

## Scapula Fractures- Do We Need To Fix Them?

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**Abstract:**

Scapula fractures, though infrequent, often result from high-energy impacts and pose a significant challenge in treatment due to the scapula's complex anatomy and the intricacies involved in surgical approaches for fracture fixation. With advancements in surgical techniques, innovative implants, and enhanced methods for decision-making and outcome measurement, surgical intervention for extraarticular scapular fractures is increasingly being considered.

**Keywords:** Scapula, Fracture, Case Report.

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**Introduction**

Scapular fractures can occur from direct impacts to all regions of the scapula, but indirect trauma, such as a force transmitted from the humeral head into the glenoid fossa, can also lead to intra- and extra-articular fractures [1,2&3]. Diagnostic imaging, including anteroposterior, lateral, and axillary radiographs, is vital, but the role of computed tomography (CT), especially 3D reconstructions, is critical in preoperative planning and decision-making [4]. A study by Armitage et al. [5] utilizing 3D-CT to analyze 90 scapula fractures found that 68% involved the inferior aspect of the scapula neck, with 17% showing articular involvement and 84% extending medially beneath the scapular spine's medial extent. Notably, articular fractures exhibited no consistent pattern.

The approach to treating scapula fractures has evolved significantly over the past decade. Despite the scapula's well-muscled envelope that typically allows for the successful healing of most fractures, malunion of the scapula can severely affect shoulder girdle functionality, leading to chronic pain, aesthetic issues, impingement, and scapulothoracic dyskinesia.

**Surgical Indications:**

- Articular displacement or gap exceeding 4 mm
- Articular involvement above 20 to 25%
- Scapula medialization over 20 mm (reduced to 10 mm for double disruptions, 15 mm when combined with 30° angulation)
- Glenopolar (GP) angle below or equal to 22°
- Angulation at or above 45°

**Case Report**

A 26-year-old male with a history of trauma and direct shoulder girdle injury was examined. Initial radiographs showed a scapular fracture affecting the lateral border and extending through the body, with a GP angle of 18 degrees. CT scans verified the displaced lateral border fracture. Open reduction and internal fixation of the lateral border were performed using a Brodinsky approach. The fracture was reduced and secured with a scapula lateral border plate and screws, with fluoroscopic imaging confirming the reduction. Postoperative radiographs demonstrated excellent reduction. The patient was advised to wear an arm sling for three weeks, followed by physiotherapy to restore shoulder movement. By three months, the patient had nearly regained normal range of motion.

**Discussion**

Scapular fractures can significantly disrupt normal shoulder girdle function, often leading to chronic pain due to malunion, nonunion, impingement, or scapulothoracic dyskinesia [4]. The vast majority of scapular fractures (>80%) respond well to conservative treatment and exhibit favorable functional outcomes [6,7&8]. Typically, isolated fractures of the scapular body and glenoid neck, as well as most fractures of the acromion, coracoid process, and scapular spine, are effectively managed without surgery [9].



## References

1. Rowe CR. (1963). Fractures of the scapula. *Surg Clin North Am.* 43:1565–71.
2. Vidović D, Benčić I, Ćuti T, Bakota B, Bekić M, Dobrić I, Sabalić S, Blažević D. (2020). Surgical treatment of scapular fractures: results and complications. *Injury.* S0020-1383(20):30772–
3. Kaya HA, Eroglu O, Günal N, ÇoSskun F, Deniz T. (2018). The relation between scapula fracture and the severity of trauma in blunt thoracic trauma. *Turk J Med Sci.* 48:1228–33.
4. Voleti P, Namdari S, Mehta S. (2013). Fractures of the scapula: diagnosis, indications, and operative technique. *Univ Penn Orthop J.* 23:57–61.
5. Armitage BM, Wijdicks CA, Tarkin IS, Schroder LK, Marek DJ, Zlowodzki M, Cole PA. (2009). Mapping of scapular fractures with three-dimensional computed tomography. *J Bone Joint Surg Am.* 91(9):2222–8
6. Kuhn JE, Blasler RB, Carpenter JE. (1994). Fractures of the acromion process: a proposed classification system. *J Orthop Trauma.* 8(1):6–13.
7. Labronici PJ, Tavares AK, Canhoto EC, Giordano V, Pires RES, Silva LHP, Mathias MB, Rosa IM. (2017). Does the position of the scapula in relation to the glenopolar angle change the preferred treatment of extra-articular fractures? *Injury.* 48 Suppl4:S21–6.
8. Kim KC, Rhee KJ, Shin HD, Yang JY. (2008). Can the glenopolar angle be used to predict outcome and treatment of the floating shoulder? *J Trauma.* 64(1):174–8.
9. Zlowodzki M, Bhandari M, Zelle BA, Kregor PJ, Cole PA. (2006). Treatment of scapula fractures: systematic review of 520 fractures in 22 case series. *J Orthop Trauma.* 20(3):230–3.