying symptom that requires an immediate examination of the patient, discovering the type and the cause of the paralysis, as well as choosing an appropriate treatment and immunotherapy.

Aim: Based on our own experience and literature data, we present our clinical behavior in FNP cases. In the future, we want to develop an assessment of the preoperative risk by using the following criteria: for how many years has the ear been affect-

ed, the type of the ear discharge (smelly or not), the treatment that has been conducted, the result from the treatment, previous surgical interventions, appearance of vertigo and nausea, to explore the levels of lymphocyte populations and subpopulations in peripheral blood, common serum immunoglobulin classes and the tests made up to the moment of the paralysis.

Material and metods: We present 9 patients with otitis media that has progressed to FNP. To diagnose the FNP we used the following methods: otoscopy, audiometry, microbiology, preoperative and postoperative EMG, CT scan of the mastoid, pyramis, the middle and posterior cranial fossa, turbidimetry for serum levels of common immunoglobulins and flow cytometry of blood sample. While performing the otologic surgery, we used IOFNM, with which we identified the nerve and which helped in the removal of the granulations or the cholesteatoma (if any dehiscence or erosion of the facial canal was present). In three of the patients, one with Bell's palsy, one with a Herpes zoster oticus infection, and one with CSOM (who denied operative treatment), medicamentous treatment was conducted. Four of the patients were operated depending on the pathologic process in the middle ear (two of them were treated with CWU and the other two were treated with CWD). One of the patients developed a FNP in the other, non-operated ear, that required operative treatment. Fresh venous blood was drawn into sodium-heparin tubes and the results were obtained within 2 hours. Leukocytes were analyzed by using a dual-laser FACS Calibur cytometer (Becton Dickinson, Heidelberg, Germany) and Cell Quest Pro software (Becton Dickinson). Briefly, blood cells were stained with fluorescence-conjugated antibodies (FITC and PE). After lysis of erythrocytes (Lysis buffer; Becton Dickinson) and two washes, stained PBMC were re-suspended and fixed with CellFIX (BD Biosciences). Ten thousands of lymphocytes were collected in a forward scatter/side scatter (FSC/SSC) lymphocyte gate and saved together with the monocytes and granulocytes. Data is presented as a percentage of the lymphocyte gate. The cytometer was calibrated daily with appropriate single-stained samples for setting compensation and acquired data was analyzed by FACSComp software©2007 Becton Dickinson. Fluorescence conjugated antibodies by Becton Dickinson Pharmingen™ were used to identify cell populations CD3 T-lymphocytes , CD19 B-cells, CD8 T-cytotoxic, CD4 T-helpers and CD3/CD16+56 NK-cells.

Results: The full recovery of facial nerve function in our clinical cases demonstrates that the facial nerve damage corresponded to first to second degree according to Sunderlan and mild to moderate facial dysfunction with following recovery according to House Brackmann facial grading system. In terms of immunological status was observed significant deviations from the reference values in patients with Bell's palsy. At the time of recording was decreased total T-lymphocytes, T-cytotoxic lymphocytes, B lymphocytes and increased NK cells refer to changes caused by viral infection and requirement for immunostimulating therapy. These degrees of facial nerve damage were identified preoperatively and postoperatively with EMG, thus confirming our treatment choice.

Conclusions: The use of modern diagnostic methods contributes for the specification of the type and reason of FNP occurrence. The cell-mediated and humoral immunity play an important role in protection against viruses and bacteria. Contemporary immunological laboratory tests should be not only the diagnostic tool but also define appropriate administration of immunotherapeutic agents in the course of treatment. Depending on the reasons of occurrence, there are certain types of nerve injury: neuropraxia, axontemesis, neurontemesis. The tympanic segment и SGA of the intratemporal course of the facial nerve are the most vulnerable structures in the middle ear during otologic surgery. Yester et al. have found 83% dehiscent facial canal in patients with facial paralysis due to chronic otitis media, with the most common sites being at the second genu and the horizontal portion. The incidence of iatrogenic facial nerve injury is reported as 0.6- 3.6 % in all otologic surgical procedures, and increases up to 4-10% in revision surgery. In these cases, the IOFNM method is useful. It can contribute in 93% of the cases for the surgical anatomic identification, which helps for the prevention of iatrogenic facial nerve injury.

