Scientific Research Publishing

Open Journal of Orthopedics, 2025, 15(12), 474-482
https://www.scirp.org/journal/ojo
ISSN Online: 2164-3016
ISSN Print: 2164-3008

Bilateral Symmetric and Asymmetric Traumatic Hip Dislocations in Young Women: Two Case Reports and Literature Review

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How to cite this paper: Agbao, A.K.V., Kombate, N.K., Towoezim, T.H., Bakriga, B. and Abalo, A. (2025) Bilateral Symmetric and Asymmetric Traumatic Hip Dislocations in Young Women: Two Case Reports and Literature Review. *Open Journal of Orthopedics*, **15**, 474-482.
https://doi.org/10.4236/ojo.2025.1512047

Received: November 23, 2025
Accepted: December 19, 2025
Published: December 22, 2025

Abstract

Background: Traumatic dislocation of the hip is an orthopaedic emergency that usually follows high-energy trauma in young adults. Bilateral dislocations are rare, and asymmetric patterns combining posterior fracture-dislocation and obturator dislocation are particularly uncommon. **Case Presentation:** We report two cases of bilateral hip dislocation in young women after road traffic accidents. The first patient presented with symmetric bilateral high posterior (iliac-type) dislocation without associated fracture. Closed reduction was performed three hours after injury, followed by one month of skin traction and progressive mobilisation with protected weight-bearing. At two years' follow-up, she was pain-free, with a full range of motion and no radiological signs of avascular necrosis or early osteoarthritis. The second patient presented an asymmetric bilateral injury with posterior high fracture-dislocation of the right hip and contralateral obturator dislocation. Both hips were reduced urgently under general anaesthesia within two hours of trauma. The acetabular fracture-dislocation was then managed non-operatively with six weeks of transosseous condylar traction followed by staged rehabilitation with partial, then full, weight-bearing, while the obturator dislocation was treated conservatively after stable reduction with three weeks of skin traction and physiotherapy. At eleven months' follow-up, she walked independently with only occasional discomfort on the right side and maintained joint congruence on imaging. **Conclusion:** These two cases illustrate the diversity and severity of bilateral traumatic hip dislocations. They underline the need to systematically assess both hips in any high-energy pelvic trauma and to perform prompt reduction. With early management and appropriate follow-up, satisfactory

short-term functional outcomes can be achieved despite the rarity and potential complexity of these lesions.

Keywords

Bilateral Hip Dislocation, Asymmetric Dislocation, Obturator Dislocation, Acetabular Fracture-Dislocation, Road Traffic Accident

1. Introduction

Traumatic dislocation of the hip is an uncommon but serious orthopaedic emergency. It usually affects young adults following high-energy trauma such as road traffic accidents or falls from height [1]-[3]. Posterior unilateral dislocations are by far the most frequent pattern, whereas anterior, central and complex forms are less common [2] [4]. Early diagnosis and urgent reduction are essential to limit the risk of avascular necrosis of the femoral head, post-traumatic osteoarthritis and long-term functional impairment [3]-[5].

Bilateral hip dislocations are exceptional and generally reflect a very violent mechanism of injury [6]-[8]. Most published cases involve symmetrical posterior dislocations, typically after "dashboard"-type trauma, while bilateral anterior or asymmetric combinations of anterior and posterior dislocation are much rarer [7]-[10]. Reports detailing the mechanisms and short-term functional outcomes of asymmetric bilateral injuries combining posterior acetabular fracture-dislocation with contralateral obturator dislocation, especially when managed non-operatively in resource-limited settings, remain scarce.

Because clinicians' attention is often focused on associated life-threatening injuries in polytrauma patients, one of the hips may be missed initially, leading to diagnostic delay and worse outcomes [8] [9].

We present two bilateral hip dislocations in young women following high-energy road traffic accidents: one with a symmetric pattern and the other with an asymmetric combination. Through these observations, we discuss the mechanisms, the decision-making process leading to conservative treatment in one case, and early outcomes in the light of the current literature, with particular emphasis on the need for prompt recognition and reduction.

2. Case Reports

2.1. Case 1—Symmetric Bilateral Posterior Hip Dislocation in an 18-Year-Old Woman

An 18-year-old woman with a history of mental health disorder followed irregularly was brought to our emergency department after being struck by a car while walking along the roadside. On arrival, she was conscious, anxious and slightly disoriented, with stable haemodynamic parameters and no obvious external wounds. She complained of intense bilateral hip pain and was unable to stand or move her

lower limbs.

