

DISTAL OBLIQUE BUNDLE REINFORCEMENT FOR THE TREATMENT OF BIDIRECTIONAL DRUJ INSTABILITY, MID-TERM RESULTS

BACKGROUND

The TFCC is - in combination with the distal part of the interosseous membrane - the most important stabilizer of the distal radioulnar joint (DRUJ) to enable unrestricted range of motion (pro- and supination) of the forearm. Dynamic instability of the DRUJ may be the result of TFCC injury and can be highly disabling. Stabilization of the DRUJ may offer a solution in cases of disabling DRUJ instability. In 2015, the fellowship director P Hannemann described a novel percutaneous tenodesis technique for stabilization of the DRUJ after TFCC injury, the so called Distal Oblique Bundle reinforcement (DOBr). The goal of the present study is to assess the long-term objective functional outcomes after DRUJ stabilization by DOBr.

METHODS

All patients complaining of bidirectional DRUJ instability that were referred to the department of Trauma Surgery of the Maastricht University Medical Centre between June 2011 and December 2019, were eligible for participation in this study. Bidirectional DRUJ instability was defined as a combination of palmar subluxation in supination and dorsal subluxation in pronation. All patients that were treated using the DOB reinforcement technique were prospectively enrolled in this observational study. In case of a simultaneous malunion of the radius, only patients with persistent instability after correction of the radius malunion were included. A QuickDASH score, PRWHE, range of motion measurements, and grip strength were obtained at follow-up. Additionally, functional tests for assessment of DRUJ stability were also performed (ballottement test, grind test and free rotation test). Range of motion was expressed as total motion in degrees. Grip strength was expressed as the percentage of the contralateral, uninjured side.

I only analyzed and focused at long term functional outcomes, since the previous IBRA upper limb fellow at the Maastricht University Medical Centre analysed the patient reported outcome measures. (QuickDASH and PRWHE scores)

RESULTS

31 patients (24 women-7 men) with complaints of bidirectional DRUJ instability were treated using the DOB reinforcement technique. 28 of them met the inclusion criteria for this study. A total of 3 patients were excluded from the study; two of them due to an open fracture that developed an infection as main complication, and one patient due to significant posttraumatic osteo-arthritis of DRUJ. The final study group consisted of 21 women (75%) and 7 men (25%). The mean age was 34 (15-69 years). Trauma mechanism was a low energy trauma in the majority (93%). Mean duration of symptoms prior to surgery was 15.29 +/- 9.74 months. (3-38 months). There was no difference in duration of symptoms between genders. 71% of all patients were treated surgically prior to DOB reinforcement. In 5 patients, corrective osteotomy had taken place prior to DOB reinforcement. Only in a case of persistent DRUJ instability after corrective osteotomy, a DOB reinforcement was carried out. Mean Follow up was 82 months (7-119).

Primary endpoints were QuickDASH and PRWHE outcomes at final follow-up. Secondary endpoints were functional outcomes.

Range of motion (ROM) at final follow up for flexion-extension was mean 154.78 +/- 16,95 degrees; ROM for pronation-supination was 167,64 +/-29,29 degrees at final follow-up.; Mean grip strength at final follow up was 86 % +/- 11,74. Minor postoperative complications were observed in 7 patients and all resolved after non-operative treatment. 2 patients complained of ulnar sided pain and discomfort due to the subcutaneous knot of the suture anchor requiring excision. This was noted as major complication. After that, only knotless anchors were used for this technique. 4 patients experienced recurrent instability of the DRUJ during follow-up and were considered as symptomatic graft failures (14%).

DISCUSSION

Based on the analysis of our registered data, the technique of percutaneous DOB reinforcement is an effective and easy treatment for chronic instability of the DRUJ in patients with chronic bidirectional DRUJ instability. The results of this clinical study show that this technique is effective for restoring DRUJ stability with very satisfying long-term results. Being one of the largest study groups regarding bidirectional DRUJ instability in present literature, this technique shows very promising results. Further research and prospective comparative studies including other procedures for treatment of DRUJ instability would be useful.