PROXIMAL TIBIO-FIBULAR SYNOSTOSIS A RARE CONGENITAL ANOMALY

by K. J. O'DWYER

A case of proximal tibiofibular synostosis is presented along with a review of the literature. The variety of presenting complaints is discussed and the syndrome is compared with that of radio-ulnar synostosis. Possible modes of treatment are explained.

Keywords : proximal tibio-fibular synostosis.
Mots-clés : synostose tibio-péronière proximale.

RÉSUMÉ

K. J. O'DWYER. Synostose tibio-péronière proximale.

L'auteur présente le cas d'une synostose tibio-péronière proximale. Il établit un parallèle avec la synostose radio-cubitale. Les symptômes et le traitement sont discutés. Revue de la littérature.

SAMENVATTING

K. J. O'DWYER. Proximale tibio-fibulaire synostose.

De auteur beschrijft een geval van proximale tibiofibulaire synostose. Vergelijking met de radio-ulnaire synostose. De symptomen, evenals de verschillende behandelingsmogelijkheden worden besproken. Literatuuroverzicht.

INTRODUCTION

Although radio-ulnar synostosis is not an uncommon anomaly in the upper limb, its counterpart in the lower limb, proximal tibiofibular synostosis, is exceedingly rare. The rarity of the condition and the different modes of presentation justify this present account.

CASE REPORT

A 6-year-old girl presented to the outpatient department with a 3-year history of an enlarging lump on the lateral aspect of her right knee. Her mother had noted the swelling at the age of 3 years and consulted her general practitioner. An X-ray (fig. 1) of both knees was reported as showing no evidence of a bony growth, e.g. a chondroma, although the right fibular epiphysis was noted to be abnormal in location. No further action was taken at that stage. Recently the mother had noticed an apparent increase in size of the lump and requested an orthopedic opinion. There was no history of trauma. Pregnancy was normal and uneventful, as was delivery. Milestones were reached at the appropriate ages. There was no significant family history. Apart from the cosmetic deformity, the child herself had no complaints and undertook all normal activities.
Examination of the child was normal apart from a prominent fibular head. There was no evidence of any neurological defect, leg lengths were equal, and there was no valgus or varus deformity of the knee. Both knee and ankle joints revealed a

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full range of pain-free movement when compared to the normal side. X-rays showed a complete synostosis of the proximal tibial and fibular metaphysis (fig. 2). No treatment was considered necessary at present for this cosmetic problem. The child and her parents were both reassured.