Clinical examination showed the typical attitude of posterior hip dislocation on both sides: the hips were flexed, adducted and internally rotated, with apparent bilateral shortening of the lower limbs (Figure 1(a)). There were no abdominal, thoracic or spinal signs of associated injury. Distal pulses were symmetrical, and neurological examination revealed no motor or sensory deficit of either lower limb.

An anteroposterior radiograph of the pelvis demonstrated a symmetric bilateral high posterior (iliac-type) dislocation of the femoral heads without associated fracture of the acetabulum or proximal femur (Figure 1(b)). The patient was transferred urgently to the operating room, and closed reduction of both hips was performed under general anaesthesia three hours after injury using gentle longitudinal traction combined with flexion and internal-external rotation manoeuvres. Reduction was stable, and post-reduction radiographs confirmed concentric reduction of both hips with no visible intra-articular fragment.

Post-operatively, she was managed with bed rest and skin traction for four weeks, followed by progressive mobilisation and protected weight-bearing with crutches. At two years' follow-up, she was walking without pain or limp. Hip range of motion was full and symmetrical, and control radiographs showed no sign of avascular necrosis or early osteoarthritis.

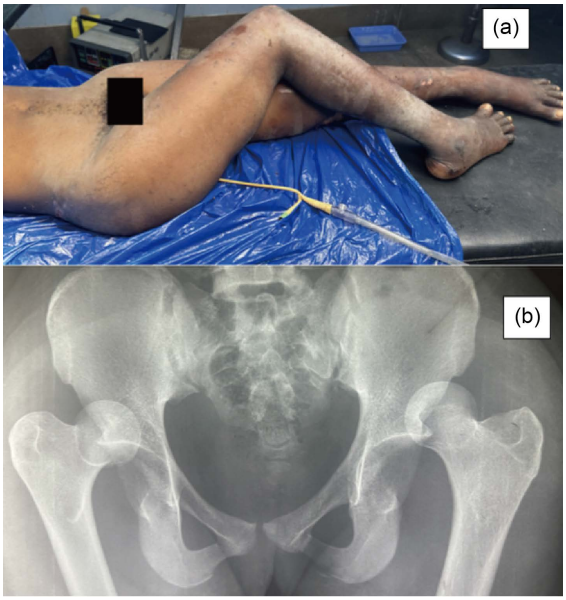

Figure 1. Symmetric bilateral hip dislocation in an 18-year-old woman. (a) Clinical appearance at admission. (b) Anteroposterior pelvic radiograph showing bilateral high posterior dislocation without associated fracture.

2.2. Case 2—Asymmetric Bilateral Hip Dislocation with Right Acetabular Fracture-Dislocation and Left Obturator Dislocation in a 36-Year-Old Woman

A 36-year-old previously healthy woman was admitted after a road traffic accident.

She had been the rear passenger on a motorcycle that was hit by a car; the driver died at the scene. The patient was found lying on the road, unable to stand, and was transported to our hospital by emergency services.

On admission, she was conscious and haemodynamically stable but complained of severe pain in both hips. Examination revealed an asymmetric posture of the lower limbs. On the right side, the limb was shortened, flexed, adducted and internally rotated, suggesting a posterior dislocation. On the left side, the limb was held in flexion, abduction and external rotation, consistent with an obturator (anterior-inferior) dislocation (**Figure 2(a)**). There were no open wounds around the hips. Abdominal and thoracic examinations were unremarkable. A 4-cm wound was noted on the anterior aspect of the right knee overlying a patella fracture. Distal pulses were present on both sides, and there was no neurological deficit of the sciatic or femoral nerves.

