

Application of Girdlestone Procedure in Neglected Hip Dislocation with Ipsilateral Femoral Shaft Malunion: A Case Report

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ABSTRACT

Introduction: Neglected hip dislocation is a rare but serious orthopedic condition, typically resulting from high-energy trauma and commonly associated with other skeletal injuries. If left untreated, the dislocated hip undergoes progressive anatomical distortion, leading to chronic pain, deformity, and loss of function. Management becomes especially complex when the dislocation coexists with a malunited femoral shaft fracture. In such cases, conventional reconstructive procedures may be challenging or infeasible. The Girdlestone procedure, or femoral head excision arthroplasty, although traditionally reserved for elderly or low-demand patients, may serve as a valuable option in select young adults with complex neglected injuries.

Case Presentation: We report the case of a 22-year-old female university student who presented with persistent pain and restricted mobility in the left hip and thigh, one year following a motorcycle accident. She had declined initial treatment due to fear of surgical intervention and self-managed with analgesics. On evaluation, she exhibited signs of a neglected posterior hip dislocation and malunited left femoral shaft fracture. A staged surgical approach was adopted. The first procedure involved open reduction via

ilioinguinal approach and excision of the deformed femoral head using a Girdlestone technique, followed by skeletal traction for alignment. In the second stage, performed eight months later, osteotomy and internal fixation with a 9-hole broad locking plate and screws were carried out to correct femoral malalignment. The patient demonstrated significant pain relief and progressive improvement in mobility postoperatively.

Discussion: Neglected hip dislocations in young adults are uncommon and present unique challenges due to extensive joint remodeling and associated injuries. The Girdlestone procedure, while not typically first-line in young patients, provided effective joint decompression and pain relief in this complex case. It also enabled staged correction of femoral deformity and preserved the potential for future reconstructive options. This case supports the role of excision arthroplasty as a temporizing or definitive treatment in young patients with severe anatomical distortion and delayed presentation.

Conclusion: In carefully selected cases, the Girdlestone procedure can serve as a viable salvage technique for managing neglected hip dislocation in young adults, especially when conventional reconstruction is not immediately feasible. This case underscores the importance of individualized surgical

planning and staged intervention to restore function and improve patient outcomes.

Keywords: Hip Dislocation, Femoral Fractures, Arthroplasty, Excision, Orthopedic Procedures, Delayed Diagnosis

INTRODUCTION

Neglected hip dislocation is a rare clinical entity that presents unique diagnostic and therapeutic challenges, especially when associated with concomitant femoral fractures. In contrast to acute traumatic dislocations that are typically managed with prompt reduction, neglected hip dislocations refer to cases where the joint remains dislocated for an extended period—often weeks to months—without appropriate reduction. This condition is most frequently encountered in regions with limited access to healthcare or where cultural, financial, or systemic barriers prevent early medical intervention. Neglected dislocations account for a small percentage of all hip dislocations but are significantly associated with higher morbidity, long-term disability, and complex reconstructive needs^{1,2}.

The hip joint is a stable ball-and-socket joint, and it requires considerable force to dislocate. Posterior dislocations, the most common type, often occur in high-energy trauma, such as motor vehicle accidents. If left untreated, a dislocated femoral head can lead to changes in joint morphology, osteonecrosis, and secondary osteoarthritis due to prolonged abnormal articulation or lack of congruency with the acetabulum. When compounded by a malunited femoral shaft fracture, as seen in this case, the biomechanics of the hip joint are further compromised. The result is chronic pain, restricted mobility, limb length discrepancy, and a substantial decline in quality of life³.

The optimal management of neglected hip dislocations remains controversial and must be tailored to the patient's age, functional demands, duration of dislocation, and the extent of associated injuries. While total hip arthroplasty (THA) is frequently considered the definitive treatment in older individuals

or those with significant joint destruction, its use in young adults is limited by concerns over prosthesis longevity, future revisions, and infection risk in previously traumatized tissue. Moreover, in patients with long-standing dislocations and femoral deformity, the anatomy may be so distorted that conventional THA is technically infeasible or associated with a high rate of complications⁴.

In this context, the Girdlestone procedure, also known as femoral head and neck excision arthroplasty, represents a viable salvage option. Originally described by Gathorne Girdlestone in 1928 for the treatment of septic arthritis of the hip, the procedure has since evolved into a palliative but effective surgical technique for managing intractable hip pain in cases of chronic infection, failed arthroplasty, or neglected dislocation. By removing the femoral head and allowing fibrous tissue interposition, the procedure eliminates bone-on-bone contact, thereby relieving pain and restoring a degree of mobility. Although it results in a flail hip with reduced mechanical efficiency, patients often regain ambulatory function with the aid of assistive devices⁵.

