THE OS PARACUNEIFORME

Some Observations on an Example Removed at Operation

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Rare accessory or inconstant bones of the foot are usually regarded by surgeons and radiologists as collectors' pieces, often of little more than academic interest. But from time to time such bones cause symptoms requiring surgical treatment.

The os paracuneiforme, first described by Dwight in 1902, is one of the least common of the accessory bones, and early descriptions of it are rather confused. Although it is always included in lists of accessory bones I have been able to trace only five recorded examples. Most of the descriptions are based on radiographic findings alone.

In 1924 Carlier described a case in which the bone was giving rise to symptoms and had to be removed. In the example now recorded the findings were almost exactly those of Carlier.

CASE REPORT

A man aged twenty-eight years presented himself complaining of pain of three months duration over a small bony swelling on the medial side of his right foot. The swelling had been present for as long as he could remember but had previously been symptomless. It was situated over the dorso-medial aspect of the medial cuneiform and was protected by an overlying bursa.

A small range of lateral movement was present, but it was impossible to produce any movement in the long axis of the foot. Radiographic examination showed a well-formed os paracuneiforme articulating with the medial aspect of the medial cuneiform (Fig. 1). The bone was partly accommodated in a hollow occupying the anterior two-thirds of the cuneiform, but projected beyond the general level of the medial border of the foot. No other abnormality was present. A radiograph of the left foot was normal. At operation, after removal of the small bursa, the bone was found to be partly incorporated in the substance of the tendon of the tibialis anterior and to be articulating with a facet on the medial surface of the medial cuneiform. It was dissected out of the tendon and the projecting postero-medial angle of the cuneiform was removed. The operation caused no disturbance of function except for temporary imbalance of muscle control from interference with the tendon of the tibialis anterior. The symptoms, which were due to pressure, were relieved.

DISCUSSION

Dwight's original description (1902) is of an ossicle lying in a hollow on the medial side of the foot between the navicular and medial cuneiform bones and this description is repeated by Holland (1928), Burman and Lapidus (1931) and Cameron (1923). On the other hand, Carlier's (1924) example, like the one now reported, is described as lying against the middle of the medial surface of the medial cuneiform, with which it articulated.

The present case is of interest from two aspects. First, it is unusual for an accessory bone to cause symptoms requiring surgical intervention, but examples occur from time to
time. A comprehensive account of functional disturbances produced by accessory bones is given by Burman and Lapidus (1931). Secondly, the relationship of the tendon of the tibialis anterior to the bone stimulates speculation whether the os paracleiforme should be regarded as a true accessory bone, as a sesamoid, or perhaps as an example of an ununited traction epiphysis. The distinction between accessory bones, sesamoids and traction epiphyses is not clear cut. Wood Jones (1944) admits that it is no easy matter to define a sesamoid with any precision, and states that what is a free ossicle in a tendon in one animal may be a fixed skeletal element in another. Parsons (1904) drew attention to the fact that there is a similarity between the behaviour of traction epiphyses and sesamoid bodies and that the two structures occasionally change from one to the other. Similarly it may not always be possible to draw a rigid distinction between accessory bones and sesamoids.

In describing the specimen in which he found the paracleiforme Dwight (1902) stated: "At least a large part of this bone must have been under the tendon of the tibialis anterior," but this was speculation, not observation. Carlier's description is from the findings at operation, his actual words being: "Le tendon du jambier antérieur se passait sur son bord externe." In the present example the bone was almost completely incorporated in the tendon. This is in favour of regarding it as a sesamoid, and according to Gray's Anatomy one does occasionally appear late in life in the tendon of the tibialis anterior at this situation. But Parsons (1908) states: "When a sesamoid in a tendon is caused by the pressure of a bone into which the tendon is on its way to be attached, without the intervention of a fleshy belly, it fuses with that bone and a traction epiphysis results. When, on the other hand, the tendon is on its way to be attached to another bone, the sesamoid remains in that condition."

According to this conception, and in so far as the tibialis anterior is inserted into the base of the first metatarsal, the paracleiforme may be regarded as a sesamoid resulting from pressure of the tendon against the medial cuneiform. But at least half of it is inserted into the medial cuneiform, the bone against which the tendon and ossicle are playing. According to Parsons this would be in favour of classifying the paracleiforme as a traction epiphysis which had failed to unite. In support of this view the following suggestion is made as to the possible mode of development of the bone.

Since examination of the radiograph shows that it is not of traumatic or pathological origin its presence must be explained in terms of an anomaly of ossification. Normally the medial cuneiform is ossified from a single centre, but ossification of the prominent medial part of the bone from a secondary centre (analogous to the occasional secondary centre for the tuberosity of the navicular) is a possibility. Such a centre, lying in close relation to the tendon of the tibialis anterior, might fuse with the main part of the bone, giving rise to a true traction epiphysis; or, remaining separate, to an ossicle which might be regarded as a sesamoid body or an ununited traction epiphysis.

REFERENCES


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