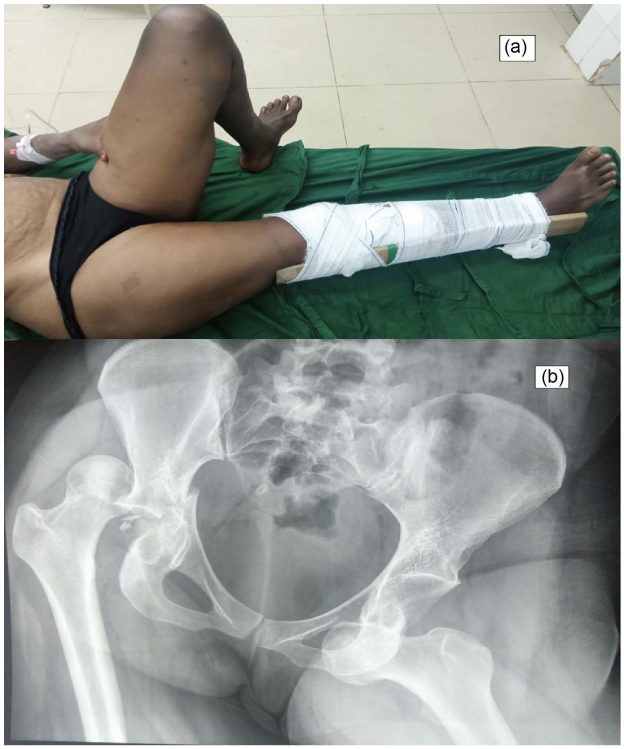

Figure 2. Asymmetric bilateral hip dislocation in a 36-year-old woman. (a) Clinical appearance at admission; (b) Anteroposterior pelvic radiograph showing right posterior acetabular fracture-dislocation and left obturator dislocation.

Pelvic radiographs showed an asymmetric bilateral hip dislocation: on the right side a high posterior dislocation associated with a complex acetabular fracture (fracture-dislocation of the hip), and on the left side an obturator dislocation without associated fracture of the femoral head, neck or acetabulum (**Figure 2(b)**). The patient was transferred urgently to the operating theatre less than two hours after injury, where both hips were reduced under general anaesthesia. Post-reduction imaging confirmed concentric reduction of the femoral heads within

the acetabula and enabled a more precise assessment of the complex right acetabular fracture. Given the concentric reduction, the absence of obvious intra-articular fragments or gross displacement on post-reduction imaging, and taking into account local resource constraints and the patient's preference, we opted for non-operative management of the acetabular fracture-dislocation.

Management combined immobilisation with transosseous condylar traction on the right side for six weeks, while the left obturator dislocation was treated conservatively after stable reduction with adhesive skin traction for three weeks. Both hips were then mobilised gradually, with supervised physiotherapy and staged rehabilitation: initial bed-based exercises, followed by sitting, partial weight-bearing with crutches, and finally full weight-bearing as tolerated. At eleven months' follow-up, the patient was walking independently. She reported occasional discomfort on the side of the acetabular fracture but no major functional limitation, and radiographs showed maintained joint congruence without obvious collapse of the femoral head.

3. Discussion

Traumatic dislocation of the hip is an unusual injury because the joint is inherently stable, thanks to the depth of the acetabulum, the labrum, the capsule and the strong peri-articular muscles [1] [2]. When dislocation does occur, it is almost always the result of high-energy trauma, most commonly road traffic accidents, and typically affects young adults [1]-[3]. In most series, hip dislocations represent only a small fraction of all joint dislocations; posterior unilateral forms dominate, whereas anterior, central and more complex patterns are much less frequent [2] [4]. Bilateral dislocations are exceptional, and asymmetric combinations of anterior and posterior dislocation are usually described only as isolated observations or very small series [5]-[7]. Our two patients fit into this rare group: both were young women involved in road traffic crashes, which matches data showing that car and motorcycle collisions are the usual mechanisms [3] [5] [8], although most authors report a marked male predominance for traumatic hip dislocation [5] [8]. In our setting, young women are frequently exposed to high-energy trauma as pedestrians or rear passengers on motorcycles, and the occurrence of two female cases is probably related to this pattern rather than to a specific sex-related vulnerability.

The lesion patterns observed are consistent with those described in the literature. Symmetric bilateral posterior dislocation, as seen in our first case, is the most frequently reported configuration among bilateral injuries and is classically linked to a "dashboard" mechanism with both hips flexed and adducted at the time of impact [4]-[6] [11]. The second case is more unusual, with a posterior acetabular fracture-dislocation on one side and an obturator dislocation on the other, but the combination remains in keeping with known biomechanics: flexion and axial loading tend to produce posterior dislocation, whereas abduction and external rotation favour anterior or obturator displacement [1] [9]. Similar asymmetric forms, sometimes associated with acetabular or proximal femoral fractures and

obligate obturator dislocation, have been reported by other teams [5]-[8] [10]. These series also underline that bilateral hip dislocation often occurs in the context of polytrauma, with frequent fractures of the acetabulum, femoral head or proximal femur and associated head, thoracic or abdominal injuries [8] [10] [12] [13]. Our second patient, who combined a complex acetabular fracture-dislocation with a contralateral obturator dislocation and a patellar fracture, fits this severe profile, whereas the first case illustrates the less common situation of "pure" bilateral posterior dislocation without fracture [10] [12] [13].