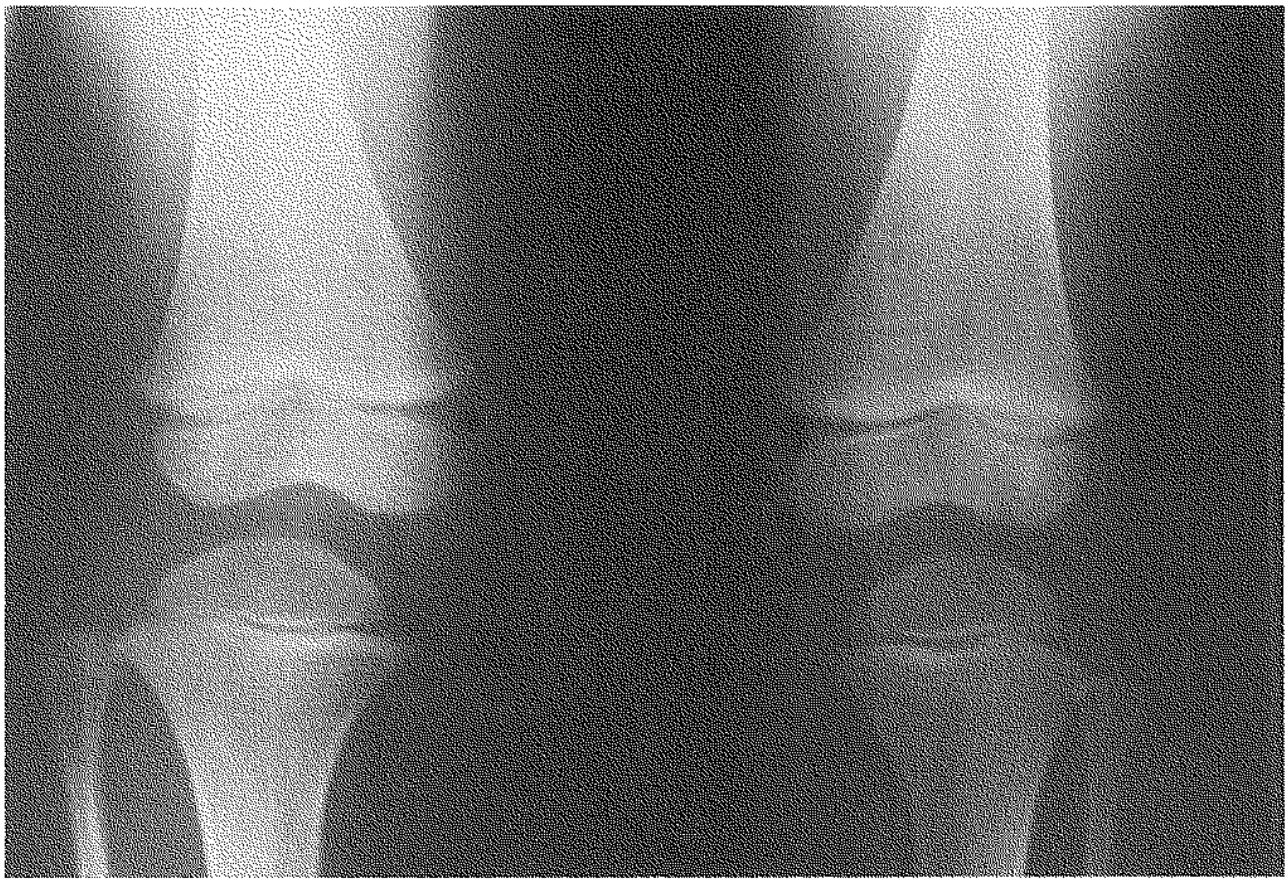

Fig. 1. — A.P. radiographs of both knees at age 3 years.

DISCUSSION

Reports of synostosis of the proximal tibiofibular joint are exceedingly rare. To date there have only been 6 previously recorded cases in the literature (1, 4, 7, 13, 15).

Surgical arthrodesis of the proximal tibiofibular joint for symptomatic subluxation has been recorded. These patients subsequently developed pain, discomfort and instability of the ankle, while those undergoing resection of the fibular head remained asymptomatic (10). Normal ankle joint function thus requires a mobile proximal tibiofibular joint. Gamble (4) reports a patient who presented at the age of 13 years with ankle symptoms for this reason.

Congenital synostosis may occur at several sites in the body, either as a single entity, e.g. radio-ulnar synostosis, or together with other deformities, e.g. Nievergelt-Pearlman syndrome (2). Congenital tarsal coalition or peroneal spastic flat foot, is probably the commonest of these conditions but occur in less than 1% of the population (8). Carpal coalitions have also been reported (12). Cases of radio-ulnar synostosis are reported in reasonable numbers in the literature, with a series of 37 cases described by Hanson and Anderson (5).

