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Neglected monteggia fracture-dislocation in a child: A case report

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Abstract
Introduction: Monteggia fracture-dislocations are a rare entity and they represent less than 2% of forearm fractures, the diagnosis can be missed up to 50% most of the time. The standard treatment is ulnar osteotomy with angulation and lengthening and internal fixation, Open reduction of the radial head, temporary fixation of the radial head with a trans capitellar k -wire, and immobilization for 6 weeks in pediatrics.
Case Report: We described a case of an 8years old boy with a neglected Monteggia fracture-dislocation, he presented to us 3 months after the injury, with a cubitus varus deformity of the left elbow and he was treated surgically and cast immobilization and physiotherapy.
Conclusion: To avoid missing the injuries, each patient should undergo a thorough comprehensive clinical approach and adequate radiological imaging. Different treatment methods are available for neglected Monteggia fractures and each option should be exhausted to save the radial head starting with the less invasive approaches. This report concerns a surgical technique to reduce a chronic dislocation of the radial head using an ulnar osteotomy with angulation and lengthening and internal fixation with Open reduction of the radial head with temporary fixation of the radial head with a trans capitellar k-wire and immobilization with the forearm in the neutral rotation was maintained for 6 weeks, the patient had appreciable recovery after surgery and physiotherapy, He regained painless function of the forearm, good range of elbow and forearm range of motion, and maintenance of the reduction of radial head.

Keywords: Neglected Monteggia lesions, ulnar osteotomy, chronic dislocation of the radial head

Introduction
Delayed recognition of a Monteggia fracture-dislocation continues to pose a great treatment challenge, as evidenced by the different surgical techniques that have been described. Procedures include ulnar and radial osteotomies, open reduction or closed reduction of the radial head, repair or reconstruction of the annular ligament around the radial head, temporary fixation of the radial head with a trans capitellar k-wire, or some combination of these techniques [1–13]. In addition, the outcome of the surgical treatment of chronic radial head dislocation is uncertain, with reports of subluxation and re-dislocation, as well as complications including elbow stiffness, instability, non-union of the osteotomies, avascular necrosis of the radial head, neurovascular injury, and infection [4, 6, 11, 14–19]. Secondary degenerative arthritis may also be a late sequela. Although many authors recommend a procedure directed at the radio-capitellar joint to the radial head [1, 4, 9, 17], other studies support the opposite approach, focusing on proper correction or over-correction of the ulnar deformity [7, 13, 14, 20–25]. We review the clinical outcome of a patient who was treated with a specific technique of ulnar osteotomy with angulation and lengthening and internal fixation, Open reduction of the radial head, and temporary fixation of the radial head with a trans capitellar k -wire and immobilization.

Case Report
History: An 8-year-old male, from Vijayanagara, presented with a deformity of the left elbow for 2 months, mother gave a history of fall from a height of approx.

10 feet 3 months back and sustained an injury to his left elbow then he was taken to a local bone setter where he managed conservatively.

Local examination: Revealed a bony protuberance at the lateral aspect of the left elbow and cubitus varus deformity noted and left elbow range of movement (0-110 degrees), pronation 60-degree, supination 50 degrees in both active and passive movements, and carrying angle in 20-degree varus and no distal neurovascular deficit.

Diagnosis: X-ray of the left forearm with elbow and wrist revealed: anterolateral dislocation of the radial head with ulnar bowing.

Treatment: Surgical correction was done in the form of ulnar osteotomy with posterolateral angulation and lengthening and internal fixation by small DCP with Open reduction of the radial head and temporary fixation of the radial head with a trans capitellar k-wire.