The time between trauma and reduction is a major prognostic factor for femoral head viability. Experimental work and clinical series converge to show that reduction within six to eight hours is associated with a much lower risk of avascular necrosis, while delays beyond twelve hours are followed by a clearly higher rate of this complication [3] [9] [13] [14]. In both of our patients, closed reduction was achieved shortly after admission—within three hours for the first case and within two hours for the second—and no radiological sign of avascular necrosis or advanced degenerative change was observed at around one year of follow-up. This is in keeping with the favourable results reported when early reduction is obtained [3] [9] [13] [14].

Post-reduction imaging is another key step. Many authors recommend CT after reduction, especially in bilateral dislocations, to confirm that the reduction is truly concentric and to detect intra-articular fragments or occult fractures that may not be visible on standard radiographs [10] [12] [15]. Some teams even consider bilateral traumatic hip dislocation an indication for whole-body CT in polytrauma patients, in order not to overlook associated life-threatening injuries [12] [16]. In our practice, post-reduction CT is reserved for cases with complex fracture-dislocations, any doubt about concentric reduction on radiographs, or clinical suspicion of intra-articular fragments or associated head or acetabular fractures. Within this framework, careful clinical examination, good-quality pelvic radiographs and targeted CT when indicated were sufficient to guide management in our two patients without obvious undertreatment.

Once the joint has been reduced, the treatment strategy depends mainly on the presence of associated fractures and on the stability of the reduction. For symmetric posterior dislocations without fracture, many authors regard closed reduction followed by a short period of traction and protected weight-bearing as an adequate option, provided that concentric reduction is confirmed radiographically [2] [4] [11] [12]. Acetabular fracture-dislocations, on the other hand, are more often managed with early CT evaluation and open reduction with internal fixation to restore joint congruence and limit the risk of post-traumatic osteoarthritis [5] [10] [13] [15]. However, acceptable outcomes have also been reported with prolonged skeletal traction after closed reduction in selected cases where fixation is not performed, provided that follow-up and rehabilitation are properly organised [7] [11] [15]. The decision to treat the acetabular fracture-dislocation non-operatively in our second patient was based on the quality of the closed reduction, the absence

of obvious intra-articular fragments or gross displacement on post-reduction imaging, the patient's clinical stability, and the constraints of a resource-limited environment. In this context, the use of transosseous condylar traction on the fractured side and skin traction on the obturator dislocation falls within the range of strategies already described in the literature.

Functionally, both patients recovered independent walking, had little or no pain and almost full range of motion at one year, which is consistent with short-term outcomes reported in other bilateral or asymmetric dislocations treated by early reduction with or without traction [6] [7] [11] [14]. Nevertheless, several limitations must be acknowledged. The very small number of patients and the retrospective nature of the observations limit the generalisability of our findings. Standardised functional scores, such as the Harris Hip Score, were not systematically collected, which reduces the precision of functional outcome assessment and should be viewed as a limitation of this report. Finally, the relatively short follow-up does not allow us to determine the true incidence of avascular necrosis and post-traumatic osteoarthritis, complications known to occur several years after the initial trauma [3] [11] [13]-[15]. Even so, our experience supports the main practical messages found in the literature: in any high-energy pelvic trauma, both hips must be examined and imaged; reduction should be obtained as early as possible, whatever the definitive stabilisation method; and when the reduction is stable, appropriate traction and supervised rehabilitation can provide good early functional results [3] [5] [11] [12] [16].

4. Conclusion

Bilateral traumatic hip dislocations, particularly asymmetric patterns associated with posterior fracture-dislocation and obturator dislocation, are exceptional injuries. Our two cases of young women after road traffic accidents highlight the need to systematically assess both hips in any high-energy pelvic trauma and to perform prompt reduction. With early management and appropriate follow-up, satisfactory short-term functional outcomes can be achieved despite the severity of these lesions.

Ethical Approval and Consent

Written informed consent was obtained from both patients for publication of these case reports and the accompanying clinical and radiological images.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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