

# Neglected Locked Posterior Shoulder Dislocation: Diagnostic Challenges and Management Insights – A Case Report and Literature Review



**Ashraf Elazab\***

*Orthopedic Surgery Department, Mansoura International Hospital, Mansoura, Egypt*

**Submission:** October 30, 2025; **Published:** November 13, 2025

**\*Corresponding author:** Ashraf Elazab, Orthopedic Surgery Department, Mansoura International Hospital, Mansoura, Egypt

## Abstract

**Background:** Posterior shoulder dislocations are rare, accounting for only 2–5% of all shoulder dislocations, yet they are frequently missed on initial assessment. Chronic or neglected cases, defined as unreduced dislocations beyond three weeks, present unique diagnostic and therapeutic challenges, particularly when complicated by a reverse Hill–Sachs lesion.

**Case Presentation:** We report the case of a 42-year-old right-hand dominant male who presented three weeks after an electric shock injury with pain, stiffness, and loss of function in the right shoulder. Imaging revealed a neglected, locked posterior dislocation with a reverse Hill–Sachs lesion involving approximately 30% of the articular surface. Open reduction was performed via a deltopectoral approach. The reverse Hill–Sachs defect was managed with a modified McLaughlin procedure-transfer of the subscapularis tendon into the defect-reinforced with a suture anchor and two cancellous screws. Postoperatively, a structured rehabilitation protocol was followed. At three months, the patient demonstrated painless forward flexion to 110°, abduction to 100°, internal rotation to 25°, and radiographic evidence of stable reduction without re-dislocation.

**Discussion:** Posterior shoulder dislocations are commonly overlooked due to subtle clinical and radiographic findings. Neglected cases often require open surgical intervention. The choice of surgical procedure depends on the size of the reverse Hill–Sachs lesion: defects <25% may be treated with reduction alone, 25–40% typically require a modified McLaughlin procedure, while >40% defects may necessitate reconstructive grafting or arthroplasty. Literature supports the modified McLaughlin technique as the most reliable joint-preserving option for medium-sized defects.

**Conclusion:** This case emphasizes the importance of high clinical suspicion, appropriate imaging, and defect-based surgical management in neglected posterior dislocations. The modified McLaughlin procedure remains an effective and reproducible technique for medium-sized reverse Hill–Sachs lesions, providing stable reduction, pain relief, and functional recovery.

**Keywords:** Posterior shoulder dislocation; Neglected dislocation; Reverse Hill–Sachs lesion; Modified McLaughlin procedure; Electric shock injury

## Introduction

Shoulder dislocation is the most common large joint dislocation encountered in clinical practice, but posterior dislocations remain rare, accounting for only 2–5% of all cases [1-3]. Unlike anterior dislocations, posterior dislocations are frequently missed at initial presentation, with reported rates of misdiagnosis as high as 60–79% [4-6]. The clinical presentation is often subtle, and standard anteroposterior radiographs may appear deceptively normal, necessitating additional imaging such as axillary or scapular Y-views and cross-sectional modalities for confirmation [2,6,7]. Posterior dislocations typically occur due to axial loading of the adducted, internally rotated arm or secondary to violent involuntary muscle contractions [3,8,9]. The latter

mechanism is classically associated with epileptic seizures and electrical shock injuries, where sudden and powerful contraction of the subscapularis, pectoralis major, latissimus dorsi, and teres major overwhelms the external rotators, forcing the humeral head posteriorly against the glenoid [3,8,10].

A particularly challenging subset of cases involves neglected or chronic posterior shoulder dislocations, defined as those left unreduced for more than three weeks [4,11,12]. In such cases, fibrous tissue, joint capsule contracture, and articular damage make closed reduction virtually impossible. Furthermore, these injuries are often accompanied by a reverse Hill–Sachs lesion, an impression fracture of the anteromedial humeral head that occurs

in up to 86% of posterior dislocations [2,13]. The size of this defect largely determines the choice of surgical management. Several surgical options have been described depending on the extent of humeral head involvement. When the defect involves <25% of the articular surface, closed or open reduction alone may suffice [2,5]. For moderate defects (25–40%), the modified McLaughlin procedure-involving transfer of the subscapularis tendon or lesser tuberosity into the defect-has become the treatment of choice [6,15-17].

For larger defects exceeding 40%, particularly in chronic cases or elderly patients, reconstructive procedures with structural bone grafts, rotational osteotomy, or even arthroplasty may be necessary [11,18,19]. The modified McLaughlin technique, first described by Neer in 1970 as an evolution of McLaughlin's original procedure [5,13], has shown reproducible outcomes with restoration of stability and function in neglected posterior dislocations [14,15-17]. Modern systematic reviews confirm its role as the mainstay treatment for moderate reverse Hill-Sachs lesions, with arthroplasty reserved for more extensive humeral head compromise [20]. In this report, we present a rare case of a neglected locked posterior shoulder dislocation following electrical injury in a 42-year-old male, treated successfully with open reduction and a modified McLaughlin procedure augmented by an anchor and cancellous screw fixation. We also provide a

comprehensive review of the literature regarding epidemiology, diagnostic challenges, surgical techniques, and outcomes of neglected posterior dislocations.

### Case Report

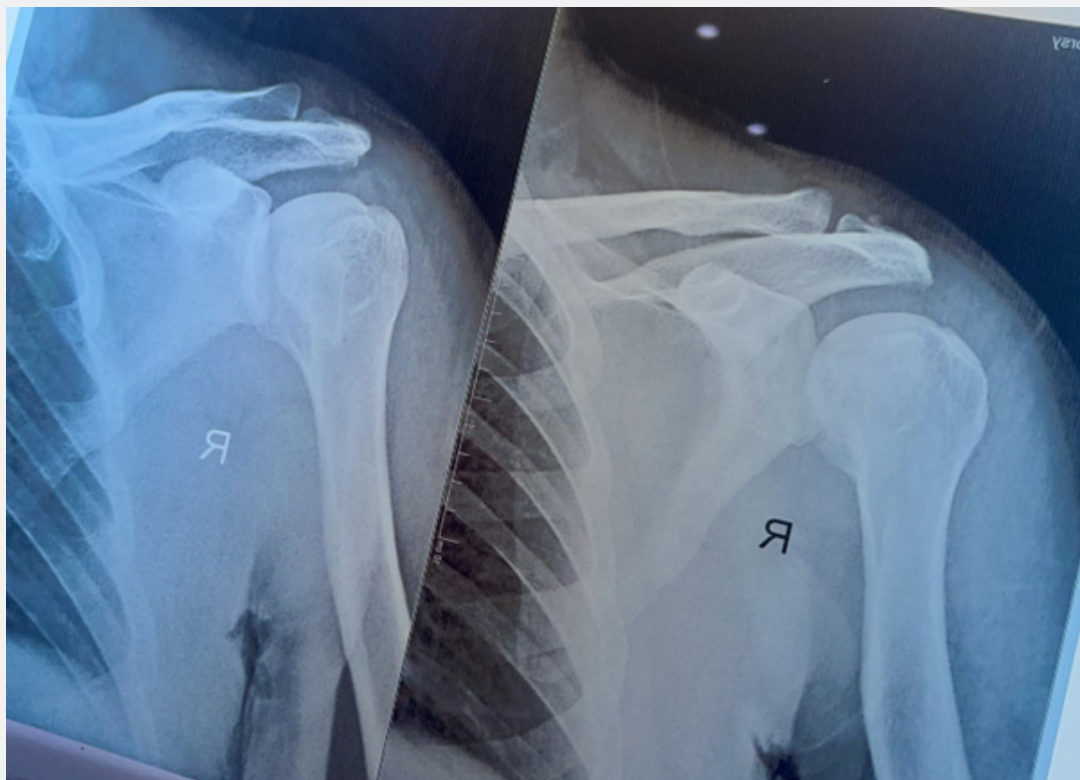
A 42-year-old right-hand dominant male presented to our department three weeks after sustaining an electric shock injury at home. Immediately following the event, he experienced severe pain and functional limitation in the right shoulder but did not seek medical attention. He presented with persistent pain, stiffness, and inability to elevate the arm.