Despite its limitations—including a non-anatomic joint, potential limb shortening, and residual instability—the Girdlestone procedure continues to be a valuable component of orthopedic surgical armamentarium, particularly in cases involving neglected trauma or failed prior interventions. For carefully selected patients, especially those in whom standard reconstructive techniques are delayed or contraindicated, the procedure offers an acceptable compromise between function and pain relief. This case report aims to highlight the clinical decision-making, surgical techniques, and outcomes associated with employing a Girdlestone procedure in a young adult with a neglected hip dislocation, thereby contributing to the evolving literature on managing such complex cases in low-resource or delayed-treatment settings.

CASE PRESENTATION

A 22-year-old female university student presented with a one-year history of persistent pain in the left hip and thigh, which had progressively worsened over the past three months following attempts at ambulation training. Her symptoms began after a motor vehicle accident a year prior, during which she fell from a motorcycle and

impacted her left hip against the asphalt. Despite an initial visit to the emergency department at Prof. Ngoerah Hospital, she declined further intervention due to fear, and only received symptomatic treatment with antibiotics and paracetamol. The patient reported being able to walk with assistance using a cane, although she continued to experience considerable pain.



Figure 1. Physical examination showed a persistent external rotation of the left hip, and radiological examination showed neglected dislocation of the left hip and malunion of the femoral shaft

Physical examination revealed an externally rotated deformity of the left hip, tenderness in both the hip and mid-thigh regions, limited active range of motion of the hip due to pain, and signs of femoral malalignment (Fig. 1). Sensory and vascular examinations of the left lower extremity were within normal limits. Referred from Surya Husadha Hospital with a diagnosis of neglected dislocation of the left hip and malunion of the left femur, radiological and laboratory investigations were pursued for preoperative evaluation.

The first surgical intervention was performed on March 14, 2025, under a diagnosis of

neglected dislocation of the left hip with an associated neglected left femoral shaft fracture. Utilizing an ilioinguinal approach, intraoperative findings revealed a malunited femoral head and acetabular dislocation. A Girdlestone procedure (femoral head resection arthroplasty) was undertaken, involving osteotomy and extraction of the deformed femoral head using a bone saw. This allowed for repositioning of the femoral remnant into the acetabulum without the prosthesis, aiming to relieve pain and improve mobility. In addition, the malunited femoral shaft was osteotomized,



Figure 2. Post operative radiograph of the first surgery, following Girdlestone procedure, and application of skeletal traction to the left distal femur adhesions were released, and skeletal traction was applied distally, followed by layered wound closure. Estimated intraoperative blood loss was 500 mL.

A second surgery was subsequently performed on March 21, 2025, to address the femoral malunion. In a lateral decubitus position, skeletal traction was removed, and a lateral approach was employed to access the mid-shaft femoral fracture, which displayed hypertrophic callus formation. Osteotomies were performed at both the proximal and distal fragments, and the canal

was re-opened. The fracture site was refreshed, irrigated, and internally fixated using a 9-hole broad locking plate placed posteriorly near the linea aspera with 5 locking screws and 4 non-locking screws. Alignment and stability were confirmed intraoperatively, and the surgical site was closed in layers. Total blood loss during the second procedure was 1200 mL.



Figure 3. Post operative radiograph of the second surgery, internal fixation was done using 9-hole broad locking plate

This case highlights the complexity of managing neglected hip dislocations complicated by malunited femoral fractures in young adults. The Girdlestone procedure, though traditionally reserved for older or low-demand patients, was effectively utilized in this case as a limb-salvaging approach to manage chronic dislocation, relieve pain, and allow for potential functional rehabilitation.

DISCUSSION

Neglected hip dislocations are rare clinical presentations, especially in young, otherwise healthy individuals. These injuries typically result from high-energy trauma and, if not managed acutely, can progress to chronic pain, deformity, joint stiffness, and even avascular necrosis of the femoral head⁴. In this case, the patient presented one year after

a motorcycle accident with a neglected posterior dislocation of the left hip and a malunited femoral shaft fracture. The delay in treatment, caused by the patient's fear of invasive intervention, allowed the dislocation to persist and evolve into a complex orthopedic challenge. This situation necessitated a staged surgical approach involving both excision arthroplasty (Girdlestone procedure) and corrective osteotomy with internal fixation.

