

# A rare concomitant ipsilateral hip and knee dislocations: A case report and review of the literature

SAGE Open Medical Case Reports  
Volume 12: 1–7  
© The Author(s) 2024  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/2050313X241233199  
journals.sagepub.com/home/sco



Mohamed Jlidi<sup>1,2</sup>, Walid Bouaicha<sup>1,2</sup>, Karim Mallek<sup>1</sup>,  
Mohamed Hedi Gharbi<sup>1</sup>, Salma Jaziri<sup>2,3</sup> and Selim Daas<sup>1,2</sup>

## Abstract

Ipsilateral hip and knee dislocation is a rare and complex injury that usually results from high-energy trauma. Only 14 cases were reported in the literature so far. We report the case of a 35-year-old man who presented with an ipsilateral right hip and knee dislocation after being involved in a road traffic accident. A contralateral floating knee was associated. The hip dislocation was associated to a posterior wall fracture of the acetabulum and a femoral head fracture. The knee dislocation was compound and associated with a patella fracture. The hip dislocation was reduced. The posterior wall and the femoral head fractures were treated conservatively. The knee dislocation was reduced and stabilized by external fixator. Early postoperative infection occurred and was treated surgically. At the last follow-up, the knee was ankylosed at 5° of flexion with a bony bridge between the femoral condyle and the tibial plateau. The patient described an occasional hip pain on exertion. He had full range of motion of the right hip. No avascular necrosis of the femoral head was seen. Outcomes of simultaneous hip and knee dislocation are very variable and remain unpredictable. The timing of reducing the hip joint and the knee.

## Keywords

Dislocation, hip, knee, ipsilateral, case report, simultaneous

Date received: 18 August 2023; accepted: 29 January 2024

## Introduction

Hip and knee dislocations are orthopedic emergencies. In isolation, these injuries are of common occurrence in routine trauma practice. However, simultaneous ipsilateral dislocation of both joints is an unusual injury denoting the severity of the trauma.<sup>1,2</sup>

This injury pattern usually occurs following a high-energy trauma and is often associated with concomitant lesions and secondary complications. Simultaneous ipsilateral hip and knee dislocations not only require urgent treatment but also pose a real challenge for orthopedic surgeons. Decisions need to be taken regarding the appropriate therapeutic strategy to follow in order to achieve proper reduction and stabilization of the dislocations and to prevent any iatrogenic injury that may be caused by the reduction attempts.

We report the case of a patient with concomitant ipsilateral hip and knee dislocations and discuss the literature.

## Case presentation

A 35-year-old man, with no personal or family medical or surgical history, was a victim of a high energy motor vehicle

accident (head-on collision). The patient was brought to the emergency room with the main complaint of painful and deformed lower limbs.

After applying the Advanced Trauma Life Support principles,<sup>3</sup> vital emergencies were ruled out and isolated injuries to the lower limbs were retained.

On clinical examination, the patient was perfectly conscious and his vital parameters were stable.

The musculoskeletal examination of the right lower limb revealed a 7-cm wound over the anterior aspect of the right knee which was grossly deformed. The distal femur was protruding through the wound and a fracture of the patella was visible (Figure 1(a)). The right hip was flexed, adducted and

<sup>1</sup>Orthopedics and Traumatology Department, Mohamed Taher Maamoury Hospital, Nabeul, Tunisia

<sup>2</sup>Faculty of Medicine of Tunis, University of Tunis El Manar, Tunis, Tunisia

<sup>3</sup>Department of Anesthesia and Intensive Care, Mohamed Bourguiba Hospital, El Kef, Tunisia

## Corresponding Author:

Mohamed Jlidi, Faculty of Medicine of Tunis, University of Tunis El Manar, AFH City Mrezgua, Nabeul 8050, Tunisia.

Email: medjlidi@hotmail.fr





**Figure 1.** Open posterior dislocation of the right knee with protruding femoral condyle through the wound (a). The reduction of dislocated hip was done using two trans-fixating Steinman pins inserted in the distal femur (b).

internally rotated. The dorsalis pedis and tibialis posterior pulses were palpable. Dorsiflexion of the left ankle and sensation along the lateral aspect of the leg and the dorsum of the foot were absent suggesting an injury to the common peroneal nerve.