### Clinical Examination Revealed

The shoulder held in internal rotation, loss of the normal shoulder contour with posterior fullness, marked restriction of abduction and forward flexion, external rotation severely limited and painful, and neurovascular examination unremarkable.

### Radiological Evaluation

Preoperative anteroposterior and axillary radiographs demonstrated a neglected locked posterior shoulder dislocation with a reverse Hill-Sachs defect (Figure 1a). Computed tomography and MRI confirmed a posteriorly locked humeral head with approximately 30% involvement of the articular surface (Figure 2a–2d).



**Figure 1:** Preoperative anteroposterior radiograph showing posterior shoulder dislocation with the humeral head locked behind the glenoid.



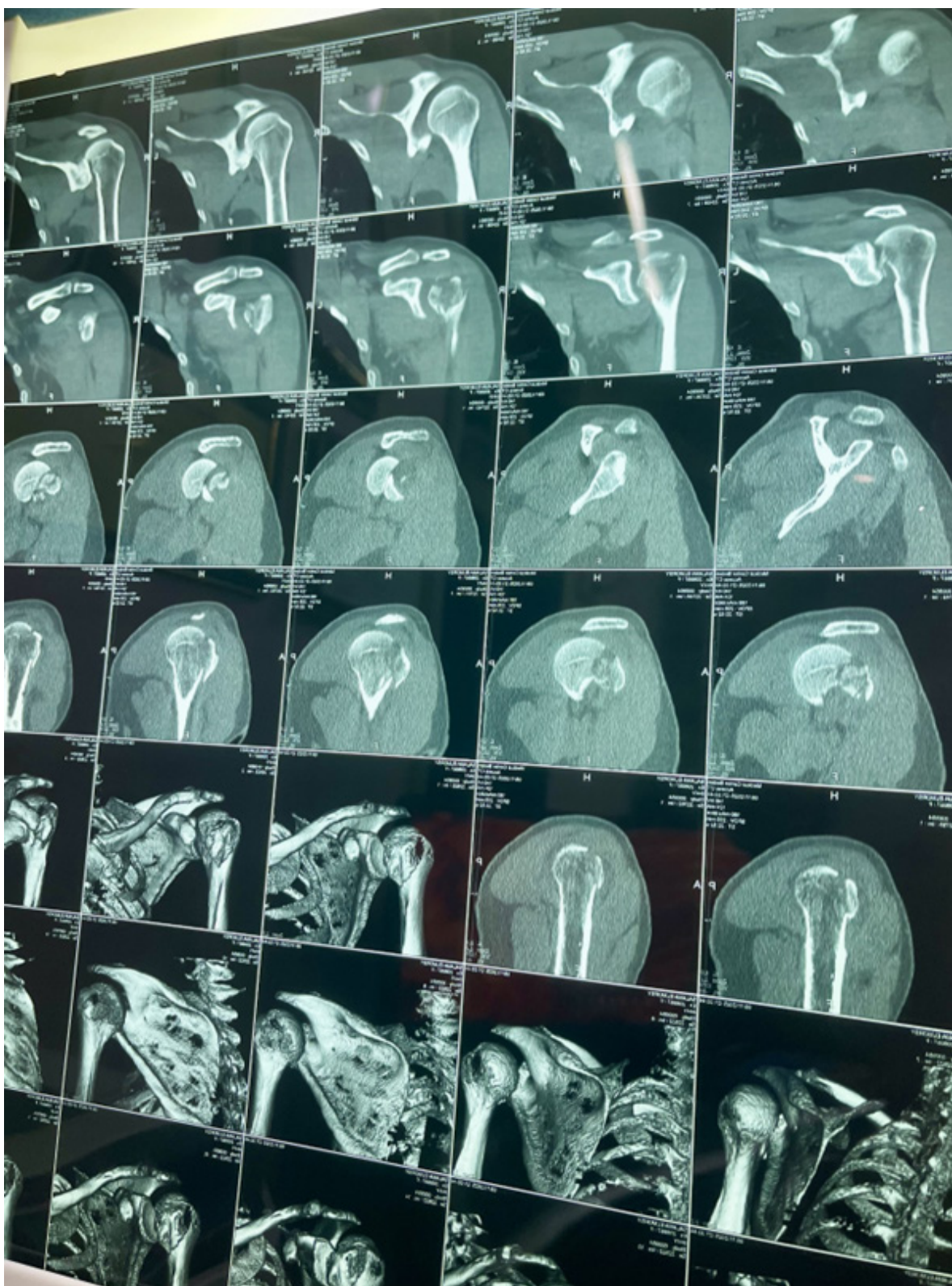


Figure 2A



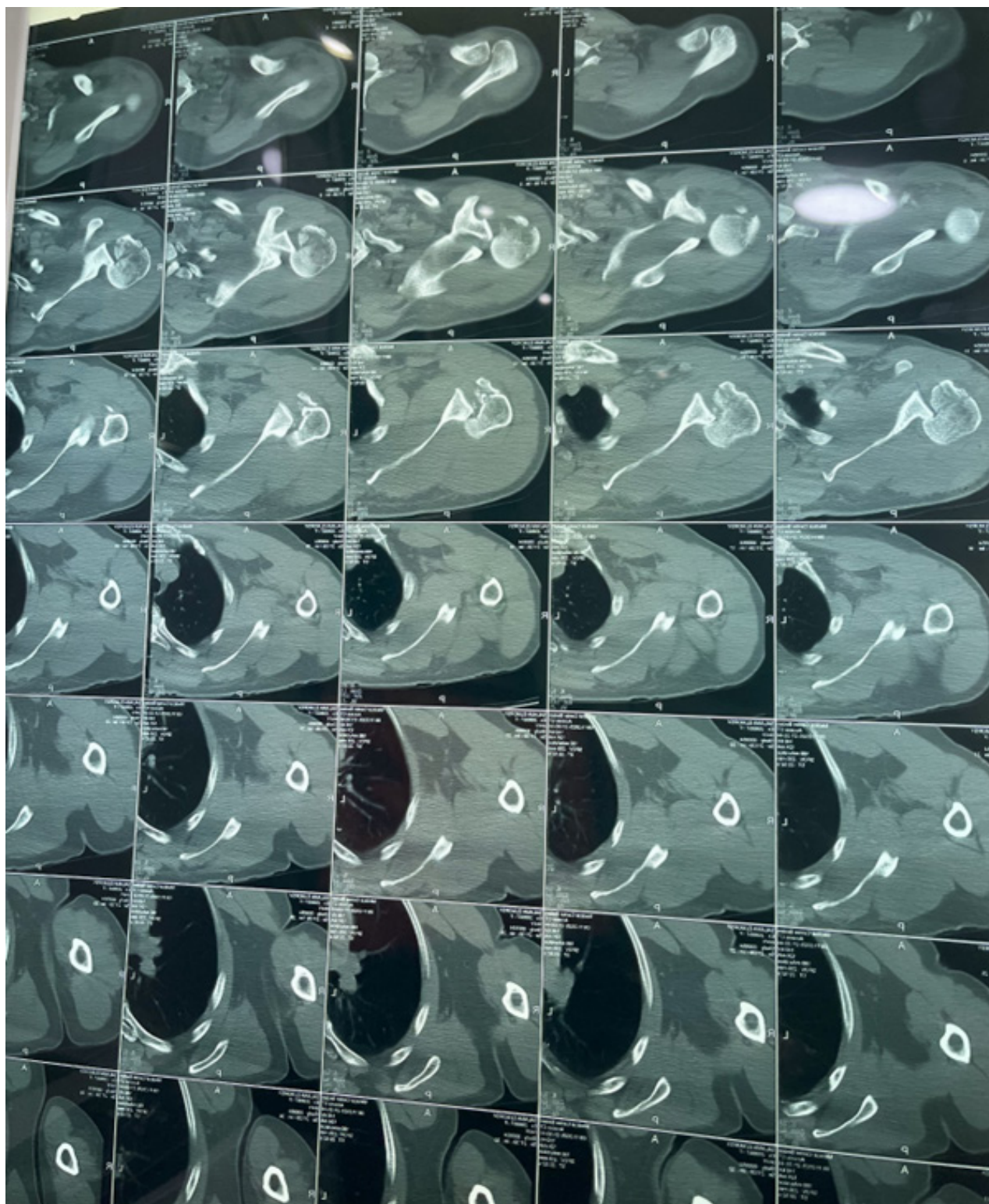
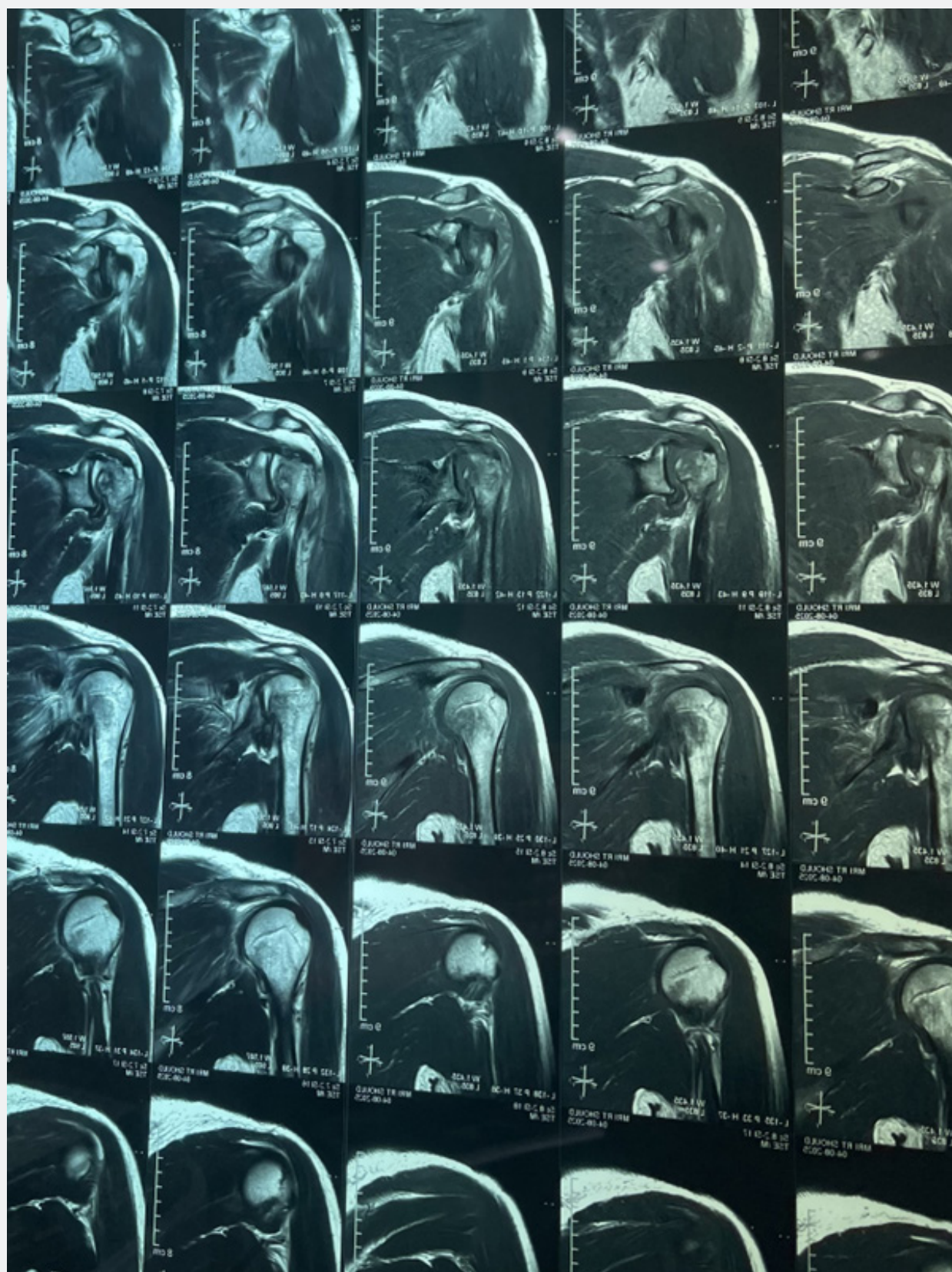


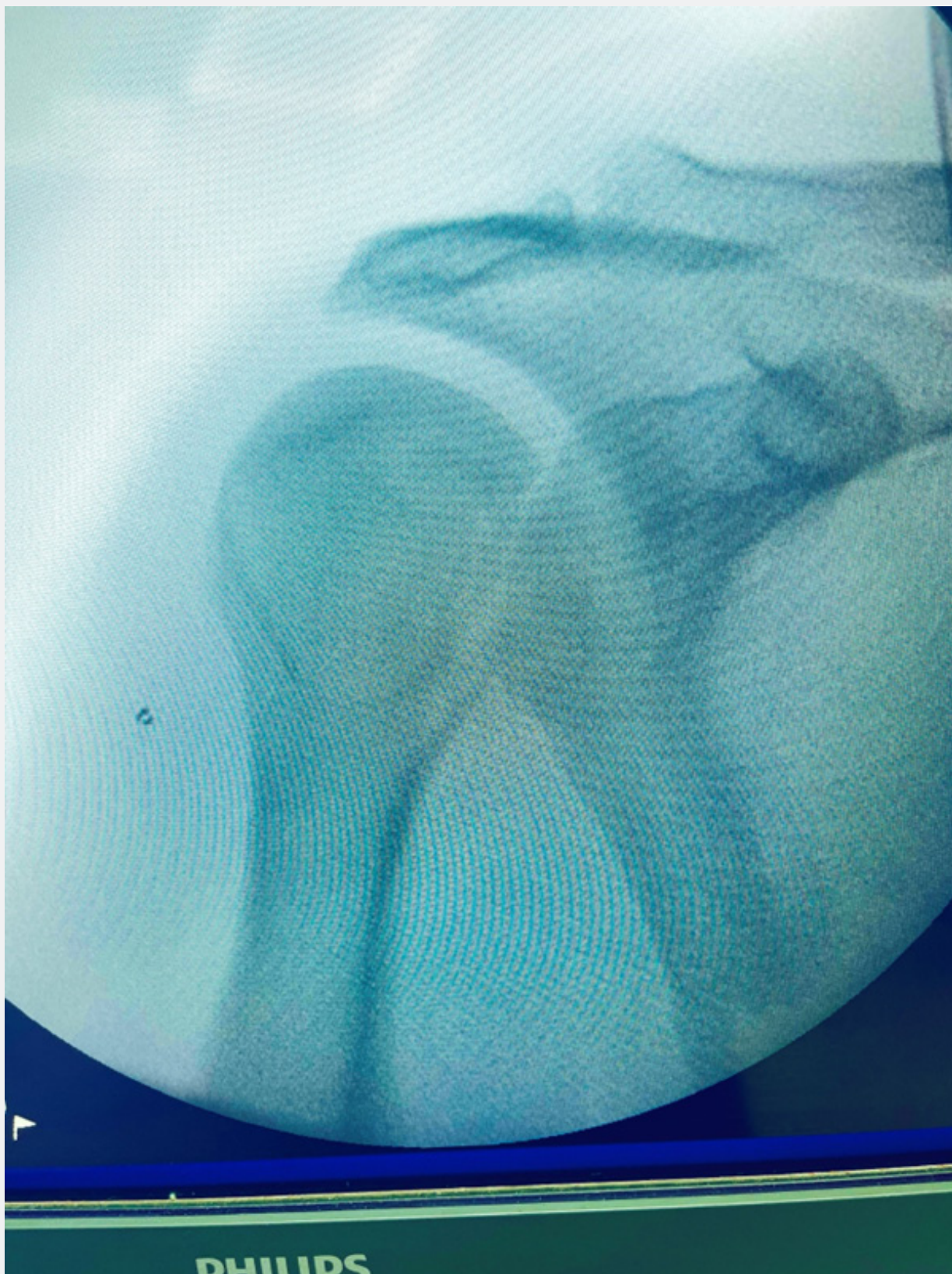
Figure 2B





**Figure 2a–2c:** CT scan and MRI images demonstrating a ~30% reverse Hill–Sachs lesion of the anteromedial humeral head and confirming posteriorly locked dislocation.