Key words: intratemporal course of the facial nerve, congenital dehiscence, facial nerve palsy, IOFNM, immunotherapy.

Дехисценция на преден полуокръжен канал (SSCD syndrome) – съвременна диагноза и лечение

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Дехисценцията на предния полуокръжен канал (SSCD, superior semicircular canal syndrome) е сравнително нова нозологична единица, дефинирана за първи път от Minor et al. (1998). Част от симптоматиката обаче е добре позната на специалистите като симптом на Тулио. Въпреки това при определянето на това заболяване съществуват сериозни диагностични затруднения. През последните няколко години в практиката се въведоха нови методи за диагноза и лечение на това заболяване. Представени са резултатите от 5 пациенти, изследвани и лекувани в клиниката в рамките на последната година. Диагнозата е поставена въз основа на рутинни отоневрологични и аудиометрични тестове и регистрация на шийни и окуларни VEMP's , а след това е верифицирана с помощта на КТ с висока резолюция – 0,625 мм. Дискутирани са резултатите от VEMP-тестовете, като се отбелязва високата диагностична информативност на тези проби. На двама от пациентите в клиниката е приложено най-новото и щадящо лечение – оклузия на кръглото прозорче. Докладваме предварителните резултати след хирургичното лечение.

Active middle ear implants for the rehabilitation of patients with sensineural, mixed and conductive hearing losses – long term experience after 10 years

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Introduction: The Vibrant Soundbridge offers an alternative treatment option for patients suffering from sensorineural, conductive or mixed hearing loss. The advantages over traditional hearing aids in sensorineural hearing loss have been demonstrated in numerous clinical studies and include improved sound quality without distortion, high amplification without feedback or occlusion, very good speech understanding even in situations with background noise, and improved comfort. In conductive or mixed hearing losses, the active floating mass transducer (FMT) is positioned in direct contact with the inner ear bypassing the external ear canal and the middle ear.
Material and Methods: We report about our experience with the Vibrant Soundbridge Implant program after 10 years of personal experience. Altogether 275 patients suffering from sensorineural and mixed hearing losses were treated so far and implanted by the first author. The FMT was placed in on the long process of the incus in sensorineural hearing losses, on the head of the stapes or on the round window in mixed hearing losses. New couplers have been used in order to make surgery more easy and feasible. The placement of the FMT depends on the grade of the hearing loss, on the pathology and the anatomy of the patients. The quality of the coupling of the FMT to the ossicular chain or to the inner ear is evaluated based either on comparative reverse transfer function (RTF) or on electrocochleography measurements. Both measurements will be presented in the lecture.
Results: In 273 cases, residual hearing was preserved indicating that the surgical techniques are safe. Surgical techniques and audiological results under headphone and in free field in the unaided and aided condition with Vibrant Soundbridge of all activated patients are presented.
Conclusion: The Vibrant Soundbridge represents an innovative treatment option for sensorineural, conductive and mixed hearing losses. Especially for pathologies that are difficult to treat, issues with the reconstruction of the middle ear can be solved by directly applying mechanical energy to the inner ear. Intraoperative measurements like the reverse transfer function help the surgeon to achieve proper audiological postoperative results.

Management of acute otitis media with purulent intracranial complications

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Changes in approaches to surgical treatment of purulent intracranial complications (meningitis, brain abscess, and ventriculitis) combined with acute otitis media are driven by emergence of such complications not only during purulent but also during non-purulent inflammation in the ear. Enlarged mastoidectomy combined with exposure of the dura and sinus often looses its actuality. Positive results of treatment with intensive medical therapy has proven, and in doubtful cases – diagnostic antrotomy or mastoidotomy. Both CT scan and MRI exclude necessity of cerebrum puncture of infected zone through undamaged dura and support neurosurgical approach. According to our clinical study, positive treatment results for patients suffering from acute otitis media combined with purulent intracranial diseases can be achieved: in 61% of cases with non-purulent (mostly viral) disease and in 29% – with purulent disease without any surgeries. In 44% of purulent inflammation cases, processes are formed simultaneously in the cranial cavity, in parallel, rather then as a result of acute otitis media. They should be called combined processes.

Piquant situations in ossiculoplasty – how i do iit!

