

Artificial syndactylisation for congenital crossed toes

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Summary—Congenital crossed toe is a common deformity which frequently causes disability. The fifth toe is affected and over-rides the fourth toe. Correction is carried out to relieve pain caused by pressure and to improve appearance. Methods of correction range from conservative manipulation and splintage to radical amputation. The method of syndactylisation is a plastic procedure which is simple, safe and reliable.

Congenital crossed toe is a familial deformity in which the dorsally adducted fifth toe over-rides the fourth toe and causes disability in half the affected patients (Cockin, 1968). The fifth toe has an extended, adducted deformity at the metatarso-phalangeal joint with tightness in the extensor digitorum longus tendon and dorsal contracture of the capsule of the metatarso-phalangeal joint. There is no underlying deformity of the bones. Many methods of treatment have been described ranging from manipulation and splintage, which is time-consuming and ineffective, to amputation which is often unacceptable to the patient who is attached to his toes! Whilst the condition is most often seen by orthopaedic surgeons, it is increasingly being referred to plastic surgery clinics.

The first patient seen was an 8-year-old boy with an over-riding fifth toe of his right foot which had recently begun to be painful especially when wearing shoes (Fig. 1). An attempt was made to correct the deformity by release of the contracture of the fourth web space with a Z-plasty and lengthening of the extensor digitorum longus of the fifth toe. Although the initial result was satisfactory, the deformity recurred within 6 months. A second operation was then undertaken with division of the extensor digitorum longus tendon distally and reattachment to the lateral side of the flexor tendon on the plantar surface (Lapidus, 1942) along with release of the tightness in the dorsal capsule of the metatarso-phalangeal joint. Postoperatively correction was reasonable but short-lived, with recurrence of the deformity within 6 months.

At this time an 11-year-old girl was referred who had had syndactylisation of her fourth and fifth toes carried out as a 3-year-old and who now wanted them separated for cosmetic reasons. This was done

with an excellent cosmetic and functional result and no recurrence of the crossed toe. It was therefore decided to syndactylise the first patient's fourth and fifth toes and an equally good result was obtained, with no recurrence (Fig. 2). The method has subsequently been used with success in four further cases.

Operation

Essentially the operation consists of the reverse of a release of syndactyly of the hand with dorsal and plantar skin flaps to obliterate the web space. A Z-plasty of the dorsal skin overlying the extensor tendon is incorporated together with Z-lengthening of the tendon. The skin incision markings are shown in Fig. 3. A dorsally based flap is raised from the outer aspect of the fourth toe and a similar plantar based flap from the inner side of the fifth toe. It is not necessary to extend the incisions more distal than the middle phalanx and this gives a natural looking appearance to the toes after they are sutured together (Fig. 4). Postoperatively no splintage is required. The patient is mobilised early, walking on the heel without a shoe for 10 days, after which normal footwear is allowed.

Discussion

In contrast to syndactyly of fingers, congenital syndactyly of toes is never known to cause any disability in later life (Kelikian *et al.*, 1961). The operation of artificially syndactylising toes for the correction of painful or disabled crossed toes was first described by McFarland in 1950, who claimed reliable and satisfactory results in his long experi-



Fig. 1

Figure 1—Crossed toe deformity



Fig. 2

Figure 2—Appearance of same patient 2 years after correction.

ence with this operation. The particular advantages of the operation are its simplicity and safety with regard to the circulation of the toe. The cosmetic appearance is good and if reversal is requested later, as seen in one of our patients, it can be easily undertaken with little danger of recurrence of the crossed toe. In contrast to the many other procedures described for this condition, syndactylisation avoids the necessity of external postoperative splints; in fact, the operation itself acts as a permanent, internal splint for the toes. Satisfactory results with similar procedures are also described by Scrase (1954), Kelikian *et al* (1961) and Leonard and Rising (1965).

The original operation as described by McFarland included, in addition to syndactylisation, excision of the base of the proximal phalanx of the fifth toe, but this is not advised as the bones appear normal radiologically. However, lengthening the

extensor digitorum longus tendon by Z-plasty is required. The conservative management of manipulation and splintage may look simple, but is time-consuming and hardly ever gives satisfactory permanent results.

