

Irreducible Periprosthetic Hip Dislocation Due to Muscular Entrapment with Concomitant Sciatic Nerve Involvement

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Learning Point of the Article:

Irreducible periprosthetic hip dislocations may result from rare mechanical barriers such as muscular penetration of the femoral head and can be complicated by sciatic nerve involvement, requiring prompt surgical intervention.

Abstract

Introduction: Periprosthetic dislocations remain a prevalent complication following total hip arthroplasty, with heightened risks in elderly patients and those with cognitive impairments. While most cases can be managed with closed reduction, irreducible dislocations are rare and may be due to unusual mechanical or soft-tissue impediments.

Case Report: This case report describes an 87-year-old woman with an irreducible prosthetic hip dislocation due to penetration of the femoral head through the gluteus medius musculature after a ground-level fall. After multiple failed closed reduction attempts, the patient developed a foot drop with sensory changes indicating a sciatic nerve palsy. Open reduction was then indicated, along with neurolysis of the sciatic nerve.

Conclusion: The case underscores the challenges of managing complex hip dislocations in older adults and highlights the importance of addressing mechanical and neurological factors during treatment.

Keywords: Periprosthetic hip dislocation, total hip arthroplasty, open reduction, sciatic nerve entrapment, irreducible, neurolysis.

Introduction

Total hip arthroplasty (THA) is a highly effective surgical procedure commonly employed to alleviate pain and restore function in patients with advanced hip joint pathology [1, 2, 3]. Despite its success, complications such as prosthetic dislocations remain a significant concern, with reported rates ranging from 1% to 5% [4, 5, 6, 7]. Factors contributing to dislocation include malpositioning of components, soft tissue laxity, surgical approach, and prosthetic design [4, 5, 6, 7]. While many of these cases can be successfully treated with closed reduction techniques, irreducible dislocations are rare but challenging

scenarios that may require advanced interventions. Irreducible dislocations often result from unusual causes, including dissociation of modular components, interposition of soft tissues, or entrapment of surrounding anatomical structures [8, 9, 10, 11]. In addition, sciatic nerve complications, although rare, are critical to recognize given their potential to cause significant neurological deficits, including foot drop and sensory changes [12, 13]. The author reports a case of an irreducible prosthetic hip dislocation due to femoral head/neck penetration through abductors with concomitant foot drop following closed reduction attempts.

Author's Photo Gallery



Access this article online

Website:
www.jocr.co.in

DOI:
<https://doi.org/10.13107/jocr.2026.v16.i02.6778>

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Submitted: 10/11/2025; Review: 08/12/2025; Accepted: January 2026; Published: February 2026

DOI: <https://doi.org/10.13107/jocr.2026.v16.i02.6778>

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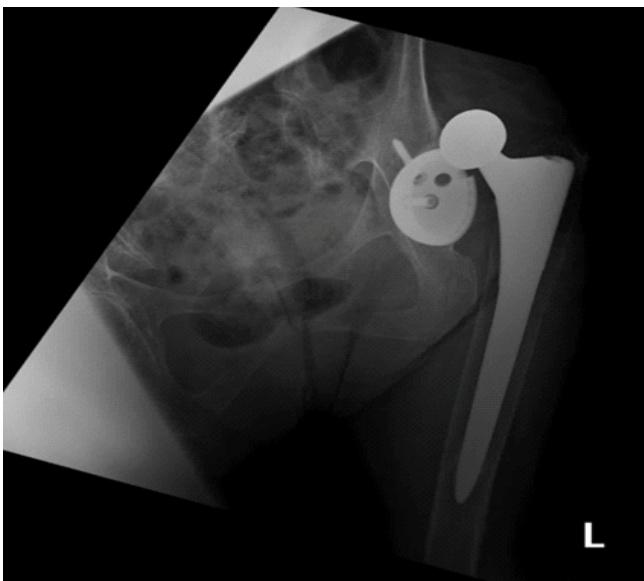


Figure 1: Pre-reduction X-ray of left hip.

Case Report

An 87-year-old female with a medical history of dementia, hypertension, and hyperlipidemia underwent a left THA through a posterior approach in 2010. She presented to the emergency department following a ground-level fall, reporting severe left hip pain and an inability to bear weight. Imaging confirmed a left periprosthetic hip dislocation (Fig. 1).

Initial attempts at closed reduction with conscious sedation in the emergency department failed. A subsequent closed reduction attempt under general anesthesia in the operating room was also unsuccessful. Postoperatively, the patient developed numbness on the dorsum of her left foot and was unable to dorsiflex, raising concerns for sciatic nerve involvement.

Given the failed reductions and the development of neurological deficits, the decision was made to proceed with an open reduction. During the procedure, it was found that the femoral head had penetrated through the gluteus medius muscle, impeding reduction (Fig. 2). In addition, the sciatic nerve was abutting the posterior acetabulum and was entrapped in scar tissue (Fig. 3). Neurolysis was performed to release the sciatic nerve, and the femoral head was carefully disengaged from the muscle. The acetabular and femoral prosthetic components were assessed and deemed to be stable and thus were left in position. The femoral head size was increased from +4 to +8 (32 mm head) to enhance stability (Fig. 4 and 5).

