Is there a role for lengthening flexor hallucis and flexor digitorum longus tendons in surgery for club foot?

A PRELIMINARY REPORT

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Most cases of club foot (congenital talipes equinovarus) respond to non-operative treatment but resistant cases may need surgery. It is broadly accepted that lengthening of tendo Achillis, the tendon of tibialis posterior and capsulotomy of the ankle and subtalar joints are necessary during surgical release, but there is no consensus as to whether lengthening of the tendons of flexor hallucis longus and flexor digitorum longus is required.

We randomised 13 children with severe bilateral club foot deformities to undergo lengthening of the flexor hallucis longus and flexor digitorum longus tendons on one side and simple decompression on the other. We found no difference in the deformities of the toes between the lengthened and non-lengthened sides at a mean follow-up of four years (2 to 6).

We conclude that routine lengthening of the tendons of flexor hallucis longus and flexor digitorum longus during soft-tissue surgery for resistant club foot is not necessary.

Surgical treatment is recommended in resistant cases of congenital talipes equinovarus, in which non-operative stretching and serial casting has failed to correct the deformity. The type of surgery can vary with the severity of the deformity from complete circumferential soft-tissue release, as recommended by McKay and Simons, to the a la carte concept described by Bensahel et al. Laaveg and Ponseti stated that extensive surgical release may lead to a decreased range of movement in the foot and ankle which compromises the functional result. Scarring of the Z-lengthened tendons of flexor hallucis longus (FHL) and flexor digitorum longus (FDL) is a common finding after surgery for club foot. A fractional lengthening method has been described to reduce this complication. However, there is no consensus in the literature regarding the role of lengthening of FHL and FDL. We report the results of a prospective randomised trial which compared lengthening with release without lengthening of the tendons of FHL and FDL in children with bilateral club feet.

We randomised 13 consecutive children with bilateral resistant congenital talipes equinovarus (11 idiopathic and two syndromic) to undergo lengthening of FHL and FDL on one side while the other side was used as a control. The severity of the deformity was graded using the Pirani score (5.5 in six children and 6 in seven children). All feet were grade III according to the classification of Harrold and Walker. Their mean age at surgery was ten months (9 to 12). There were five right and eight left feet.

We carried out a complete soft-tissue release through the Cincinnati incision. The procedure was exactly the same on each side except that on one, chosen at random on the day of surgery, FHL and FDL were lengthened and on the other they were decompressed but not lengthened. All procedures were carried out by the senior surgeon (OL) and the post-operative management was identical in each. The children were evaluated post-operatively either by a trainee surgeon or a senior physiotherapist. The assessors were blinded as to which procedure had been carried out. Independent assessment was usually at six months after surgery. The mean follow-up was for four years (2 to 6).

Results

There were no flexion deformities of the toes on the side in which FHL and FDL had been simply decompressed and not lengthened at final follow-up. The club-foot deformity occurred bilaterally in the hindfoot in three patients (one idiopathic and two syndromic) irrespective of how FHL and FDL had been treated.

Patients and Methods


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Discussion
Congenital talipes equinovarus remains an interesting and challenging problem. Wider use of the Ponseti technique has improved the outcome of non-operative treatment, but surgical treatment may be necessary in resistant or recurrent deformity. Soft-tissue release through the Cincinnati skin incision remains an excellent option. However, it is not clear whether release of the flexor tendons is necessary. It is well known that Z-plasty of the tendons of FHL and FDL can result in troublesome scarring which may compromise further revision surgery. Such lengthening also adds to the complexity of surgical release. In order to reduce this scarring fractional lengthening has been advocated. However, the results of posterolateral release in which the flexor tendons were not lengthened did not show any residual flexion deformity of the toes, suggesting that lengthening of the flexor tendons may not be necessary.

During surgery we noticed that the toes on the side on which the tendons of FHL and FDL had been simply decompressed showed a flexion deformity which did not compromise full correction of the foot. No flexion deformity of the toes was seen on the other side in which the tendons had been lengthened. Flexion of the toes started to improve spontaneously within the first three months after surgery. Six months after surgery there was no noticeable difference between the two sides. On further follow-up, at a mean of four years after surgery, the toes remained well aligned on both sides (Fig. 1).

Deformity of the hindfoot recurred bilaterally in three patients (two syndromic and one idiopathic) irrespective of whether tendon lengthening or simply decompression of FHL and FDL had been performed. We would therefore suggest that the tendons of FHL and FDL may be simply decompressed and not formally lengthened during surgery for resistant club foot.

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References