V. Honnurappa

Principles of Hearing Reconstruction: Tympanic membrane being the most important contributor for sound transmission, it should be reconstructed as near as possible when healed with free movements.
Requirements for Primary Ossiculoplasty:
1) Presence of normal or minimally hypertrophied mucosa
2) Patent Eustachian tube
3) Mobile stapes footplate
Primary or Staged Ossiculoplasty?

Grafts used for ossicular reconstruction:

- Autograft/Allografts
- Remnant Incus
- Malleus
- Septal Spur cartilage and other materials

Septal Spur cartilage is present along the floor where the cartilage flares up over maxillary crest. It is harvested in septoplasty surgery. Cartilage is preserved in 70% alcohol or autograft.

The objective of this presentation is understanding the long term results of Ossiculoplasty using Septal Spur Cartilage and Demonstrating long term viability.

The use of self stabilizing septal spur cartilage for middle ear reconstruction brings several advantages, it can be sculptured into an appropriate shape and size and has no extrusion rate.

Stable hearing with time tested results.I am using septal spur cartilage since last 25 years without any failure or problems.

Present results give evidence that sculptured septal spur cartilage is capable of reaching two major goals of every Ossiculoplasty – 1) a satisfactory hearing gain and 2) Stability.

Creutzfelt-Jacob disease or H.I.V. have never been reported in any literature after transplantation of Autograft. Biomaterials known for high extrusion rates and are expensive. Comparative Histopathological study of fresh and revision case cartilage shows same number of Chondrocytes with nucleus. There is no risk of extrusion and it is cost effective.

Based on this I recommend this type of reconstruction for all types of ossiculoplasty.

Temporal bone dissection approaches to lateral skull base

V. Honnurappa

Understanding Skull Base Surgery:

The key to study lateral skull base surgery is in understanding the classification

The lateral skull base approaches are classified based on two crieteria:

1) The location of the target lesion eg. IAC, CP angle, Clivus, Petrous Apex, Jugular bulb etc. Generally chapters in skull base textbooks are divided based on the location of the target lesion.

2) The route taken by the approach in relation to the otic capsule.

When the route goes through the otic capsule the approaches are- (Hearing preservation is not feasible)

1) Translabyrinthine approach – The SCC and vestibule are breached. The cochlea is not drilled though the function is lost.

2) Transcochlear approach – In addition, cochlea is breached this approach involves posterior transposition of facial nerve.

3) Transotic approach – The cochlea, vestibule and SCC are drilled without transposing the facial nerve.

The lateral skull base approach may take route avoiding breach of otic capsule (hearing preservation surgery)

1) Superior to otic capsule – middle cranial fossa approach

2) Posterior to otic capsule – retrolabyrinthine and retrosigmoid approach

3) Inferior to otic capsule – Fisch infratemporal fossa type A approach. This involves anterior transposition of facial nerve

4) Anterior to otic capsule – involves dealing with Intrapetrous Internal carotid artery. Fisch infratemporal fossa approaches type B, C, and D fall in this category.

Here I am discussing the following five approaches to lateral skull base:

1) Translabyrinthine approach

2) Transcochlear approach type A

3) Retrosigmoid approach

4) Retrolabyrinthine approach

5) Infratemporal fossa type A approach.

Traumatic facial nerve paralysis – new innovative technique of transcanal facial nerve decompression

V. Kumar

In our experience, as being tertiary referral centre for facial nerve disorders, 117 cases of traumatic facial nerve palsy have been performed. If the patient has grade V to VI facial nerve (FN) paralysis, he needs surgical intervention. In longitudinal fracture, the patient will have bleeding from ear canal or tympanic membrane rupture or haemotympanum with conductive hearing loss. In transverse fracture, the patient will have severe giddiness, vomiting, and sensorineural hearing loss. I have popularized a transcanal FN decompression for longitudinal fracture causing FN paralysis. It is a very easy and safe tech-

Conclusion: Trigeminal pain from ocular origin often propagates to the ear and has minimal eye symptoms and signs. The interdisciplinary approach is the key in such cases. Therapeutic contact lenses provide excellent pain relief in ocular surface irritation.

How to differentiate central from peripheral vestibular disorders?

