

OUR OWN METHOD FOR REDUCTION AND OBLITERATION OF THE CAVITY IN CASES OF FRONTOETHMOIDAL MUCOCELE

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ABSTRACT

The frontoethmoidal mucocele engaging the orbit and neighboring structures is relatively uncommon. The presented case uses operative treatment with coronal approach in which for reduction and obliteration of the cavity and the nasofrontal canal the author uses his' own method of a flap that consists of periost and galea aponeurotica. The article describes the sequence of the treatment and the operation. The case report confirms a very good postoperative result and lack of recurrence thirty six months after surgery. The author is reviewing the contemporary literature and the clinical approach with this disease.

Keywords: Orbit, Surgery, Frontoethmoidal mucocele, Coronal approach, Reduction, Obliteration

INTRODUCTION

When for one reason or another, the normal drainage of the secret that is produced by the mucus epithelium has been disturbed a cystic lesion with a slow expansive growth develops. It is called mucocele (2;3;6;8). The mucocele engages the frontal sinus with its anterior ethmoidal cells in 64% of the cases, the maxillary sinus in 18.6%, the sphenoidal sinus in 8.4% and independently-the ethmoidal cells in 6.7% (11). Etiological factors could be: inflammation of the paranasal cavities and the nasal mucus; allergic rhinosinuitis including nasal polyposis; trauma associated with dislocation of bone fragments and leading to obstruction of the drainage; tumor processes engaging the nasal canal or the foramen of the sinus; prior surgical treatment and of course a certain number of cases with unclear etiology (3;4;6;8). In the presence of some of these preconditions the mucus collects in the sinus cavity exercising hydraulic pressure on the surrounding tissues. As a result in the submucosal layer of the mucosa starts a process of fibroids transformation, as well as deformation and thinning of the surrounding bone structures, most often of the orbital wall (5;9;10). In the cases of prior surgery of the frontal sinus the bone lamella is removed and the formation grows towards the orbit (4). The treatment of the patients is operative. Depending on the localization, different methods are being used. The use of endoscopic methods combined with external access is predominant in the last decades. The incisions

are made in visually unavailable areas, most often in the hairy part of the head. For obliteration of the sinus cavity is used fat tissue or, in the last few years, a combination of non organic filler (Medpor) and tissue glue (Tissucol) with haemostatic sheet (Surgicel) (7). For contouring and obliteration a cortical plate taken from the parietal area could be used as well as titanium grid (2; 7).

PURPOSE

The author presents his own method for reduction and obliteration of the cavity and the nasofrontal canal in a case of frontoethmoidal mucocele, by using a flap that consists of periost and galea aponeurotica.

DESCRIPTION

A 72 years old woman has been sent for treatment in the Department of Oral and Maxillofacial surgery. The patient's current complaints are swelling of the inner upper part of the left orbit, difficulty in the eye movement and diplopia. These are dating from 8-10 months back when during examination a formation in the upper medial quadrant of the left orbit has been discovered. Some 25-30 years ago the diseased underwent an operation of the frontal sinus from the same side, which was proven by the old operative cicatrices medially in the eyebrow area with a length of 3 cm. There was no available data for the size and the type of the prior operation. The patient has been treated with few courses of corticosteroid therapy in another hospital on the occasion of accepted diagnosis pseudotumor of the orbit. From about 5 years the diseased suffers from badly con-

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trolled diabetes. During the clinical examination we determine a presence of formation in the upper medial quadrant of the left orbit, pushing forward the eye bulb in lower lateral position. There are disturbances in the upper and medial eye movement and a presence of diplopia (Fig.1).



Fig. 1

Fig.1 Preoperative view of the patient (bird view): Expressed deformation of the left orbit with pseudoptosis of the eyelid and exophthalmos



Fig. 2



Fig. 3

The CT shows a presence of cystic formation, engaging the left frontal sinus, part of the anterior ethmoidal cells and the orbit in its upper medial quadrant. There is a lack of sharp division between the formation and the eye bulb. There is no bone wall between the frontal sinus and the orbit (Fig.2-3).

