

Distal Biceps Tendon Reattachment Single Incision Using Endobutton Technique – Outcomes at up to 7 Year Follow Up

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Introduction

Distal biceps rupture is a functionally significant injury which primarily affects middle-aged, active males. Conservative management has been shown to result in loss of strength in supination and elbow flexion. Surgical interventions to re-attach the tendon have shown positive functional outcomes, with consensus in the literature that early reattachment yields better results due to a time-dependent risk of tendon retraction.

We developed a rapid diagnosis and treatment protocol in which patients seen in the emergency department with a suspected distal biceps tendon rupture are referred for urgent ultrasound to confirm the diagnosis. They were then offered surgical reattachment on the next available operating list under the care of the senior author.

The aim of this retrospective study is to assess the long-term functional outcomes of this patient cohort.

Method

36 consecutive patients underwent distal biceps repair using the Toggle Loc Soft Tissue™ Fixation device (fig 1-2) over a seven year period. Clinical records were reviewed to assess the time from date of injury to US confirmation of diagnosis, and time from injury to surgery.

Patients were contacted directly at different time periods postoperatively and asked to complete a range of patient reported outcome measures (PROMs): the EQ5D, the Disabilities of the Arm, Shoulder and Hand (DASH) score and the Oxford Elbow score (OES). These assess function and subjective quality of life over one day, the preceding week, and the previous month, respectively. For EQ5D and DASH lower scores represent better overall function with a perfect score in each being 5 and 0 respectively. The OES is scored out of a total of 48, with higher scores representing better function. Patients were also asked whether they were able to return to work after their procedure.



Figure 1. Insertion of the guide pin over the Toggle Loc guide



Figure 2. Image intensifier used to confirm button position

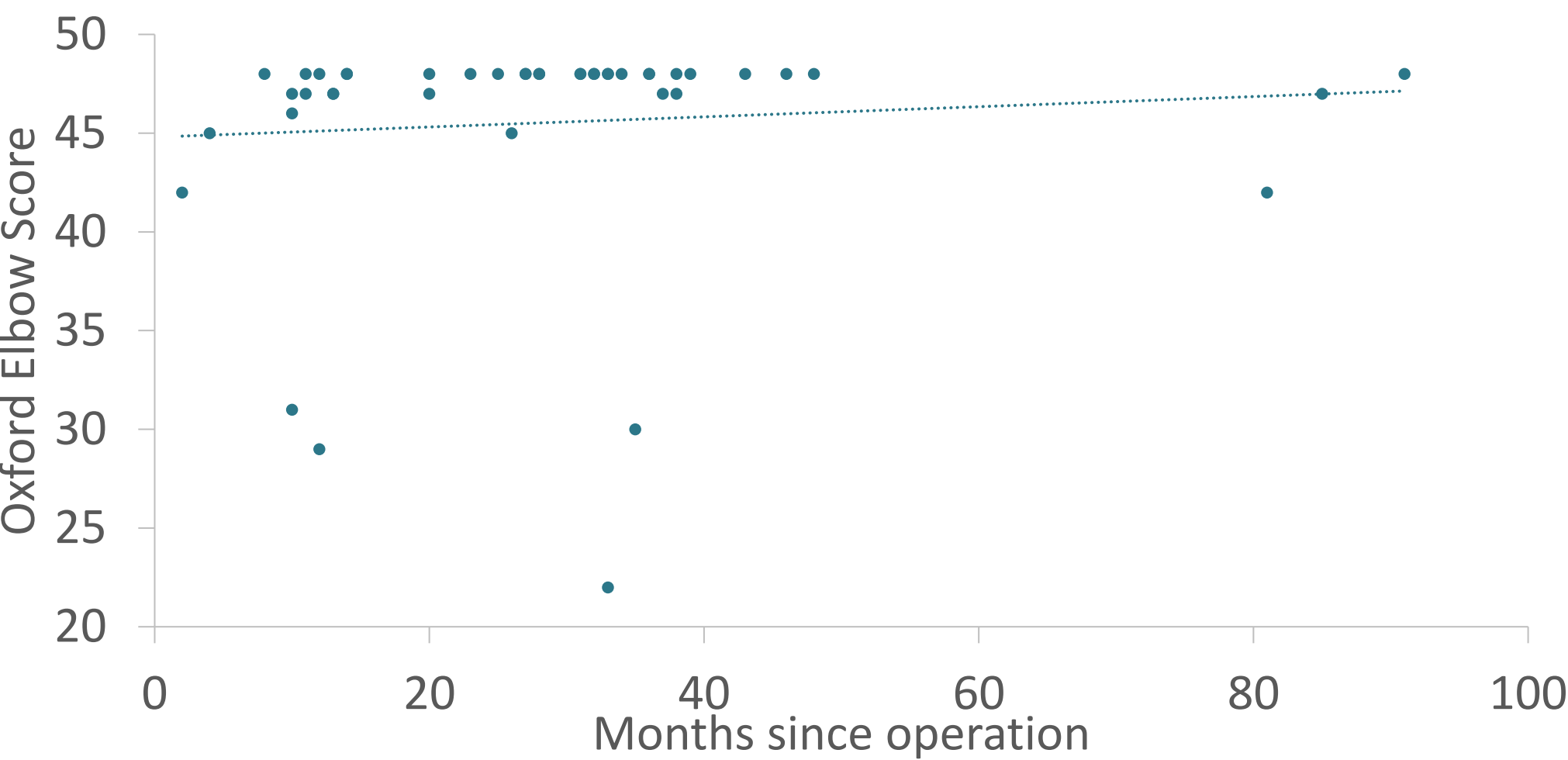


Figure 3. Patient reported Oxford Elbow Scores at different time points postoperatively, with trendline

Results

36 patients who underwent distal biceps repair between May 2017 – March 2024 were contacted. All participants were male, with a mean age of 45 (range 27-62). The median time from date of injury to US was 5.5 days (interquartile range 2-10), and median time from injury to surgery was 13.5 days (interquartile range 8-23) (Fig.4).

