A Prospective Study of 9 Cases of Neglected Posterior Dislocation of Elbow Treated by Open Reduction and V-Y Tricepsplasty of Speed

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Abstract

Aim: Neglected dislocations are common in developing country like ours. These injuries are challenging for surgeons because negligence results into soft tissue contractures and joint cavity is filled with fibrous tissue. We want to share this prospective study based on 9 cases of neglected posterior dislocation of elbow treated by open and V-Y tricepsplasty.

Method: Pain, stiffness of joint and functional impairment were the main indication for surgery. We treated 9 patients (5 men, 4 women) with mean age of patient was 34.5 (range 28 years to 42 years); mean time since injury was 9 weeks (range 4 to 14 weeks).

Results: The average follow-up was 12 month (range 6 to 18 months). The mean arc of flexion was 109 (range 75 to 125 degree) and the mean arc of supination and pronation was 152 (range 130-10 degree). The average Mayo elbow performance index was 83 (range 95 to 60) with 5 excellent, 2 good and 2 poor results. Complication was wound dehiscence in 2 cases.

Conclusion: Open reduction, V-Y tricepsplasty followed by supervised physiotherapy is effective in restoring the functional range of motion, stable and painless joint in neglected dislocation of elbow.

Keywords: Neglected, dislocations, elbow.

Introduction

Neglected dislocations are common in developing country like ours [1]. It should be considered emergency situation and set into place as soon as possible by trauma specialist. Each joint in body can be dislocated however there are common sites where most dislocation occur. The most commonly dislocated the shoulder joint and elbow joint. Posterior elbow dislocation accounts 90% of all elbow dislocation. In India, there is often a delay of some months in coming to orthopedic hospital for treatment because of ignorance, poverty and non availability of medical aid, the rural patient still seek indigenous treatment with massage and wooden splints from local bonesetters. Pain, elbow stiffness and functional impairment were the main indications for surgery. All patients presented with posterior elbow dislocation. In old dislocation the olecranon was prominent and the triceps was shortened and tening on the posterior aspect of the elbow and humerus was prominent anteriorly. Three bony point relationship was disturbed. The elbow were fixed in few degrees of flexion and range of movement was non functional preoperatively (5, 13). None of patients could flex their elbow beyond 90 degree. Heterotopic ossification was present in 4 cases. Surgery was performed under brachial block. V-Y tricepsplasty of Speed’ procedure (2) was performed in all cases for open reduction. The patient was positioned lateral decubitus with the elbow flexed at 90 degree on a side arm attached to the table. An electronic pneumatic tourniquet was applied and the posterior approach was used. The ulnar nerve was identified and released. An inverted V-flap of the triceps

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Patient comes to hospital mainly for pain relief, stiffness of joint and functional impairment. There are various treatment options for neglected posterior dislocation of elbow: closed reduction, open reduction, excisional arthroplasty, interpositional or replacement arthroplasty and arthrodesis. The aims of this study was to assess the functional outcome after correction.

Patients and Methods

This prospective study is based on 9 cases of neglected elbow dislocation which where more than 3 weeks old treated surgically at M. L. B. Medical College Jhansi from the beginning of January 2014 to the end of December 2015. They included 5 men aged from 31 to 42 years (mean 36.8 years) and 4 women aged 28 to 37 years (mean 31.8 years). Right arm involved in 7 cases and left arm in 2 cases.

Time from injury to presentation ranged from 4 to 14 weeks (mean 9 weeks). They had various occupation; 3 were farmers, 2 were Labourer and 4 housewives. All patients had initially received treatment with massage and wooden splints from local bonesetters. Pain, elbow stiffness and functional impairment were the main indications for surgery. All patients presented with posterior elbow dislocation. In old dislocation the olecranon was prominent and the triceps was shortened and tening on the posterior aspect of the elbow and humerus was prominent anteriorly. Three bony point relationship was disturbed. The elbow were fixed in few degrees of flexion and range of movement was non functional preoperatively (5, 13). None of patients could flex their elbow beyond 90 degree. Heterotopic ossification was present in 4 cases.

