Case Report

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Anterior Shoulder Dislocation with Greater Tuberosity Frature of Humerus with Brachial Plexus Injury

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Abstract

Anterior post-traumatic dislocation of the shoulder is the most common type of dislocation and is caused by excessive external rotation and hyperextension of the arm in the overhead direction. Anterior dislocation of the shoulder with fracture of the greater tuberosity is rarely associated with brachial plexus palsy.The treatment given is Closed reduction of shoulder joint under anaesthesia and shoulder immobilization .

Keywords: Shoulder; Anterior Dislocation; Fracture of the Greater Tuberosity; Plexus Injury.

Introduction

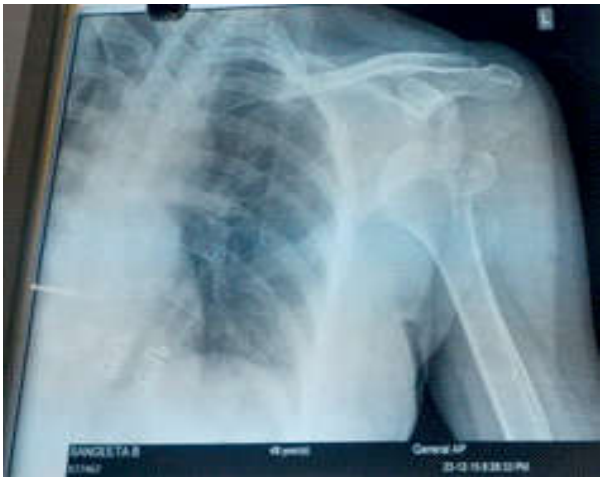
Anterior post-traumatic dislocation of the shoulder is the most common type of dislocation and is caused by excessive external rotation and hyperextension of the arm in the overhead direction [1]. As the humeral head is levered out of the glenoid, the anterior dislocation of the shoulder can be associated with fracture of the glenoid (i.e. bony Bankart); seldom can it be associated with the impaction fracture of the humeral head or of the greater tuberosity.[2]

The incidence of brachial plexus injury with anterior posttraumatic dislocation of humerus with greater tuberosity fracture is rare.Very few cases have been reported in the literature.Conservative management is usually successful, and recovery takes place after several months [6–8]. We report a case of anterior dislocation of the shoulder with fracture of the greater tuberosity and brachial plexus palsy.

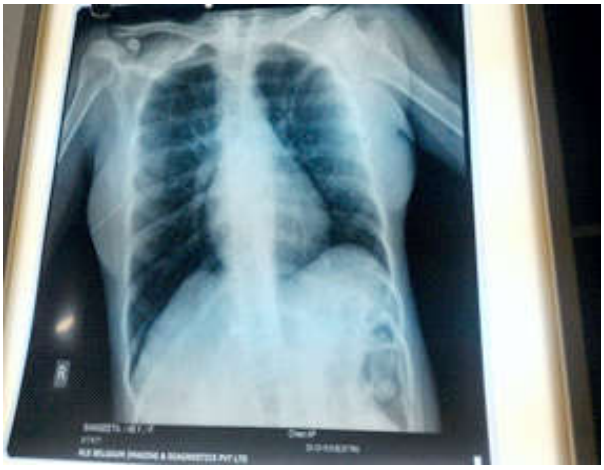
Case Report

A 48-year-old, right-handed female came to emergency department of KLE 'S Dr Prabhakar Kore Hospital & MRC, Belagavi was involved in a fall from steps at home, when her left arm was in abduction-external rotation.The patient then started complaining of pain, deformity and swelling in left shoulder and unable to move her arm. On examination an asymmetric profile of the left shoulde was found with inability to abduct the shoulder. There was a wrist drop with no sensory deficits over the left upper limb. Dugas sign, Hamilton ruler test, Brants test , calway's signs were all positive.

X-rays revealed an Anterior dislocation associated with a displaced fracture of theGreater tuberosity. The treatment consisted of Closed reduction of shoulder joint under anaesthesia and immobilization in anarm sling pouch.Check xray showed Acceptable reduction with greater tuberosity in anatomical alignment. The patient was advised physiotherapy. After 2 weeks an EMG and Nerve conduction study was done. The Patient fully recovered from the brachial plexus palsy(full shoulder movements and wrist drop) after three months and patient resumed her routine activities.



Pre Operative X Ray, Left Shoulder



Post Operative X Ray, Left Shoulder

3 Months post operative , clinical photo showing shoulder abduction and recovered wrist drop

Emg and Nerve Conduction Study Report:

The electromyography (EMG) was performed after 2 weeks. Evidence of motor neuropathy of left axillary nerve and partial motor conductive break In median,ulnar,radial nerves on left side. There is no feedback of denervation of seratus and infraspintaus.

Discussion

The rate of neurological complications after anterior dislocation is probably underestimated. Liveson [9] reported the electrodiagnostic examination of 11 patients with shoulder dislocation and revealed nerve damage not previously reported. Although axillary nerve lesions were most common, posterior cord and musculocutaneous nerve damage occurred, each in five cases.

