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Open Reduction with Collateral Ligaments Reconstruction in Neglected Elbow Dislocation – A Case Report

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Abstract

Neglected elbow dislocations pose a challenge to orthopedic surgeons, leading to contracture and functional limitations. This case involves a 51-year-old female patient experiencing pain and stiffness in her left elbow for the past 5 months due to neglected dislocation. Previous traditional treatment showed no improvement. Disuse atrophy was suspected, prompting open reduction, ligament reconstruction, and a 3-week temporary pinning. The intervention aimed to address the late-presenting unreduced elbow, utilizing autograft for ligament reconstruction. The subsequent supervised physiotherapy played a crucial role in restoring functional, stable, and painless elbow movement. This case underscores the importance of timely intervention in neglected elbow dislocations to prevent disability and enhance the quality of life for affected individuals.

Keywords: Neglected elbow dislocation, ligament reconstruction, autograft.

Introduction

Neglected elbow dislocations are common in developing countries. Neglected elbow dislocation leads to retraction of triceps muscles and collateral ligaments. This causes a limitation of the range of movement that is inadequate for the activities of daily living [1]. Neglected elbow dislocations often result in contracture and functional impairment. Treatment of neglected elbow dislocation is a challenging problem for orthopedic surgeons in developing countries and little information has been written in the standard textbooks. Elbow joint mobility after operative treatment is variable and considered related to several factors including the age of the patient, the duration of the untreated dislocation, the method of open reduction with or without triceps lengthening, the collateral ligament reconstruction, and post-operative mobilization with or without hinge external fixation [2]. Loss of elbow function can cause significant disability and affect activities of daily living, work-related tasks, and recreational activities.

Case Report

A 51-year-old female patient came to the outpatient department of Sanglah Hospital due to pain and stiffness around her left elbow in the past 5 months before admission. There was a history of trauma before, she got into a traffic accident and fell with her left elbow withstand the body. The patient could not move her elbow freely after the trauma and received traditional treatment by a bonesetter with no significant improvement. She worked as a farmer with right-hand dominance. The patient was referred from the district hospital to our hospital. From physical examination, there was an angulation deformity around the left elbow and muscle atrophy around that area. The left elbow range of movement was restricted, especially for flexion.

Anteroposterior and lateral left elbow radiographs were obtained, and it showed displacement of the ulnar and proximal radial bone to the inferoposterior side. Decreasing bone trabeculation was also shown on the radius, proximal ulna, and distal humerus. No fracture line was shown and no soft-tissue swelling. Disuse atrophy was suspected.

Based on the history, clinical, and radiograph findings, the patient was diagnosed with left elbow contracture due to neglected left elbow dislocation. The decision was made to perform surgery for open reduction, soft tissue release, medial collateral ligament (MCL), and lateral collateral ligament (LCL) reconstruction and pinning for her left elbow. (Fig.1 and 2).

The left elbow surgery utilized a posterior approach, wherein the ulnar

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Figure 1: Clinical pictures of the left elbow.

nerve was identified and isolated. The olecranon fossa exhibited fibrosis, prompting the release of soft tissue and resection of fibrotic tissue. Notably, lateral radial head dislocation, anterior subluxation of the capitulum, and lateral radial subluxation were discovered during the procedure. To stabilize the left elbow joint, olecranon, and radio-capitellar reduction were performed. Importantly, cartilage preservation was emphasized throughout the surgery. The triceps and collateral ligaments were located after retraction of the nearby area. Elbow flexion stretching was executed, and a tensor fascia lata graft from the left thigh was harvested as a donor graft. Subsequently, the graft was employed in the reconstruction of the MCL and LCL using the docking technique. The left elbow was immobilized through pinning and casting for a duration of 3 weeks.