**Figure 3:** Intraoperative fluoroscopic image showing the “light bulb” sign and the locked position of the humeral head.

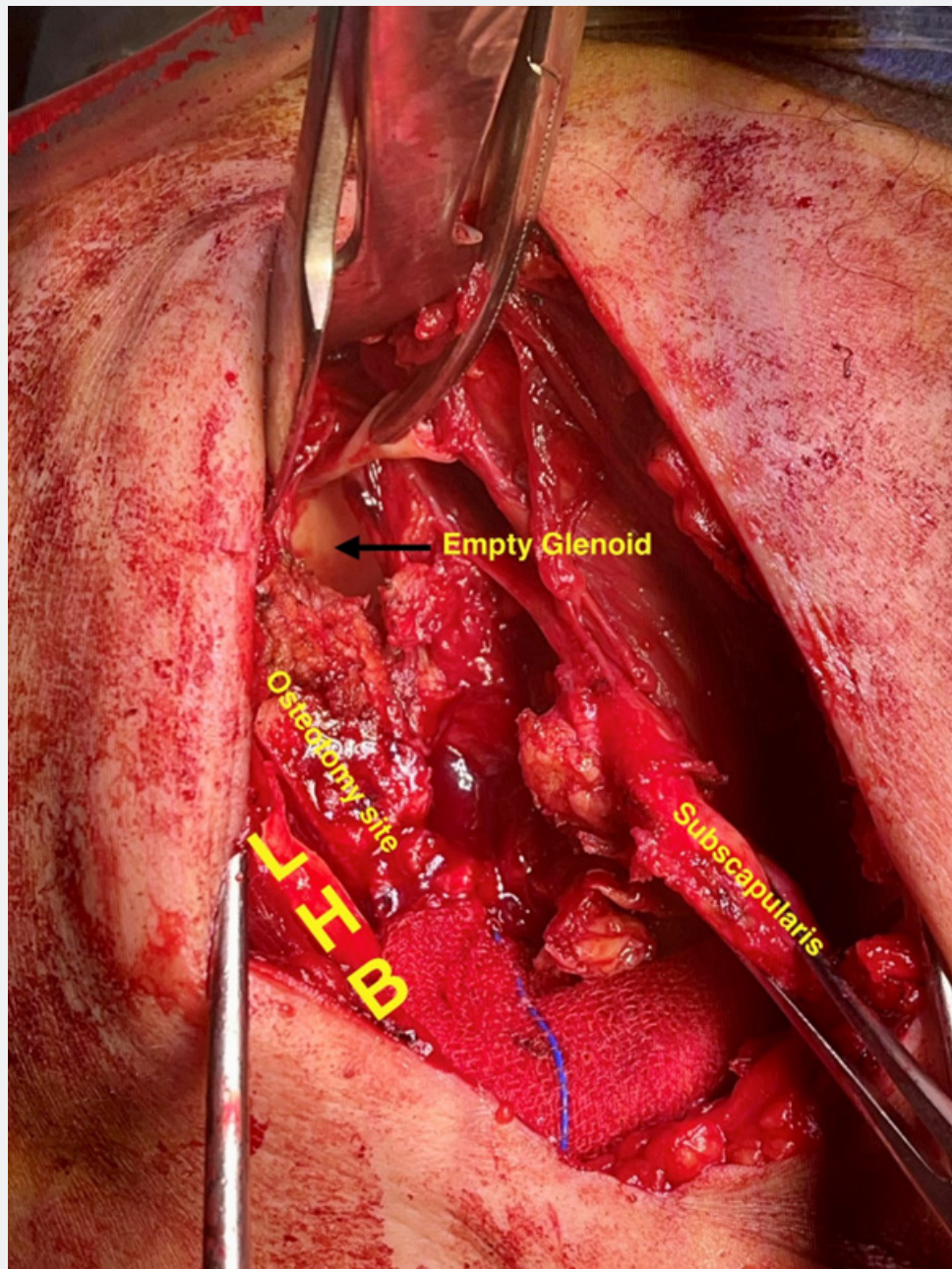


Intraoperative fluoroscopic images further delineated the light bulb sign and locked position of the humeral head (Figure 3).

### Surgical Technique

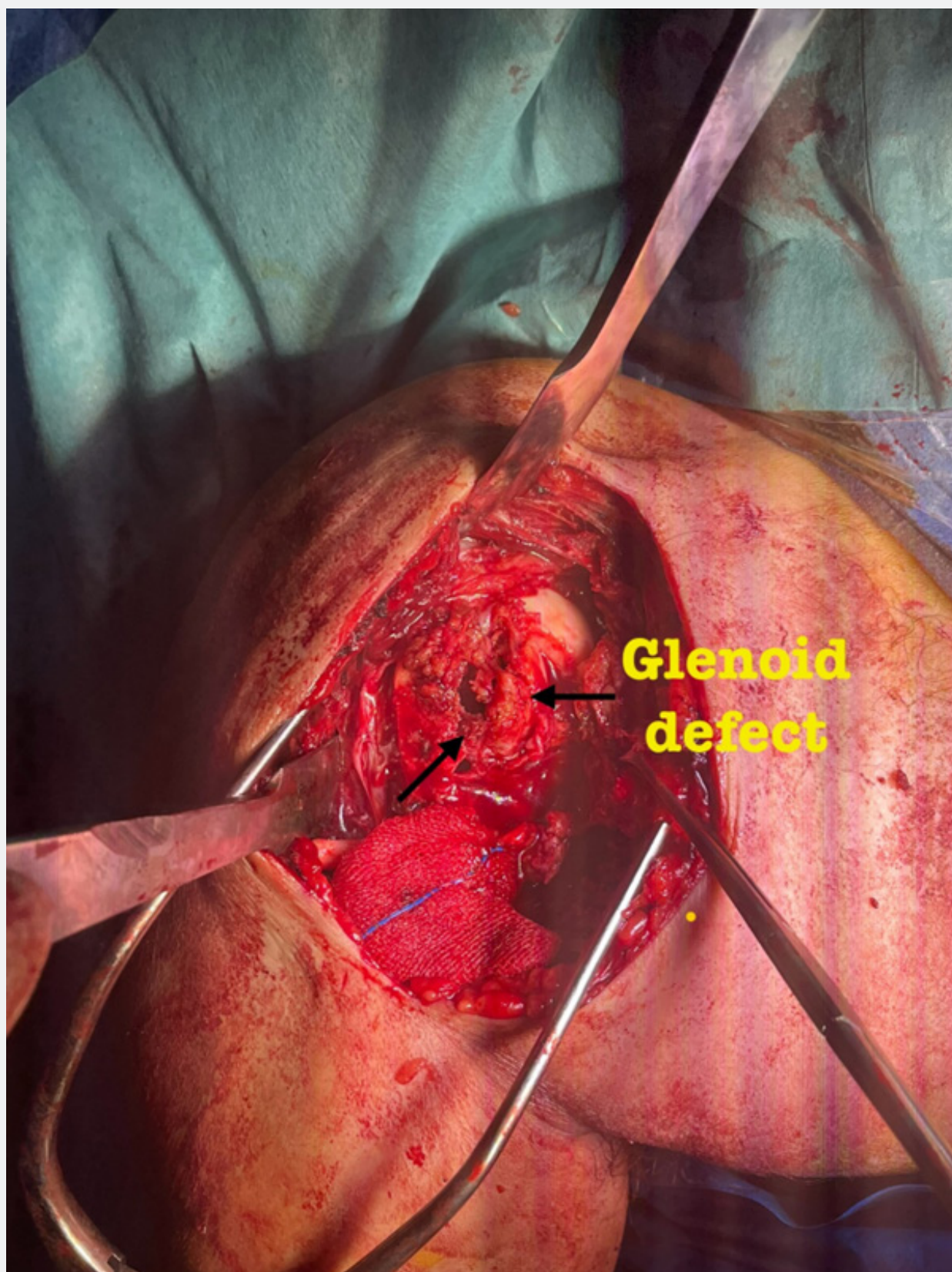
The patient was placed in a beach-chair position under general anesthesia. A standard deltopectoral approach was used. Intraoperatively, the humeral head was found locked posteriorly with fibrous tissue interposition (Figure 4). Open reduction was achieved after careful release of fibrous adhesions