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Looking at the eye movements as a part of neurotology examination can help us to differentiate central from peripheral vestibular disorders. Here is a practical guide how not to miss central vestibular signs.

Nystagmus

The first part of this examination in dizzy patient is to look for spontaneous and gaze evoked nystagmus. The very characteristic sign of peripheral nystagmus is to be stronger when looking at the side of nystagmus direction and to slows down or be absent when looking at the opposite side of the nystagmus direction (Alexander's low). In the absence of fixation it becomes stronger. If the nystagmus changes the direction, it is a sign of central vestibular disorder (periodic alternating nystagmus or gaze evoked nystagmus). Pure vertical or pure torsional nystagmus is of central origin.

Examples of central types of nystagmus include:

Rebound nystagmus is a change of nystagmus direction when returning eyes to the central position after holding the gaze to the side for a while. It is a sign of neural integrator disfunction. Brun's nystagmus is asymmetrical gaze evoked nystagmus, a combination of central and peripheral nystagmus. It is a sign of large CPU tumours compressing the cerebellum. This nystagmus is a combination of large amplitude slow frequency nystagmus toward geze to lesion side (cerebellar component) and small amplitude high frequency to the gaze opposite to lesion (vestibular component).

Pursuit and saccades

Saccades hypometria or hypermetria is a sign of cerebellar lesion (usually, dorsal vermis). Impaired pursuit is, usually, due to floccular dysfunction. Special attention should be paid if the pursuit is saccadic just in one direction. During pursuit test if an eye can't adduct it is a sign of internuclear ophtalmoplegia (INO). INO is characteristic sing in multiple sclerosis patients and in stroke as well. Inability to adduct an eye while looking to the contralateral side is because of the lesion of medial longitudinal fasciculus (MLF). INO patients can adduct the eye during convergence eye movement and this test differentiates INO from the partial third nerve palsy. In the clinical practice, some mild forms of INO can be overlooked because adduction at the lesion side is just of reduced velocity and the only sign would be contralateral eye nystagmus while looking to the contralesional side. While testing pursuit in the vertical plane, one can find eye movement paresis in this plane which can be a first sign of progressive supranuclear palsy (PSP).

Ocular tilt reaction (OTR)

Head tilt can be seen both in peripheral and central vestibular disorders. But skew deviation which can be easily revealed by cross cover test is almost always sign of central vestibular pathology. It is a vertical eye misalignment where higher eye is contralateral due to medullary lesion or ipsilateral due to pontine or midbrain lesion.

Head impulse test

Positive head impulse test is a sign of non-functioning vestibulo-ocular reflex (VOR). The positive head impulse test can result from floccular lesion. In patients with bilaterally positive head impulse test and with saccadic smooth pursuit, the visually enhanced vestibulo-ocular reflex (VVOR) test should be positive (like in CANVAS patients). At VVOR test, the patient is asked to look at fixed target while the head is turning slowly from side to side. Saccadic eye movements denote positive test which is a result of non-functioning both VOR and smooth pursuit system.

Positional tests

Positional downbeat nystagmus (PDBN) can be seen in some forms of BPPV like anterior canal canalolithiasis or ageotropic form of the posterior canal. PDBN is commonly a sign of central vestibular disorders. Except history, there are some nystagmus characteristics which would imply peripheral etiology: latency, paroxysmia and crescendo-decrescendo type, torsional component, more pronounced without fixation and very important the nystagmus is accompanied by vertigo. If these signs are absent, central etiology is more obvious.

Direction changing positional nystagmus, geotropic or ageotropic is frequently seen in horizontal canal BPPV. We should be caution not to miss positional direction changing nystagmus in central pathology. If a positional nystagmus is not accompanied by vertigo, if it is a bizarre form, or if it doesn't go away on repeated maneuvers it iss mandatory to send the patient to magnet resonance imaging to exclude the central pathology.

Scanning of the pharaohs

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Dr. Hawas and his team started projects to scan the Royal mummies and analyze their DNA. The first project started in 2005. C.T. imaging of the Royal mummies was performed. In this presentation, we shall talk about the identification of the mummy of Queen Hatshepsut through the discovery of a lost tooth. We illustrate also the study of the mummy of the famous king Tut Ankhamun with the purpose to find out the real cause of his death.