Postoperatively, the patient showed partial improvement in foot sensation, though dorsiflexion remained weak.

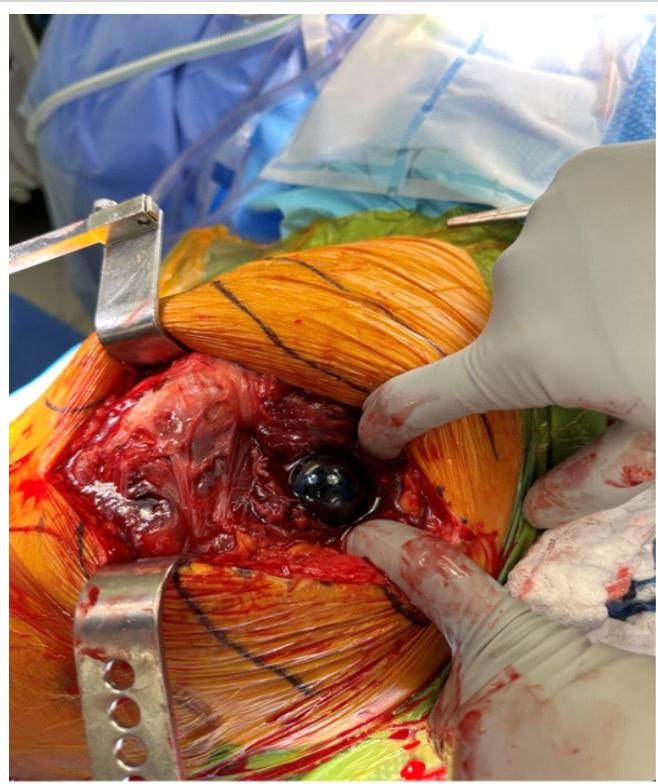


Figure 2: Clinical photograph during open reduction with the head violating the abductors.

She was discharged to a subacute rehabilitation facility on post-operative day 3. At the 2-week follow-up, she continued to exhibit incomplete recovery of motor and sensory function.

On post-operative day 22, during a physical therapy session, the patient experienced a repeat left hip dislocation, confirmed by imaging. This dislocation was successfully reduced through a closed procedure without complications.

At her 3-month post-operative visit, she remained well located, had regained dorsiflexion of her foot, and was ambulatory



Figure 3: Clinical photograph during open reduction showing scarred sciatic nerve abutment against the posterior margin of the cup.



Figure 4: Post-reduction X-ray of left hip.

without assistive devices.

Discussion

This case illustrates several critical challenges in managing periprosthetic dislocations. The perforation of the femoral head through the gluteus medius is a rare mechanical impediment to reduction but should be suspected when numerous attempts have failed. In addition, sciatic nerve entrapment, likely due to scarring, compounded the difficulty in achieving a closed reduction and provided additional challenges in the post-operative period.

Irreducible dislocations, though rare, present unique clinical difficulties. Previous literature states failed closed reductions could be due to entrapment of the iliopsoas tendon, interposition of the joint capsule, cement fragments, or other third-body elements [4,8,9,10,11]. Non-concentric reductions during attempts at closed reduction should alert the surgeon to the possibility of such interpositions necessitating open reductions.

In addition, sciatic nerve complications – though with a prevalence of <0.1% – can occur, further complicating management [14]. Due to the proximity of the sciatic nerve to the posterior hip structures places it at risk of tension or compression injury during reduction maneuvers [13,14]. Cases



Figure 5: Clinical photograph during open reduction of tension-free sciatic nerve status post-neurolysis.

of sciatic nerve entrapment around the femoral stem following closed reduction have been documented but are very limited in the literature [12,13,14,15,16,17]. When sciatic nerve palsy occurs post-reduction, immediate surgical exploration and neurolysis may be warranted to prevent permanent motor deficits [12]. This underscores the importance of limiting forceful reduction attempts and performing neurovascular assessments following manipulative efforts. It is recommended to monitor partial and secondary nerve injuries with an initial observation period of four to 6 months, as spontaneous recovery occurs in 70–100% of cases [14].

Conclusion

This case emphasizes the importance of considering mechanical, muscular, and neurological factors in periprosthetic dislocations. Surgical intervention must address not only the reduction of the prosthesis but also the surrounding soft tissue and nerve involvement. Further studies are needed to explore optimal strategies for preventing recurrent dislocations and improving neurological outcomes in this high-risk population.

Clinical Message

In elderly patients with failed closed reductions after hip arthroplasty, consider open reduction to address both mechanical interposition and potential sciatic nerve entrapment to prevent long-term deficits.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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Conflict of Interest: Nil

Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this article

How to Cite this Article

Fuller Z, Jones T, Thomas J, Weintraub M, Preston J, Patel A. Case Report: Irreducible Periprosthetic Hip Dislocation Due to Muscular Entrapment with Concomitant Sciatic Nerve Involvement. *Journal of Orthopaedic Case Reports* 2026 February;16(02): 143-146.