and identification of the anterior glenoid defect (Figure 5). The reverse Hill-Sachs defect was managed by a modified McLaughlin procedure: transfer of the subscapularis tendon into the defect using a suture anchor (Figure 6). Fixation was reinforced with two 3.5 mm cancellous screws with washers for stability (Figure 7). Intraoperative fluoroscopy confirmed concentric reduction and stable fixation (Figure 8). External and internal rotation was tested intraoperatively and demonstrated a stable, congruent reduction without evidence of redislocation or subluxation (Figure 9a–9b).



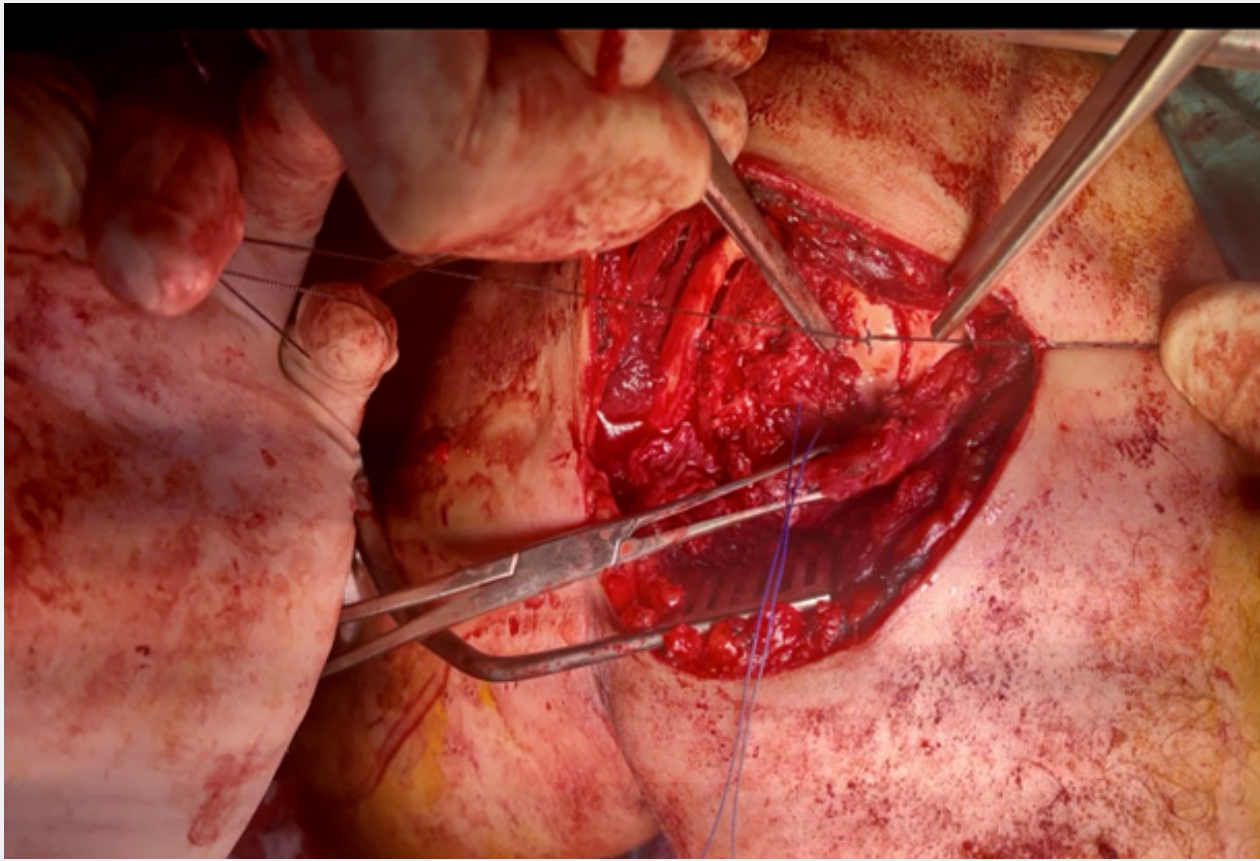
**Figure 4:** Intraoperative photograph showing the empty glenoid fossa and the humeral head still dislocated posteriorly after elevation of the subscapularis tendon with part of the lesser tuberosity. LHB: Long Head of Biceps.





**Figure 5:** Intraoperative image after reduction showing the anterior humeral head defect (reverse Hill–Sachs lesion).





**Figure 6:** Intraoperative image showing preparation of the defect and subscapularis tendon transfer with fixation (modified McLaughlin procedure).

## Postoperative Protocol

The shoulder was immobilized in an abduction brace for 4 weeks. Passive pendulum exercises were initiated at 2 weeks. Active-assisted range of motion began at 4–6 weeks. Strengthening exercises commenced at 10–12 weeks postoperatively.

## Outcome

At three months, the patient had regained painless functional mobility with forward flexion to 110°, abduction to 100°, and internal rotation to 25° (Figures 10-12). Postoperative radiographs at three months demonstrated maintained reduction and implant stability without loosening or redislocation (Figure 13). At one-year follow-up, the patient remained pain-free, with forward flexion 140°, abduction 130°, external rotation 20°, and internal rotation 30°. The Constant–Murley score improved from 22 preoperatively to 82, with no evidence of avascular necrosis or post-traumatic arthritis.

## Discussion

Posterior shoulder dislocation is an uncommon injury, comprising only 2–5% of all shoulder dislocations [1-3]. It is

often under-recognized, with up to 79% of cases missed initial assessment due to subtle radiographic findings and nonspecific clinical signs [4-6]. In our patient, the etiology was an electric shock, a well-documented but relatively rare mechanism compared to epileptic seizures and high-energy trauma [3,8,9].