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aponeurosis was prepared in all cases to compensate for the triceps shortening. Any fibrotic tissue, osteophytes and heterotopic ossifications were resected. Reduction was achieved with slow, gentle traction. Full reduction was achieved by gently reducing first the humeroradial dislocation then the humeroulnar dislocation. Once the reduction was achieved olecranonohumeral k-wires (2 to 2.5 mm) used to stabilise the elbow at 90 degree. The wound was closed in layers over suction drain. An above elbow pop slab was applied with the elbow at 90 degree flexion. Drain was removed after 2 days, sutures were removed at 2 weeks and k-wire was removed at 3 weeks except in two cases which were infected superficially were removed at 4 weeks. Active movement of elbow was started after 3 weeks. The Mayo(3) elbow performance index was used to assess the functional outcomes before and after surgery. This index consists of four parts; Pain(with maximum score of 45 points), ulnohumeral motion (20 points), elbow stability (10 points) and ability to perform five functional tasks (25 points). Pain is rated as none (45 points); mild (30 points) if there is no limitation of activity and occasional use of analgesics; moderate (15 points) if there is limitation of activity and regular use of analgesics; severe (0 points) if there is constant pain and regular use of analgesics. The stability is graded as stable, mildly unstable or unstable. The functional score is determined on the basis of the patients ability to perform normal activities of daily living. The total score ranges from 5 to 100 points, with higher scores indicating better function. If the total score is between 90 to 100 points, it can be considered excellent; between 75 to 89 points, good; between 60 to 74 points, fair; less than 60 points, poor. The follow-up radiographs were evaluated for articular alignment and post-traumatic arthritis using the rating scale of Broberg and Morrey (4). No radiographic joint narrowing was defined as grade 0, slight joint narrowing as grade 1, moderate joint space narrowing with minimal osteophytosis as grade 2 and severe degenerative changes with loss of the joint space as grade 3.

**Results**

Patients were followed for a mean of 12 months (6 to 18 months) with a minimum of 6 months and maximum of 18 months. Average Mayo elbow performance index was 83 (range 95 to 60) with 5 excellent, 2 good and 2 poor results. Poor result were in 2 patients who had an superficial infection which was treated with appropriate oral antibiotics and proper dressings. 7 patients had no pain, 2 had mild pain. Mean pain score was 42 (range 45 to 30). At the final follow-up no patients had any sign of instability, mean score was 10. 7 achieved a flexion range of 110 to 135 degree, one achieved 90 degree and one achieved 75 degree. The mean arc of flexion was 109 degree, range 75 to 125 degree. The mean arc of supination - pronation was 152 degree.
authors final outcome of open reduction of neglected dislocation depends on the age of dislocation. Most authors [3, 8, 13] recommend open reduction for dislocation of 3 months duration and excisional arthroplasty, total elbow arthroplasty or orthodesis thereafter. In our study we achieved a good results and a good range of movement with open reduction. Most activities of daily living can be performed with a 100 degree flexion and a 100 degree supination - pronation arm; such an elbow was termed ‘useful’ [6]. All our patients were within this range and could perform activities of daily living. Our study is comparable to similar study done by Mehta et al [7] , and Elzohairy [8]. Like most of authors [7,8] we also concluded that a retracted collateral ligament do not need to be repaired to restore elbow stability. Ligament repair has been described by Arafile [9] using an allograft from the palmaris longus or extensor radialis longus tendons. This method takes longer procedure times and increase the risk of morbidity due to second surgical site. Jupiter and Ring [10] used an articulated external fixator. The advantage of these two techniques are that they provide stability and early mobilisation during the first weeks of post surgery. Duckworth et al [11] recommended the use of hinged external fixator to protect the repair. Hotchkiss [12] also used hinged external fixation to maintain joint reduction to permit motion. The posterior and lateral approaches are used most often in open reduction. Krishnamoorthy [13] advocated lateral approach has the advantage of providing a good exposure of the humeroradial joint and the anterior structures, particularly the coronoid fossa. Disadvantage of this approach is often combined with medial approach resulting in second scar. Like most of authors [7,8] we used posterior approach. In posterior approach there was good exposure of posterior structures that are typically retracted, it also easy to perform ulnar nerve transposition when needed. We used V-Y tricepsplasty described by Speed [2] which was most commonly used. Vangorder [14] also described triceps lengthening technique by using an Achilles tendon or fascialata allograft after the triceps is cut transversely. Most authors [7,8] , however, use the V-Y technique described by Speed to lengthen the triceps.

Conclusion
Neglected dislocations are common in our country. Open reduction, V-Y tricepsplasty followed by supervised physiotherapy is effective in restoring the joint to a painless, stable and functional limb in case of neglected elbow dislocations which present upto 3 months [1] after injury.

References