



Non or minimally displaced acromion fractures treated conservatively with shoulder spica: Our experience with 13 cases

Abhishek Nerurkar¹, Mishil Parikh²

1- Lecturer, Department of Orthopaedics, Hinduhridaysamrat Balasaheb Thackeray Trauma Care Hospital, Jogeshwari, Mumbai.
2- Registrar, Department of Orthopaedics, Hinduhridaysamrat Balasaheb Thackeray Trauma Care Hospital, Jogeshwari, Mumbai.

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Corresponding Author:

Dr. Mishil Parikh, B/6, Anand Bhavan, Bajaj Road, Vile Parle (W), Mumbai 400056.

Email: mishil7@gmail.com

Abstract:

Introduction: Approximately 8% to 9% of all scapular fractures involve the acromion. Most nondisplaced acromion fractures are successfully treated simply by immobilization with a sling or Velpeau dressing until the pain has subsided, which is usually within 3 weeks. But there are reports of displacement following conservative management. The results of delayed reconstruction for a displaced fracture have been poorer than early reconstruction. We have used a shoulder spica with shoulder in 30o-45o of abduction to prevent further displacement of an undisplaced fracture. **Aim:** To analyze the outcomes of the non-operative management using shoulder spica. **Materials and Methods:** 13 patients of acromion fractures were treated conservatively between June 2014 to January 2015 with 3 months of follow-up. Fractures were classified according to Kuhn et al. The classification system for acromion fractures is based on displacement and invasion of the subacromial space. All patients were followed up weekly for 4 weeks then at 8 wks and 3 months. Local examination, shoulder movements were assessed and check x-rays were done at each visit. The UCLA Shoulder Scoring System was used to evaluate the patients on follow-up. **Result:** Our study showed statistically significantly better prevention of displacement and union time in those given shoulder spica than existing studies on non-operative management. Displacement was seen in only 1 case (0.07%). **Conclusion:** Our study concludes that Shoulder Spica application significantly reduces the chance of displacement in an undisplaced acromion fracture thus preventing a surgical intervention.

Key words: Acromion Fracture, Shoulder Spica.

Introduction:

The scapula is that bone which connects the upper extremity and the axial skeleton. Scapular fractures are generally associated (local and remote)

injuries as they are a result of high energy trauma [1]. Historically, non-displaced scapular fractures have been treated by closed means. One of the earliest descriptions of treating scapular fractures was published in 1805 in Desault's treatise on fractures.

Since then, it has been suggested in the literature that over 90% of scapular fractures are non- or minimally displaced and do well with conservative treatment. [2] Approximately 8% to 9% of all scapular fractures involve the acromion (Fig. 1) [3]. Most acromion fractures are successfully treated simply by immobilization with a sling or Velpeau dressing until the pain has subsided, which is usually within 3 weeks. Some authors have advocated the use of a spica cast with the shoulder in abduction [4].

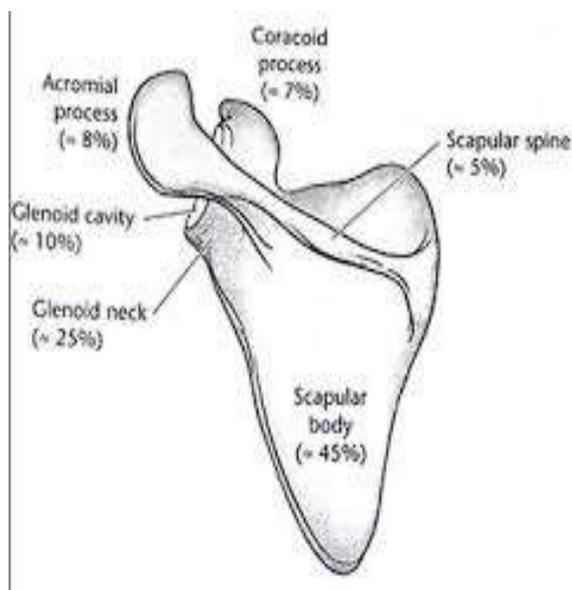


Figure 1:

Materials & Methods :

In our study 13 patients of acromion fractures were treated conservatively with a shoulder spica between June 2014 and January 2015 with 3 months of follow-up. Adult patients above 18 years who had undisplaced acromion fractures were included for this study after taking written consent from them. Closed fractures, fractures associated with complication like head injury and associated other bone injuries were included in this study.

Patients less than 18 years of age, patients with displaced fracture of acromion were excluded. In our study none of the patients had neuro-vascular complications. 13 patients were treated conservatively with shoulder spica. (Fig. 3)



Figure 2:

General information like name, age, sex, occupation and address and functional demand of patients were noted. Then a detailed history was noted regarding mode of injury like fall on the shoulder, road traffic accident, direct injury to shoulder and fall on outstretched hand. All patients were examined for pallor, pulse rate and blood pressure. Respiratory and cardio vascular system were examined for any abnormalities. Local examination regarding site of swelling, local skin condition, tenderness and crepitus were noted.

