

Tips and Tricks in the Management of a Medial Clavicle Fracture Requiring Surgical Revision for Hardware Removal and Bone Regularization

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Abstract

Introduction: Medial clavicle fractures are rare and present a surgical challenge due to their proximity to mediastinal structures. Surgical fixation may lead to hardware-related complications.

Case Report: We present the case of a patient who underwent surgery for a medial clavicle fracture. Due to persistent pain, gross deformity, and bony irregularity, surgical revision was performed for complete hardware removal and bone regularization.

Conclusion: Careful preoperative planning and meticulous surgical technique are essential. Practical “tips and tricks” help optimize safety and functional outcomes.

Keywords: Clavicle fracture, medial third, hardware removal, surgical revision, orthopedic surgery.

Introduction

Medial clavicle fractures account for less than 5% of all clavicle fractures (Robinson, 1998). Surgical management is indicated in cases of significant displacement, skin compromise, or high functional demand (Van Tongel, et al., 2012).

Surgical exposure is challenging: the small bony fragment, proximity to major vascular and mediastinal structures, and frequent hardware prominence make this location particularly at risk (Königshausen, et al., 2015).

We report a case of surgical revision after plate fixation due to persistent pain, bony irregularity, and hardware loosening, and we provide technical “tips and tricks” for safe and effective management.

Case Report

We present the case of a 70-year-old patient with a medial clavicle fracture following blunt thoracic trauma from a fall from a cherry tree. Urgent evaluation with standard radiographs and CT scan excluded intrathoracic organ injury and confirmed a displaced fracture.

The patient underwent emergency open reduction and internal fixation with a plate and screws. The immediate postoperative course was uneventful.

One week postoperatively, the attending nurse noted a threatening subcutaneous bony and metallic prominence at the surgical site.

Due to persistent pain and discomfort, surgical revision was performed. The procedure included:

- Complete hardware removal,
- Bone regularization using rongeurs and a burr,
- Meticulous soft tissue closure.

The postoperative course was favorable, with resolution of discomfort and full recovery of scapulothoracic mobility.

Discussion

Medial clavicle fractures present several challenges:

- Limited exposure and proximity to major vessels
- Difficult fixation due to small bony fragments
- High risk of hardware-related discomfort or complications

Indications for Surgical Revision

- Persistent pain
- Mechanical irritation (bony or metallic prominence)
- Infectious or wound complications

Technical Tips (“tips and tricks”)

1. **Preoperative Imaging:** X-ray or CT scan to locate residual hardware and assess bony irregularity.
2. **Positioning:** Supine position with a small interscapular bolster to improve sternoclavicular exposure.
3. **Careful Approach:** Gentle dissection and tissue preservation to minimize vascular risk.
4. **Complete Hardware Removal:** Ensure no screws or metal debris remain.

5. **Bone Regularization:** Use of a burr or rongeurs for smooth remodeling and reduced risk of subcutaneous conflict.
6. **Meticulous Closure:** Adequate soft tissue coverage to prevent recurrent discomfort.

Functional recovery is generally excellent after bone regularization, with rapid return of mobility (Throckmorton & Kuhn, 2007).

Conclusion

The surgical management of medial clavicle fractures remains challenging. Hardware-related complications are common and may require surgical revision. Careful planning, complete hardware removal, and meticulous bone regularization help ensure satisfactory functional and cosmetic outcomes.

