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Case report

Case report: Fibrous dysplasia of the navicular bone treated with excision of navicular and talo-cuneiform arthrodesis

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ABSTRACT

Fibrous dysplasia is an uncommon beningn disorder of bone. It usually affects the long bones, and is uncommon in the navicular. We describe a case of fibrous dysplasia of the navicular successfully treated with navicular excision and talo-cuneiform arthrodesis.

1. Introduction

Fibrous dysplasia is a benign non-inheritable disorder of the bone that develops during skeletal formation and growth. It starts as an expanding fibro osseous lesion replacing the cancellous bone. The lesions are characterised by woven ossified tissue originating in the medullary cavity, which cause the mechanical quality of bones to be decreased and put patients at risk of fracture. This abnormality may affect a single bone (monostotic) or multiple bones (polystotic), with the majority being monostotic. The monostotic form is six times as common as the polyostotic form and tends to manifest later in life [1].

Fibrous dysplasia usually affects the long bones with the majority found in femur, tibia, ribs and facial bones [2]. The risk of malignancy is low (0.4 to 4%) but more common in the polyostotic form [3].

Pain is the main presenting feature of fibrous dysplasia, the origin of which may be mechanical in nature, secondary to pathological fracture, due to development of deformity, intra-articular involvement or less commonly malignant transformation.

When growth stabilisation or symptom reduction is needed in fibrous dysplasia, biphosphonates have been used for medical management. These drugs can reduce associated pain by decreasing osteoclastic activity and lesion progression. Sometimes braces are used to prevent fracture but they tend not to prevent deformity.

Indications for surgery in fibrous dysplasia include failure of conservative management, pathological fractures, progressive deformity and malignant transformation [4,5].

Involvement of navicular bone in fibrous dysplasia of the foot is extremely rare. We report a case of recurrent fibrous dysplasia of the navicular treated with excision of the navicular and talo-cuneiform arthrodesis. We believe this procedure has not previously been reported in the literature as a treatment for fibrous dysplasia of the navicular.

2. Case report

A 19-year-old girl presented to the foot and ankle clinic at our institution with mechanical pain localised to her midfoot, associated with a history of a progressive cavus deformity. Aged 13, the girl had previously undergone curettage and biopsy of a lytic area within her left navicular. The histology confirmed the diagnosis of fibrous dysplasia. Following this she had made an uneventful recovery and was largely asymptomatic until recent development of a cavus deformity and midfoot pain, which was localised over the navicular. Her medical history was otherwise unremarkable.

The patient was noted to have a fixed cavus deformity with a neutral hindfoot. There was a restriction to the terminal 10 degrees of ankle dorsiflexion due to a tight gastrocnemius. It was also noted that there was a painful restriction of the movements at the mid-tarsal joint was associated with a bony swelling of the midfoot; both dorsally and medially.

Plain radiographs were performed and demonstrated a grossly deformed and expanded navicular. There was significant flattening

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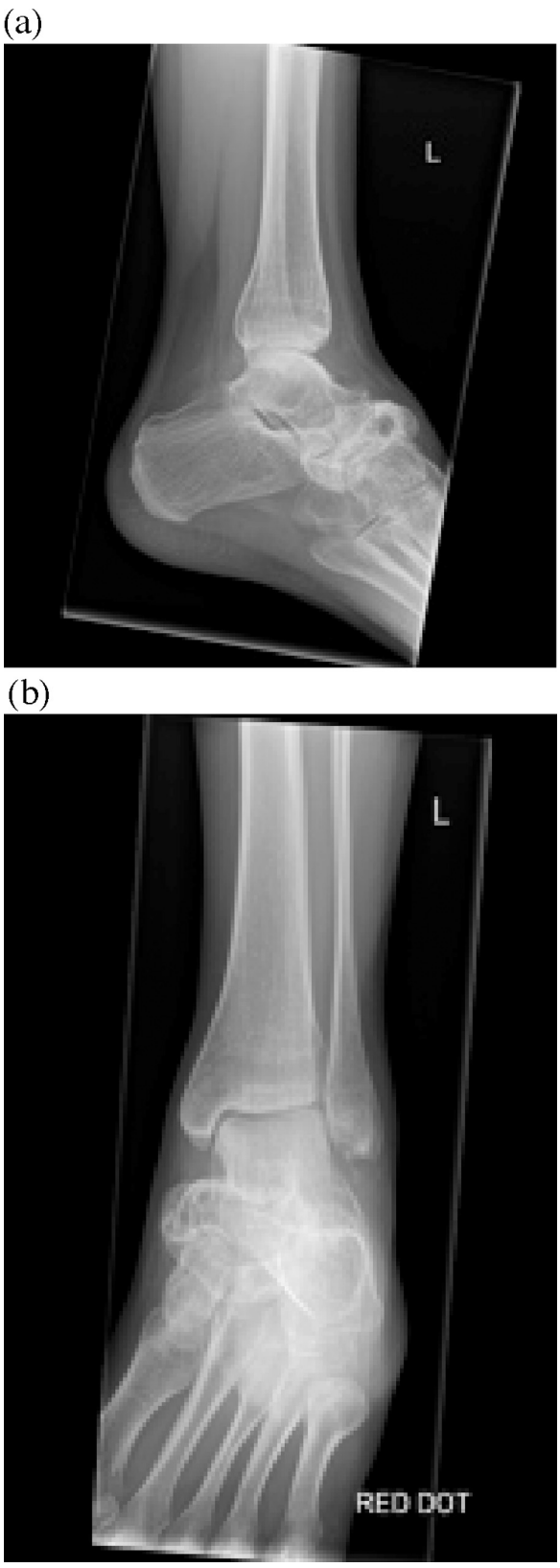

Fig. 1. (a) Plain film lateral view. (b) Plain film AP view.

of the middle portion of the bone resulting in a decreased gap between the talus and the cuneiform resulting in a midfoot cavovarus deformity. The plain radiographs are shown in Fig. 1. Following this both MR and CT were performed confirming the

Fig. 2. T1 Weighted MRI.

aforementioned abnormalities, shown in Figs. 2 and 3. All the imaging was discussed at the MSK Radiology Conference and it was felt that the appearances were consistent with either residual/recurrent fibrous dysplasia with significant distortion of the navicular and adjacent midfoot joints. There was no evidence of a malignant process from the radiological investigations performed.

Due to the severity of the deformity a consultant foot and ankle surgeon in conjunction with a consultant orthopaedic oncology surgeon performed the operative procedure. With the significant distortion of the tarsal navicular, salvage was inappropriate and the decision taken to excise the navicular.

The procedure was performed under a general anaesthetic in conjunction with a popliteal block. A dorsal incision was used to provide access to the talo-navicular joint. The whole of the tarsal navicular bone was found to be pathological and was associated with degenerative changes within the talo-navicular joint.

As the whole navicular was involved and grossly distorted it was not reconstructable and therefore excised. The defect that was created was filled using a femoral head allograft shaped to the required size and thickness. The talo-allograft–cuneiform fusion was performed following denuding the respective joint surfaces of articular cartilage. An ALPS midfoot fusion plate was used in conjunction with memory staples. A gastrocnemius release was performed at the musculotendinous junction to correct the restricted dorsiflexion.

Post-operatively the patient was immobilised in a lightweight plaster cast with a strict non-weight bearing status. The cast was removed at 8 weeks and the patient gradually mobilised in a walker boot. Physiotherapy was supplied for calf stretching exercises and the surgical wound healed uneventfully. The fusion progressed to sound radiological (Fig. 4) and clinical union at 4 months.