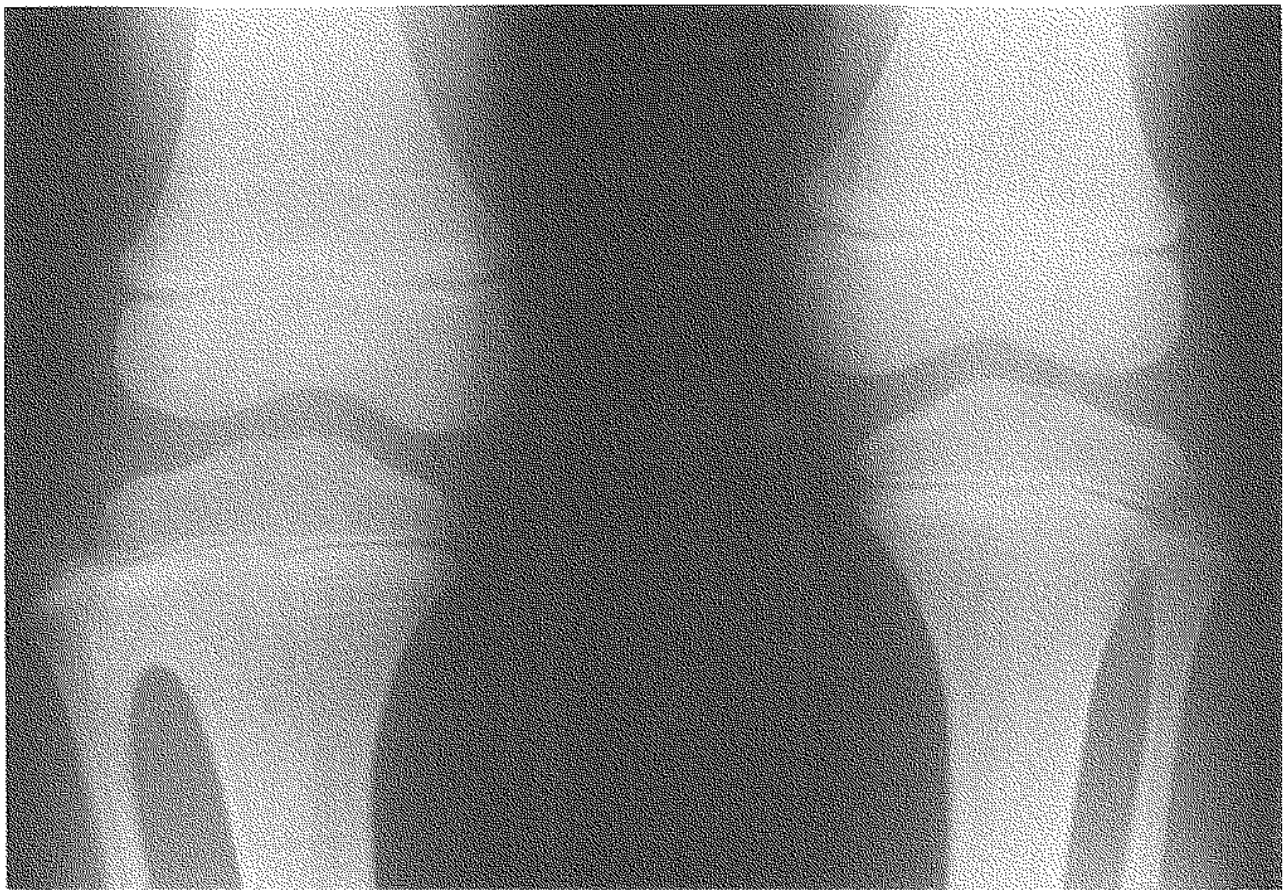

Fig. 2. — A.P. radiographs of both knees at age 6 years.

Inheritance of these conditions appears in general to be autosomal dominant with variable penetrance (8, 9). The rarity of proximal tibiofibular synostosis implies that this is not an inherited disorder but instead appears sporadically.

Trauma can cause synostosis between the tibia and fibula, either with (3) or without (6) a fracture of the tibia. It is rare however that sufficient trauma is sustained by children to cause a synostosis (11). Treatment consists of resection of the bony bridge following maturation of the callus (3), rather similar to the surgical ablation in myositis ossificans. In both cases described by Wong and Weiner (15), there was a history of trauma to the area.

Post mortem findings quoted in Hanson and Anderson's paper (5) have shown that proximal radio-ulnar synostosis is not simply a bony bridge between radius and ulna. Many soft tissue abnormalities are also present, and X-ray appearances thus oversimplify the condition. Surgical correction of the congenital variety is therefore difficult, whereas in post-traumatic cases the synostosis alone is the major problem and surgical treatment is successful.

Solomon has shown that proximal tibiofibular synostosis may occur in diaphyseal aclasis (14). The deformity present in legs with this condition is one of valgus and shortening. Both of these abnormalities have been reported as presenting complaints in proximal tibiofibular synostosis (1, 13, 15). It is possible that the associated soft tissue abnormalities affect fibular growth which then leads to these deformities. Hanson and

Anderson (5) stated that in unilateral cases of radio-ulnar synostosis, the affected forearm was shorter and thinner than its normal counterpart. If this is a similar condition, leg shortening might be expected.

Three types appear radiologically. The first has a straight fibula with synostosis occurring proximally (15). Trauma appears to be the cause in such cases. Type 2 (4) has a fibula of normal length with mild bowing and widening of the interosseous distance in the proximal half only, as is seen in our case and that of Gamble (4). In the third type, marked bowing of the fibula occurs throughout its length, with an increased interosseous distance occurring well into the distal half and synostosis occurring at a more distal level than in type 2 (1, 7, 13). These three types are illustrated diagrammatically in Fig. 3.

