

A Rare Case : Traumatic Posterior Hip Dislocation Associated with Anterior Column and Incomplete Posterior Column Acetabular Fracture

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ABSTRACT

Introduction: The hip is among the most solid joints within the human body that took a lot of force to dislocate it. Hip dislocation is frequently associated with acetabulum fracture. Although traumatic posterior hip dislocation is rarely involved anterior column fracture.

Case Presentation: We describe a rare case of traumatic posterior dislocation of hip associated with anterior column and incomplete posterior column acetabular fracture in a young female following road traffic accident. The patient hip dislocation was reduced with closed reduction and performed open reduction and fixation under C-Arm for acetabular fracture management. Assessment of anterior and posterior acetabular column was revealed stable after fixation. The goals are to maximize the patient's ability to function, enable early recovery to function. The patient was able to flex her left hip at 6 weeks after the surgery.

Conclusion: This case highlights a rare case of the traumatic posterior hip dislocation associated with anterior column and incomplete posterior column acetabular fracture, attempts to elucidate the mechanism of injury and perform prompt reduction to achieve a better patient outcome.

KEYWORD : Traumatic posterior hip dislocation, anterior column acetabular fracture, incomplete posterior column acetabular fracture

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INTRODUCTION

The hip is among the most solid joints within the human body. It took a lot of force to dislocate the hip that commonly resulted after a high-energy trauma. Traumatic hip dislocation majority occur in male young patient that caused by motor vehicle accident. The position and type of dislocation were defined as the direction of the resultant force and lower limb position during the impact¹. Hip dislocations are classified as anterior, posterior, or central based on where the head of femur is in relation to the acetabulum⁷. The posterior dislocation causes 90% of hip dislocations cases².

Hip dislocation is frequently associated with acetabulum fracture, which can result in increased complications incidence^{2,4}. The posterior wall fracture is the most common fracture pattern of posterior hip dislocation among all acetabular fractures⁴. Traumatic posterior hip dislocation is rarely involved Anterior column fracture. We

describe a rare case of traumatic posterior dislocation of hip associated with anterior column and incomplete posterior column acetabular fracture.

CASE PRESENTATION

A 24 years old female was involved in road traffic accident between a motorcycle and three-wheeler vehicle and threw herself in the gutter after accident. She was taken to the emergency department of the district hospital and then to be referred to Prof. Dr. Margono Soekarjo Hospital. Patient suffered traumatic brain injury with loss of consciousness which is being treated by neurosurgeon. The patient consulted to orthopaedic department after being treated by neurosurgical department because there was shortening and limitation of movement of the left limb, then the patient

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transferred to the orthopaedic department for proper management.



Figure 1. Patient's limb positioned in flexion, adduction and internal rotation

Physical examination findings are patient in altered consciousness with 11 score of Glasgow Coma Score and hemodynamically stable. Hip examination revealed shortening, flexed, adduction, internal rotation of the left limb [Figure 1]. The patient underwent an anteroposterior pelvic radiograph, the results showed that the head of the left femur protruded from the acetabulum and visible fractures in the anterior column of the acetabulum, fracture of the inferior \

ramus of the pubic bone [Figure 2]. This patient was initially diagnosed with posterior dislocation of the left hip with an anterior column acetabular fracture. The patient then underwent investigation with CT Scan of Pelvic, it revealed superoposterior dislocation of left hip with anterior column acetabulum fracture, incomplete posterior column fracture and inferior pubic rami fracture [Figure 3].



Figure 2. Pre Operative Pelvic AP View

Surgical treatment was planned for patient. Preoperative antibiotic with 2 gr of Cefazolin was given for prophylaxis. Under general anesthesia patient lied in supine position. Closed reduction of hip with Allis Manuever was performed for dislocated hip. Illioinguinal approach was utilized for expose into the fracture site. Intraoperatively, open reduction and internal fixation of anterior acetabular column was

performed with a reconstruction plate and cortical screws under C-Arm imaging [Figure 4]. Assessment of anterior and posterior acetabular column was revealed stable after anterior fixation. The wound was irrigated with normal saline then closed with a suction drain. Skin traction was applied in the left limb to maintain reduction.