On examination of the left lower limb, the left thigh and leg were also deformed. The skin was intact and there was no associated neuro-vascular deficit.

Radiological assessment showed a simultaneous posterior right hip fracture–dislocation and a posterior dislocation of the right knee associated with a comminuted fracture of the patella. On the left side (Figure 2), displaced mid-shaft femur and tibia fractures were noted realizing the so-called floating knee.

The patient was immediately taken to the operating room. In theatre, the patient’s hemodynamics deteriorated and was classified as “Borderline” and the decision of damage control surgery was taken.

The surgical procedures were done by two teams led by a senior orthopedic surgeon each. Under general anesthesia, on an ordinary table, the patient was put supine and a sterile draping of both lower limbs was done.

On the right side, the first step consisted in a closed reduction of the hip fracture–dislocation. To do so, two trans-fixating Steinman pins were inserted into the femoral

condyles (Figure 1(b)). The pelvis was stabilized by the assistant and traction associated to flexion and internal rotation was applied in the direction of the femur using the pins. An audible “clunk” was heard as the hip reduced. Skeletal traction was not performed as the hip felt stable after reduction.

The wound over the anterior aspect of the knee was then debrided. The joint was thoroughly washed and inspected. Joint exploration found a complete tear of the anterior and posterior ligaments. The dislocation of the knee was reduced and stabilized with an external fixator (Orthofix®). The patella was fixed by tension band wiring. In the meantime, a stabilization of the left “floating knee” was achieved by the second team using external fixation devices (Orthofix®) applied to the femur and the tibia under fluoroscopic control.

The patient was then taken to intensive care for further resuscitation.

Analgesia, prophylactic anti-coagulation, and intravenous antibiotics were prescribed.

Postoperatively, X-rays showed a good reduction of the left hip and knee. Pelvis CT scan showed a congruent hip joint with a minimally displaced posterior wall fracture and a Pipkin type I undisplaced femoral head fracture (Figure 3).



**Figure 2.** Standard X-ray showing a right hip dislocation (a) and an ipsilateral knee dislocation with a patella fracture (b).

The patient was stabilized. However, he had to be taken to theatre on day three for an early sepsis in the right knee requiring a second-look surgery with irrigation and drainage of the knee. The joint infection could be controlled after several surgical debridement and prolonged antibiotics.

MRI of the knee was discussed to identify the other ligament injuries. However, the presence the metallic hardware

as well as the recurrent infection prevented us from any further exploration.

Across knee fixator was removed at 13 weeks postoperatively.

At 18 month follow-up, the right knee was stiff at a fixed 5° flexion contracture (Figure 4). There were no signs of active infection. Standard X-ray showed an ankylosis of the knee joint, this can be explained by the chondral lesions due both to the initial trauma and the recurrent infection. The right hip, however, was fully mobile with occasional pain and no signs of avascular necrosis (AVN) (Figure 5). There was a slight recovery of his neurologic fallout, the patient refusing any further surgery.

The left side fractures went on to consolidation with the external fixators with some residual knee stiffness that improved with rehabilitation.

