Clinical Outcomes After Suture Anchor Repair of Recalcitrant Medial Epicondylitis

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abstract

This study evaluated clinical and patient-reported outcomes and return to sport after surgical treatment of medial epicondylitis with suture anchor fixation. Consecutive patients were evaluated after undergoing debridement and suture anchor repair of the flexor-pronator mass for the treatment of medial epicondylitis. Demographic variables, a short version of the Disabilities of the Arm, Shoulder and Hand (QuickDASH) score, Oxford Elbow Score (OES), and 10-point pain and satisfaction scales were collected. Ability and time to return to sport after surgery were evaluated, and the relationship between predictor variables and both elbow function and return to sport was investigated. Median age at the time of surgery was 55 years (range, 29-65 years), with median follow-up of 40 months (range, 12-67 months). Median QuickDASH score and OES at final follow-up were 2.3 (range, 0-38.6) and 45 (range, 22-48), respectively. Most patients returned to premorbid sporting activities at a median of 4.5 months (range, 2.5-12 months), whereas 4 patients (14%) reported significant limitations at final follow-up. Older age at the time of surgery was predictive of better QuickDASH score and OES (P=.05 and P=.02, respectively). Patients who underwent surgery after a shorter duration of symptoms had better outcomes, but the difference did not reach statistical significance (QuickDASH, P=.09; OES, P=.10). Surgical treatment of recalcitrant medial epicondylitis with suture anchor fixation offers good pain relief and patient satisfaction, with little residual disability. Older age at the time of surgery predicts a better outcome. [*Orthopedics*. 2016; 39(1):e104-e107.]

Medial epicondylitis as a result of overuse of the flexor-pronator musculature can be a significant source of elbow pain and dysfunction.[1] These lesions often affect athletes who must generate repetitive rotatory forces across the elbow joint as well as some manual laborers.[2] Repetitive forearm pronation and wrist flexion can be associated with chronic tendinotic changes seen at the medial epicondyle.[3] Pathologic changes at the musculotendinous origin of the medial epicondyle are far less common than the lateral counterpart and are often amenable to conservative treatment that includes activity modification and a focused rehabilitation program.[4]

Recurrence of symptoms after nonsurgical treatment can occur in 26% of patients, and it is estimated that 5% to 15% of those with relapsing symptoms ultimately require surgical intervention.[1,5] Numerous techniques have been described for the operative treatment of

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recalcitrant medial epicondylitis. These techniques include percutaneous tendon release, open debridement with or without tendon repair, and medial epicondylectomy.[6] Little information is available to guide surgeons on return to recreational activity in patients who have surgical intervention with results based on patient-reported functional outcome measures.

Previous reports on the results of surgical treatment of recalcitrant medial epicondylitis have been limited because of small patient numbers,[7] the use of different surgical techniques,[8] and the use of older surgical principles associated with the treatment of chronic tendinosis.[9] Newer studies focused on the therapeutic advantage of arthroscopic techniques or novel options for stimulating a healing response in a chronically tendinotic flexor mass.[10,11] Further, no study has shown results with validated, disease-specific, patient-reported outcome measures or reported rates of return to athletic activities for patients undergoing surgical correction of chronic medial epicondylitis.[12] The goal of the current study was to review a previously unreported technique for surgical treatment of recalcitrant medial epicondylitis with suture anchor fixation, with a focus on factors that may affect patient-reported outcomes and the rate of return to sport. The authors hypothesized that older patient age, longer duration of symptoms, and preoperative ulnar nerve symptoms would negatively affect patient outcomes.

Materials and Methods

Patient Selection

After institutional review board approval was obtained, patients were identified as a consecutive cohort with a retrospective chart review. All research procedures adhered to the ethnical standards of the institutional review board for the protection of human subjects. Procedures with Current Procedural Terminology codes 24358 and 24359 (medial or lateral epicondyle debridement and medial or lateral epicondyle debridement with tendon repair of reattachment) that were performed at a single urban tertiary care orthopedic hospital between 2003 and 2013 were used to screen for patients who might fit the inclusion criteria. Both office notes and operative notes were reviewed to ensure proper patient selection. Inclusion criteria consisted of surgical debridement and suture anchor repair of recalcitrant medial epicondylitis (symptoms lasting >4 months). The diagnosis of medial epicondylitis (as well as associated ulnar nerve neuritis) was made based on the clinical history and findings on physical examination of the elbow. Minimum follow-up for study inclusion was 12 months, and patients with previous or concomitant elbow surgery (biceps repair, lateral epicondylitis debridement, Tommy John surgery) were excluded. The presence of ulnar nerve neuritis was specifically investigated as well because this can affect the outcome of surgical treatment of medial epicondylitis.