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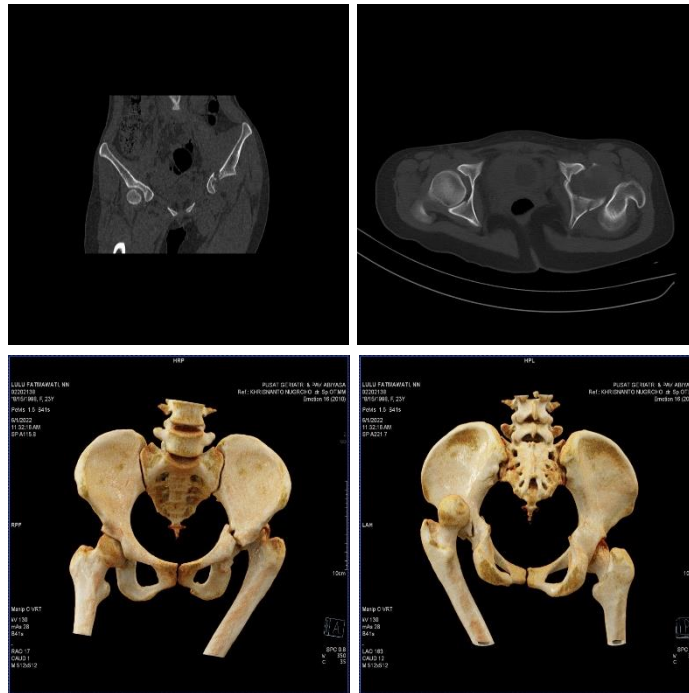


Figure 3. Pre-operative Pelvic CT Scan



Figure 4. Reconstruction Plate and Screws Reduction Under C-Arm Durante Surgery

After the surgical treatment, pelvic radiographs were taken to assess the quality of the reduction. [Figure.5]. The patient was also evaluated by a neurosurgeon before being

discharged as the patient still had impaired consciousness. The patient was followed up in the clinic, 6 weeks after the surgery the patient was able to flex her left hip [Figure.6].

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Figure 5. Post Operative Pelvic AP View

DISCUSSION

One of most solid joints in the human body is the hip. Hip joint is unlikely to dislocate with a thick joint capsule and strong muscular structure support. It requires high energy trauma to dislocate the hip. Traumatic dislocation can be divided into two types, simple dislocation without associated fracture and complex dislocation associated with fracture^{1,2}.

The resultant force direction and the position of the hip influence hip dislocation. Posterior hip dislocation contributes to 90% of hip dislocation cases. Anterior wall fractures are generally associated with anterior hip dislocations, while posterior wall injuries are associated with

posterior hip dislocations⁹. A posterior hip dislocation uncommonly involves an anterior wall fracture.

Hip dislocation after motor vehicle accident has high incidence of nonorthopedic additional injuries with closed-head injuries (24%), craniofacial fractures (21%), thoracic injuries (21%), and abdominal injuries (15%)¹. We describe rare case of 24 years old female with posterior dislocation of hip that involved anterior column acetabular fracture and incomplete posterior column acetabular fracture also had additional traumatic brain injury following road traffic accident involving a motorcycle and three-wheeler.



Figure 6. The patient was able to flex the hip at 6 weeks

There is few literatures reported the rare cases. Singh A et al, describe a rare case of a posterior dislocation hip involving anterior column acetabular fracture that occurred during a road traffic accident³. Yousefi A et al, describe the posterior hip dislocation associated with a posterior wall acetabular fracture and an ipsilateral intertrochanteric fracture in a motorcycle and pickup truck traffic accident². I.H Dilego et al, describe a posterior hip dislocation associated with closed posterior wall acetabular fracture and the femoral head fracture occurred in a car accident⁴. S Nohmi et al, describe a

posterior hip fracture dislocation that involving a fracture of the posterior wall of the acetabulum and an ipsilateral trochanteric comminuted fracture of the femur after a fall⁵. Sinha S et al, describe an ipsilateral traumatic posterior dislocation of the hip, posterior wall, and transverse acetabular fracture with trochanteric fracture in an adult after falling from a moving train⁶. Chen et al described an ipsilateral anterior and posterior acetabular wall fracture in a case of posterior hip dislocations secondary to a motor vehicle accident¹⁰.

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Combinations of cases above suggest some variable mechanism of injury. Typically posterior dislocation of hip occurred by intensive axial forces impact to the hip while flexed and adducted and internal rotated that lead posterior dislocation of the hip and posterior acetabulum fracture¹. In our patient, we believe that the mechanism causing the rare fracture dislocation pattern was dynamic axial force to femur in extension, external rotation, and abduction that caused anterior acetabular column fracture. Although before an anterior hip dislocation could occur, there was likely a change in direction of the actuating force when the patient encountered the gutter and forced the left hip in flexion and adduction causing the posterior hip dislocation.