## Discussion

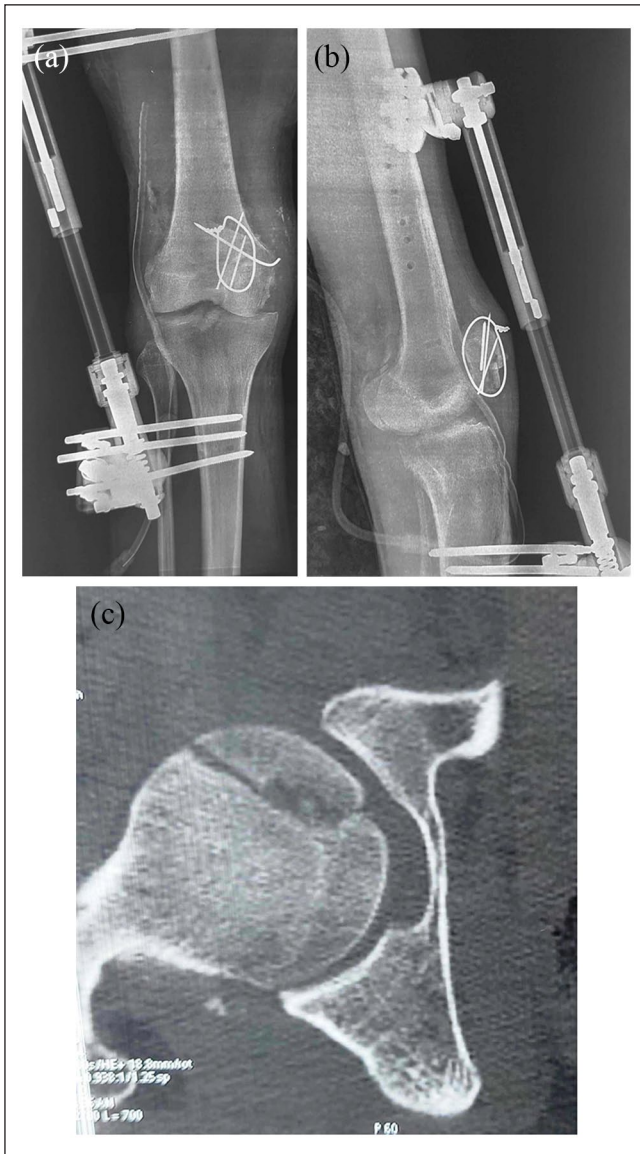
Ninety percent of hip dislocations are posterior. The most common causes are either a fall from a height or an axial force loaded on the flexed hip (dashboard mechanism).<sup>4</sup> Furthermore, hip dislocations are often associated with knee injuries, secondary to either direct or indirect trauma.<sup>5</sup> For this reason, in posterior hip dislocations, a rule of thumb is to always proceed with a thorough physical examination of the knee to identify any associated ligamentous injuries.

Simultaneous ipsilateral hip and knee dislocation is an extremely rare injury. It usually is related to high energy trauma.

To the best of our knowledge, only 14 cases of this entity have been reported in the English literature. A summary of the published cases can be found in Table 1.<sup>1,2,6-17</sup>

Eight of the 14 reported patients,<sup>1,6,8,14-17</sup> including the present case, had associated injuries. Some of these injuries can be serious such as chest trauma, ipsilateral femoral shaft fracture, or contralateral floating knee as our case. This confirms that the mechanism is usually violent and often secondary to high velocity accidents. For this reason, a full clinical and radiological examination must be carried out to rule out any life-threatening emergencies.

Ipsilateral hip and knee dislocation may be associated with serious acute complications. Three of the 14 patients (21.5%) had popliteal artery injury.<sup>1,11,16</sup> Arterial repair was successful only in one case<sup>16</sup>; however, the remaining two patients ended up with limb amputations.<sup>1,11</sup> Four patients including our case had common peroneal nerve fallout.<sup>2,7,12</sup> Three patients ultimately recovered, but in our case recovery was only partial. Cornwall and Radomisli<sup>18</sup> reported a 10% incidence of nerve complication following traumatic hip dislocation. Generally, exploration of the nerve was not recommended when this complication was associated with traumatic hip dislocation. Traumatic knee dislocations, on



**Figure 3.** Postoperative X-ray of the knee (a and b) showing an acceptable reduction of the knee dislocation. CT scan of the hip (c) showing a congruent hip joint with undisplaced femoral head fracture.

the other hand, were associated with nerve injury in up to 40% of the cases.<sup>19</sup> The management of this neurological fallout was controversial. However, most of the authors recommend a common peroneal nerve neurolysis when posterolateral corner repair or reconstruction was done.

Simultaneous hip and knee dislocation represents an extremely uncommon injury pattern, with a high risk of neurovascular compromise. For this reason, all the cases including ours were considered as therapeutic emergencies. The management should be done as soon as possible after the injury.