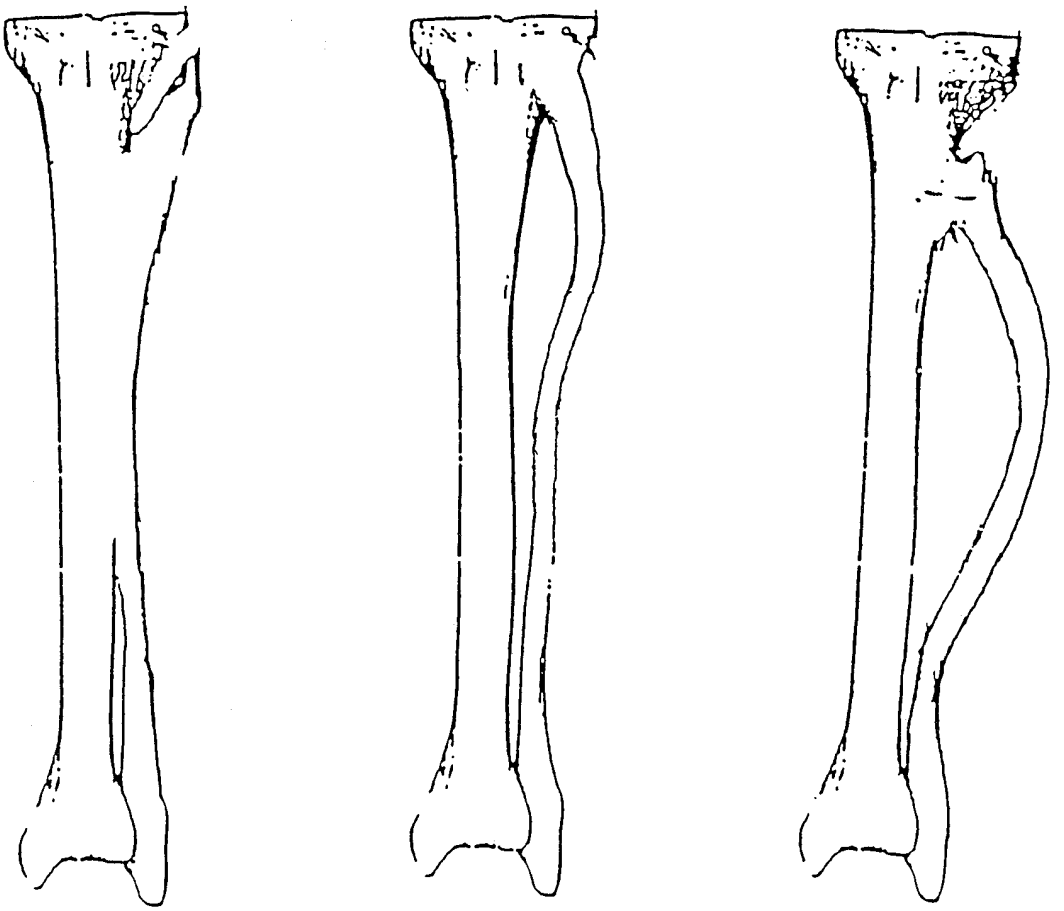

Fig. 3. — Diagrammatic illustration of the three types of proximal synostosis reported in the literature.

Treatment of the condition is difficult. In post-traumatic cases, excision of the synostosis is successful in both the forearm (16) and leg (3). Attempts at bony resection in congenital radio-ulnar synostosis have so far failed because of the multitude of deformities present (10). In the lower limb, gross movement of bones does not occur, and therefore limitation of function is less. Deformities should be corrected by osteotomy or leg lengthening when necessary. Excision of the proximal fibula including the area of synostosis should give a good functional and cosmetic result. There

has been little success in treating congenital radioulnar synostosis by free fat grafts interposed between the bones, so this suggestion by Gamble (4) is unlikely to succeed in the lower limb.

CONCLUSION

The rarity of this condition makes it unlikely that it is an inherited disorder. Treatment should consist of either fibular head excision or osteotomies to correct the deformity.

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