NEW OPERATIVE METHOD FOR CORRECTION OF HALLUX VALGUS COMBINED WITH PES PLANUS TRANSVERSUS

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Hallux valgus deformity is often combined with flat foot. This causes alteration in the anterior foot part and by this way functional and cosmetic disorders.

Conservative means for lifting of the transversal arch in shoes by sole "blotches" or by lateral elastic pressing of the anterior foot part do not lead to healing. There exist more operative methods of treatment of hallux valgus alone but less ones when pes planus transversus (flat foot) is concerned. However, there is an insignificant number of methods dealing with simultaneous correction of both deformity components namely hallus valgus and pes planus transversus.

V. I. Bezhenutza (1) resects the osteochondous growth from the head of the 1st metatarsal bone, performs a linear osteotomy at the basis of the same bone and drives an osseous wedge taken from the resected osteochondrosis into the triangle formed by osteotomy after valgus correction. Then he fixes 1st and 2nd metatarsal bones by lawsan band.

N. V. Novikov et al. (4) combine McBride's with Schede's operation: they tenotomize m. adductor hallucis tendon of the 1st phalanx by insertion to the 1st metatarsal bone. Osteochondrosis is resected and internal side of the 1st metatarso-phalangeal joint is restituted by using of a fascial band.

I. Ikonomov (2) adds to the aforementioned technique Ugo Camera's operation by means of lifting of the 2nd and 3rd metatarsal heads by the tendon of m. extensor longus of corresponding toes. This method has, however, certain disadvantages. Osteotomy of the 1st metatarsal bone and its osteoplastics often results in shortening or rotation of this bone and the period of work incapacity is prolonged. Bringing together of the 1st and 2nd, or the 1st and 5th metatarsal bones and their fixation by lawsan, catgut, metal wire, fascial bands, etc., fails to support the transversal arch a long time. Material stretch or cutting of metatarsal bones sets in. Transversal arch lifting by one tendon of m. extensor longus of the toes only is not enough due to its small force.

Now we present our operative technique:

Lifting of the 2nd metatarsal head by the tendon of m. extensor digitorum longus and m. tibialis anterior. Formation of capsular fascial band from the metatarsophalangeal joint with distal insertion and osteochondrosis resection. Formation of channels and connecting of the 1st and 2nd metatarsal heads with the tendon end of m. extensor digitorum longus of the 2nd toe. Tenotomy of m. adductor hallucis and its insertion on newly-formed tendinous ligament between the 1st and 2nd metatarsal heads. Capsulotomy of the 1st cuneiform — 1st metatarsal joints. Insertion of the end of m. extensor digitorum longus tendon behind the tibial margin of the 1st phalanx of the hallux and sewing up of the capsulo-fascial band from the metatarsophalangeal joint to the distal end of the 1st metatarsal bone (fig. 1, 2, 3).
This operation is indicated with severe and medium-severe forms of hallux valgus combined with pes planus transversus and sometimes even with toes-mallets.

Operation is carried out under general anaesthesia and controlled haemostasis. Two cuts are made. The first is on the dorso-medial side of the foot beginning from the proximal end of the 1st phalanx and ending in the area of the 1st cuneiform bone. Osteochondrosis prominence is surrounded by two elliptical cuts. Second cut is on the dorsal face of the foot along the 2nd metatarsal ray beginning from the middle of the proximal phalanx and ending in the proximal part of the 2nd metatarsal bone. Sometimes the first cut can be divided into two ones: in the region of the 1st cuneiform—1st metatarsal joint and of the metatarso-phalangeal one. By means of this cut redundant skin in the area of osteochondrosis is incised, a fascial-capsular band with distal insertion to the 1st phalanx is formed, and osteochondrosis is resected at the level of Clark’s sagittal sulcus on the head of the 1st metatarsal bone. Insertion of m. tibialis anterior tendon is opened by catching by holding catgut and then tenotomized. This influences favourably upon medial capsulotomy of the joint between the 1st cuneiform and the 1st metatarsal bone. By means of the second cut extensor tendon of the second toe is opened and tenotomy in the region of the middle of the proximal phalanx is performed. Its distal end is sewed to the tendon of m. extensor brevis of the second toe on.

