REPAIR OF AVULSED INSERTION OF BICEPS

A NEW TECHNIQUE IN FOUR CASES

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We report the use of the Mitek anchor with a limited approach for repair of avulsion of the biceps tendon from the radius in four middle-aged men. All regained a full range of movement with minimal loss of power.

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Avulsion of the biceps brachii tendon is uncommon, but is classically seen in middle-aged men when excessive force is applied to the supinated forearm. Surgical repair has been shown to be better than conservative treatment, but the optimal method of operation is disputed.

The use of a single anterior incision was reported to risk radial nerve damage. This led to the development of a two-incision approach (Boyd and Anderson 1961), but this carries a risk of radio-ulnar synostosis (Failla et al 1990). Another described technique in which the biceps tendon is attached to the brachialis, takes no account of the contribution of biceps to forearm supination (Postacchini and Puddu 1975).

We report four cases in which, by a new technique, the Mitek anchor was used for anatomical repair through a single incision.

PATIENTS AND METHODS

Four men aged 45 to 53 years (mean 48.75) had repair of avulsed biceps tendons using the anterior approach to the radius (Henry 1957).

The site of insertion and the course of the tendon are readily exposed with the forearm fully supinated, and three 2.4 mm drill holes are made through one cortex of the radius close to the bicipital tuberosity. The surrounding area is roughened with an osteotome and three size-2 Mitek anchors each bearing an Ethibond suture are pushed through the cortex (Fig. 1). Within the medullary canal of the bone, the nickel-titanium arc of the anchor regains its shape, preventing withdrawal (Fig. 2). The elbow is then flexed to 90° and the three sutures are woven into the tendon. The tendon is then advanced along the threads on to the bone and the sutures are tied individually. After wound closure a back slab is applied with the elbow in 90° flexion and the forearm in mid-rotation. This is removed after six weeks and physiotherapy is given.

Recovery was assessed at 4 to 10 months (average 7-6) using a CybexII + isokinetic dynamometer (Cybex, Ronkonkoma, New York). Flexion and supination strengths were measured as the average maximal torque.

Fig. 1
Using the introducer to place a Mitek anchor into a drill hole in the radial tuberosity.
in Nm of three repetitions at 60° per second. Endurance was recorded as the average maximal torque of 30 repetitions at 180° per second. The mean of the first 5 torques compared to the last 5 is given as the Endurance Ratio, a percentage decrease indicates fatigue.

RESULTS

All patients regained the full preoperative range of motion. There were no radial nerve injuries and no cases of radio-ulnar synostosis. All the patients were able to return to their former occupations and there have been no reruptures.

The results of the Cybex tests are given in Table 1. There is normally a 5% to 15% difference in Cybex testing between the dominant and non-dominant sides.

DISCUSSION

Case 4 was tested only four months after repair and may not have achieved full recovery. His apparent decrease in fatigue, reflected in the endurance ratio, was due to initial sub optimal effort and increasing confidence with testing.

Our Cybex results after the use of Mitek anchors are comparable with those published for other techniques (Baker and Bierwagen 1985; Agins et al 1988), but the limited exposure and drilling of only one cortex minimise the possibility of producing a radio-ulnar synostosis. The single anterior incision provided excellent exposure. We consider that this technique offers advantages over two-incision methods.

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REFERENCES