Neglected dislocations are generally defined as dislocations unreduced for more than three weeks³. The longer the hip remains dislocated, the more extensive the anatomical alterations become, including capsular contracture, soft tissue fibrosis, acetabular remodeling, and femoral head flattening. In this patient, imaging and intraoperative findings confirmed the presence of a

malunited femoral head and deformity in the acetabular contour, making conventional reduction technically unfeasible and inappropriate without first modifying the joint anatomy surgically.

Several management options are available for neglected hip dislocations. These include open reduction and internal fixation (ORIF), total hip arthroplasty (THA), and resection arthroplasty (i.e., Girdlestone procedure). However, each approach must be carefully evaluated based on patient-specific factors such as age, functional needs, joint damage, and overall health status. THA, while effective in many chronic dislocation cases, is technically demanding in young patients with distorted hip anatomy due to the absence of normal bone stock and possible muscle contracture. Moreover, prosthetic implants are prone to early loosening and wear in active individuals, making long-term success in younger patients questionable^{5,6}.

The Girdlestone procedure, or femoral head and neck excision arthroplasty, was initially developed for septic arthritis of the hip but has since been adapted for a variety of indications, including post-traumatic arthritis, failed hip arthroplasty, chronic osteomyelitis, and intractable hip pain where reconstruction is not feasible⁶. Although not commonly used as a first-line treatment in young adults, it provides a practical alternative in cases where pain control and joint decompression are the primary goals, especially as a temporizing procedure prior to definitive reconstruction. In this case, the Girdlestone procedure served as a critical step in reducing the patient's pain and restoring a functional anatomical alignment. The excision of the malunited femoral head not only alleviated intra-articular pressure but also enabled partial reduction of the femoral shaft. This facilitated skeletal traction and correction of limb length discrepancy. Importantly, the procedure allowed a second-stage surgery involving internal fixation of the femoral shaft using a broad locking plate with both locking and non-locking screws. This two-stage approach proved effective in stabilizing the limb and

preparing the patient for eventual rehabilitation and possible future arthroplasty if required.

Outcomes following the Girdlestone procedure vary significantly depending on the patient's condition and post-operative care. While the operation often results in a flail joint and limb shortening, it significantly reduces pain and permits some level of ambulation, particularly when accompanied by physiotherapy and assistive devices³. Several studies have shown that patients, especially in resource-limited environments, tolerate the procedure well and regain functional independence. In developing countries, where access to implants or advanced surgical infrastructure may be limited, Girdlestone arthroplasty remains a cost-effective and viable solution for neglected hip conditions⁷.

The decision to perform osteotomy and internal fixation of the femoral shaft in the second stage was driven by the need to correct the deformity and restore limb alignment. The use of a 9-hole broad locking plate with a combination of locking and non-locking screws ensured mechanical stability and allowed for early mobilization. Furthermore, aggressive intraoperative irrigation, wound drainage, and staged planning minimized infection risks, which are often heightened in post-traumatic or previously neglected injuries. This case reinforces the importance of individualized treatment planning in orthopedic trauma, especially in cases involving delayed presentations. The combination of a Girdlestone procedure with definitive femoral reconstruction allowed this young patient to achieve pain relief, corrected limb alignment, and improved mobility—outcomes that would have been difficult with a single-stage intervention. It also demonstrates that in well-selected cases, the Girdlestone procedure remains a relevant and valuable option in the modern orthopedic surgeon's toolkit, even for younger, active individuals.

CONCLUSION

Neglected hip dislocations, particularly when complicated by associated femoral fractures, represent a rare and challenging orthopedic condition that requires individualized, often staged, surgical management. This case highlights the successful application of a Girdlestone procedure as a crucial component of treatment in a young adult with a one-year-old neglected posterior hip dislocation and malunited femoral shaft fracture. Although traditionally reserved for elderly or low-demand patients, the Girdlestone procedure provided significant pain relief, enabled partial restoration of limb alignment, and served as a temporizing yet functional solution in this complex clinical scenario.

The decision to pursue femoral head resection arthroplasty in the first stage, followed by definitive internal fixation of the femoral shaft, allowed for improved biomechanical stability and positioned the patient for potential future reconstructive interventions, such as total hip arthroplasty, should her functional demands increase. This case reinforces the importance of flexible, context-sensitive surgical planning, particularly in patients presenting with delayed or neglected trauma. In carefully selected cases, the Girdlestone procedure remains a valuable and effective strategy—not merely as a salvage operation, but as a pivotal step toward restoring function and quality of life in young, active individuals faced with severe hip joint pathology.

Declaration by Authors

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