## Mechanism and Pathophysiology

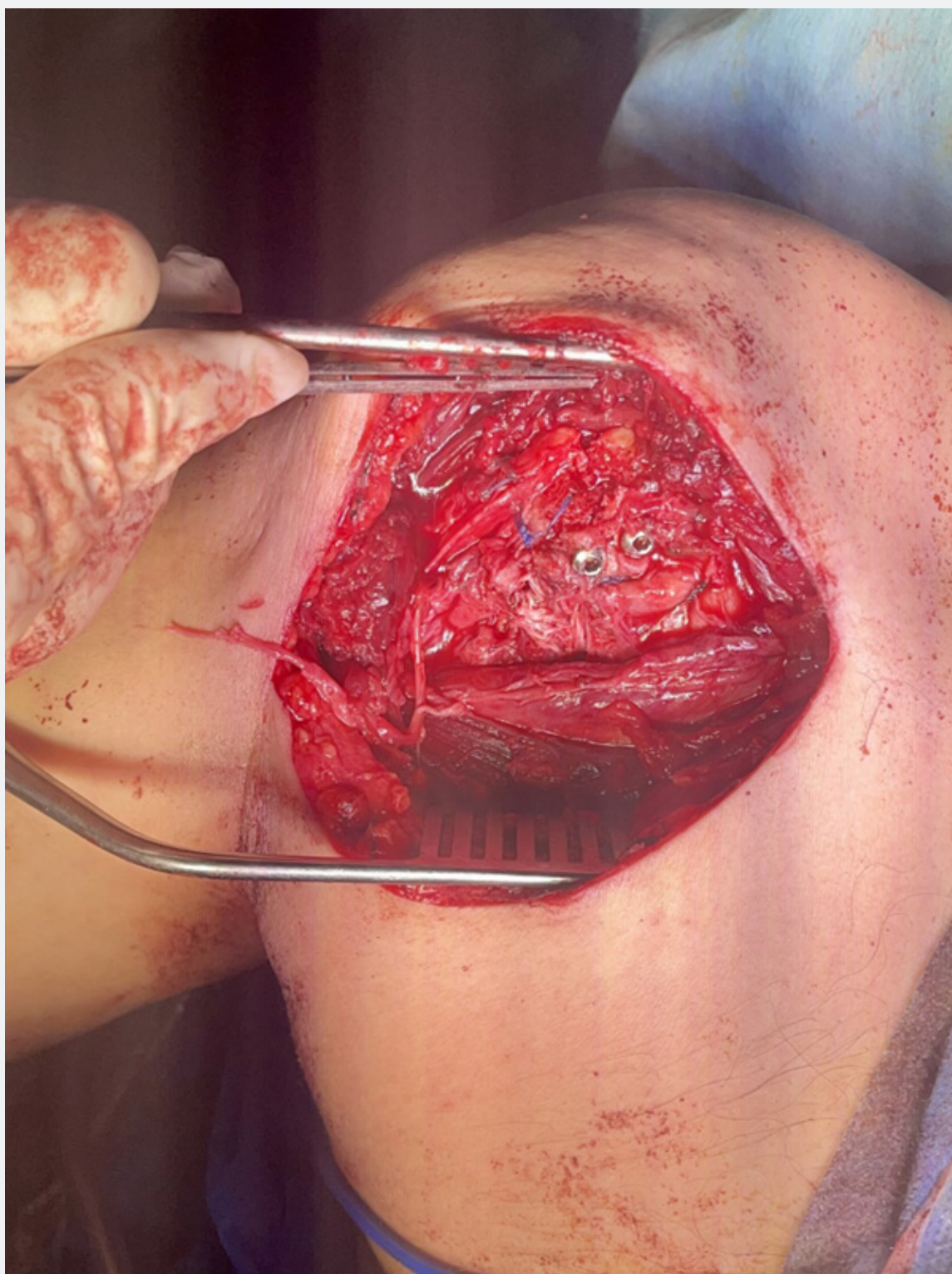
During an electric shock or seizure, violent involuntary contraction of the internal rotators (subscapularis, pectoralis major, latissimus dorsi, teres major) overwhelms the external rotators and posterior capsule, forcing the humeral head posteriorly [3,8,10]. This results in dislocation, and in many cases, an impression fracture of the anteromedial humeral head—the reverse Hill–Sachs lesion—occurs when the humeral head impacts against the posterior glenoid rim [2,13]. In our patient, CT imaging confirmed ~30% articular surface involvement, consistent with a medium-sized reverse Hill–Sachs lesion.

## Diagnostic Challenges

Posterior dislocations can be missed if only anteroposterior radiographs are obtained, as the humeral head may appear normally aligned. The axillary view is the most reliable, while

scapular Y-view and CT scans aid in confirmation and in quantifying humeral head defects [2,6,7]. In our case, the patient

was misdiagnosed initially, and diagnosis was only established three weeks later using both radiographs and CT.



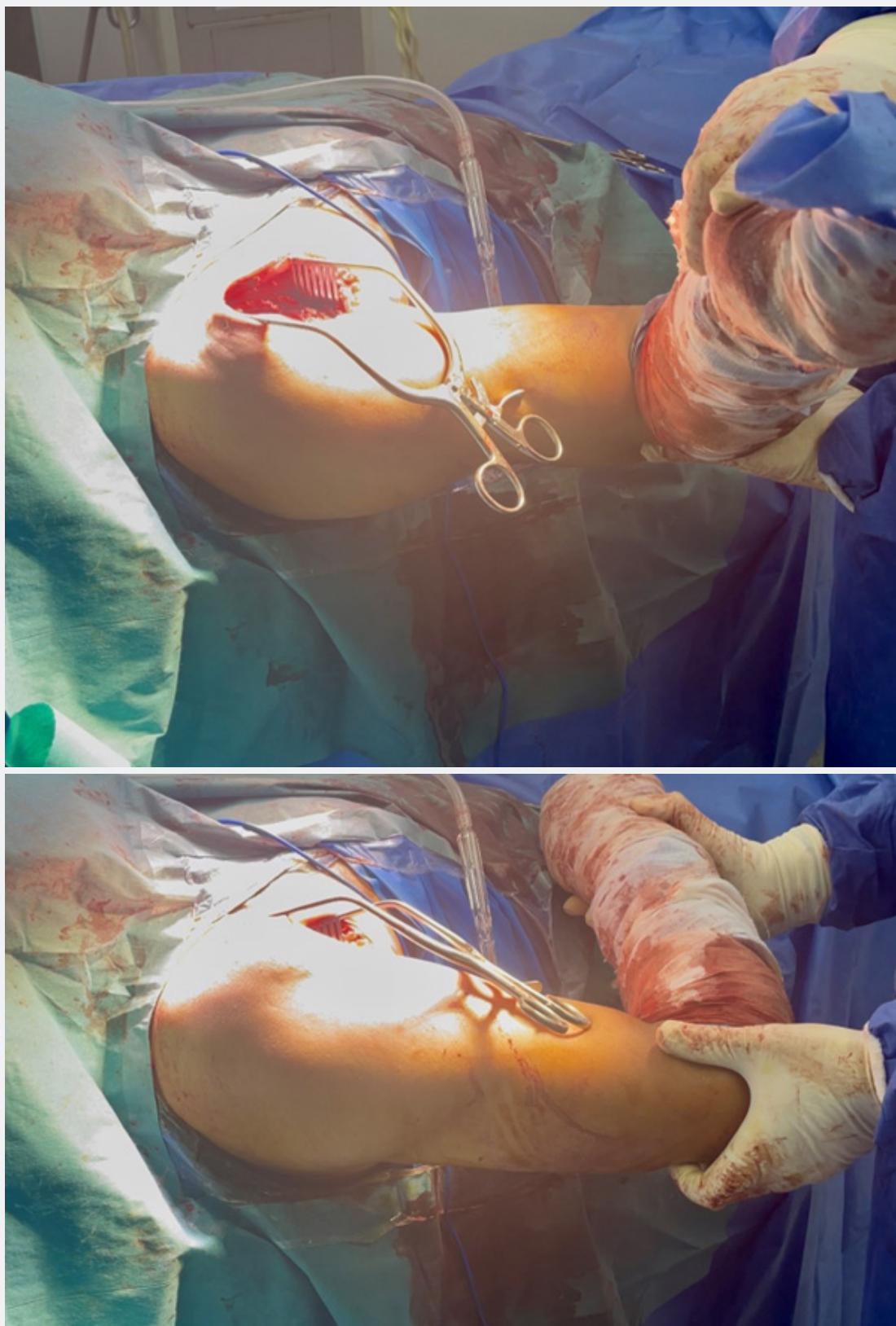
**Figure 7:** Fixation reinforced with two 3.5-mm cancellous screws with washers for additional stability.





**Figure 8:** Intraoperative Fluroscopic image confirming stable fixation with two cancellous screws and washers.





**Figure 9a–9b:** Intraoperative assessment of external and internal rotation showing a stable, congruent reduction without redislocation or subluxation.





**Figure 10:** Clinical photograph at 3 months postoperatively demonstrating abduction of the operated shoulder.



**Figure 11:** Clinical photograph at 3 months postoperatively demonstrating forward flexion of the operated shoulder.



**Figure 12:** Clinical photograph at 3 months postoperatively demonstrating internal rotation of the operated shoulder.

## Neglected Dislocations

Neglected or chronic posterior dislocations are defined as those unreduced for more than three weeks [4,11,12]. Chronicity results in fibrous tissue formation, capsular contracture, and irreversible bony changes, rendering closed reduction impossible. These cases pose significant treatment challenges, especially when associated with large reverse Hill-Sachs lesions [11,17,21].

