

Medial Elbow Ulnar Collateral Ligament Reconstruction With and Without Medial Epicondyle Fractures in Children

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Background

- Medial epicondyle fractures occur in 11.5% of elbow fractures (ped)
- Indications to treat:
 - >5mm displacement (controversial)
 - Open fractures
 - Incarcerated fragments
- ~90% rate of nonunion
 - 11% are symptomatic

Hypothesis

- Does medial epicondyle fragment excision with UCL reconstruction in cases of chronic nonunion lead to improvements in pain, ROM, and instability?

Method

- Retrospective case series
- IRB approved from Shriner's Hospital for Children
- 5 patients with the CPT code matching reconstruction of medial collateral ligament, elbow, with tendon graft were included
 - 3 underwent UCL reconstruction + medial epicondyle excision
- Surgical technique
 - Medial approach to elbow
 - Ulnar nerve transposed if pre-op sx or needed for exposure
 - Grafts were secured via docking and bitenodesis screw



Image 1: This is a representation of a medial epicondyle nonunion. Patients underwent excision with or without UCL reconstruction.



Image 2: This is a representation of the type of UCL reconstruction patients underwent in this study.

Results

Patient number	Procedure performed
1	UCL reconstruction with palmarus longus autograft; ulnar nerve neurolysis
2	Medial epicondyle fragment excision, UCL reconstruction with palmarus longus autograft; ulnar nerve neurolysis
3	UCL reconstruction with FCR graft, ulnar nerve transposition
4	Removal of hardware, medial epicondyle fragment excision, UCL reconstruction with palmarus longus autograft; ulnar nerve transposition
5	Medial epicondyle fragment excision, UCL reconstruction with palmarus longus autograft; ulnar nerve transposition

Table 1: This depicts the procedures each of the 5 enrolled patients underwent

Patient number	Pre-operative range of motion (degrees)	Post-operative range of motion (degrees)
1	0-140	0-150
2	10-135	0-150
3	0-150	0-150
4	20-150	0-150
5	20-95	0-150

Table 2: This demonstrates the pre and post-operative ROM of all of the enrolled patients.

Results

- All 5 patients underwent UCL ligament reconstruction
- 3 patients underwent UCL reconstruction + ME excision
- Post-operative findings:
 - No patients c/o ulnar nerve dysfunction
 - No patients experienced diminished ROM (0-150, 80-80)
 - 100% return to pre-injury level of sport participation in UCL reconstruction and UCL + ME excision
 - NO patients reported recurrent instability

Conclusions

- UCL reconstruction with or without medial epicondyle excision is a viable surgical option to improve pain, instability, and range of motion for pediatric patients presenting with symptomatic medial epicondyle nonunion and/or UCL insufficiency.
- Early treatment of nonunion with ORIF of the medial epicondyle fragment up to 9 months from injury may yield the best results.
- Medial epicondyle excision with UCL reconstruction may be a valuable salvage option in patients presenting after 9 months from injury.
- Should we be more aggressive in treating acute medial epicondyle fractures with valgus instability, regardless of the amount of displacement, particularly in competitive athletes?

References

1. Beatty JH, Kasser JR: Rockwood and Wilkins' Fractures in Children. Philadelphia, PA, Lippincott Williams & Wilkins, 2010.
2. Smith JT, McFeely ED, Bae DS, Waters PM, Micheli LJ, Kocher MS: Operative fixation of medial humeral epicondyle fractures nonunion in children. J Pediatr Orthop 2010;30:644-648.