

Recent and Relevant Literature in 2020 on Trauma Around Shoulder

Sandeep R Biraris¹

Floating Shoulder

Floating shoulder is complex rare injury cause by high velocity trauma. This was described in 1975 by Ganz and Noesberger [1]. There is also double disruption of superior shoulder suspensory complex [2]. There is debate in the literature on how patients with floating shoulder injuries are treated properly to improve functional outcomes. Both conservative as well as operative treatment modalities have been described for these patients. Both these treatment modalities have yielded the satisfactory functional outcomes.

Dombrowsky et al. have done the systematic review of the management of these injuries to put forward the outcome [3]. They reviewed 159 abstracts and selected 17 studies for the systemic review. Out of these 17, three involved non-operative management, six involved surgical management, and eight involved combination of both the managements. Mean age of the patients was 39.3 years (range, 16–82). 277 were male and 81 were female. Mean follow-up time was 47.5 months (range, 6–312 months). Mechanism of injury was seen in 340 shoulders. About 51% injuries were caused by motor vehicle accidents. Out of these, 215 (58%) shoulders were

treated with surgical fixation.

Glenopolar angle (GPA) is the angle formed between lines which connects superior as well as inferior poles of the glenoid and the second line which starts from the superior pole of the glenoid to the most inferior tip of the scapular body (Fig. 1). GPA was measured in eight studies, total 106 patients were available for pre-operative and follow-up studies. Mean GPA was 22.7° in patients managed nonoperatively and 29.7° in those managed surgically. Authors noted poor outcome in the patients with <30° GPA and advocated surgical fixation of scapular fractures in these patients. Authors also stress that GPA can be corrected to normal range of 30–35° only after fixation of clavicle and scapula. GPA is also used to assess the rotational malalignment of glenoid neck. It is also tool to predict the outcome after the floating shoulder injuries. Authors also speculate that being a two-dimensional measure, GPA may not be reliable indicator for final outcomes.

Constant-Murley score was used most of the time for the outcome assessment, followed by Herscovici Floating Shoulder Injury Efficacy Scoring System. Outcome was comparable in both the groups, fixation of scapula alone and clavicle as well as scapula.

Patients treated surgically were noted to have come out of arm sling earlier than the operated patients. They have concluded that both non-operative and surgical management give the satis-

factory outcome provided that the treatment is individualized according to patients. Fixation of clavicle alone has higher incidence of better results. They concluded that there is need for multicenter, large volume randomized control studies to determine the optimal treatment strategy.

Clavicle

Rauer et al. [4] in their study verified the reliability of three commonly used classification systems for lateral clavicle fractures and verified the inter- and intra-observer agreement. There was fair agreement in the interobserver reliability in all three classification systems. It was moderate between OTA and Jager/Breitner classification systems. They concluded that all the tested classification systems are unreliable and of limited value.

Kim et al. [5] in their study have provided overview of classification system of distal clavicle fractures and treatment methods. They have studied the fracture patterns based on ligament injuries as per the Cho's classification system [6] (Fig. 2). They have stated that non-union rates are higher amongst the Neer Type 2 fractures. The treatment options for these fractures are still controversial. They believe that pre-contoured locking plate is one of the best options for unstable distal clavicle fractures including Type IIA, B, and D fractures as per Cho's classification system. Hook plate should be considered for the fractures with small distal fragment, fractures with severe comminutions as well as osteo-

¹Head of Orthopaedics, Mumbai Port Trust Hospital, Nadkarni Park, Wadala (E), Mumbai-400037.

Address of Correspondence

Dr. Sandeep R Biraris,
Head of Orthopaedics, Mumbai Port Trust Hospital,
Nadkarni Park,
Wadala (E), Mumbai-400037
E-mail:sandeepbiraris@gmail.com

porotic fractures. It is associated with various plates related complications such as impingement, inflammation, and osteolysis. This option can be good for Type IIB and IID fractures as per Cho's classification. Isolated CC fixation or using flexible method has shown comparable results. With the use of flexible methods, there is no need for removal of the implants or screws before start the physiotherapy. This type of fixations can be very well done using arthroscopic techniques. With the use of arthroscopic techniques, rehabilitation can be faster. For fixation using K wires or tension band wirings it should be patient specific. Hence, patient selection is optimal.