Several reduction techniques for the hip dislocation were described in the literature. Closed reduction was done by most of the authors. Freedman et al.<sup>9</sup> reduced the hip with manual traction over the thigh. Dubois et al.<sup>12</sup> described the use of Schanz pins inserted in the femoral condyle as well as lateral aspect of the proximal femur to affect the reduction. Our technique was similar with the use of two Steinman pins placed in the distal femoral condyle. Waterman et al.<sup>16</sup> described a technique where the traction force was applied on the flexed knee through the distal femur. We think that the use of pins inserted through the distal femur is safer than pulling over an instable knee to prevent possible iatrogenic vascular complications.

Open reduction was indicated when closed reduction was unsuccessful.<sup>7,8</sup> Once the hip is reduced, the knee dislocation can be reduced in the same way as isolated dislocations.

Knee dislocations associate a various multi-ligamentous injuries. The best treatment remains surgical. Many studies discuss the advantages and drawbacks of early or delayed reconstruction of the involved structures in order to reach better clinical outcomes.<sup>2</sup>

In patient with knee dislocation, Ma et al.<sup>20</sup> found better functional and clinical outcomes when a two-stage strategy is adopted consisting in peripheral structures reconstruction in phase I followed by anterior and posterior cruciate ligaments reconstruction in phase II. Most of authors believe that lateral collateral ligament integrity is paramount for the stability of the knee joint. Early repair involving a simple suture of the broken ends should be performed, and it is preferable to delayed complex reconstruction.<sup>21</sup> In our case, the septic complication prevented any further ligamentous reconstruction of the affected knee until the last follow-up.

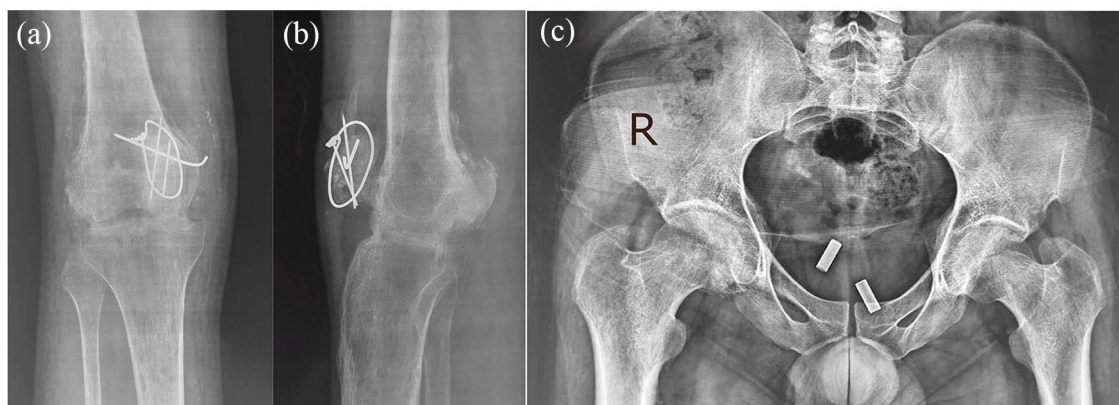
Function and clinical outcomes of hip and knee dislocations can vary widely from restitutio ad-integrum of the limb function to through or above the knee amputations. Several factors can affect the functional outcomes such as the timing of hip reduction, the presence of neurovascular complications, and the management of multi-ligament knee injury.<sup>1,2,13</sup> In our case, the patient had good functional and clinical results for the hip; however, infection was deleterious for the final result of the open knee dislocation.

## Conclusion

Ipsilateral hip and knee dislocation is a serious and rare emergency. Proper management is necessary for good functional outcomes. The timing of hip joint reduction and knee ligament reconstruction are the most important prognostic factors. The outcomes are very variable and remain unpredictable.



**Figure 4.** Clinical results at the last follow-up.



**Figure 5.** Standard X-ray of the knee at the last follow-up (a and b): a bone bridge joining the medial femoral and tibial condyle. No avascular necrosis of the femoral head was seen on the X-ray of the pelvis (c).

