



Effect of Physiotherapy Management of the Post-Traumatic Stiff Elbow: A Case Report

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Abstract: 23 years old female who is a student by occupation had a history of a direct fall on her right elbow and injury takes place on her left elbow. After the injury, an orthopedic surgeon and the patient was treated conservatively. The patient came to the physiotherapy department with a chief complaint of left elbow pain with difficulty in moving the left elbow. On examination, restriction in elbow flexion and extension assortment of motion and tightness of left biceps brachii were seen. The intervention was carried out for 6 sessions per week for 6 weeks. The patient was treated with electrotherapy and exercise therapy. After 6 weeks of intervention pain was reduced (VAS score from 7 to 3), elbow extension range of motion was improved and OES was 20 to 39. This case report results suggest that physiotherapy treatment is important in reducing pain and increasing range of motion and functional ability.

Introduction

The elbow is a hinge joint that connects the upper arm to the forearm (Anusha et al., 2023). It enhances precision in open and closed kinetic chain work by freeing the forearm to act as a lever alongside the hand. However, the full function can be achieved even with limited flexion and extension (up to 160 degrees in each direction for a normal elbow) and 75–80 degrees of pronation and supination, respectively (Jones, 2016; Akhtar et al., 2021; Birinci et al., 2022; Manohar et al., 2023).

After the shoulder, dislocation of the elbow is the joint that occurs most frequently in adults. Elbow dislocations, including simple and complex, occur at a rate of 6.1 per 100,000 people each year. Dislocations of the elbow can be either simple or complex. Dislocations of the elbow can be classified as simple or complex. In complex elbow

dislocations, the radial head and coronoid process are intra-articularly fractured. The elbow is a strong joint that requires a great deal of energy to dislocate. Rarely do people get neurovascular problems. Anterior elbow dislocations are more difficult to achieve and occur less frequently. Complications from an elbow dislocation can be avoided with prompt closed reduction (Sarila, 2023; Laugharne and Porter, 2009; Mehta and Bain, 2004).

The synovial hinge joint of the elbow is particularly vulnerable to stiffness and degeneration. The elbow is formed by the capitellum and trochlea of the humerus meeting with the ulna and radial head at the trochlear notch. One hundred degrees of angular motion at the elbow is considered usable (Kuschner and Sharpe, 2002; Mahmood, 2023).

The Oxford Elbow Score (OES) is a questionnaire consisting of 12 questions. It is a reliable and true way to



measure how well the elbow works, how bad the pain is, and how it affects the patient's social and mental health. The tool is split into three one-dimensional areas: pain, elbow function, and social-psychological.

Case Report

23-year-old female who is a student by occupation had a history of a direct fall on her left elbow on date 11/03/2023. She was diagnosed with a posterior dislocation of the left elbow with chip fracture of medial humeral condyle as well as coronoid process of ulna which was displaced by 2 mm and was treated with closed reduction under general anaesthesia on the same day by an orthopedic surgeon. Then plaster cast in the form of above elbow Posterior slab was applied for 1 month on the same day after close reduction. Removal of cast was done on 12/04/2023 and the patient was referred to a physiotherapy department. The patient came with a chief complaint of left elbow pain and difficulty in performing movements. There after patient's elbow was examined and found that elbow flexion, extension and supination range were restricted as well and the pain component was assessed. For the measurement of functional ability OES were done before initiation of physiotherapy treatment. Physiotherapy treatment was provided to the patients for 6 weeks which was 6 days/week.

Investigation

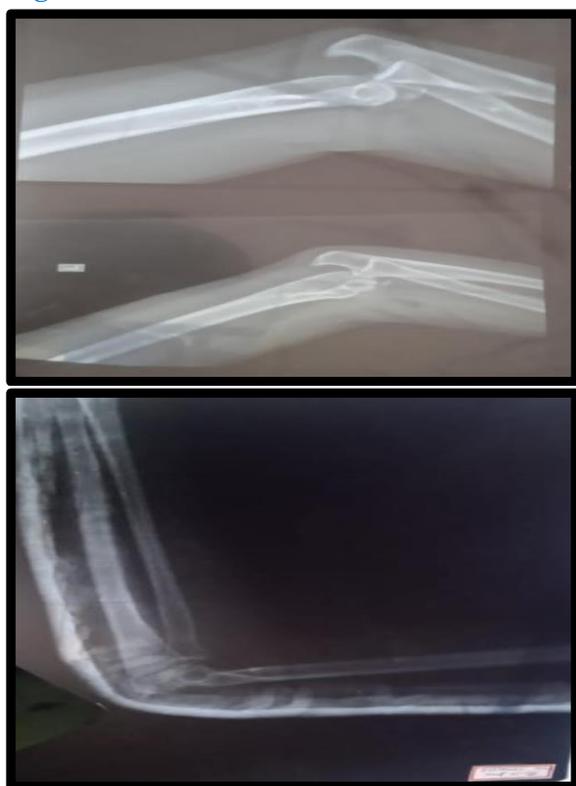


Figure 1. Pre- and Post-X-ray after close reduction of elbow dislocation (Date: 11 March, 2023).



Figure 2. CT scan after close reduction of left elbow dislocation (Date: 13/03/2023).

Outcome measures

The intensity of pain was assessed using a Visual Analog Scale (VAS), elbow range of motion (Figure 3) was measured using a universal goniometer and OES was measured before starting treatment as well as post-assessment taken after 6 weeks of physiotherapy treatment (Shende et al., 2022; Zhang et al., 2020).

Table 1. Pre and Post evaluation of Left elbow joint

Outcomes	Pre Physiotherapy treatment	Post Physiotherapy treatment
VAS	7	3
Elbow flexion range (Active)	45° to 90°	20° to 105°
Elbow extension range (Active)	90° to 45°	105° to 20°
Elbow supination range (Active)	20° to 50°	10° to 65°
Elbow pronation range (Active)	50° to 20°	65° to 10°
OES	20	39

Pre- and post-physiotherapy treatment range of motion of the left elbow joint is mentioned below (Figures 3 & 4).



Figure 3. Pre-treatment elbow range



Figure 4. Post-treatment elbow range

Discussion

Treatment for elbow injuries should result in a joint that is both pain-free and stable and fully functioning for the patient (Wegner et al., 2023).

Treatment during immobilization phase

1. Active exercises of the shoulder
2. Active exercises of fingers

Treatment Started during mobilization phase

1. Moist Pack
2. Transcutaneous Electrical Nerve Stimulation
3. Active assisted exercises
4. Muscle Energy Technique (Post isometric relaxation technique)
5. Gentle passive end-range stretch

Along with above mentioned treatment the patient was advised home exercise of elbow active movement 10 repetitions 2 times a day. This case report shows that after the application of the above-mentioned physiotherapy treatment for the 8 weeks, there is a reduction in the pain as well as improvement in the elbow's active range of motion and functional ability. Kale and Naik (2019) did a case study in which, physiotherapy treatment was given in 2 sessions per week for 5 months including active range of motion exercises, Maitland mobilization, gravity-assisted stretch and dry needling. After intervention pain was reduced (VAS score from 7 to 2) and elbow extension range of motion was improved (from 95° to 130°). The previous study supports the present study regarding the improvement in post-traumatic elbow physiotherapy treatment plays an important role in reducing pain and improving range of motion and functional ability.

Conclusion

By the present study, it can be concluded that physiotherapy treatment helps to reduce pain, and increases range of motion and functional ability.

Declaration of patient consent

Authors certify that they have obtained the patient consent form, where the patient has given his consent for reporting the case along with the images and other clinical information 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

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Nil

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