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CONGENITAL BILATERAL SYNOSTEOSIS OF THE CALCANEUS AND CUBOID AND OF THE TRIQUETRAL AND HAMATE BONES

Report of a Case

By

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Variations in the number of carpal and tarsal bones are not rare. An increase in the number (accessory bones) is more common than a decrease; the latter anomaly is due to fusion of two or more osseous elements and may be either unilateral or bilateral.

Congenital fusions of carpal and tarsal bones have been observed in almost every possible combination. A case of congenital bilateral synosteosis of the calcaneus and cuboid and of the triquetral and hamate bones is reported below.

In *the tarsus,* osseous union to a varying extent occurs principally between the calcaneous and navicular, while talocalcaneal or—as in our patient—cuboidocalcaneal fusions are less frequent.

Author, year	Type of synosteosis
Bargellini, 1928	Unilateral (?); changes in the talus and calcaneus.
Wagoner, 1928	Bilateral.
Rey, 1932	Unilateral; associated with bilateral cleft hand.
Esau, 1932	Unilateral (?); one case.
Mestern, 1934	Familial occurrence of os tibiale externum associated with carpal and tarsal synosteoses. Two patients exhibited cuboidocalcaneal fusion associated with other osseous anomalies.

Congenital synosteosis of the calcaneous and cuboid had previously been reported by various authors as shown in the accompanying table.

In our patient, supplementary roentgen examination of *the carpal bones* revealed bilateral synosteosis of the triquetral and hamate bones, a rare anomaly previously described by *Mestern* in two members of the above-mentioned family with extensive congenital fusions of carpal and tarsal bones. Five cases collected from the literature were mentioned by *Meves*. The most common type of congenital carpal synosteosis is lunatotriquetral fusion (*Arens, Lönnerblad*).

CASE REPORT

The patient was an unmarried woman (Aalborg Orthopaedic Out-Patient Clinic, No. N. 14790), aged 42, who lived on her parents' farm, where she used to help. There was no history of inflammation of the joints of the feet.

She applied to the clinic for hand-sewn footwear because of a congenital bilateral deformity of the foot. Her feet had always been relatively small with restricted mobility of the joints. She had previously used ordinary footwear, which had caused great discomfort.

Physical examination revealed a normally nourished female of dull intelligence. Her hearing was considerably impaired (she wore a hearing aid). The feet were very short and narrow, both measuring 21 cm in length (from the posterior point of the calcaneus to the tip of the great toe) and 7.5 cm in width (at the transverse arch). The mobility of the talocrural joint was 90–110° on both sides, but the subtalar mobility of both feet was greatly restricted. The plantar surfaces of both feet showed large callosities, especially under the transverse arches. The gait was stiff, with absence of the normal "take-off" phase.

Roentgen examination of both feet in two planes showed massive bilateral fusion of the calcaneous and cuboid (figs. 1 a, 1 b and 2). On the right side a small proximal and a distal groove were seen at the junction of the bones. The calcanei were short and plump, the cuboids small. The proximal end of the fifth metatarsal bone was deformed, showing a plump bony process extending proximally below the cuboid to the calcaneus, with which it formed an articulation.

Supplementary roentgen examination of *both carpi* showed bilateral hamatotriquetral fusion (figs. 2 a and 3 b).

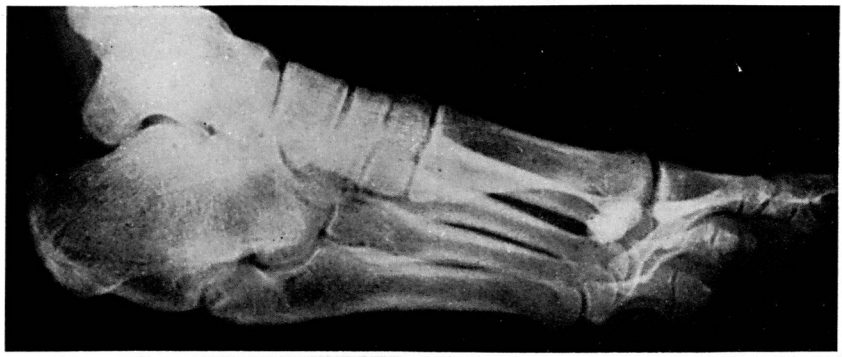

Fig. 1 a.
Lateral view of the right foot.