Black sea society in otology and neuro-otology – past, present and future

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Introduction: The last 20 years have served as an important period of new scientific relationship among medical doctors at Balkan and Black Sea countries. Old history of the region, good international conditions at the end of the last century and the „100 ENT Clinic“ project of Prof. Jan Grote formed the basis to encourage mobility across borders for students, doctors and staffs in all Europe include the Black Sea region.
Aim: Review of important scientific meetings and relationships in otology and neuro-otology concerning idea for creation of new otology society in Black Sea region.
Methods: Continuing Medical Education (CME) in otology activities in Bulgaria in the last 16 years were analyzed: 30 otology meetings – from the beginning between ORL Clinics' – Stara Zagora, Edirne; Heraklion and Nish; e-journal „Pro Otology“; Varna Otology Days – congresses, symposiums and meetings with international relation and solidarity.
Results: Working Lunch in „Hearing Loss-Functional Diagnostic and Treatment“ Stara Zagora 2014 – proposal of idea of creation of new Black Sea Society; First and Second Vestibular Days of Varna 2015-2016 with International Participation, preparation for 1-st BSSONO meeting
Conclusion: The established scientific relations on otology of the Balkans have helped to prepare and validate the idea of establishing a new scientific society on otology of the Black Sea countries within European Community's standards and methods.
Key words: Black Sea Society in Otology and Neuro-Otology, Continuing Medical Education

The functional MSCT (fMSCT) of the middle ear mobile structures is a new noninvasive objective diagnostics method

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Introduction: The overall results of stapes surgery considerably depend on the anatomy peculiarities of complicated temporal bone's structure.
Materials and methods: Thirty-seven persons (63 ears) with otosclerosis participated in the study. All the patients were examined by microotoscopy, audiologic tests, and multi-slice computer tomography (MSCT). Vestibular window niche was assessed in all the ears according to the following criteria: the width and shape of the niche, the presence and absence of overhanging of facial nerve canal and promontorium over the vestibular window, the width of the stapes footplate and of the stapes cruses, and the distance to the internal vestibular wall. All these ears underwent stapes surgery.
Results: Overhanging of the facial nerve canal over the vestibular window was observed in 14 ears, overhanging of the promontorium – in nine, and protrusion of the facial nerve canal – in six. Wide niche was observed in 45 ears but narrow one – in 18. A rectangular shape was observed in 18 ears, a trapezoid – in 32, and a triangular – in 13. Stapes footplate thickening was established in all the 53 ears and thickening of stapes cruses – in 11 ears. Distance to the internal vestibular wall less than 2 mm was seen in five ears but more than 2 mm – in 58. A 'standard' piston stapedoplasty was done 44 ears, an 'aim' piston one – in 14, while a 'standard' piston stapedoplasty with stapedectomy in five. MDCT sensitivity was 95,2%, specificity – 98,4%, and accuracy – 96,8%.
Conclusion: The MDCT-criteria allow estimating the complexity of the surgery, planning the surgery thoroughly and predicting the outcome.

Българска средновековна представа за устройството на органа на слуха и взаимовръзката му с нервната система, изразени в текст на Йоан Екзарх от IX-ти век

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Йоан Екзарх е един от най-великите български книжовници от Златния век на българската култура. Най-важното му съчинение е „Шестоднев“, което представлява енциклопедия на тогавашното естествознание. Известни са повече от 60 преписа, достигнали до наши дни. С настоящата работа представяме текстовете, описващи органа на слуха, физическата и функционалната му връзка с нервната система според средновековното познание. Йоан Екзарх цитира автори от древността и коментира тезите им. Представя органа на слуха с външно, вътрешно ухо и слухова тръба. Последната е обществено известна, като tuba eustachii чрез името на Бартоломей Евстахий, описващ я след близо 600 години (Писма за органа на слуха – 1563 г.). Особено интересни са соматопсихологичните отнасяния и разсъжденията на Йоан Екзарх за мястото на слуховото възприятие в разбирането и осъзнаването на духовния и материалния свят. Ролята на „Шестоднев“, като може би първата естествено-научна книга на некласически език, е огромна, имайки предвид българското културно пространство по това време, простиращо се от Адриатика до Урал.