Movements of shoulder were noted which was restricted in most patients. The UCLA Shoulder Scoring System was used. Plain radiograph of acromion with shoulder in anteroposterior view was taken to assess the site of fracture and the fracture type (displacement and comminution). The fractures were classified according to Kuhn's classification (Fig. 2).

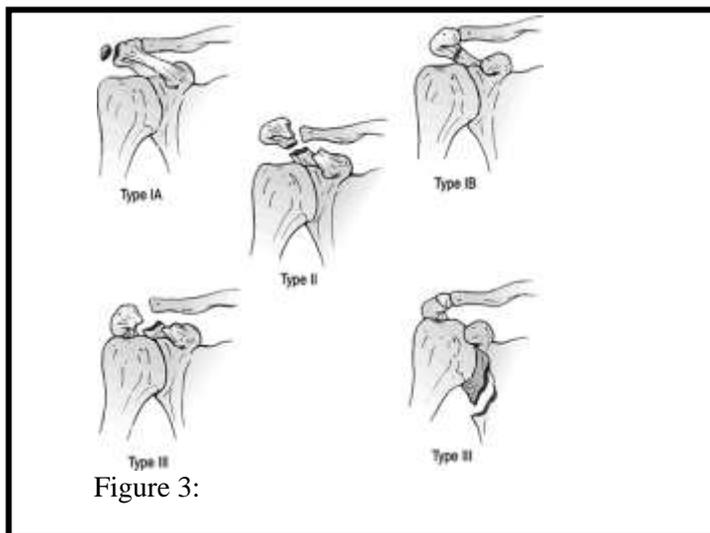


Figure 3:

Type I: Minimally displaced

Type II: Displaced but does not reduce the subacromial space

Type III: Displaced with narrowing of the subacromial space

The patient was taken to the Operating Theatre and the fracture was visualized under the C-arm. Stability and displacement were evaluated under C-arm. After confirming nondisplaced or minimally displaced fracture, reduced in a stable position, a shoulder spica was applied and check Xrays were taken. The patient followed up weekly for 4 weeks then at 8 wks and 3 months. The UCLA Score was done at 4 weeks and 8 weeks.

Results :

12 out 13 patients (92.3%) showed union of the fracture within 6 weeks. Mean union time being 4.2 weeks. The mean UCLA score was 33/35 at the end of 8 weeks. The resultant functional deficit was negligible. The range of motion was restored after shoulder rehabilitation. Out of 13 patients selected for this study, only 1 (7.7%) displaced within the spica, the rest went on to unite in anatomical position after 8 weeks. This patient required surgical reconstruction with plates.

Table 1: Age distribution of patients

AGE IN YEARS	NO. OF PATIENTS	PERCENTAGE
21-30	1	7.7
31-40	3	23.2
41-50	5	38.4
51-60	4	30.7
TOTAL	13	100

In this study, patients were of age group between 21-60 years.

Table 2: Sex distribution

SEX	NO. OF PATIENTS	PERCENTAGE
MALE	11	84.6
FEMALE	2	15.4
TOTAL	13	100

There was a male predominance

Table 3: Fracture union

TIME	NO. OF PATIENTS	PERCENTAGE
<4 weeks	1	8.3
4-6 weeks	11	91.7
>6 weeks	0	00
TOTAL	12	100

Average time of union was 4.2 weeks.

Table 4: Results

RESULTS	NO. OF PATIENTS	PERCENTAGE
Excellent	10	76.9
Good	2	15.4
Poor	1	7.7
Total	13	100

Discussion

Acromion fractures are caused by high energy trauma and, in general, accompany damage to

surrounding organs and life-threatening injuries. Therefore, diagnosis and treatment are often delayed. Cases of minimally displaced fractures were unnoticeable without close observation. These patients' plain radiographs showed minimally displaced fractures of the acromion. Hence we gave Shoulder Spica under C-arm guidance and asked them to followup after 3 weeks. Doosup Kim et al in his study reported that delayed reconstruction group showed significantly lower pain scores and daily activity scores compared to the early fixation group [5]. In cases of nondisplaced acromion fractures, it is important that patients and families are properly informed about advantages and disadvantages of early surgery and delayed reconstruction. Especially when patients are young and active, the possibility of displacement during conservative treatment is to be stressed, and early surgery is to be more carefully selected. With respect to the nondisplaced acromion fracture, there are very few case reports in the literature. Nondisplaced acromion fractures may displace if not protected [6].

These patients were treated non-operatively and observed for any displacement at weekly follow ups for 4 weeks. Since there was no displacement, we continued the spica for 4 weeks and started mobilizing the shoulder after spica removal. At the end of 8 weeks, patients had almost full range of motion and no functional disability. The Average UCLA Score at time of presentation was 9/35 and that at the end of 8 weeks was 33/35.

Hence Immobilizing in a shoulder spica did help union and prevent displacement.

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Figure 4: Immediately After Trauma



Figure 5: Immediately After Shoulder Spica Application



Figure 6: At 4 Weeks after Spica Application