Now m. tibialis anterior tendon is passed through subcutaneous tunnel in direction towards the 2nd cut without drawing out from supporting ligaments in the region of the ankle joint. On the 2nd cut an interwoven suture between the tendons of m. tibialis anterior and of m. extensor longus is carried out at moderately protracted posture of both muscles. An osseous channel through the cervix of the 2nd metatarsal bone and through the head of the 1st metatarsal bone directed towards internal-plantar from dorso-lateral side. Its outlet is in the area of resected osteochondrosis of the 1st metatarsal bone. Tenotomy of m. adductor hallucis from the 1st phalanx of the hallux is performed and then caught by holding catgut. The distal end of unified tendon of m. tibialis anterior and m. extensor digitorum longus of the 2nd toe is passed through the channels formed entering from the fibular orifice of the 2nd metatarsal bone and coming out on the tibial face of the 1st metatarsal head. The tendon of m. extensor hallucis longus of the 2nd toe is long enough to transfer 1st and 2nd metatarsal heads and then it is rotated in distal direction and sewed up in its distal end to the 1st phalanx in the region of insertion of m. abductor hallucis and the basis of periostal-capsu.
lar band when hallux is straight. The tendon of m. adductor hallucis is sewed up to that one of m. extensor digitorum longus at the place of bridging of the 1st and 2nd metatarsal heads and plays a role for stabilization of the 1st and 2nd metatarsal bones. Capsular-fascial band is sewed up to 1st metatarsal bone diaphysis and together with the tendinous ending of m. extensor strengthens the tibial side of the 1st metatarsophalangeal joint. Toe-mallet is corrected if even present by lifting of the 2nd metatarsal head and by dorsal capsulotomy of this joint. One assistant supports the foot in an angle of 90° and already formed transversal arch until plaster setting. Skin stitches of both cuts are made. Correction of the deformity of the anterior foot part is thus achieved by improving of the hallux valgus and creating of a transversal arch of the foot. Second toe-mallet is set up straight by using of Kirschner's needle fixation. Plaster boot setting is done for a 4-week period. Catgut is removed on the 14th day after operation. After plaster removing patient walks in orthopaedic shoes.

Nine patients aged between 50 and 65 years are operated by this method. Late results are very good. A functional and aesthetic restoring of the anterior foot part is achieved.

This method possesses the following advantages:

1. It creates a simultaneous correction of hallux valgus deformation as well as of the flattened transversal arch.
2. Pathological action on the 1st foot ray of m. tibialis posterior is eliminated but its force combined with that of m. extensor digitorum longus is used in order to support dynamically the transversal arch of the foot.

3. Lifting of the 2nd metatarsal head corrects subluxation or luxation of the 2nd metatarsophalangeal joint and sets up toe-mallet straight.

4. A solid and short ligament is created by the tendon of the m. extensor between the 1st and 2nd metatarsal head, and insertion to it of m. adductor hallucis extends actively and thus puts both bones close to each other.

5. Flexor-extensor balance of the foot and hallux is not disturbed. First metatarsal bone integrity is not damaged, too. Varus deformity of the 1st metatarsal bone and hallux valgus is corrected. Geometrical shortening of the 1st metatarsal ray is also corrected. Then it takes up its function of greatest loading of the anterior foot part. The width of this part reduces to the normal one.

REFERENCES


НОВЫЙ ОПЕРАТИВНЫЙ МЕТОД КОРРЕКЦИИ КРИВОГО ПАЛЬЦА В СОЧЕТАНИИ С ПЛОСКОСТОПИЕМ ПОПЕРЕЧНОГО СВОДА

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РЕЗЮМЕ

В работе представлен новый оперативный метод одновременной коррекции кривого пальца в сочетании с плоскостопием поперечного свода и молоткообразным пальцем. Оперативный метод состоит в том, что поднимается вторая пястная головка сухожилия длинной разгибательной мышцы пальца и передней большеберцовой мышцы. Делается разрез суставной сумки первого клиновидного и первого плюсневого суставов, а также разрез остеохондроза первой плюсневой головки, приближается первая плюсневая к второй плюсневой кости и прикрепляется экстензорным сухожилием, проходящим через каналы пястных головок. Сухожилие отводящей палец ноги мышцы перерезывается от проксимальной фаланги и пришивается к сухожильной связке, находящейся между первой и второй пястными костями.

Этот оперативный метод был применен при лечении 9 больных. Было получено очень хорошее функциональное и косметическое восстанавливающее стопы.