**Table 1.** Reported cases of ipsilateral hip and knee dislocation.

Authors, years	Side	Hip dislocation	Knee dislocation	Associated injuries	Treatment		Results	
					Hip	Knee	Hip	Knee
Malimson, <sup>6</sup> 1984	Right	P + PW	Posterior closed	Fracture of sternum, tarsometatarsal fracture dislocation	CR; conservative	CR; LFC treated conservatively	Painless	0°–100° ROM, knee stable
Kreibich et al., <sup>7</sup> 1990	Left	P + FN	Posterior closed	None	OR with fixation of #FN	Primary repair of ligaments	Intermittent pain, AVN	Flexion up to 105°, knee stable, arthrosis
Millea et al., <sup>8</sup> 1991	Left	P + FH	Rotary closed	Ipsilateral femoral shaft fracture, open bimalleolar fracture	OR with fixation of #FH	Primary repair of ligaments	Occasional discomfort of the hip	Occasional discomfort of the knee
Freedman et al., <sup>9</sup> 1994	Right	P	Posterior closed	None	CR	Early ligaments reconstruction	Painless, no AVN	ROM: 10°–105°, mild Lachman+
Schierz et al., <sup>10</sup> 2002	Right	P + PW	Posterior closed	None	CR, # acetabular wall treated conservatively	PCL repaired	Painless, no AVN	ROM: 0°–125°, mild Lachman+
Motsis et al., <sup>11</sup> 2006	Right	P + PW	Posterior closed	None	CR, # acetabular wall treated conservatively	Through knee amputation	Not mentioned	Walking with crutches
DuBois et al., <sup>12</sup> 2006	Right	P + PW	Posterior closed	None	CR, # acetabular wall treated conservatively	Early ligaments reconstruction	Painless, no AVN	ROM: 0°–125°, no instability
Ali et al., <sup>13</sup> 2009	Right	A	Anterior	None	CR	Early ligaments reconstruction	Painless, no AVN	Up to 120° ROM, mild instability
Vaseenon et al., <sup>14</sup> 2010	Left	A	Posterior closed	Ipsilateral olecranon fracture	CR	Ligaments reconstruction not discussed	Not mentioned	Not mentioned
Sen et al., <sup>15</sup> 2011	Left	P + PW + FH	Posterior closed	Contralateral open leg fracture	OR with fixation of FH and acetabular fragments	OR of tibial plateau fracture	Painless, no AVN	ROM: 0°–125°, knee stable
Waterman and Banerjee, <sup>16</sup> 2011	Right	P	Posterior closed (C)	Ipsilateral tibiotalar dislocation, contralateral tibia fracture	CR	Patient refused ligament reconstruction	Painless, no AVN	ROM: 0°–125°, no instability
Sharma et al., <sup>2</sup> 2016	Right	P + PW	Posterior closed	None	CR fixation of posterior wall fragment	Delayed ligament reconstruction	Painless, no AVN	ROM: 0°–120°, mild Lachman+
Miquelez et al., <sup>17</sup> 2017	Left	P	Lateral closed	Thoracic trauma	CR	Conservative	Not mentioned	Mild discomfort of the knee, no instability
Jain et al., <sup>1</sup> 2020	Right	A	Posterior closed (C)	Contralateral forearm fracture	CR	Above knee amputation	Not mentioned	Not mentioned
Our case, 2023	Right	P + PW + FH	Posterior open with patella fracture	Contralateral knee floating	CR, # acetabular wall and FH treated conservatively	External fixation	ROM: complete, no AVN	Ankylosis at 5°, arthrosis++

P: posterior; PW: posterior wall; FH: femoral head; FN: femoral neck; (C): vascular injury; CR: closed reduction; OR: open reduction; #: fracture; LFC: lateral femoral condyle.

## Acknowledgements

The authors would like to thank Ms Slim Jerbi and Ms Mohamed Gannar for their kind assistance in the elaboration of this article.

## Author contributions

All the authors participated in the design, performance, analysis and drafting of this manuscript.

## Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

## Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

## Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

## ORCID iDs

Mohamed Jlidi  <https://orcid.org/0000-0002-8862-2722>

Walid Bouaicha  <https://orcid.org/0000-0003-4837-1954>

## References

- Jain M, Sathia S, Mahapatra RP, et al. Triple blow injury to a limb: ipsilateral hip and knee dislocation with vascular occlusion. *J Emerg Trauma Shock* 2020; 13(4): 309–311.
- Sharma G, Chahar D, Sreenivasan R, et al. Ipsilateral hip and knee dislocation: case report and review of literature. *J Clin Orthop Trauma* 2016; 7(2): 115–121.
- Galvagno SM, Nahmias JT and Young DA. Advanced Trauma Life Support® Update 2019: management and applications for adults and special populations. *Anesthesiol Clin* 2019; 37(1): 13–32.
- Gillespie WJ. The incidence and pattern of knee injury associated with dislocation of the hip. *J Bone Joint Surg Br* 1975; 57(3): 376–378.
- Tabuenca J and Truan JR. Knee injuries in traumatic hip dislocation. *Clin Orthop Relat Res* 2000; 377: 78–83.
- Malimson PD. Triple fracture-dislocation of the lower limb. *Injury* 1984; 16(1): 11–12.
- Kreibich DN, Moran CG and Pinder IM. Ipsilateral hip and knee dislocation. A case report. *Acta Orthop Scand* 1990; 61(1): 90–91.
- Millea TP, Romanelli RR, Segal LS, et al. Ipsilateral fracture-dislocation of the hip, knee, and ankle: case report. *J Trauma* 1991; 31(3): 416–419.
- Freedman DM, Freedman EL and Shapiro MS. Ipsilateral hip and knee dislocation. *J Orthop Trauma* 1994; 8(2): 177–180.
- Schierz A, Hotz T and Käch K. [Ipsilateral knee and hip joint dislocation]. *Unfallchirurg* 2002; 105(7): 660–663.
- Motsis EK, Pakos EE, Zaharis K, et al. Concomitant ipsilateral traumatic dislocation of the hip and knee following high-energy trauma: a case report. *J Orthop Surg (Hong Kong)* 2006; 14(3): 322–324.
- DuBois B, Montgomery WH, Dunbar RP, et al. Simultaneous ipsilateral posterior knee and hip dislocations: case report, including a technique for closed reduction of the hip. *J Orthop Trauma* 2006; 20(3): 216–219.
- Ali C, Malkus T and Podskubka A. [Ipsilateral traumatic dislocation of hip and knee joints. Case report]. *Acta Chir Orthop Traumatol Cech* 2009; 76(4): 329–334.
- Vaseenon T, Wongtriratanachai P and Laohapoonrungsee A. Ipsilateral anterior hip dislocation and posterior knee subluxation: a case report. *J Med Assoc Thai* 2010; 93(1): 128–131.
- Sen RK, Tripathy SK, Krishnan V, et al. Ipsilateral fracture dislocations of the hip and knee joints with contralateral open fracture of the leg: a rare case and its management principles. *Chin J Traumatol* 2011; 14(3): 183–187.
- Waterman BR and Banerjee R. Management of simultaneous ipsilateral dislocation of hip, knee, and ankle. *Am J Orthop (Belle Mead NJ)* 2011; 40(6): 301–304.
- Miquelez AA, Familiari F, Arbeloa L, et al. Simultaneous ipsilateral dislocation of the hip and the knee: a case report. *JBJS Case Connect* 2017; 7(4): e85.
- Cornwall R and Radomisli TE. Nerve injury in traumatic dislocation of the hip. *Clin Orthop* 2000; 377: 84–91.
- Plancher KD and Siliski J. Long-term functional results and complications in patients with knee dislocations. *J Knee Surg* 2008; 21(4): 261–268.
- Ma W, Yang Y and Ha X. Two-stage ligament reconstruction with remnant preservation as treatment of knee dislocation. *BMC Surg* 2023; 23(1): 371.
- Vicenti G, Solarino G, Carrozzo M, et al. Major concern in the multiligament-injured knee treatment: a systematic review. *Injury* 2019; 50: S89–S94.