Surgical Technique

Three surgeons (A.A.A., D.W.A., J.S.D.) participated in the study, and all used identical techniques for surgical correction of medial epicondylitis. Surgery was performed under control of the tourniquet after limb exsanguination. A 6-cm longitudinal incision was made, centered over the medial epicondyle, and full-thickness subcutaneous flaps were created. Care was taken to protect the ulnar nerve and its cutaneous branches. The medial epicondyle was identified, along with the common flexor tendon. The tendon was sharply incised to expose the underlying intrasubstance degeneration. Extensive debridement was performed to remove all diseased tissue. The underlying bone was gently debrided and prepared to stimulate healing at the bony bed of the tendon footprint for later repair. Then 1 or 2 double-loaded SuperQuick G2 Anchors (DePuy Mitek; Raynham, Massachusetts) were used at the site of the medial epicondyle. The number of anchors needed was determined by the size of the medial epicondyle. Sutures were shuttled through the remaining tendon in a horizontal mattress configuration (surgeon preference) to advance healthy tendon back down to the footprint on the medial epicondyle. Closure was completed in a layered fashion.

Postoperatively, patients were maintained in a posterior splint for the first 7 to 10 days. A supervised rehabilitation program was started at the first postoperative visit, and the patient was then transitioned to a low-profile hinged elbow brace to protect the healing tendon site for the first 6 to 8 weeks. Early rehabilitation focused on elbow and wrist range of motion, and passive wrist extension and active wrist flexion were limited. A gradual strengthening program was started after presumed healing of the tendon at approximately 8 weeks after surgery. Patients were generally cleared to return to all activities at 4 months after surgery, based on their progress in the therapy program.

Outcome Measures

Patient-reported outcome measures that were used to assess elbow function after flexor-pronator mass debridement and repair included a short version of the Disabilities of the Arm, Shoulder and Hand (QuickDASH) score[13] and the Oxford Elbow Score (OES).[14] In addition, patients were surveyed regarding their subjective pain and satisfaction via a 10-point scale for each, in which 1 represents no pain and full satisfaction and 10 represents the worst pain possible and full dissatisfaction. The authors also attempted to determine if and when patients returned to the premorbid activity level (ie, return to sporting activities) after debridement and repair. Further, the authors documented the patient's qualitative ability to participate in recreational activities (no difficulty, mild difficulty, moderate difficulty, severe difficulty, and unable).

Predictor variables included age, sex, duration of preoperative medial elbow

pain, effect of preoperative injections (steroid or platelet-rich plasma), and the presence of concomitant ulnar nerve neuritis at the time of surgery.[8] Patients were diagnosed with ulnar neuritis based on the findings of physical examination and subjective history.

Statistical Analysis

Statistical analysis was performed with SAS version 9.3 software (SAS Institute, Inc, Cary, North Carolina) by a member of the research team who had advanced training in biostatistics (P.D.F.). Descriptive statistics were used to evaluate and report the distribution of continuous and count variables. Clinical outcome data were assessed for normality, and comparative analyses were performed with nonparametric tests. The Wilcoxon rank-sum test was used to evaluate the effect of predictor variables on patient-reported outcomes and return to sport. All comparative analyses were 2-tailed and used P=.05 as the threshold for statistical significance. This investigation was a retrospective review of all available patients who met the inclusion and exclusion criteria. Therefore, ad hoc power calculation was not performed.

Results

Of 40 patients, 31 were available for final follow-up. Median age at surgery was 55 years (range, 29-65 years), and median follow-up was 40 months (range, 12-67 months). Most of the patients were men (74%). Of the 31 patients, 21 (68%) had medial elbow pain for longer than 12 months before undergoing debridement and open repair of the flexor mass tendon, whereas 4 patients (13%) had symptoms for 6 to 12 months and 6 patients (19%) had symptoms for less than 6 months. Most patients did not have concomitant preoperative ulnar nerve neuritis, with only 6 patients (19%) reporting signs and symptoms consistent with nerve irritation preoperatively. In addition, 2 patients (6%) underwent ulnar nerve transposition at the time of flexor mass repair. Further, preoperatively, 14 of 31 patients (45%) had at least 1 cortisone injection about the medial epicondyle and 7 patients (23%) had a platelet-rich plasma injection.