Of the various other surgical procedures described in the literature, probably the most widely practised is a V-Y plasty of the dorsal skin, but a significant number so treated recur (Scrase, 1954). The operations described by Lapidus (1942) and Colonna (1950) involve extensive dissection of the toe and need prolonged immobilisation using external splints. Similar extensive dissection is required in Butler's procedure and Cockin (1968), describing his experience with this operation, warns about the possibility of producing traction on the vessels of the toe, which is also a real danger in the Lapidus operation. Disarticulation of the fifth toe is mentioned only to be discouraged as it is highly

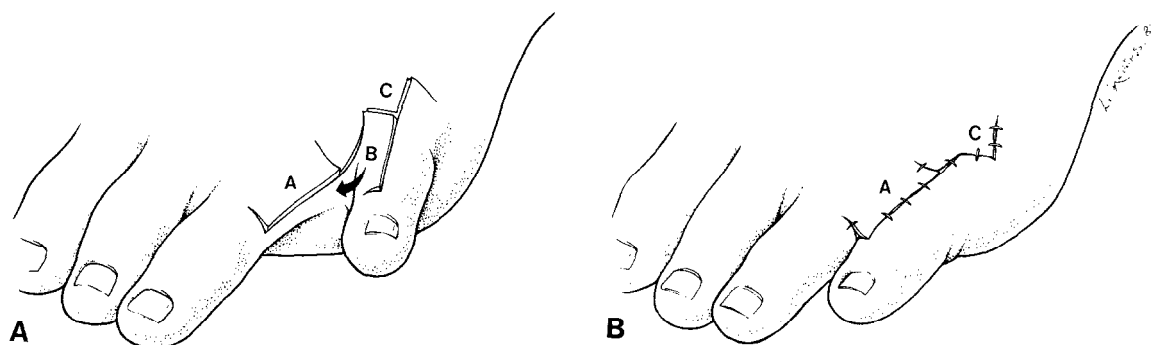


Fig. 3

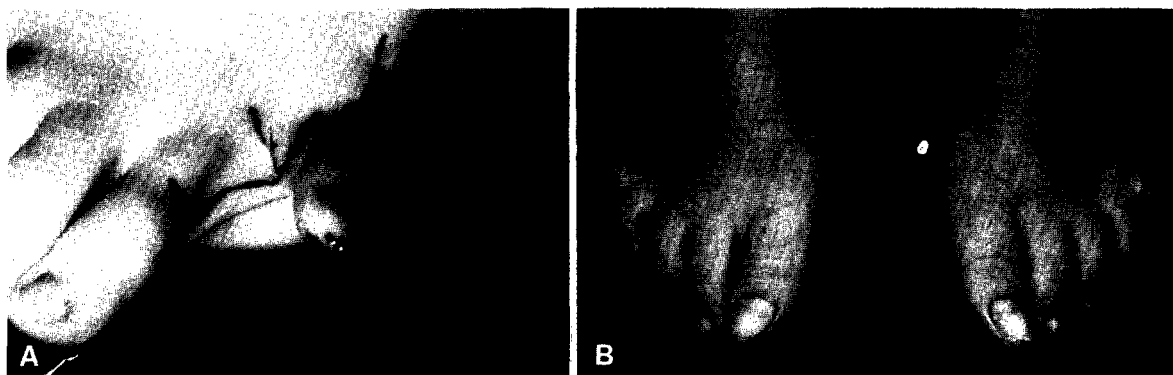


Fig. 4

Figure 3—Diagram of (A) preoperative markings (B) after transposition of flaps. A=Dorsal flap, B=Plantar flap, C=Z-plasty over tendon. Figure 4 (A) Preoperative appearance with flaps marked. (B) Appearance 10 days after operation.

unacceptable and the postoperative deformity of painful step-like prominence of the fifth metatarsal head will be more disabling than the original deformity of crossed toes.

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