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Rare Pipkin Type Fracture Of Femoral Head And Its Management

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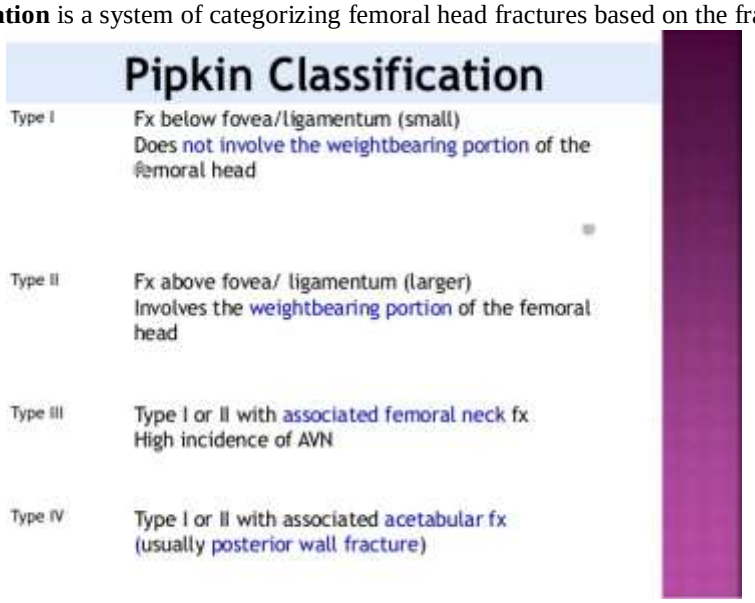
Description:

The **Pipkin classification** is a system of categorizing femoral head fractures based on the fracture pattern.



INTRODUCTION

Femoral head fracture is a severe high-energy injury, and approximately 5%–15% of cases are accompanied by posterior dislocation of the hip . The incidence of femoral head fractures has been increasing recently . Because of the poor outcomes reported with conservative treatment, open reduction and internal fixation are commonly recommended for femoral head fractures. Several surgical approaches have been applied, including lateral, medial (Ludloff), anterior (Smith-Petersen), posterior (Kocher-Langenbeck) and anterolateral (Watson-Jones) approaches, resulting in wide discussion among surgeons. Each of these approaches has merits and limitations. The Pipkin classification is the most commonly used classification for femoral head fractures

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Description of the Case

A 41-year-old male sustained a posterior hip dislocation with an associated type II Pipkin fracture following a motorcycle accident . In the emergency department, an emergent close reduction under fluoroscopy was performed, followed by definitive surgical treatment five days after the initial injury. This delay in the definitive orthopedic treatment was due to a concomitant aortic rupture, which needed an emergent vascular repair. Regarding the Pipkin fracture, we chose to perform an anatomical reduction and internal fixation, using a surgical hip dislocation as described by Ganz et al. The labrum was also inspected, and a posteroinferior lesion was identified and repaired. We additionally verified the viability for the femoral head, performing perforations with a small K-wire as preconized in literature. The osteosynthesis was achieved using three subchondral headless cannulated screws.

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HOW DID WE PROCEED IN THIS CASE FOR SURGERY
All Pre Operative Preparation ;
ALL PRE OPERATIVE INVESTIGATIONS:
Consist of ROUTINE HAEMOGRAM,RENAL FUNCTION TEST,LIVER FUNCTION TEST,CHEST RADIOGRAPH,TRAUMA SERIS XRAYS,3D RECONSTRUCTION OF PELVIS WITH BOTH HIPS,ECG VIRAL MARKERS

PATIENT POSITION:

Patient was kept in Right lateral position and fixed with 2 sand bags on either sides

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Surgical approach

We did ORIF via POSTERIOR APPROACH to the hip called as KOCKER-LANGENBECK approach

The Kocher-Langenbeck approach is an approach to the posterior structures of the hip. It allows direct visualization of the grater trochanter, posterior column and the retroacetabular surface.

The Kocher-Langenbeck approach can be performed either in the prone (as illustrated) or lateral position.

The maintenance of knee flexion (at 90°) and hip extension throughout the procedure reduces tension on the sciatic nerve

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Skin incision

Outline the following bony landmarks with a sterile marking pen:

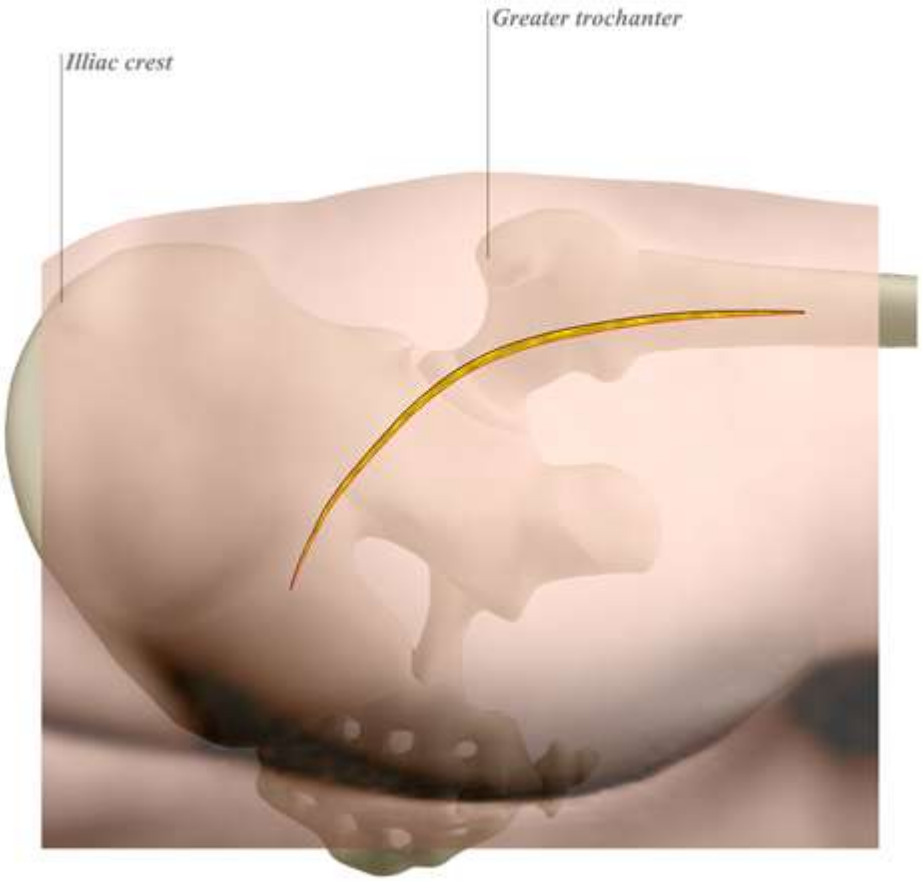
1. Posterior superior iliac spine
2. Greater trochanter
3. Shaft of femur

Start the skin incision a few centimeters distal and lateral to the posterior superior iliac spine. A more proximal extension (indicated by dashed line) may improve exposure in obese or muscular patients.

Continue the incision anteriorly over the greater trochanter. Curve it distally along the tip of the greater trochanter towards the lateral aspect of the femoral shaft.

End the incision at the mid third of the thigh (just distal to the insertion of the gluteus maximus tendon).

Incision



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Superficial surgical dissection

Fascial incision

After dividing the subcutaneous tissues, sharply incise the subcutaneous tissues along:

- The gluteus maximus muscle (using scissors)
- The iliotibial tract (using a scalpel)

Split the gluteus maximus

Split the gluteus maximus in line with its fibers, starting at the greater trochanter in a proximal direction up to the crossing of the first neurovascular bundle.

This creates a posterior muscle belly (inferior gluteal artery), and an anterior belly (superior gluteal artery) that includes one third of the gluteus maximus and the muscle of the tensor fascia latae.

Incise the iliotibial tract

In the distal half, incise the iliotibial tract in line with its fibers up to the mid third of the thigh.

Deep dissection

Free the layer of fat covering the short external rotators, exposing the insertion of the piriformis tendon, the gemelli, and the internal obturator muscle.

The sciatic nerve (see illustration) lies posterior to the gemelli and internal obturator muscles, and anterior to the piriformis muscle, between the greater trochanter and the ischial tuberosity.

Carefully visualize the sciatic nerve.

Ensure at all times that no direct pressure or stretching is exerted on the nerve.

Option: detach the gluteus maximus muscle

Detach the gluteus maximus 1 cm from its insertion into the gluteal tuberosity of the femur.

Detachment can be done partially or completely.

This allows less tension and easier mobilization of the gluteus maximus muscle.

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Detach the external rotator muscles

Isolate the piriformis tendon. Place a suture at least 1 cm lateral to its femoral insertion and dissect the tendon.

Avoid damage to the medial circumflex femoral artery which is running in proximity (at the upper border of the quadratus femoris muscle) by leaving 1 cm of tendon attached to the greater trochanter.

Reflect the piriformis belly laterally to expose the retroacetabular surface to the greater sciatic notch.