## Management Strategies

Figure 14 illustrates a comprehensive management algorithm for posterior shoulder dislocations, designed to assist surgeons in structured clinical decision-making. The pathway begins with confirmation of the diagnosis through standard radiographs, computed tomography, and magnetic resonance imaging to delineate associated bone and soft-tissue injuries. Once confirmed, dislocations are classified as acute (<3 weeks) or chronic (>3 weeks), as chronicity significantly affects treatment feasibility and outcomes. The next critical step is quantifying the reverse Hill-Sachs defect, as defect size remains the principal determinant of surgical strategy: Defects <25%: Closed or open reduction may suffice, occasionally with McLaughlin's original tendon transfer [2,14]. Defects 25–40%: The modified McLaughlin procedure is recommended, involving transfer of the subscapularis tendon or the lesser tuberosity into the humeral head defect [6,19-21].

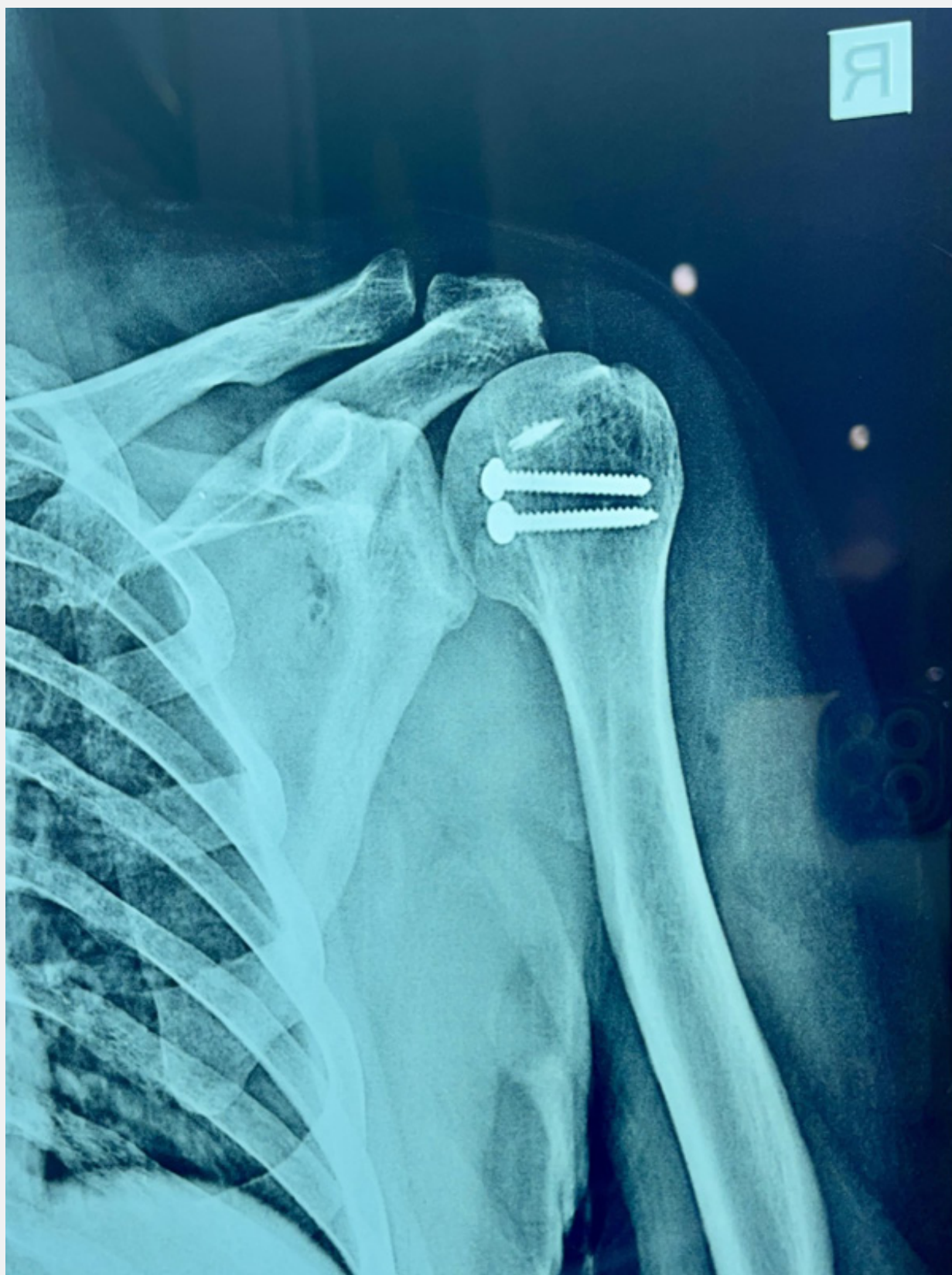
This technique provides stability and allows for biological healing. Defects >40%: Options include humeral head

reconstruction with autograft or allograft [11,13,19], rotational osteotomy [10], or shoulder arthroplasty in irreparable cases, particularly in older or low-demand patients [18,22]. Our patient had a ~30% defect, making the modified McLaughlin procedure the most appropriate treatment option. We reinforced fixation with two cancellous screws and washers, ensuring stability. The algorithm concludes with a standardized postoperative rehabilitation protocol emphasizing staged mobilization-from sling immobilization and passive motion to progressive active-assisted and active exercises within 3–6 weeks-to restore stability, range of motion, and functional recovery.

