

Neglected Monteggia Fractures in Children, Operative Management By Ulnar osteotomy without Reconstruction of Annular Ligament, A Review of Eight Patients.

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Abstract

Background : Neglected Monteggia fractures pose a challenging problem as evidenced by variety of treatment options available. Left untreated they may have fixed flexion deformity with restriction of terminal flexion of elbow or unstable valgus deformity of elbow joint.

Materials and Methods : Eight patients with neglected Monteggia lesions were treated between May 2015 and December 2016(1&1/2 years). Average age of patients was 7.1 years and average delay at presentation was 7.6 months. None of the patients were previously treated properly and all had some preoperative limitation of range of motion of elbow joint and forearm. All were treated with ulnar oblique osteotomy with plate fixation without reconstruction of annular ligament after reduction of radial head.

Results : All wounds healed uneventfully except pin tract infection in one case which healed shortly. Elbow and forearm range of motion improved in all cases and it was pain free.

Conclusions : Surgical treatment of neglected Monteggia injuries with ulnar oblique osteotomy and plate fixation without sling operation for reduced radial head results in excellent pain relief and improved elbow and forearm range of motion, with restoration of stability of elbow joint.

I. Background

Historically neglected Monteggia fractures were treated conservatively with radial excision after skeletal maturity. However it may lead to fixed flexion deformity and unstable valgus deformity of the elbow and limitation of elbow and forearm range of motion. Even when open reduction was performed, reconstruction of annular ligament was performed with expectation that radial head will remain stable. This was responsible for many complications. Thus it is rational to opt for early surgical treatment of these injuries.

II. Materials And Methods

All cases underwent an ulnar oblique osteotomy at the site of fracture/ maximum angulation and radial head was relocated under direct vision using a separate incision after failed closed attempt. Any intervening soft tissue was removed. Provisional radio-capitellar K wire was passed in all cases which were routinely removed after 3 weeks. The osteotomy was fixed with over contoured plate(3.5 mm DCP) to reverse the ulnar angulation. Of the eight patients in all cases the radial head was either at the level of the joint or proximal to the joint but the distance was less than 1 cm. Thus gradual lengthening with external fixation was not required. The limb was splinted in a long-arm slab with 90 degrees of elbow flexion and forearm in supination for 3 weeks followed by gradually increasing active elbow range of motion exercises.

III. Results

Post operative period was uneventful in all cases except pin tract infection in one case which healed shortly. The patient was admitted, K wire was removed along with debridement of pin tract. Intravenous antibiotics were administered. There were no cases of implant breakage, neurovascular compromise, myositis ossificans or radio-ulnar synostosis. Mean elbow flexion was 131 degrees, forearm pronation 84 degrees and supination 90 degrees. Range of motion was pain free. There was no varus-valgus instability. Functional activity was good and Mayo elbow performance score was excellent in all cases. Data of individual patients are presented in a tabular form.

case	side	age	sex	type	delay	ROM before surgery		ROM after surgery	
						P-S	F-E	P-S	F-E
1	left	10 years	female		1 18 months	60-0-90	110-0-0	80-0-90	130-0-0
2	left	10 years	male		3 2.5 months	90-0-70	130-0-0	90-0-90	130-0-0
3	left	5 years	male		1 10 months	60-0-85	120-0-0	85-0-90	130-0-0
4	right	6 years	male		1 4 months	90-0-65	130-0-0	90-0-85	130-0-0
5	right	5 years	female		1 2 months	60-0-90	140-0-0	85-0-90	140-0-0
6	left	8 years	male		1 9 months	40-0-90	130-0-0	80-0-90	130-0-0
7	left	6 years	male		1 2 months	85-0-90	110-0-0	85-0-90	130-0-0
8	right	7 years	female		1 13 months	50-0-90	130-0-0	80-0-90	130-0-0

IV. Discussion

In neglected Monteggia injuries it is the malunion of the ulna which prevents relocation of the radial head. Ulnar oblique osteotomy leads to distraction allowing for radial head relocation. Fixation of the osteotomy with overcontoured plate(3.5 mm DCP) creates an angulation which stabilizes the reduction. Reconstruction of the annular ligament with sling procedures are associated with increased morbidity. Complications like myositis ossificans, elbow stiffness and radio-ulnar synostosis are mostly related to sling operations. Thus we are of the view that annular ligament reconstruction is not required. We used temporary radiocapitellar K wire to increase stability of the relocated radial head. Only one case developed pin tract infection which healed after K wire removal and debridement.

