Full title

Protuberant heterotopic ossification following distal biceps tendon repair

Short title

Heterotopic ossification after distal biceps repair

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Introduction

A rupture of the distal biceps tendon is a rare occurrence, contributing to around 3% of all biceps tendon ruptures.¹ The treatment standard is early surgical reattachment of the tendon with or without using a fixation device such as a cortical button, bone anchor or interference screw. The formation of heterotopic ossification (HO) has predominantly been reported in the setting of two-incision techniques, with an incidence rate of up to 7%.^{2,3} Significantly lower rates have been observed after single incision techniques.^{2,3}

We report a case of significant and impressive HO along the length of the tendon after a single-incision distal biceps tendon repair, leading to decreased range of movement (ROM), pain and parathesia.

Case report

A 55-year-old man presented with a palpable mass on the left proximal radius, accompanied by several months of pain on heavy lifting and elbow flexion, as well as parathesia and numbness over the lateral forearm. He had a history of left distal biceps rupture as a result of a fall and subsequently underwent a distal biceps tendon repair with a cortical button and interference screw (Arthrex, Naples, FL, USA). After a few months the patient noticed the development of a lump at the location of the surgical scar. On examination some twelve months' post-operative, the lump was of a bony consistency at the level of the distal biceps repair. The parathesia and numbness were deemed to be in the lateral cutaneous nerve of the forearm distribution. The patient had also developed limitations in supination to 45° and pronation to 80°. Subsequent series of X-rays showed a mature heterotopic ossification arising from the bone tunnel in the proximal radius (**FIG 1a**) which was even better visualised on CT scan (**FIG 2**).

The patient underwent an osteectomy to remove the left radial tuberosity exostosis. The lateral cutaneous nerve of the forearm was identified and protected throughout the course of the surgery. The exostosis was exposed and approximately 15mm was removed, with a small amount of bone

spared as this would compromise the distal biceps tendon repair. Before closure, the wound was thoroughly irrigated and haemostasis was ensured. Manipulation of the elbow elicited supination to 80° and pronation to 80°.

A 12 months follow-up of the patient exhibited 0° of extension of the elbow, 140° of flexion, with 80° pronation and 70°supination. Minimal pain was still noted as well as a degree of paraesthesia, but this was normalised at 6 months' post osteectomy **(Fig 2 B)**.

Discussion

Biceps tendon injuries usually occur as a result of an eccentric force being applied to a flexed elbow, and unlike other tendon injuries, most often result in avulsion at the distal tendinous insertion. In healthy and active patients, it is recommended that the surgical reattachment of the avulsed distal biceps tendon occur immediately. Currently, suspensory fixation devices are often being used to repair such tendon ruptures as they can be utilised with a limited anterior approach and offer a secure anatomical fixation through the radial tuberosity.⁴ Furthermore, researchers believe that the use of a single incision approach as oppose to the two-incision technique, leads to a decrease in the incidence of HO cases.^{5, 6, 7}

This report illustrates quite an unusual HO case with decreased ROM in a patient, following a distal biceps tendon repair. Whilst further investigation and understanding is necessary in order to

determine the catalyst for development of such a case, our general knowledge on HO thus far indicates that careful soft tissue handling, wound irrigation in conjunction with the use of NSAIDS and radiation can lead to the decrease in incidence of HO development.

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Fig 1 A and B. Lateral plain X-Rays taken preoperatively (A) and 12 months postoperatively (B) showing the achieved result of the HO resection.

Figure 1.tiff

Figure 2. 3D CT scan of the impressive mushroom-like heterotopic ossification along the tendon insertion at the radial tuberosity (yellow arrow)

Figure 2.tiff

Fig 3 A and B. Twelve months after HO resection the patient had regained significantly improved range of motion on his left (operated) elbow with 80° pronation (A) and 70° supination (B).

Figure 3.tiff

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