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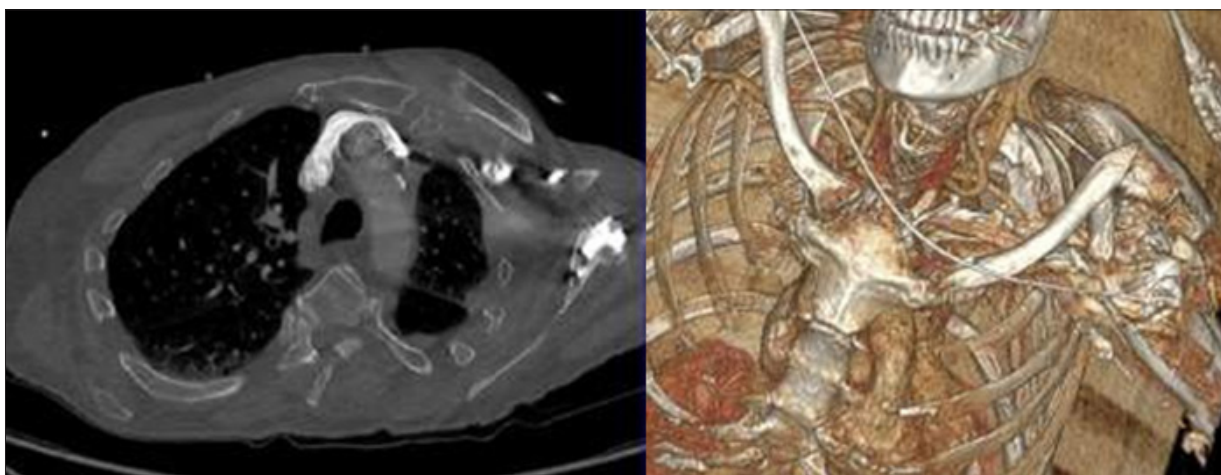


Figure 1: Initial Thoracic CT: Internal quarter fracture of left clavicle



Figure 2: Left shoulder X-ray Front: immediate post-operative



Figure 3: Local condition of the operated shoulder on day 5 post-operatively



Figure 4 : Left shoulder X-ray from the front: 21 days post-op



Figure 5: local condition on postoperative day 12

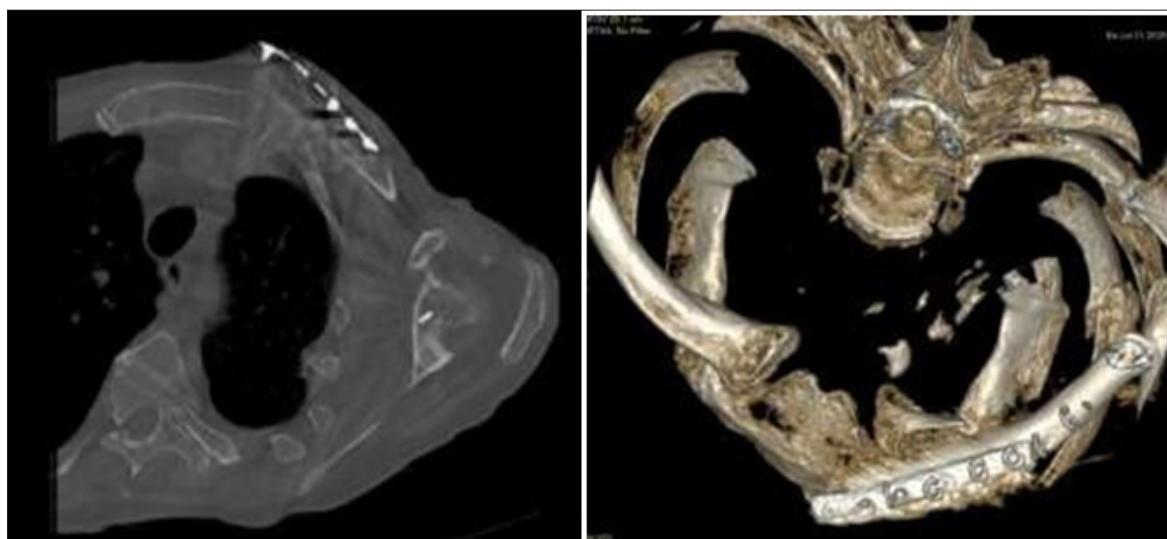


Figure 6: Control CT axial section 1 month postoperatively



Figure 7: local condition on postoperative day 15



Figure 8: Left shoulder X-ray: (a) immediate post-operative / (b) 6 weeks post-operative

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