Из историята на медицината във Варна

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Зараждане на първата европейска цивилизация. Откриването на Варненския халколитен некропол (1972) и на Раннохалколитните гробове до град Варна (1976) доказа, че през V хил. пр. Хр., населението от крайбрежието на Варна, Лонгоза и СИ Добруджа достига високо ниво на материално и духовно развитие. Според чл. кор. проф. Хенриена Тодорова тук е възникнала най-ранната човешка „протоцивилизация“ – „Късноенеолитна култура Варна“ (4600-4200 г. пр.Хр.). Н.с. Иван Иванов свързва двата некропола с откритите на 6 – 8 м под съвременното ниво на водите на Варненско-Белославското езеро 8 късно-енеолитни селища и доказва, че в тях се е зародила първата европейска цивилизация.

Проучването на костните останки от 270 погребани във ВХН и 3 в РХГВ разкри сложен погребален ритуал, който следва йерархията в обществото, изразена в неравномерно разпределение като количество, материална и духовна стойност на гробните дарове. 75% от мъжките скелети са в изпънато положение, а 70% от женските в сгънато (ембрионално) положение. Черепите от двата най-богати гроба – № 3 от РХГВ и № 43 от ВХН, се отнасят към европеидната голяма раса, с най-близка характеристика до динарския расов тип. Това доказва местния, балкански произход на тези най-високо стоящи в йерархията на техните общества личности. 75,93% от мъжките скелети са на възраст между 20 и 35 години, при пределната възраст 40 – 45 години. 86,49% от женските скелети са на възраст между 18 и 30 години, при пределната възраст 35 – 40 години. Зъбните коронки са силно абразирани, но кариес се среща по-рядко отколкото днес. На някои зъби има медни халкички, поставени вероятно с изцелителна или магическа цел. Гроб 63 е разрушен с ритуална цел, тъй като погребаният е страдал от системно костно заболяване с тежки клинични изяви.

Населението преминава от номадски към уседнал начин на живот в защитени селища с постоянни жилища и от събиране към производство на храни, като култивира пшеница и ечемик и отглежда домашно говедо, овце, кози и свине. Това осигурява защитата му от климатични промени, създава по-добри условия за отглеждане на децата и лечение на болните и подобрява храненето, но повишава риска от епидемии и от появата на зоонози.

В 49 т. нар. „Символични“ гроба от ВХН липсват костни останки от човек. В три от тях са погребани изработени от глина със златни артефакти подобия на човешки глави, изобразяващи „богинята-майка“. В областта на „устните“ им имаше 7 или 6 малки златни артефакти, наподобяващи „гвоздейчета“. Такива златни „гвоздейчета“ се откриха в устната област на 7 скелета, сгънати надясно – 2 на деца, 3 на жени между 20 и 25 години и 2 на израснали, полът на които не беше определен. При 2 от тях има по едно „гвоздейче“ на нивото на зъбите на горната и на долната челюсти, а при 5 – по 1 „гвоздейче“ на нивото на зъбите на горната челюст. Имплантирани са в устните вероятно приживе и са най-древният открит златен „piercing. В останалите „Символични гробове“ има уникални златни, медни, керамични или мраморни атрибути на властта (жезли, брадви, диадеми, апликации), зооморфни изображения, художествени керамични съдове и други. Впечатляващата форма на два мраморни съда от гроб 41 насочва към възможната им употреба за получаване/съхраняване на субстанции или течности с лечебни или магически свойства.

Възход на медицината в Одесос и региона през Античността. Одесос е основан от гръцки колонисти през втората четвърт на 6-ти век пр. Хр. върху древно тракийско селище. Съществува до 614 г., когато е опустошен. През този период медицината в Одесос е във възход под влиянието на древногръцката, елинистичната, римската и византийската медицински школи. Има данни, че бащата на медицината Хипократ е посетил Одесос, за да проучи причината