Fig 1: Show Presenting picture of our patient and pre OP X-RAY

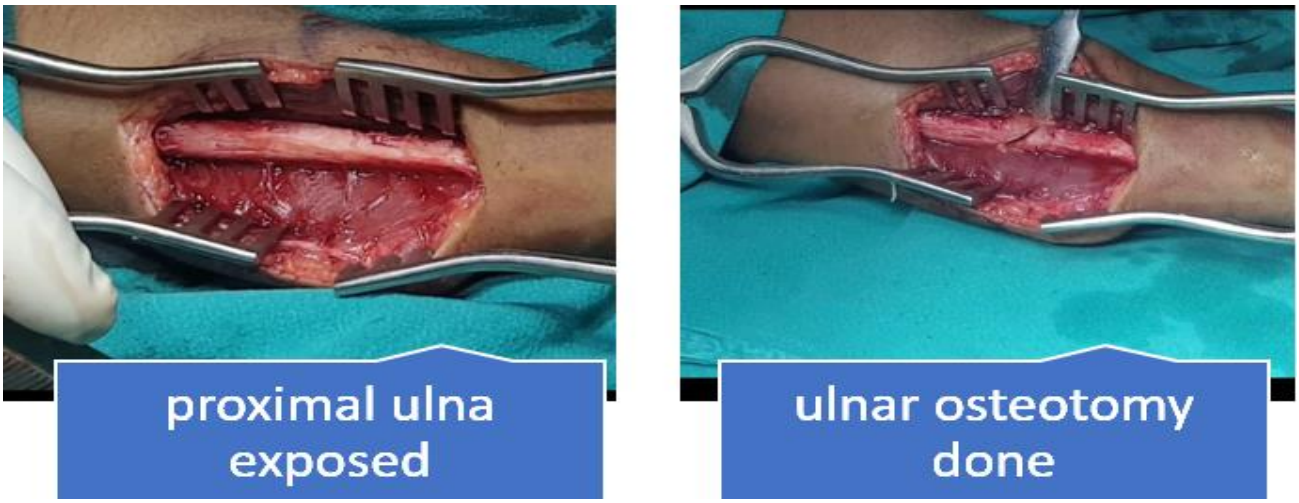

Fig 2: Show Proximal ulna exposed and ulnar osteotomy done

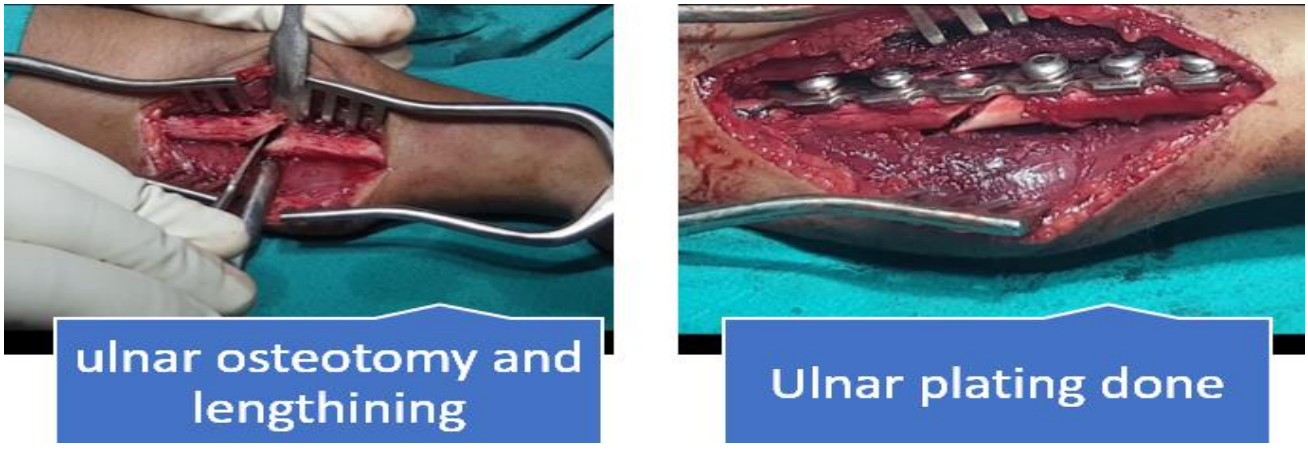

Fig 3: Show ulnar osteotomy and length inking and ulnar plating done

Under general anesthesia, a midline posterior incision is placed lateral to the tip of the olecranon and along the posterior border of ulna develops an interval between flexor carpi ulnaris and extensor carpi ulnaris distally and proximal ulna is exposed and ulnar osteotomy with posterolateral angulation and lengthening and internal fixation by small

DCP with same incision extended laterally Open reduction of the radial head and removal of fibrous tissue in the radiocapitullar joint and then the radial head is relocated and temporary fixation of the radial head with a trans capitellar k - wire was done and cast immobilization with the forearm in the neutral rotation was maintained for 6 weeks, we followed up the case, At 4 weeks and At 6-week, and At 6 weeks k-wires are removed and range of movement of elbow exercises started and He regained painless function of the forearm, good range of elbow and forearm range of motion, and maintenance of the radial head position.

