



## Pipkin Type IV Femoral Head Fracture without Dislocation

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### Abstract

We present a case of a 33-year-old man who sustained Pipkin type IV femoral head fracture with concomitant acetabular fracture even without dislocation.

### Introduction

Femoral head fracture is uncommon and occurs almost exclusively in association with hip dislocation. Pipkin type IV femoral head fractures combined with acetabular fracture are usually results of high energy trauma and almost always occur with hip dislocation, and surgical treatment is required because of the concomitant injury of the acetabulum [1-3]. Here, we present a case of a patient diagnosed of Pipkin type IV femoral head fracture that resulted from low energy trauma and without hip dislocation.

### Case Report

A 33-year-old man, who had previously no problem in hips, visited a hospital due to sudden severe pain on his left hip while stretching. (186 cm, 89 kg) He told that he sensed clicking sound on his left hip during sagittal splits of his legs. He could not bear weight on his left hip due to severe pain.

The neurovascular status of the affected limb was normal. Performed physical examination revealed moderate tenderness, inability to perform hip flexion and knee extension due to pain, and positive Patrick sign on the affected hip.

Plain anteroposterior radiographs showed a suspicious posterior acetabular rim fracture in left hip. On left obturator view, posterior acetabular rim fracture was obvious (Figure 1A and B).

CT scan revealed a femoral head avulsion fracture at the ligamentum teres attachment site as well as posterior acetabular rim fracture (Figure 2A and B).

MRI revealed an avulsion fracture of ligamentum teres with fracture of posterior acetabular rim (Figure 3).

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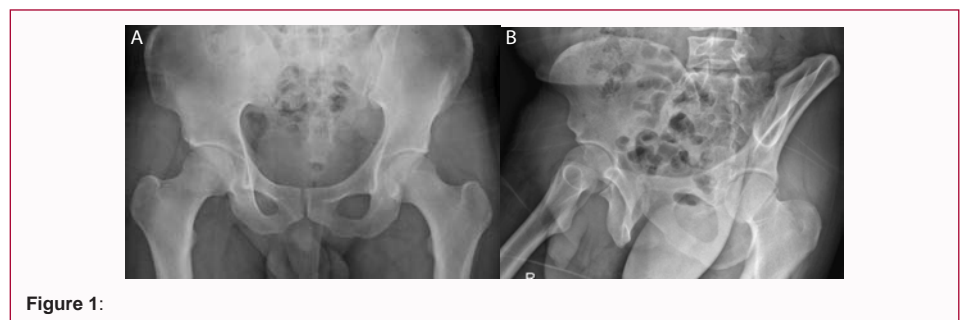


Figure 1:

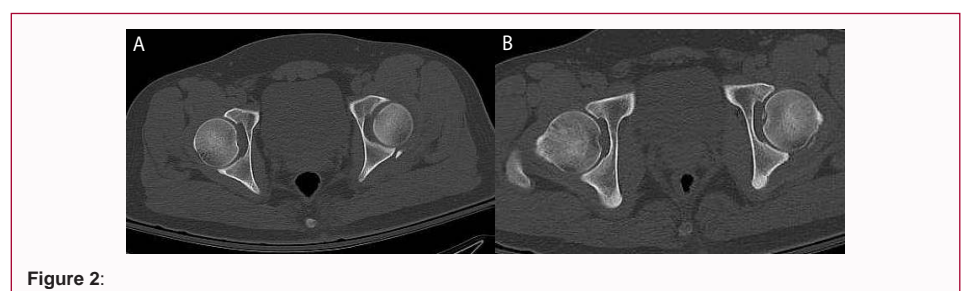


Figure 2:

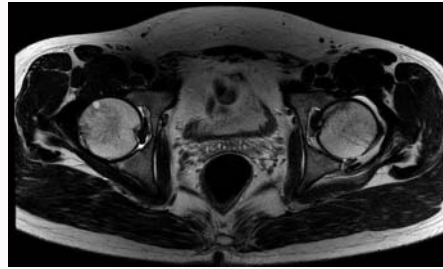


Figure 3:

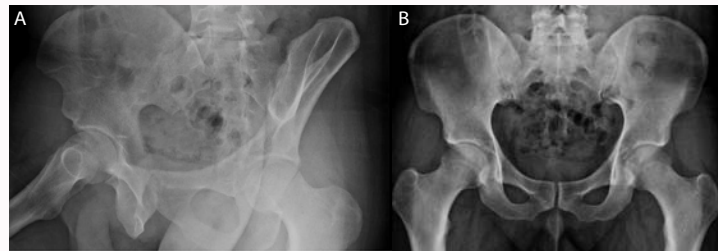


Figure 4:

Table 1: Several case reports showing femoral head fracture without hip dislocation.

Author	Number of patients	Gender	Age	Event	Tx
Yoon et al., [7]	1	Male	21	Direct injury on hip joint	conservative
Matsuda, Dean K.	1	Female	19	Traffic accident	Arthroscopic internal fixation and pinning
Van der Werken et al.,	1	Male		Traffic accident	
Mody et al., [6]	2	Female	57, 53	Direct injury on hip joint	THRA ORIF
Nheme AH et al. [8]{Nehme, 2017 #14}	1	Male	13	Direct injury on hip joint	ORIF
Current study	1	Male	33	Sagittal splitting	Conservative

Considering the tiny sized avulsion fragment, the patient was conservatively treated with partial-weight-bearing on the injured leg for six weeks. Three months later, the patient was fully recovered and had no symptom.

Pelvis radiographs showed absorption of posterior acetabular rim fragment (Figure 4).

**Discussion**

Femoral head fracture usually occurs in high energy trauma with hip dislocation [4]. Femoral head fracture is relatively rare compared to other fractures of the proximal femur [2,3]. It has been traditionally considered that Pipkin type IV femoral head fracture combined with acetabular fracture occurs exclusively in hip dislocation [4].

However, our patients sustained Pipkin type IV femoral head fracture after sagittal splitting. It seemed that excessive stretching of the hip joint led to posterior femoroacetabular impingement and acetabular rim fracture followed by femoral head avulsion.

Although Pipkin type IV femoral head fracture after high energy trauma requires usually anatomical reduction and internal fixation Pipkin type IV femoral head fracture after low energy trauma (sagittal splitting) could be treated conservatively in our patient [3,5].

Some authors have presented case reports showing that femoral head fractures could occur without high energy trauma such as hip dislocation (Table 1) [6-8].

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