They concluded that, as there are many methods for the fixation of these injuries, there is no consensus on which is the gold standard treatment. Surgeons should be skilled in all the treatment modalities.

Tutuhaturnewa et al. [7] in their study hosted four face to face and two web-based focus groups, which comprised 24 participants. Out of these 24, 14 were treated nonoperatively and ten were treated operatively. All these patients were subjected to scripted questionnaires about expectations, attitude, and satisfaction. At the end of their study they concluded that information given to the patient about their injury, treatment options, and expectations for recovery are of significant importance for the patient satisfaction of the displaced mid shaft clavicle fractures.

Scapula

Scapular neck fractures account for around <1% of all the fractures. Non-operative treatment modality is the most preferred treatment modality for these fractures provided there is no disruption of shoulder suspensory complex.

Mannambeth et al. [8] in their retrospective cohort study of direct lateral column approach for the extra-articular fractures of the scapula states that there was improvement in the post-operative

scores of the patients. This approach gives good clinical scores in these patients. Their indications for surgical fixation included scapular neck fracture with >20 mm of either medial or lateral displacement and angulation of >45° along with double disruption of shoulder suspensory complex. GPA of <22° was also one of the indications for the surgery. Bi et al. [9] in their systemic literature review of 42 manuscripts with total 669 patients stated that average age of the patients was 41.2% years, 78.1% were male. Blunt force was the most common mechanism of injury. They concluded that patient with extra-articular fractures had excellent outcome either with operative or non-operative treatment modality. They suggested that there is need for high quality comparative study to determine strategy for management of these injuries.

Proximal Humerus

Systemic review conducted by Soler-Peiro et al. [10] about conservative management of 3-part and 4-part proximal humerus fractures included six studies and patient population of 133. Interestingly, they noted that four-part fractures had high rate of consolidation and lower rates of malunion than the three-part fractures. However, functional results were poor in four-part fractures over three-part fractures.

Ishii et al. [11] in vitro evaluated tension band suture methods for proximal humerus fracture treatment. They examined mechanical durability of 18 various combinations of the sutures through cyclic loading test. The results were promising for the Fiber wire with single hole washer at 45° angle, while threading of Ethibond to the washer disc at 15° had more breakages. They recommended combination with the use of Fiber Wire because of durability and strength.

Systemic review about nonunion of proximal humerus fractures in adults conducted by Zastrow et al. [12] included 37 articles, representing 508

patients. They observed that younger patients with simpler fracture patterns were managed with open reduction and internal fixation (ORIF) which resulted in over 97% union rates. In the patients with arthroplasty, Hemiarthroplasty / Total Shoulder Arthroplasty (HA/TSA) and Reverse TSA (RTSA) groups, RTSA demonstrated more forward flexion but less external rotation than HA/TSA group patients. Complications as well as reoperation rates were slightly more in RTSA group patients.

Authors concluded that, if there is adequate bone stock then the ORIF will certainly achieve good results. Some patients do need the bone graft to achieve the union. If bone stock is not adequate, then the arthroplasty will provide the improvement in forward flexion. While external rotation is dependent on healing of the tuberosities. If the tuberosities are excised or not healed in anatomic position, then the chances of instability are higher with the RTSA.

Shoulder Dislocation: (Brachial Plexus)
There is an interesting study of shoulder dislocation associated with brachial plexus injury, conducted by Gutkowska et al. [13]. They stated neurological injuries are rarest but most severe complication of shoulder dislocation. Incidence of neurological complications range from 5.4% to 55% in all dislocations. Predominantly neuropraxia and axonotmesis and rarely complete nerve disruptions (3%). Immobilization and stiffness post shoulder dislocation may mask the neurological injury. Brachial plexus injury resolves in most of the patients spontaneously. Around 13–18% patients needed to undergo surgery. If the surgery is planned, then it should be carried out in around 3–6 months of injury. Authors recommend, first EMG after the delay of 3 weeks post-dislocation in suspected neurological compromise patients. They recommend non-operative approach in the infraclavicular brachial plexus injuries. However, if there is no improvement in 6

months then the operative management to be considered. Early surgery within 3 months is beneficial. They have also outlined the detailed algorithm in their article. They emphasize that physio-

therapy has role to play in brachial plexus injuries post shoulder dislocation. Furthermore, there should be long lasting cooperation between patient, surgeon, physiotherapists, and psycho-

logical counselor.

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