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ORIGINAL ARTICLE

SURGICAL MANAGEMENT OF SCAPULAR NECK FRACTURES: PROSPECTIVE STUDY

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ABSTRACT: Scapula fractures are uncommon injuries, representing approximately 3 to 5% of all shoulder fractures. Usually the scapular fractures are managed conservatively here I have done a study to evaluate the results of surgical treatment in scapular neck fractures. **MATERIALS AND METHODS:** I studied six patients who had displaced scapular neck fractures admitted to our hospital between May 2013 and April 2015. All cases were operated by open reduction and internal fixation with locking reconstruction plate and screws. And follow up done at 3, 6 and 12 weeks for function and radiological outcome. **RESULTS:** All patients were followed at 3, 6 weeks and 12 weeks for the clinical and radiological assessment for the range of motion at the shoulder joint and union respectively. At the end of 12 weeks range of movement was full at the shoulder joint without any pain and disability. And radiological evaluation show complete osteosynthesis in all our patients by twelve weeks. **CONCLUSION:** Open reduction and internal fixation followed by early mobilization helps in preventing stiffness, pain, and disability in scapular neck fractures. And also helps in complete anatomical osteosynthesis.

KEYWORDS: Scapula neck, Reconstruction plate, Displaced fracture.

INTRODUCTION: Scapula fractures are uncommon injuries, representing approximately 3 to 5% of all shoulder fractures. It requires high energy trauma like motor vehicle accidents account for 50% of scapular fractures, direct trauma to the shoulder region, indirect trauma through falling on outstretched hand and non-accidental injuries in children. It can be associated with clavicle fracture, rib fracture, sterna fracture and pneumothorax and or pulmonary contusion and brachial plexus injury. Usually the scapular fractures are managed conservatively here I have done a study to evaluate the results of surgical treatment in scapular neck fractures.

MATERIALS AND METHODS: I studied six patients who had displaced scapular neck fractures admitted to our hospital between May 2013 and April 2015. In which all were male patients. And in all the cause for the fracture was road traffic accident and no one had associated injury. All were in the age group between 25 and 40 years. Right sided was affected in four and left sided in remaining two.

The indication for surgery in all patients was greater than 1cm medial displacement and greater than 40deg angulations (Fig. 1). All were operated using the locking reconstruction plate and screws. The posterior approach to the shoulder was used in all the cases.

PROCEDURE: In lateral position with the arm supported for fracture of posterior aspect of glenoid & lateral scapular margin. Curved skin incision starts at lateral prominence of acromion, courses medially along scapular spine and caudally to inferior angle of Scapula (Fig. 2).

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Detach of deltoid from scapular spine and retract laterally, deepen approach through interval between infraspinatus and teres minor, original Judet posterior approach involved elevation of belly of infraspinatus which was then reflected laterally to expose whole infraspinatus fossa. Reduction was achieved using pointed reduction forceps or using Kochars forceps. After reduction locking reconstruction plate put over the lateral border of the scapula and stabilized using locking screws (Fig. 3) Would is washed using normal saline and closed over layers using suction drain. Postoperatively arm sling was put for three days and range of movement exercises ware started from day three. Postoperative check x-ray was taken to confirm the reduction and fixation (Fig. 4).

RESULTS: All patients were followed at 3, 6 weeks and 12 weeks for the clinical and radiological assessment for the range of motion at the shoulder joint and union respectively. At the end of 12 weeks range of movement was full at the shoulder joint without any pain and disability. And radiological evaluation show complete osteosynthesis in all our patients by twelve weeks.

DISCUSSION: Scapula fractures are uncommon injuries, representing 3 to 5% of all shoulder fractures and 0.4% to 1% of all fractures.[1,2] It requires high energy trauma like motor vehicle accidents account for 50% of scapular fractures, direct trauma to the shoulder region, indirect trauma through falling on outstretched hand and non-accidental injuries in children. It can be associated with clavicle fracture, rib fracture, sterna fracture and pneumothorax and or pulmonary contusion and brachial plexus injury.

This low incidence of scapular fractures may be due to the scapula's thickened edges, its great mobility with recoil, and its position between layers of muscle. The mean age of patients with fracture of the scapula is 35 to 45 years,[3,4,5]

Radiographic features in true anteroposterior view of the scapula, axillary view and true lateral view (Y-view) to demonstrate glenoid fracture. CT a standard tool for diagnosis and evaluation of the fracture and its associated injuries. Axial scan with coronal, sagittal and 3D reconstructions are used in assessment of scapular injuries.