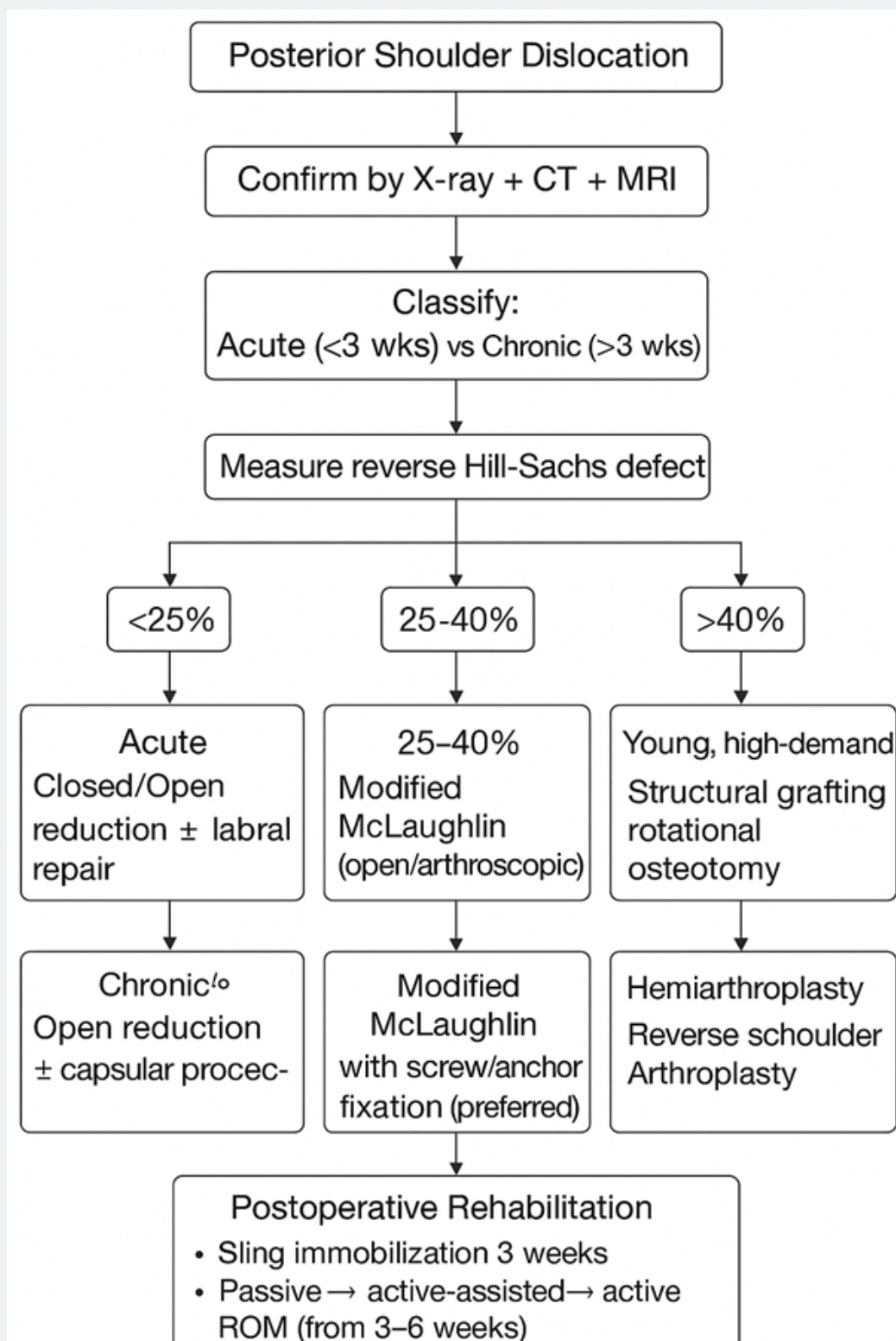
## Literature Review

McLaughlin [23] first described subscapularis tendon transfer into the defect, while Neer [15] later modified it by transferring the lesser tuberosity, which improved healing and fixation strength. Several studies have reported excellent outcomes with the modified McLaughlin procedure in neglected dislocations: Gerber & Lambert [11] reconstructed large segmental defects with allografts, reporting good long-term outcomes. Diklic et al. [24] treated 13 patients with chronic locked posterior dislocations using open reduction and tendon transfer, achieving satisfactory function. Martinez et al. [25] used Neer's modification in four neglected cases, reporting stable reductions and pain relief. Kokkalis et al. [15,26] confirmed the efficacy of the modified McLaughlin for medium-sized defects, with good functional results.





**Figure 13:** Postoperative radiograph at 3 months showing maintained reduction and implant stability.



**Figure 14:** Proposed management algorithm for neglected posterior shoulder dislocations. Patients are stratified according to (a) time to diagnosis (acute <3 weeks vs chronic >3 weeks) and (b) size of the reverse Hill–Sachs defect: <25%: closed/open reduction ± McLaughlin tendon transfer 25–40%: modified McLaughlin procedure ± screw/anchor fixation 40%: reconstructive techniques (allograft, rotational osteotomy) or arthroplasty for irreparable cases.



Katthagen et al. [22] emphasized the procedure's value for locked dislocations with engaging lesions. Saltzman et al. [24], in a systematic review, found the modified McLaughlin procedure to be the most employed technique for moderate lesions, reserving arthroplasty for large defects. Conversely, when humeral head involvement exceeds 40–50%, outcomes with tendon transfer alone are suboptimal, and arthroplasty or reconstructive grafting is

recommended [11,18,19]. A comprehensive overview of the major reported series is summarized in Table 1, which demonstrates how time to diagnosis, defect size, and surgical choice directly influence clinical outcome. To guide clinical decision-making, we propose a structured treatment pathway illustrated in Figure 14 (management algorithm), which stratifies patients by defect size and chronicity to optimize surgical selection.

**Table 1:** Summary of major reported series on neglected posterior shoulder dislocation, illustrating patient characteristics, time to diagnosis, reverse Hill–Sachs defect size, surgical treatment, and clinical outcomes.

Author, Year	No. of Patients	Time to Diagnosis	Defect Size (%)	Treatment	Outcome
McLaughlin, 1952 [5]	4	3–12 weeks	20–40%	Subscapularis tendon transfer	Stable, pain relief
Neer, 1970 [6]	Case series	>3 weeks	25–40%	Modified McLaughlin	Good stability
Rowe & Zarins, 1982 [4]	6	3–6 weeks	20–35%	Open reduction ± tendon transfer	Improved function
Hawkins et al., 1987 [9]	6	≈6 weeks	25–40%	Open reduction + tendon transfer	Variable ROM
Gerber & Lambert, 1996 [7]	6	>6 weeks	>40%	Allograft reconstruction	Stable, pain relief
Checchia et al., 1998 [11]	5	1–3 months	25–35%	Modified McLaughlin + screws	Fair-to-good results
Martinez et al., 2008 <sup>20</sup>	4	4–12 weeks	25–40%	Neer's modification	Stable, long-term function
Abalo et al., 2009 [23]	8	3–20 weeks	25–45%	Open reduction ± tendon transfer	Pain relief, functional gain
Diklić et al., 2010 [8]	13	≈10 weeks	>40%	Allograft reconstruction	Good stability, pain relief
Raiss et al., 2012 [25]	12	>6 weeks	>40%	Reverse shoulder arthroplasty	Stable, pain-free, limited ROM
Kokkalis et al., 2013 [19]	6	3–8 weeks	25–35%	Modified McLaughlin + screws	Good stability, return to activities
Katthagen et al., 2016 [21]	5	4–10 weeks	25–35%	Arthroscopic modified McLaughlin	Excellent outcomes
Sahu et al., 2021 (systematic review)	11 studies	>3 weeks	Variable	Head-preserving techniques	Good-to-excellent outcomes
Cohen et al., 2023	10	4–24 weeks	25–40%	Modified McLaughlin + screws/anchors	Excellent functional outcomes, ≥2 years

## Prognosis and Rehabilitation

Successful outcomes depend not only on the surgical technique but also on a carefully structured rehabilitation program. Immobilization should be followed by staged passive, active-assisted, and strengthening exercises [12,13]. Our patient followed this protocol and achieved functional range of motion by three months. Prognostic factors influencing outcome include defect size, time to diagnosis, fixation stability, and patient compliance with rehabilitation [9,11,21]. Early detection and appropriate management remain the most critical determinants of long-term results.

## Relevance of the Present Case

The current case highlights several important points: Rare mechanism: posterior dislocation following electrical injury is uncommon but well-documented. Diagnostic pitfalls: the injury was neglected for three weeks due to initial misdiagnosis. Optimal surgical management: the modified McLaughlin procedure, reinforced with anchors and screws, provided stability for a medium-sized reverse Hill–Sachs lesion. Favorable short-term outcome: in three months, the patient achieved painless functional range of motion and radiographic stability.

## Conclusion

Neglected posterior shoulder dislocations with associated reverse Hill-Sachs lesions remain a rare but challenging entity in orthopedic practice. Diagnosis is frequently delayed due to subtle radiographic findings and nonspecific symptoms, especially when the mechanism of injury involves seizures or electrical shock. Our case illustrates the importance of maintaining a high index of suspicion, utilizing advanced imaging such as CT for accurate assessment, and selecting an appropriate surgical strategy based on the size of the humeral head defect. The modified McLaughlin procedure remains a reliable and effective option for defects involving 25-40% of the humeral head, offering joint preservation and restoration of stability.

A structured algorithm (Figure 14) together with evidence from the literature (Table 1) may aid surgeons in selecting the optimal treatment strategy for neglected posterior shoulder dislocations. Early diagnosis, meticulous surgical technique, and structured rehabilitation are key determinants of successful outcomes. Surgeons must remain vigilant in cases of posterior shoulder pain following seizures, trauma, or electrical injury, as prompt recognition and intervention can prevent chronic instability, functional impairment, and the need for arthroplasty [27,28].

## Declarations

### Consent for publication

Oral informed consent was taken.

### Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

**Funding:** There is no funding source.

**Competing interests:** The author declare that he has no competing interests.

**Acknowledgement:** Not applicable.

## Conflict of Interest

The author declare that he has no conflict of interest.

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DOI: [10.19080/OROAJ.2025.25.556161](https://doi.org/10.19080/OROAJ.2025.25.556161)

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