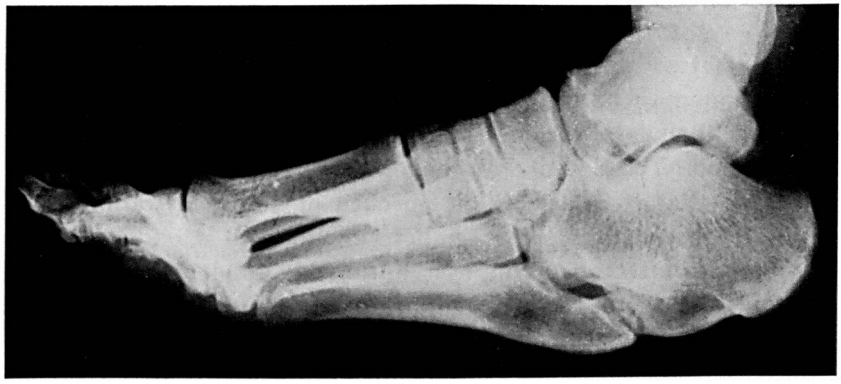

Fig. 1 b.
Lateral view of the left foot.

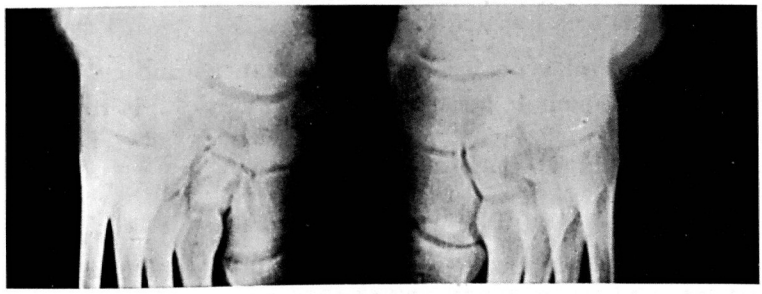

Fig. 2.
Anteroposterior view of both feet.

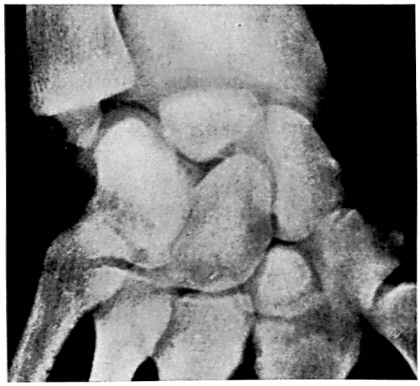

Fig. 3 a.
Right hand.

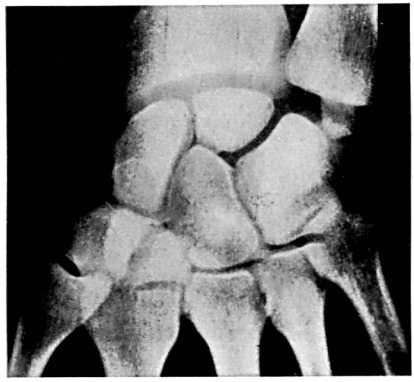

Fig. 3 b.
Left hand.

COMMENTS

Fusion of two or more normally adjacent bones in the carpal or tarsal region may be congenital or secondary to destructive arthropathy. In either case, absence of articular cartilage is a prerequisite for the anomaly. The cause of congenital synosteosis is unknown; it is assumed that it arises as an absence of joint cavitation due to arrested development in early embryonic life and chondrification of the embryonic interzone. This assumption is supported by *O'Rahilly*.

In synosteosis following inflammatory joint disease the articular cartilage is destroyed. In the present case, there had not been any inflammatory disease; the bilaterality of the tarsal fusion and its association with bilateral symmetrical fusion of carpal bones are in favour of the assumption that the anomaly was of congenital origin.

SUMMARY

A case of bilateral synosteosis of the calcaneus and cuboid and of the triquetral and hamate bones in a woman aged 42, is reported.

RESUME

Communication d'un cas de synostose bilatérale entre le calcanéum et le cuboïde, ainsi qu'entre l'os triquetrum et l'os hamatum chez une femme âgée de 42 ans.

ZUSAMMENFASSUNG

Ein Fall von doppelseitiger Synostose zwischen Calcaneus und os cuboideum, sowie zwischen os triquetrum und os hamatum bei einer 42–jährigen Frau wird mitgeteilt.

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