Median QuickDASH score and OES at final follow-up were 2.3 (range, 0-38.6) and 45 (range, 22-48), respectively. The median satisfaction score was 1 (range, 1-10), and the median pain score was also 1 (range, 1-4). Data on return to sport were available for 28 of 31 patients. Most patients returned to premorbid sporting activities at a median of 4.5 months (range, 2.5-12 months), and 4 patients (14%) reported significant limitations in sporting activities as a result of elbow symptoms at final follow-up. Older age at the time of surgery was predictive of an overall better patient-reported outcome, as reported by QuickDASH score (P=.05) and OES (P=.02). Patients who underwent surgery and had a shorter duration of symptoms showed a trend toward better outcomes, but the difference did not reach statistical significance (QuickDASH, P=.09; OES, P=.10). Demographic variables, ulnar nerve symptoms, and preoperative treatment with injection therapy did not show a statistically significant association with any measured outcome variable (P>.05 for all).

Discussion

Debridement followed by suture anchor repair for the treatment of recalcitrant medial epicondylitis resulted in good pain relief and patient satisfaction, with little residual elbow disability, as measured by QuickDASH score and OES. Older age was associated with better results, as measured by these patient-reported outcomes. Interestingly, return to recreational and sporting activities was relatively prolonged, requiring a median of 4.5 months after surgery. Ulnar neuritis and a history of corticosteroid injection did not affect the final outcome of the elbow after repair of the flexor mass. Postoperative pain relief and satisfaction scores after surgery were excellent, with median scores of 1 for both.

The current findings are consistent with older literature supporting surgical treatment of medial epicondylitis in patients who were treated unsuccessfully with conservative measures.[7-9,12] Ollivierre et al,[12] in the largest series to date, showed reliably good results in 48 patients who underwent flexor-pronator debridement and defect closure. The authors concluded that surgery resulted in substantial pain relief; however, no validated patient-reported outcome measures were used to evaluate the postoperative results.[12] In a separate study, Gabel and Morrey[8] showed 87% good to excellent results in patients who underwent common flexor tendon debridement; however, in contradistinction to the current findings, they established a link between poor elbow function postoperatively and preoperative ulnar nerve neuritis. Kurvers and Verharr[9] evaluated subjective results after operative treatment of recalcitrant medial epicondylitis and showed good overall outcomes in 25 of 40 consecutive elbows. A key difference in this series was that the surgical technique focused on tendon release rather than debridement of diseased tissue.[9] More recent literature has also corroborated the success of surgical debridement for recalcitrant medial epicondylitis.[15]

In the current study, the focus on timing of return to sport and recreational activities showed some important findings. The first is that the median time for return to recreational sporting activities was 4.5 months (range, 2.5-12 months). Further, 4 (14%) patients reported significant limitations in sporting activities after debridement and repair of the flexor-pronator mass. These findings differ from those seen after surgical treatment of lateral epicondylitis. Thornton et al[16] showed that 94% of patients returned to full activities at an average of 4.1 months after debridement and suture anchor repair of the common extensor mass (recalcitrant

lateral epicondylitis). The current findings of delayed or limited return to activities compared with the lateral side are in line with previous reports. In a study by Gabel and Morrey,[8] one third of patients needed 6 months to return to the previous level of activity. Meanwhile, Ollivierre et al[12] reported that 20% of patients did not return to sport.

In the current series, older patient age and shorter duration of preoperative symptoms predicted a better functional outcome. These findings did not reach statistical significance, however, likely because of limitations of the sample size rather than lack of a true effect. It is likely that older patients demand less of their elbows, and if this is the case, it makes sense that they would have lower disability scores compared with younger patients, who have higher functional demands. In patients with a shorter duration of symptoms, it is likely that the tendinosis process is not as advanced as it is in those with more long-term pain and dysfunction. Therefore, the intrinsic healing properties of the repaired tendon may be superior in these patients. Caution is needed when attempting to apply these results universally to patient population subtypes, however, because no patients in the consecutive cohort were involved in workers' compensation claims or litigation.

Limitations

This study had several limitations. Because it was a small retrospective study, the power to make conclusions about surgical treatment was limited. However, this pathology is uncommon, so it would be difficult to report a large cohort evaluating multiple surgical techniques. Future prospective multicenter studies are needed to confirm and expand the study findings. A further limitation was the lack of preoperative outcome scores. Therefore, there is little way to determine a patient's overall improvement as a result of surgery. A lack of preoperative outcome scores highlights the overall limitations of a retrospective study. Strengths of the study included the recording of validated disease-specific, patient-reported outcome scores and the focus on timing and rate of return to recreational activities after debridement and repair of the flexor-pronator mass.

Conclusion

Patients with medial epicondylitis that was refractory to nonoperative treatment had good functional results after debridement and suture anchor repair of the flexor mass of the elbow. Patients can expect a high level of satisfaction and good pain relief with operative intervention; however, return to baseline sport activities may take up to 4.5 months. Older age was associated with lower reported disability in the study population, and preoperative ulnar nerve symptoms and treatment with injection therapy (corticosteroid or platelet-rich plasma) did not affect the final results.

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