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ORIGINAL ARTICLE

Surgical treatment of distal biceps tendon ruptures with bone anchors using a single anterior approach[☆]



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KEYWORDS

Distal biceps brachii tendon;
Bone anchors;
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Abstract

Purpose: To evaluate the clinical results of reinsertion of the distal biceps tendon with anterior bone anchors.

Materials and methods: A retrospective study was conducted on 79 patients who underwent reinsertion of the distal biceps tendon with anterior bone anchors. The mean age was 46 years (range: 32–64). Two anchors were used in 57% of cases, and one anchor in 43%. The same postoperative protocol was performed in all patients. Functional assessment was made using a Motor evoked potentials (MEPS) functional scale. The mean of follow-up time was 20 months (range: 12–28 months).

Results: The final mean of MEPS score was 95.2 points (SD: 6.8). Almost all (94%) patients had excellent and good results, and 6% a bad result. No differences were observed when comparing functional outcome among patients in whom one anchor was used (96 points) with those in whom two anchors were used (95 points), $P = .5$. The mean time off work was 14 weeks (range: 5–56) and 100% of patients were able to return to work. The incidence of complications was 13%. The most frequent was neuropraxia of the lateral antebrachial cutaneous nerve.

Conclusion: The anatomic re-attachment of the distal biceps tendon with bone anchors using a single anterior approach is a safe technique that offers excellent and good functional results in the medium term.

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PALABRAS CLAVE

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Resumen

Objetivo: Valorar los resultados clínicos de la reinserción del tendón distal del bíceps con anclajes óseos por vía anterior.

Material y métodos: Estudio retrospectivo de 79 pacientes en los que se realizó la reinserción del tendón distal del bíceps con anclajes metálicos óseos por vía anterior. El promedio de edad fue de 46 años (rango, 32-64). En el 57% de los casos se utilizaron dos anclajes y en el 43% un anclaje. Todos los pacientes realizaron el mismo protocolo postoperatorio. Se hizo una valoración funcional con la escala funcional MEPS. El promedio de tiempo de seguimiento fue de 20 meses (rango: 12-28).

Resultados: La puntuación final media de la escala MEPS fue de 95,2 pts (DE 6,8). El 94% de los pacientes tuvieron resultado excelente y bueno y en el 6% el resultado fue aceptable y pobre. No se observaron diferencias al comparar el resultado funcional entre los pacientes en los que se utilizó un anclaje (96 puntos) con aquellos en los que se utilizaron dos anclajes (95 puntos), $p=0,5$. El tiempo promedio de baja laboral fue de 14 semanas (rango, 5-56) pudiendo reincorporarse a su trabajo el 100% de los pacientes. La incidencia de complicaciones fue del 13%, siendo la más frecuente la neuroapraxia del nervio cutáneo antebraquial lateral.

Conclusiones: La reinserción anatómica del tendón distal del bíceps con anclajes óseos por vía anterior única es una técnica segura que ofrece resultados funcionales excelentes y buenos a mediano plazo.

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Introduction

Tears of the distal tendon of the biceps are more frequent among males aged between 30 and 50 years; their incidence has been calculated as approximately 1.2 cases for every 100,000 inhabitants per year.¹

The bicipital tuberosity, where the distal tendon of the biceps is inserted, is located in the proximal portion of the radius and has particular morphological characteristics. The insertion footprint has an approximate length of 22–24mm and a width between 15 and 19mm.² It has been proven that the distal tendon of the biceps has independent insertions for each of its portions. The short head, mainly involved in elbow flexion strength, is inserted distally, while the long head, involved in forearm supination, is inserted into the proximal portion of the bicipital tuberosity. Both portions are inserted in a taper shape in the cubital edge of the tuberosity, with the tendinous fibers interlinking with the periosteal.³

Surgical treatment to repair these lesions offers better functional results than conservative treatment, achieving greater flexion and supination strength.⁴ Different reconstruction techniques have been described. On the one hand there are non-anatomical techniques, which entail a loss of approximately 50% supination strength,⁵ and on the other hand there are anatomical techniques. The latter usually achieve good or excellent results in 90% of cases, better than with non-anatomical techniques, which usually offer less than 60% of satisfactory results.⁶

Various methods for anatomical reinsertion have been described, with a similar rate of success: metallic bone anchoring,^{7,8} Endobutton⁹ and interferential screws.^{10,11}

Reinsertion with bone anchors has shown good biomechanical and clinical results, with most cases using two anchors.^{7,10}

The working hypothesis of this study was that anatomical reinsertion of the distal tendon of the biceps with bone anchors through an anterior approach offers good functional results and a low incidence of complications, with no relationship between the results obtained and the number of anchors used.

The objective of this study is to assess the clinical results of reinsertion of the distal tendon of the biceps with bone anchors through an anterior approach.

Materials and methods

We carried out a retrospective study which included 109 patients admitted with a diagnosis of tear of the distal tendon of the biceps and who were intervened between January 2005 and November 2011. The inclusion criteria were: patients with complete tear of the distal tendon of the biceps who underwent anatomical reinsertion with one or two metallic bone anchors (Corkscrew®, Arthrex) through a single anterior approach and with less than 30 days between diagnosis and surgery. We excluded patients with partial tears or at a muscular level, patients in whom a non-anatomical reconstruction was indicated and patients with a follow-up period under 12 months.

A total of 79 patients, all of them males, fulfilled the inclusion and exclusion criteria. The mean age at the time of diagnosis was 46 years (range: 32–64 years). The affected limb was the right in 52 patients and the left in 27. The dominant limb was affected in 79% of cases. In 70 patients (86.6%)

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