V. Conclusion

Reconstruction surgery with ulnar oblique osteotomy and fixation with overcontoured plate(3.5 mm DCP) is the procedure of choice for neglected Monteggia injuries and reconstruction of annular ligament is not required.

Limitations

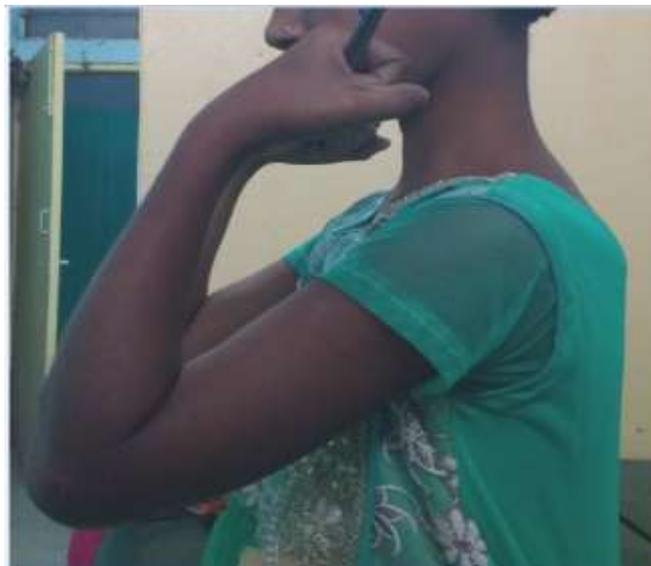
It is a short review. Multicentre studies with a large number of patients are required to recommend the operation.

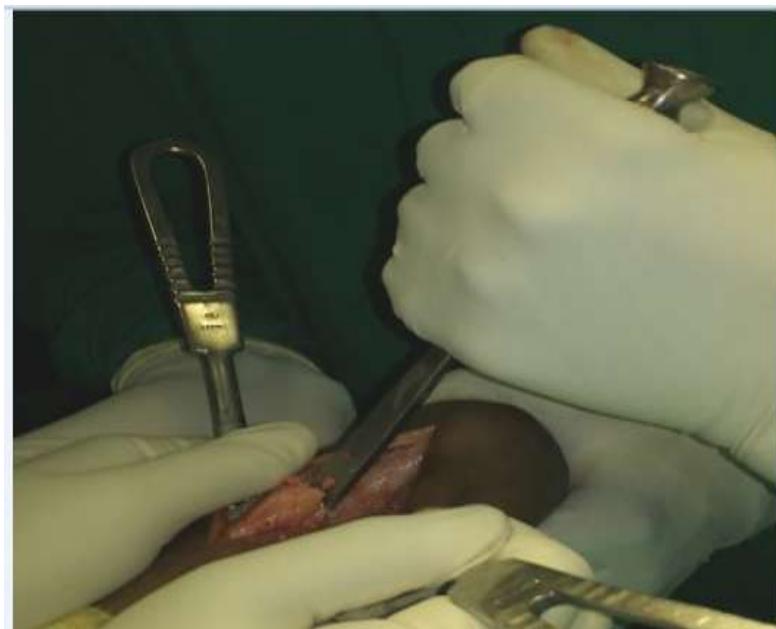
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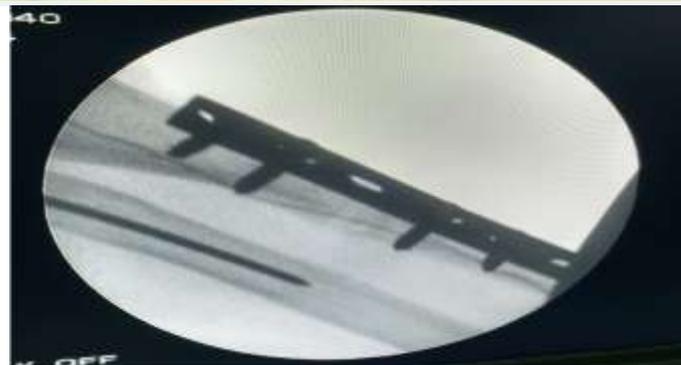
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