за мъжкия инфертелитет в скитските племена, и доказателства, че в Одесос, в Марцианополис (Девня) и в Дионисополис (Балчик) са работили последователи на неговата школа. В Одесос са открити голям брой гробници и/или надгробни плочи, датирани I – III век, с богат лекарски и/или фармацевтичен погребален инвентар и интересни надписи. Надпис от надгробна плоча от Одесос от III век на архириатъра Асклепиад и жена му Анни гласи, че той е главен лекар на обединението на лекарите, ръководи гимназиона и има почетните титли «демофилет» и «аристев». В някои от гробниците е използван тракийския погребален ритуал, а някои от имената на погребаните насочват към техния тракийски произход. В региона са открити много мраморни глави, малки каменни пластики (I – III в.) и оброчни релефи и олтари с изображения на Асклепий, Хигия и Телесфор, с които местното население е изразявало почитта си към божествата, свързани със здравето. Асклепий е почитан и от съседните тракийски племена. По време на император Антоний Пий е построен водопроводът на град Одесос, което го нарежда между санитарно най-благоустроените градове. Термите на Одесос са със застроена площ около 7000 кв. м. и в тях има светилище на Асклепий и Хигия. През периода на войните между Източната Римска империя и нахлуващите готи, авари, славяни, прабългари и други се развиват епидемии (чума през III и VI век), които нанасят тежък удар върху града.

Изкуствена деформация на черепа при прабългари. В прабългарски некрополи от VII – IX век от СИ България се откриват до 10%, а в някои – до 14% – 22% черепи с изкуствена деформация, предизвикана от поставена в детството превръзка на главата. През 1969 г. в региона на строящата се гара Повеляново е открит гроб с уникална пръстеновидна форма, в който са погребани около 66 трупа на деца, жени и мъже, като над 80% от откритите черепи са с изкуствена деформация. Най-малкото дете с деформиран череп в гроба е на 2 и половина години, което поставя въпроса за влиянието на тази процедура върху развитието на детския череп.

Трепанация на черепа при прабългари. В прабългарски некрополи се откриват черепи с извършени приживе трепанации. При т.нар. „Символична“ трепанация чрез изгаряне или изрязване се отнема външната пластинка на черепните кости и част от Diplol, докато вътрешната пластинка остава здрава. При т.нар. „Реална“ („Хирургическа“, „Лечебна“) трепанация се създава отвор на мозъчния дял на черепа. В Ранносредновековния некропол в квартал „Трошево“, гр. Варна (IX–X век) е открит череп с отвърстие на черепния покрив. Експертизата установи, че се касае за череп на млад индивид, в предно-медиалната част на лявата теменна кост на който има елипсовиден отвор със заоблен гладък ръб, което показва, че той е направен приживе и интервенцията е преживяна. Непосредствено пред него има много малък отвор, който прекосява венечния шев и води в къс канал. В дълбочина се вижда костен фрагмент с неравна повърхност.

Дарителска болница „Параскева Николау“. На 7/20.XI.1869 г. във Варна е открита и от следващия ден приема болни първата гражданска болница с 18 легла, с 8 души персонал и един свещеник, построена и издържана с дарени по завещание средства от родения във Варна, живеещ в Одеса търговец Параскева Николау. Според „Правилник на болницата“ лекарят трябва да има докторат по медицина от университет, а аптекарят диплома по фармация. „Строго се забранява на лекаря да получава пари или подаръци от болните. Лечението на всички пациенти без разлика от вяра, народност и пол е безплатно. Допущат се старци и умопомрачени (съгласно завещанието). Приютяват се скитници и сирачета.“ Във връзка със 100-годишнината от създаването на болницата възниква идея в нейната сграда да се създаде музейна сбирка, и в 1985 г. в нея е открит Музей по история на медицината.

Варненско медицинско дружество. През 1883 г. във Варна е учредено Медицинско дружество с председател д-р Михаил Василиевич Игнатиев и заместник-председател д-р Ангел Димитров Пюскюлиев, което поставя основите на организиран професионален и научен живот на лекарите в града. По хронология то е второто дружество с участие на лекари в България, след основаното в 1880 г. в София „Физико-медицинско общество“. В дружеството членуват влиятелни лекари и от други градове и то има важна роля за развитието на здравното дело и за професионалното и научното организиране на лекарите както във Варна, така и в цяла България. По редица поводи то прави предложения пред Варненското общинско управление и пред Върховния медицински съвет. Важна роля за издигане авторитета на дружеството изиграва печатният му орган „Медицинско списание“, в което се помещават статии на български и чуждестранни автори. През 1901 г. дружеството подкрепя предложението за Устав на Лекарския съюз в България, взема участие в Първия и Втория Лекарски събори и става член на съюза.