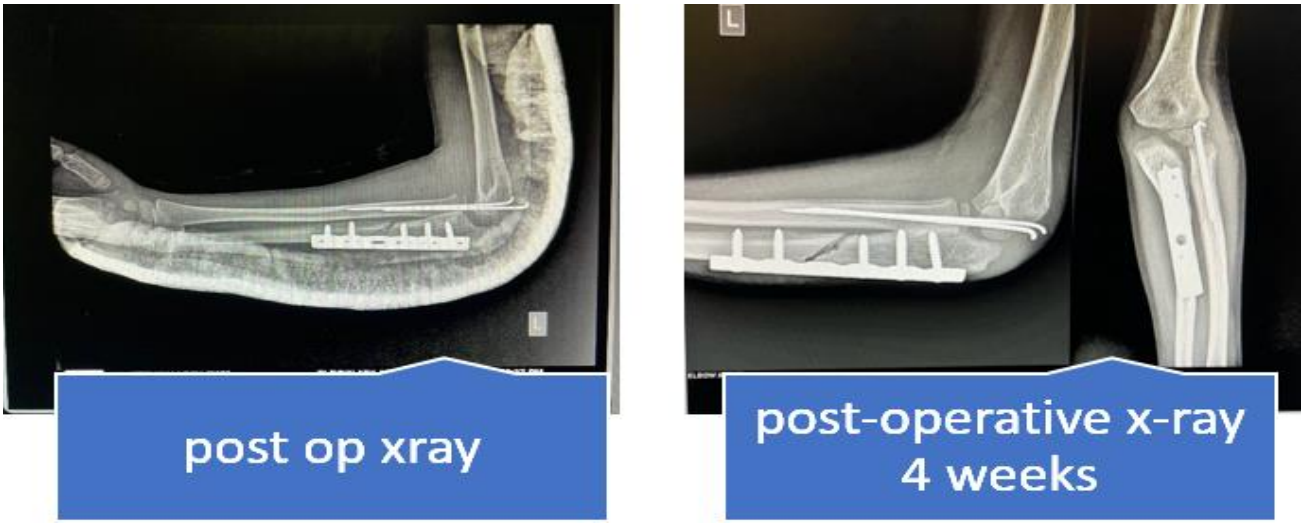

Fig 4: Show post op x-ray and post-operative x-ray 4 weeks

Discussion

In the case of a neglected Monteggia fracture, the lack of joint fixation leads to progressive dysplastic changes in the radio capitellar joint, which leads to well-documented and unacceptable long-term consequences for the patient [1, 14, 28 - 30]. It is therefore necessary to reduce the radius head. Our results suggest that restoration of joint congruence can be achieved by proximal ulnar osteotomy and radial head reduction. The interval between the traumatic dislocation and the reconstructive procedure could affect the outcome, as dysplastic changes are not immediately correctable. However, since this dislocation mainly occurs in the paediatric age group and still has significant residual growth, there is a high potential for remodelling.

The treatment we propose has been described previously [7, 13, 16, 25] and is based on the assumption that the main problem is ulnar malunion preventing radial head reduction. The surgical technique, therefore, consists of an osteotomy of the ulna with lengthening and angulation. The extension allows the radial head to be reduced and provides sufficient space for the dysplastic head while avoiding excessive pressure on the radial head. The tilt creates an overcorrection that holds the head firmly in place for the time it takes for it to stabilize. If satisfactory reduction cannot be achieved by closed means, we recommend proceeding directly to arthrography to eliminate the possibility that a pseudo capsule around the new radio-humeral joint or a remnant of the annular ligament in the radio capitellar joint is preventing reduction. In both cases, it would be the indication of a simple ablation of this fibrous tissue. In our case, we removed the fibrous tissue that had become lodged in the radio capitellar joint and here reconstruction of the pulley was not necessary. The dissection required for annular ligament reconstruction can lead to elbow stiffness, avascular necrosis of the radial head, or radioulnar synostosis [15, 17, 31]. There is no point in reconstructing or repairing an annular ligament around a neck altered by a dysplastic head, because the latter gradually remodel after reduction, leading to the weakening of the graft and predisposing to subsequent subluxation of the radial head. In contrast, a short graft results in tight constriction around the radial neck and functional limitation, as evidenced by the postoperative thinning of the neck previously reported after the Bell-Tawse procedure [18]. While stratification of the annular ligament of the neck temporarily holds the head in place, it does not appear to be physiological. If a relocation occurs, we believe it is not related to the absence of annular ligament reconstruction, but rather to a lack of angulation of the ulnar osteotomy.

There is no agreement in the literature on the type of fixation needed to stabilize the osteotomy. In our case, the osteotomy was internally fixed to reduce the risk of secondary dislocation and to allow for early mobilization. In our view, external fixation and progressive correction, as described by Exner *et al* [21, 33], reorganization of the ulna over time in such a chronic case make it difficult to determine the center of rotation of angulation. Additionally, an osteotomy of the proximal ulna offers a better chance of healing, and although angulation at the metaphysical level has less effect on reduction, it allows for finer adjustment. Finally, the lateral position of the plate may have been a factor inclined to the delayed union. According to the tension band principle, a posterior plate might have been a good choice [7].

Conclusion

According to our experience, it seems that the above procedure for the treatment of chronic Monteggia fracture-dislocation results in excellent pain-free function and good motion of the elbow, forearm, and wrist, with no pain or instability at the distal radioulnar joint in the short term. The long-term benefit of such treatment requires further observation.

Conflict of Interest
Not available

Financial Support
Not available

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