Fig.2 Parasagittal CT reconstruction: The lesion engages the frontal sinus and the anterior ethmoidal cells; Fig.3 Axial CT: A presence of cystic formation engaging the left frontal sinus and extending to the middle of the left orbit;

After clinical discussion of the case we agreed to an extirpation of the formation using coronal approach. The advantages of the method are many and undeniable but in the present case the main motives were the prior operation and the spread of the formation towards the middle part of the orbit. After coronal incision we used Raney clips for haemostasis. Through supraparietal dissection we reached level of about 3 cm. from the supraorbital edge, from where we continued to subperiosteal plan (Fig.5). After reaching the supraorbital edge the cystic cavity was uncovered (Fig.6). The cyst was removed after partial evacuation of the content which formatted a cavity neighboring the orbit (Fig.7). In the lower medial part we identified the nasolacrimal canal which was curettaged. From the scalp-flap we prepared periostogaleal flap for the obturation of the canal and for partial filling of the cavity formed by the mucocele (Fig.8). Aspiration drainage, type Redon was placed and the tissues were sawed layer by layer.



Fig. 4



Fig. 5

Fig.4 Coronal approach to the two orbits. Fig.5 Uncovering of the mucocele (the instrument shows the upper edge of the defect)

Fig.6 Preparation of the periostogaleal flap (arrow) used for obturation of nasolacrimal canal and partial filling of the cavity.

The post operative period was covered by antibiotic treatment and dynamic correction of the data, given the accompanying diseases. The patient was discharged from hospital in good condition after twelve days. The following check through ophthalmological examination in the third month showed a full recovery of the eye movement and lack of diplopia. One year after surgery the patient had no complaints. The author reports a very good aesthetic result with correct and symmetrical position of the two eyes. Only in the medial part of the brow and frontal parasagittal area we

find caving, due to the flap used for obturation and obliteration of the nasolacrimal canal and the frontal sinus (Fig.9). The follow-up period is 3 years, for which term no recurrence has been detected.

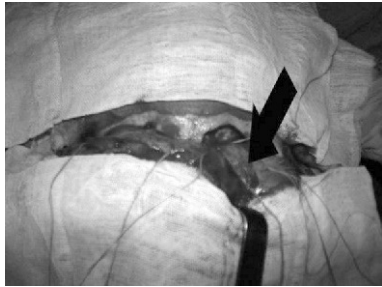


Fig. 6



Fig. 7

Fig.7 External view of the diseased an year after surgery. A presence of correct and symmetrical position of the eyes. Vaguely expressed asymmetry in the medial part of the eyebrow and in the frontal parasagittal area, where the donor site is.)

DISCUSSION

Still there is no consensus about the treatment of the post-operative cavity (1;7;11). Relatively the methods can be divided into two: the ones purposing obliteration and the ones which expand the existing nasolacrimal canal for the purpose of better drainage and prevention of the retention leading to the development of mucocele. The most commonly used method is the one of obliteration with fat tissue, and the use of tissue glue and bone taken during the operation from the external lamella of the parietal bone for obturation of the canal. According to us each of the two methods has its advantages and disadvantages. Expanding the nasolacrimal canal for the purpose of better drainage can be determined as more physiological method as far as the existing anatomical structures are kept untouched. On the other hand, the presence of cavity covered with epithelium which characteristics differ from those of the normal sinus mucosa and has decreased secretory function, is a precondition for inflammation later on in time. The immediate proximity of the brain predefines the dangerous course of such inflammation. The method applied for obturation and obliteration using periostogaleal flap belongs to the first group of methods. The main advantage is the use of a flap

with feeding base branches from a. and v. supratrochleares and a. and v. supraorbitales. We consider a better decision, than the ones used so far, the use of a flap taken from vital tissues for filling the defect. Essential disadvantage of the method is the disturbed symmetry and deformation of the donor site which especially in young people can be a serious aesthetic issue.

The coronal approach we used gives an excellent opportunity for visualization of the whole supra and inter orbital segment, the orbit itself, as well as for adequate reconstruction (7). The realization of the incision in the hairy part of the scalp is a serious aesthetic advantage along with the above mentioned.

The case presented is interesting mainly for two reasons: the operative access and the relation towards the sinus cavity. Using endoscopic technique in the presence of prior operative treatment and engagement of the orbit next to the eye bulb holds some serious risks (3;4).

CONCLUSION

The main purpose in the treatment of the frontoethmoidal mucocele is the radical removal of the formation with minimal functional and aesthetic consequences and lack of recurrence. There is a necessity of conducting a wide range of imaging studies preoperatively for the purpose of precisising the correlation to the orbit and endocranium. The author's own method is easy for execution and provides a reliable solution in the cases of small sized bone defects.

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