International Journal of Case Reports in Orthopaedics

E-ISSN: 2707-8353
P-ISSN: 2707-8345
Impact Factor (RJIF): 6.09
IJCRO 2026; 8(1): 01-03
www.orthocasereports.com
Received: 05-10-2025
Accepted:12-11-2025

Dr. Aditya Arjun Mugutrao
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Dr. Jairam Jagiasi
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Dr. Vijay Sarukte
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Dr. Tushar Ramteke
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Dr. Karan Pandav
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Dr. Suyog Wagh
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Dr. Gaurav
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Corresponding Author:
Dr. Aditya Arjun Mugutrao
Department of Orthopaedics, Lokmanya Tilak Municipal Medical College and General Hospital, Sion, Mumbai, Maharashtra, India

Creative Adaptation of a Distal Radius Plate for Scapular Reconstruction: Expanding Orthopedic Horizons

Aditya Arjun Mugutrao, Jairam Jagiasi, Vijay Sarukte, Tushar Ramteke, Karan Pandav, Suyog Wagh and Gaurav

DOI: https://www.doi.org/10.22271/27078345.2026.v8.i1a.320

Abstract
Background: Scapular fractures are uncommon injuries, comprising less than 1% of all skeletal fractures. The body of the scapula is the most frequently fractured part due to its broad surface and exposure to high-energy trauma, such as road traffic accidents. Most scapular body fractures are managed non-operatively; however, significantly displaced fractures can cause functional limitation, cosmetic deformity, and chronic pain when left untreated.
Case Presentation: A 24-year-old male presented to our institution following a fall from a motorcycle, complaining of pain, deformity, and restricted movement of the right shoulder. Imaging confirmed a displaced fracture through the body of the right scapula without involvement of the glenoid or acromion. Considering the displacement and young, active status of the patient, surgical intervention was indicated.
Method: Open reduction and internal fixation (ORIF) was performed using the Judet approach for optimal exposure. The fracture was anatomically reduced under direct vision. A reconstruction (recon) plate was adapted to the main fracture line for primary stabilization. An additional distal end radius plate was innovatively molded to match the scapular contour and applied to augment fixation and achieve superior contouring and stability.
Result: The postoperative period was uneventful. The patient commenced pendulum and passive range-of-motion exercises at two weeks, progressing to active physiotherapy by six weeks. At the 12-week follow-up, radiographs demonstrated full union. Functional recovery was excellent, with a Constant-Murley score of 96/100 and full return to pre-injury activity levels.
Conclusion: Open reduction and internal fixation using the Judet approach provides good exposure and allows precise reconstruction in scapular body fractures. The innovative use of a distal end radius plate as a supplementary implant offers an excellent contour fit and enhances fixation strength. This approach is particularly valuable in complex fracture patterns where conventional plates cannot provide adequate adaptation to the scapular curvature.

Keywords: Scapular body fracture, open reduction and internal fixation, Judet approach

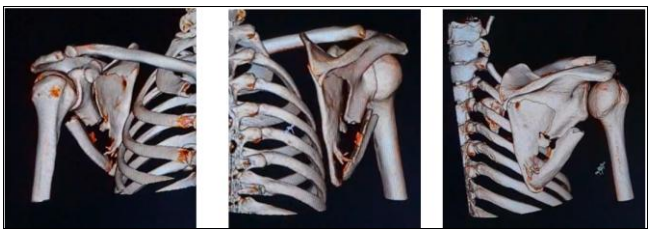
Introduction
Scapular fractures are rare due to the bone's deep muscular and thoracic protection, typically resulting from high-energy trauma such as vehicular accidents, falls from heights, or direct blows. Among all scapular fractures, the body is involved in approximately 50-60% of cases. Because of the bone's rich muscular envelope and the natural stability conferred by adjacent structures, most scapular fractures are treated conservatively with satisfactory outcomes.
However, open reduction and internal fixation become necessary when there is significant displacement (over 20 mm), angulation greater than 40-45 degrees, or double disruptions of the shoulder suspensory complex. A displaced scapular body fracture can compromise shoulder mechanics due to altered glenoid orientation, pain, and weakness.
Traditional surgical approaches include the modified Judet and extended posterior approaches, which allow visualization of the scapular spine, lateral border, and body. Fixation typically utilizes low-profile implants like reconstruction plates. Nevertheless, the irregular topography of the scapula makes plate contouring difficult, motivating the innovative use of anatomically adaptable implants.

Case Report

A 24-year-old male, with no significant past medical history, presented to the casualty department following a high-velocity fall from a motorcycle. The patient sustained a direct impact on the right scapular region upon landing on the pavement.

On examination, there was swelling, bruising, and tenderness over the posterior aspect of the right shoulder blade. Shoulder movement was restricted due to pain, but distal neurovascular status was intact. No rib fractures or pneumothorax were identified on chest radiography.

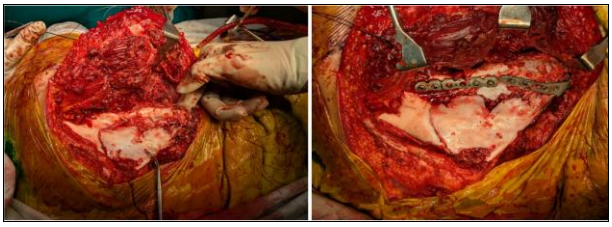
Investigations: Standard anteroposterior and lateral radiographs of the scapula showed a transverse fracture line through the body with overriding and medial displacement of the lateral fragment. A computed tomography (CT) scan with 3D reconstruction was performed for surgical planning, revealing a displaced fracture extending obliquely across the scapular body, sparing the glenoid cavity and acromial spine.