Follow up period ranged from 2-91 months (mean 29). Mean EQ5D, DASH and OES scores at follow up were 5.5, 3.3 and 45.5 respectively. Within the DASH score, the most common negative response of participants was subjective weakness in the operated arm, with 12/36 (33%) of respondents reporting some level of weakness. Nevertheless, all patients reported they were happy with the outcome of the procedure, and 100% of those contacted had returned to full employment. Positive responses were maintained up to 7 years postoperatively (demonstrated for OES in Fig.3).

Seven patients reported complications – these included four with episodes of transient postoperative forearm numbness which spontaneously resolved, one patient with loss of FDP function, one short head of biceps rupture 6 months postoperatively, and one patient who developed an infected stitch abscess and had to be taken back to theatre. There were no reported cases of re-rupture.

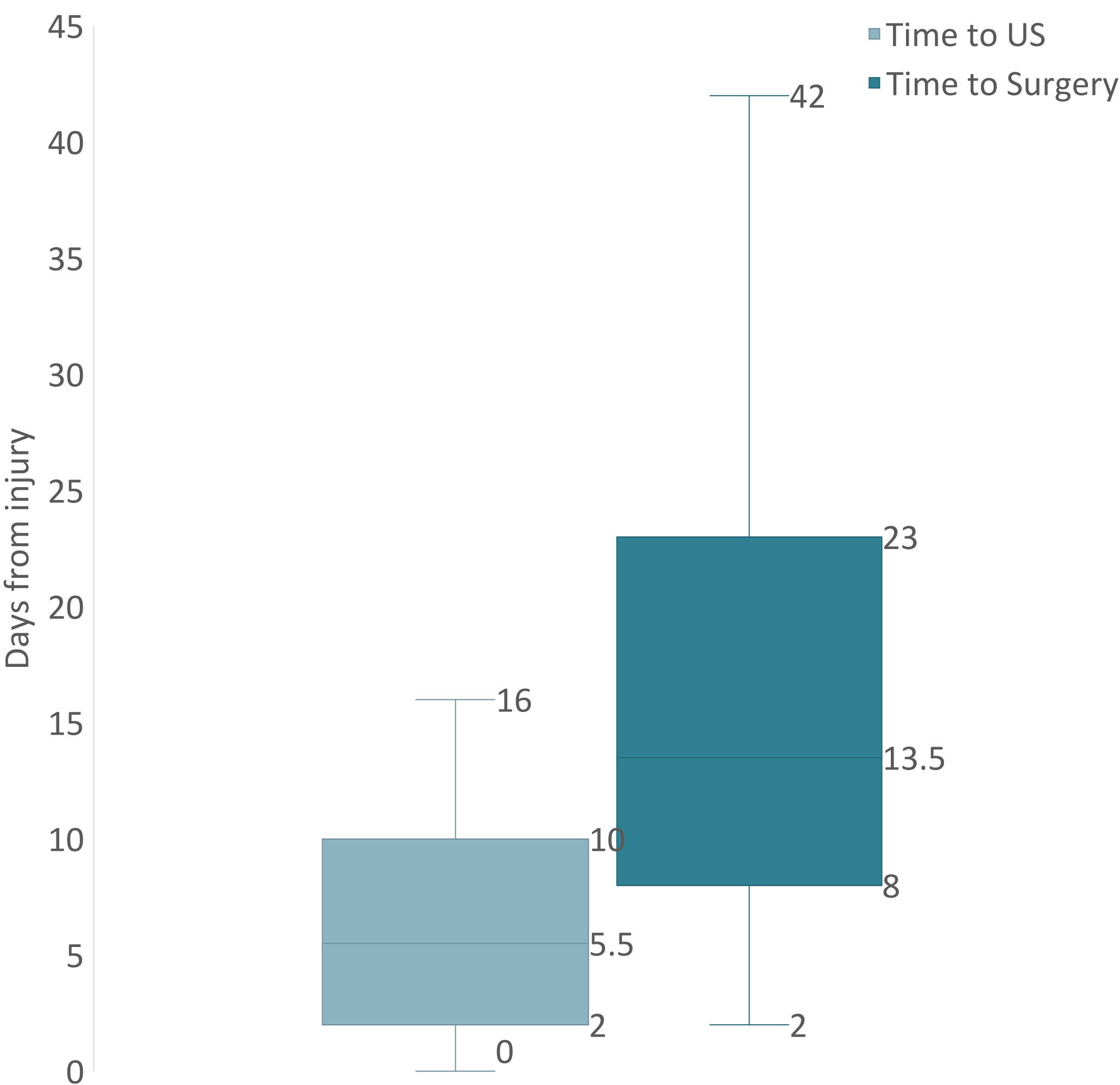


Figure 4. Time (days) from patient reported date of injury to diagnostic ultrasound and surgical intervention. Boxes represent interquartile range and median, whiskers min/max data points

Conclusion

Single incision distal biceps tendon reattachment using the Toggle Loc™ Soft Tissue Fixation Device is a successful intervention with high patient satisfaction rates up to 7 years postoperatively. We advocate prioritising the accurate diagnosis and surgical management of these injuries, as they often occur in active, working-age patients and delays in treatment have previously been demonstrated to correlate with increased difficulty with the procedure (due to tendon retraction) and a higher rate of adverse outcomes.