The surgical approach is one of the most important components for an optimally suitable surgical technique. The ilioinguinal approach is applicable to all fractures involving anterior acetabular fracture, T-shaped fracture, bicolunar fractures with minimal posterior column comminution^{7,8}. The surgical approach is selected taking into account the type of fracture, the extent and location of fracture displacement, the amount of time that passes between the injury and the surgical intervention⁷. This patient had an anterior column and an incomplete acetabular fracture of the posterior column with impaired consciousness during surgery. The ilioinguinal approach was chosen in this case after performing a hip reduction using the Allis maneuver. Anterior and posterior acetabular column assessment under C-Arm was stable after anterior fixation. A single surgical approach is used in hopes of reducing and fixing the fracture in one go.

The postoperative outcome of an acetabular fracture shows variable results. The goals are to maximize the patient's ability to function, enable early recovery to function, and quickly identify and address problems. The patient should be actively mobilized in 6-12 weeks⁷. In this case, the patient is able to flex the hip 6 weeks after the surgery.

CONCLUSION

This case highlights a rare case of the traumatic posterior hip dislocation associated with anterior column and incomplete posterior column acetabular fracture, attempts to elucidate the mechanism of injury and perform prompt reduction to achieve a better patient outcome.

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DISCLOSURE

The authors have declared that no conflict of interest and no source of funding in this study.

REFERENCES

- I. Clegg TE, Roberts CS, Greene JW, Prather BA. Hip dislocations--epidemiology, treatment, and outcomes. *Injury*. 2010 Apr;41(4):329-34. doi: 10.1016/j.injury.2009.08.007. Epub 2009 Sep 30. PMID: 19796765.
- II. Yousefi A, Ashraf H, Mashhadinezhad A, Birjandinejad A. Posterior hip dislocation associated with posterior wall acetabular fracture and ipsilateral intertrochanteric fracture: a very rare case report. *Trauma Mon*. 2013 Winter;17(4):409-11. doi: 10.5812/traumamon.8520. Epub 2013 Jan 15. PMID: 24350139; PMCID: PMC3860658.
- III. Singh A, Vohra R, Bansal S. Posterior dislocation hip with anterior column acetabular fracture: a very rare injury. *Int J Res Orthop* 2018;4:330-2.
- IV. Hadisoebroto Dilog, Ismail & Erwin, Uno & Hendriarto, Andra. (2020). Posterior Dislocation of Left Hip Joint with Closed Fracture Of Left Acetabulum Judet-Letournel Type Posterior Wall, Femoral Head Fracture, Management And Follow Up: A Case Report. *International Journal of Surgery Case Reports*. 71. 10.1016/j.ijscr.2020.04.009.
- V. Nohmi S, Oishi H, Sakamoto Y. Posterior hip fracture-dislocation associated with posterior wall fracture of the acetabulum and ipsilateral comminuted trochanteric fracture of the femur: A case report. *Int J Surg Case Rep*. 2022 May;94:107075. doi: 10.1016/j.ijscr.2022.107075. Epub 2022 Apr 12. PMID: 35427888; PMCID: PMC9026913.
- VI. Sinha S, Naik AK, Arya RK, Jain VK. Ipsilateral Traumatic Posterior Hip Dislocation, Posterior Wall and Transverse Acetabular Fracture with Trochanteric Fracture in an adult: Report of First Case. *J Orthop Case Rep*. 2013 Oct-Dec;3(4):31-4. doi: 10.13107/jocr.2250-0685.128. PMID: 27298928; PMCID: PMC4719285.
- VII. Nayak M, Yadav R, Sahu BK, Kumar VS, Sharma V. An Rare Presentation of Pubic-type Anterior Hip Dislocation with Concomitant Anterior and Posterior Acetabular Wall Fracture. *Cureus*. 2019 Apr 5;11(4):e4390. doi: 10.7759/cureus.4390. PMID: 31223549; PMCID: PMC6555496.
- VIII. Hadisoebroto Dilog, Ismail & Bernadus, Riyan & Hartanto, & Lee, Milton & Routt, Chip. (2022). State of The Art Current Acetabulum Fracture Management. 10.46355/hipknee.v3i1.119.
- IX. Wan, Yizhou & Yao, Sheng & Chen, Kaifang & Zeng, Lian & Zhu, FengZhao & Sun, Tingfang & Guo, Xiaodong. (2021). Treatment of anterior column posterior hemitransverse fracture with

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supra-ilioinguinal approach. Journal of International Medical Research. 49. 030006052098282. 10.1177/0300060520982824.

- X. Chen W, Su Y, Zhang Y, Zhang Q, Zheng Z, Pan J. Rare combination of posterior femoral head dislocation with anterior and posterior wall fractures in the ipsilateral acetabulum. Orthopedics. 2010;33(6):440