Lesions can be situated at any level from the base of the nerve roots to the division of the brachial plexus in the axillary region. Several types of lesions can be differentiated: supraclavicular lesions at the root or primary trunk level (75% of the cases); infra and retroclavicular lesions of the secondary trunk (10%); and lesions of the terminal branches (15% of the cases) [10].

Patients with brachial plexus stretch lesions are generally observed for spontaneous recovery for several months. Those patients who do not demonstrate clinical or electrical recovery by 3–6 months should undergo operative intervention. However, physicians need to be mindful that electrical signs of reinnervation do not always correlate with useful clinical recovery

Alnot [10] reviewed cases of 420 adults treated with surgery for traumatic palsy of the brachial plexus. Decision criteria for nerve grafting or

neurolysis were presented. Surgery was generally performed 3 weeks to 6 months after injury. Although secondary sutures could be performed on some injuries, nerve grafting was usually necessary and depended on the length of the gap and the quality of surrounding tissues. The overall prognosis of infra- or retroclavicular plexus injuries is nevertheless better than that of supraclavicular lesions.

However, cases of concurrent anterior shoulder dislocation and brachial plexus injury with fracture of the tuberosity are extremely rare [8, 12]. In our case, the brachial plexus injury was due to an anterior shoulder dislocation, as described previously. Nerve injury with a shoulder dislocation has been reported to occur after low-velocity trauma, because the distance between the anchorage points of nerves in the upper limb is short, making the nerves vulnerable to traction [11]. However, in our case, the fracture of the greater tuberosity associated with nerve lesions revealed a high-velocity injury, resulting in a violent shoulder dislocation with significant migration of the humeral head.

Shin [7] affirmed that the critical concepts in surgical treatment of brachial plexus are patient selection as well as the timing and prioritizing of restoration of function. Surgical techniques include neurolysis, nerve grafting, neurotization, and free muscle transfer.

Conclusion

Anterior dislocation of the shoulder with fracture of the greater tuberosity and brachial plexus palsy can be successfully treated with Closed reduction of shoulder joint under anaesthesia and shoulder immobilized in a arm sling pouch if there is neuropraxic type of brachial plexus palsy.

Clinical Messege

Anterior dislocation of the shoulder with fracture of the greater tuberosity and neuropraxic Brachial plexus palsy treated by closed reduction of shoulder joint provides excellent results and early rehabilitation.

References

1. Neviaser R, Neviaser T, Neviaser J. Concurrent rupture of the rotator cuff and anterior dislocation of the shoulder in the older patient. J Bone Joint Surg Am. 1988; 70: 1308–1311. [PubMed].
2. Claudio Chillemi,Mario Marinelli, and Pierluigi Galizia Fracture–dislocation of the shoulder and brachial plexus palsy: a terrible associationJ Orthop Traumatol. 2008 Dec; 9(4): 217–220. Published online 2008 Sep 25. doi: 10.1007/s10195-008-0028.
3. Mehta M, Kottamasu S. Anterior dislocation of the shoulders with bilateral brachial plexus injury. Ann Emerg Med. 1989; 18 :589–591. doi: 10.1016/S0196-0644(89)80850-9. [PubMed][Cross Ref].
4. Nash E, Soudry M, Abrahamson J, Mendes DG. Neuropraxis secondary to haemorrhage in a traumatic dislocation of the shoulder. J Trauma. 1984; 24(6): 546–547. [PubMed].
5. Johnson JR, Bayley JI. Early complications of acute anterior dislocation of the shoulder in the middle-aged and elderly patient. Injury. 1982; 13(5): 431–434. doi: 10.1016/0020-1383(82)90100-0. [PubMed] [Cross Ref].
6. Shears E, Sunderamoorthy D, Ali SA. Brachial plexus injury after anterior shoulder dislocation: a case report. Acta Orthop Belg. 2005;71(4):489–490. [PubMed].
7. Shin AY, Spinner RJ, Steinmann SP, Bishop AT. Adult traumatic brachial plexus injuries. J Am Acad Orthop Surg. 2005; 13(6): 382–396. [PubMed].
8. Yip KM, Hung LK, Maffulli N, Chan KM. Brachial plexus injury in association with fracture–dislocation of the shoulder. Bull Hosp Jt Dis. 1996; 55(2): 92–94. [PubMed].
9. Liveson JA. Nerve lesions associated with shoulder dislocation; an electrodiagnostic study of 11 cases. J Neurol Neurosurg Psychiatr. 1984; 47(7): 742–744. doi: 10.1136/jnnp.47.7.742. [PMC free article] [PubMed][Cross Ref].
10. Alnot JY. Traumatic brachial plexus palsy in the adult. Retro- and infraclavicular lesions. Clin Orthop Relat Res. 1988; 237: 9–16. [PubMed].
11. Visser C, Coene L, Brand R, Tavy D. The incidence of nerve injury in anterior dislocation of the shoulder and its influence on functional recovery. J Bone Joint Surg Br. 1999; 81: 679–685. doi: 10.1302/0301-620X.81B4.9005. [PubMed][Cross Ref].
12. McManus F. Brachial plexus lesions complicating anterior fracture–dislocation of the shoulder joint. Injury. 1976; 8(1): 63–66. doi: 10.1016/0020-1383(76)90013-9. [PubMed][Cross Ref].