Surgical Technique

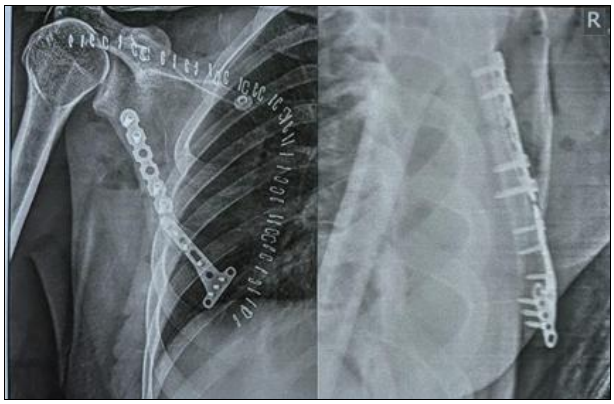
The procedure was performed under general anesthesia with the patient in the prone position. A curvilinear incision was made along the spine of the scapula extending to the lateral border, following the Judet approach. The infraspinatus and teres minor muscles were carefully retracted to expose the fracture site.

After clearing hematoma and fibrous tissue, anatomical reduction was achieved and temporarily held with K-wires and reduction clamps. A pre-contoured 3.5 mm reconstruction plate was fixed along the lateral border of the scapula. For better adaptation and additional buttressing, a 2.7 mm distal end radius plate, contoured intraoperatively to match the scapular curvature, was used as a secondary stabilizer. This innovative construct provided enhanced fixation at the thin-walled scapular body and distributed forces effectively across the fracture site.



Intraoperative fluoroscopy confirmed satisfactory reduction and plate positioning. Wound closure was done in layers over a suction drain.

Postoperative Management



The patient was immobilized in an arm sling. Pendulum exercises began after 14 days, followed by gradual active-assisted shoulder motion at four weeks. At six weeks, full active mobilization and strengthening exercises commenced under physiotherapy supervision.

At three months, radiographs showed complete bony union without implant-related complications. At six months, the patient achieved full functional recovery, returning to all activities of daily living and light sports.

Discussion

Scapular body fractures remain a topic of interest due to their infrequency and the technical challenges involved in surgical management. Various studies recommend surgical

fixation in highly displaced or angulated fractures to restore normal shoulder biomechanics.

The Judet approach, first described in 1964, remains the gold standard for exposure of the body and spine of the scapula. It allows direct reduction with minimal disturbance to the surrounding musculature. However, one of the main intraoperative challenges is obtaining a suitably contoured implant that conforms to the broad and curved scapular surface.

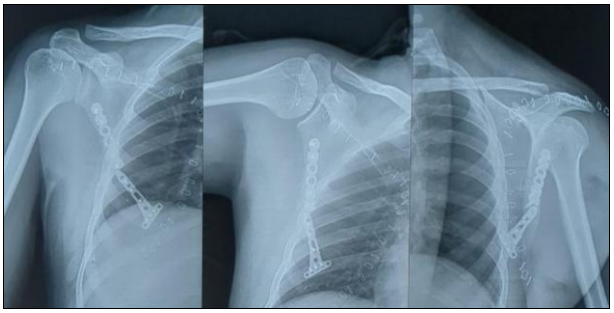
In this case, the innovative use of a distal end radius plate as an auxiliary implant provided improved adaptability to the scapular contour. Its multidirectional screw placement and low-profile structure ensured secure fixation, reducing soft tissue irritation and allowing for early mobilization. Compared to conventional recon plates, the anatomical curvature of a distal radius plate better conforms to the convex posterior scapular wall, which can reduce the need for aggressive bending and preserve implant strength.

This case demonstrates that creative adaptation of commonly available orthopedic implants can address anatomical challenges and optimize outcomes in rare fracture scenarios. The stable construct facilitated early rehabilitation and excellent long-term function.

Conclusion

This case highlights the successful operative management of a displaced scapular body fracture using an innovative combination of a reconstruction plate and a distal end radius plate through the Judet approach. The modified fixation technique provided robust stability and precise contouring, ensuring rapid recovery and excellent functional outcomes.

The innovative use of a distal radius plate can be considered a valuable alternative in complex scapular fractures where conventional implants are inadequate for achieving anatomical conformity.



Conflict of Interest

Not available.

Financial Support

Not available.

References

1. Angachekar D, Jadhav S, Rathi PM, *et al*. Fixation of displaced lateral column and spine of scapula through modified Judet approach. J Orthop Case Rep. 2017;7(4):60-64.
2. Panigrahi R, Mahapatra AK, Panda BB, *et al*. Outcome analysis of intra-articular scapula fracture fixation using distal radius plates. J Clin Diagn Res. 2016;10(1):RC17-RC19.
3. Open reduction internal fixation of extra-articular scapular neck and body fractures: functional outcomes and technical aspects. J Bone Joint Surg.
4. Stammer AT, Bavery T, *et al*. Glenoid fracture fixation using an Acu-Loc distal radius plate: technical note. Cureus. 2024;16(2).
5. Internal fixation of scapular body fractures: short-term results and surgical considerations. J Musculoskelet Surg Res.

How to Cite This Article

Mugutrao AA, Jagiasi J, Sarukte J, Ramteke T, Pandav K, Wagh S, *et al*. Creative Adaptation of a Distal Radius Plate for Scapular Reconstruction: Expanding Orthopedic Horizons. International Journal of Case Reports in Orthopaedics. 2026;8(1):01-03.