Discussion

The elbow joint is a complex structure that provides an important function as the mechanical link in the upper extremity between the hand, wrist, and shoulder. In remote areas, due to poor access to proper medical facilities and lack of awareness, old unreduced elbow dislocations are common. Such patients are often neglected and maltreated before being seen by an orthopedic specialist. Most surgeons recommend closed reduction for elbow dislocation up to 3-week post-injury. After 3 weeks, development of soft-tissue contracture and osteoporosis makes closed reduction dangerous as manipulation may lead to fracture of the bone or damage to the articular surface. Most surgeons advise

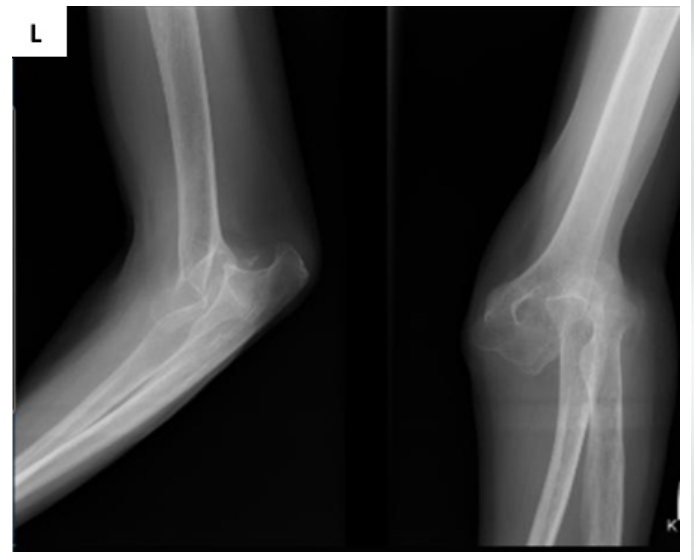

Figure 2: Left elbow X-ray pre-operation, lateral, and AP views.

Figure 3: Clinical picture during operation.

Figure 4: Left elbow X-ray AP/lateral view post-operation.

Figure 5: Left elbow active range of motion at 2-year follow-up.

open reduction for elbow dislocation up to 3 months; total elbow arthroplasty; excisional arthroplasty or arthrodesis is advised thereafter [1].

Speed et al. introduced the method of triceps lengthening using V-Y plasty to reduce old dislocations of the elbow. The technique essentially consists of extensive release, V-Y plasty, and K-wire fixation for 2-4 week post-operative followed by aggressive physiotherapy. However, all of them use K-wire or plaster of Paris cast immobilization postoperatively for a varied amount of time [3]. The elbow's stability is obtained by cast immobilization or even better with K-wires for 2–3 weeks to avoid recurrence of the dislocation [4].

The posterior and lateral approaches are used most often in open reduction. Lateral approach because the posteromedial capsule cannot be accessed and the ulnar nerve cannot be controlled. The posterior approach provides good exposure to the posterior structures that are typically retracted; it is also easy to perform a V-Y triceps plasty and an ulnar nerve transposition when needed. The joint is reduced and fixed under direct visual control. The overall esthetics are also preferable since there is only one surgical scar [5]. (Fig. 3).

When unreduced dislocation lasts 6 months to a year, changes occur in the elbow's articular surfaces and thus surgical reduction is not advised after 3 months. Excision arthroplasty is recommended after 2 months of dislocation [4]. (Fig 4). In our study, a fair outcome and a useful range of movement were found after 5 months post-surgery.

Then, The Mayo Clinic Elbow Performance Index (MEPI) was used to assess subjective, objective, and functional outcomes at the final follow-up of the case. We compared our functional results to published results where the same surgical technique was used. We decided to only compare the functional results because the MEPI is not well suited to neglected dislocations, as seen in the patient's condition.

Conclusion

Although surgical treatment is challenging, the functional improvement in neglected elbow dislocations is outstanding. Open reduction for late-presenting unreduced elbows along with ligament reconstruction with autograft followed by supervised physiotherapy can restore elbows to a functional, stable, and painless range of movement.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

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