Classification: Intra-articular Glenoid Fracture:

- Type I: Avulsion of anterior glenoid margin.
- Type II: Transverse or oblique fracture through glenoid fossa exiting inferiorly.
- Type III: Oblique fracture through glenoid fossa exiting superiorly and associated with acromioclavicular joint injury.
- Type IV: Transverse fracture exiting through medial scapular border.
- Type V: Combination of type II and type IV.
- Type VI: Comminuted glenoid fracture.

Extra-articular Glenoid Fracture:

- Type I: Glenoid neck fracture without clavicular fracture.
- Type II: Glenoid neck fracture with clavicular fracture and acromioclavicular dislocation.

Coracoid Process Fracture:

- Type I: Fracture proximal to the coracoclavicular ligament.
- Type II: Fracture distal to the coracoclavicular ligament.

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Acromial Fracture:

- Type I: minimally displaced.
- Type II: displaced but does not reduce subacromial space.
- Type III: displaced and narrow the subacromial space.

Scapular Neck Fractures: Make up about 2/3 of scapular fractures, usually these fractures are impacted and extra-articular, and have good prognosis for healing.

CLASSIFICATION:

- Type I: Non-angulated, Non-displaced.
- Type II a: Shortened/Displaced >1cm.
- Type II b: Angulated>40degrees.

Surgical Indications: Non-displaced- Non-operative treatment yields good results, no function limitation, displaced, non-operative treatment yields significant functional disability. Greater than 1cm medial displacement and greater than 40deg. angulation.

Ada and Miller.[6] found that after closed treatment of 16 patients with displaced glenoid neck fractures, 40% had weakness of abduction, 50% had subacromial and night pain, and 20% had decreased range of motion. In contrast, eight patients treated surgically with open reduction through a posterior approach had no complications, no rest or night pain, and what they described as greater than 85% of glenohumeral motion. They recommended open reduction if the glenoid neck fracture is angulated more than 40 degrees or displaced more than 1cm.

Implant used are 1/3 tubular plate, 3.5mm DCP, or LC-DCP, contoured 3.5 pelvic reconstruction plate.

Posterior Approach to the Scapular Neck Fractures: In lateral position with the arm supported for fracture of posterior aspect of glenoid & lateral scapular margin. Curved skin incision starts at lateral prominence of acromion, courses medially along scapular spine and caudally to inferior angle of Scapula. Detach of deltoid from scapular spine and retract laterally, deepen approach through interval between infraspinatus and teres minor, original Judet posterior approach involved elevation of belly of infraspinatus which was then reflected laterally to expose whole infraspinatus fossa.

Reduction can be achieved using pointed reduction forceps or using Kochars forceps. After reduction locking reconstruction plate put over the lateral border of the scapula and stabilized using locking screws. Would is washed using normal saline and closed over layers using suction drain.

Postoperatively arm sling was put for three days and range of movement exercises ware started from day three. Postoperative check x-ray was taken to confirm the reduction and fixation. The scapula has an important role in arm function.

After fixation surgery, full-time wearing of a shoulder immobilizer is essential along with early passive ROM exercises. The arc of movement is determined by the extent of muscle release and repair and the stability of fixation. After full subscapularis release, external rotation should be limited to 30 degrees for 3 weeks. With full release of the infraspinatus, a brace is worn with the arm at 0 degrees external rotation for 4 weeks; 30 degrees of internal rotation and 90 degrees of elevation are allowed. Exercises may become active assisted when muscle healing has occurred at 3 weeks.

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Resistance exercise is started only after complete radiological healing of fracture. In all our patients we achieved full range of movement at the shoulder joint and complete radiological healing by twelve weeks which is comparable to other standard studies.[7,8,9,10]

CONCLUSION: Open reduction and internal fixation followed by early mobilization helps in preventing stiffness, pain, and disability in scapular neck fractures. And also helps in complete anatomical osteosynthesis.

Fig. 1

Fig. 2

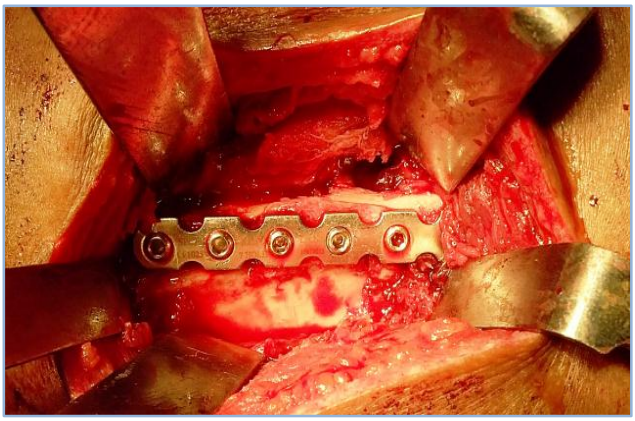

Fig. 3

Fig. 4

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