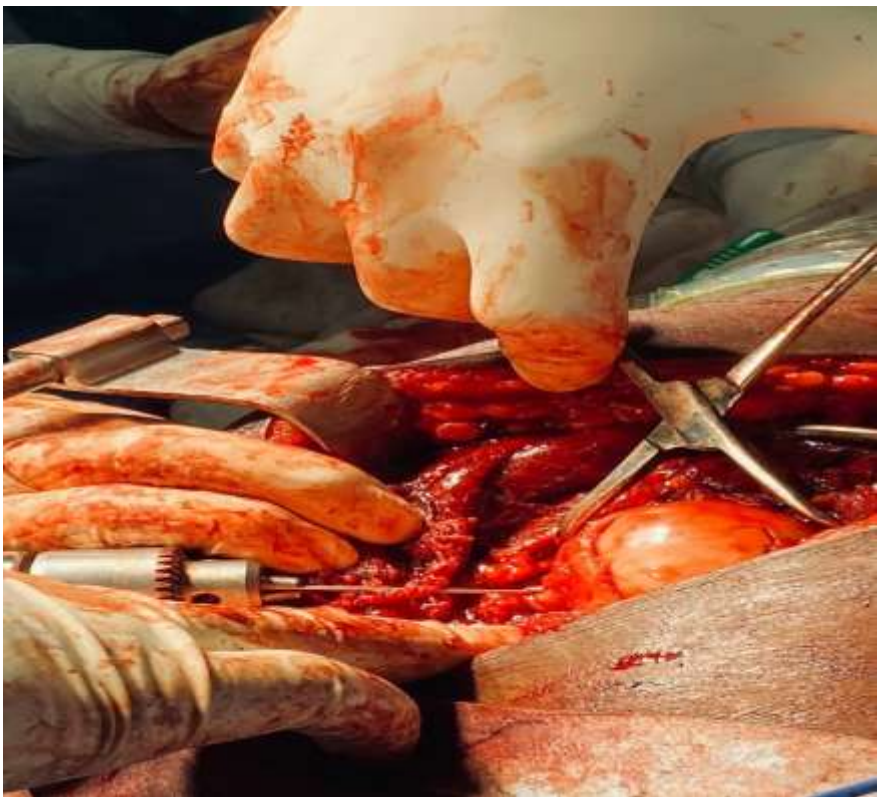
Isolate the conjoined tendon of the obturator internus and superior and inferior gemelli muscles. They are tagged and incised 1 cm lateral from their femoral insertions to protect the medial circumflex femoral artery. Reflect the muscle bellies of the three conjoined muscles laterally to access the lesser sciatic notch.

REDUCTION OF FRATURE OF THE HEAD:

On opening the joint head was seen outside the acetabulum but acetabulum was not fractured.There was a coronal split in the head running from ANTERO SUPERIOR SURFACE TO POSTERO INFERIOR SURFACE.

FRACTURED FRAGMENT WAS DELIVERED OUTSIDE

Fracture fragment was delivered outside and any clots and soft tissue were removed from the fracture ends.Acetabulum was cleared and fracture fragment was reduced and hold with towel clamps ensuring that articular step off was not more than 2 mm



FIXATION

When satisfactory reduction was achieved it was provisionally hold with 3 Herbert Screw Guide wired.

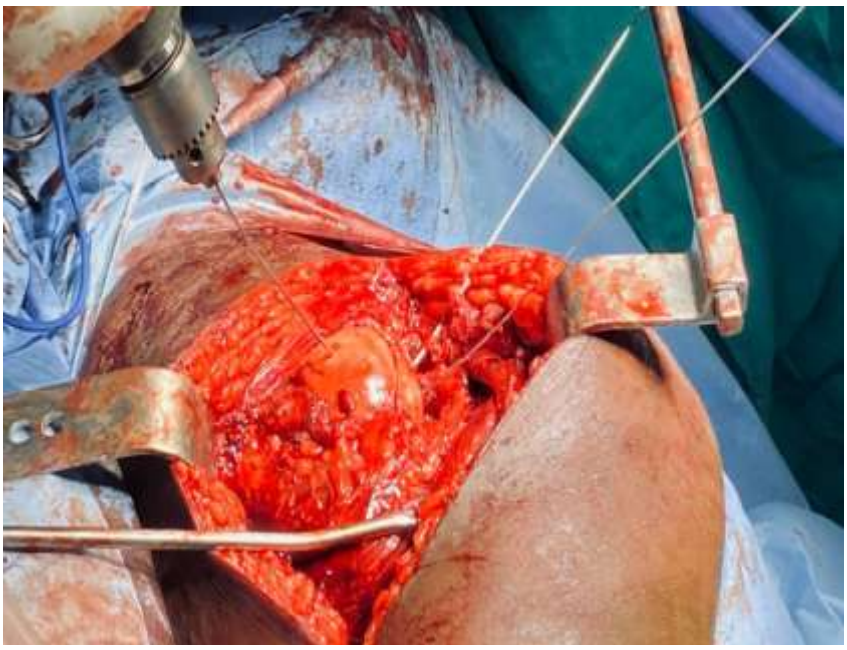
Now after Measuring the length of the screw needed.holes were drilled in the head through the guidewire

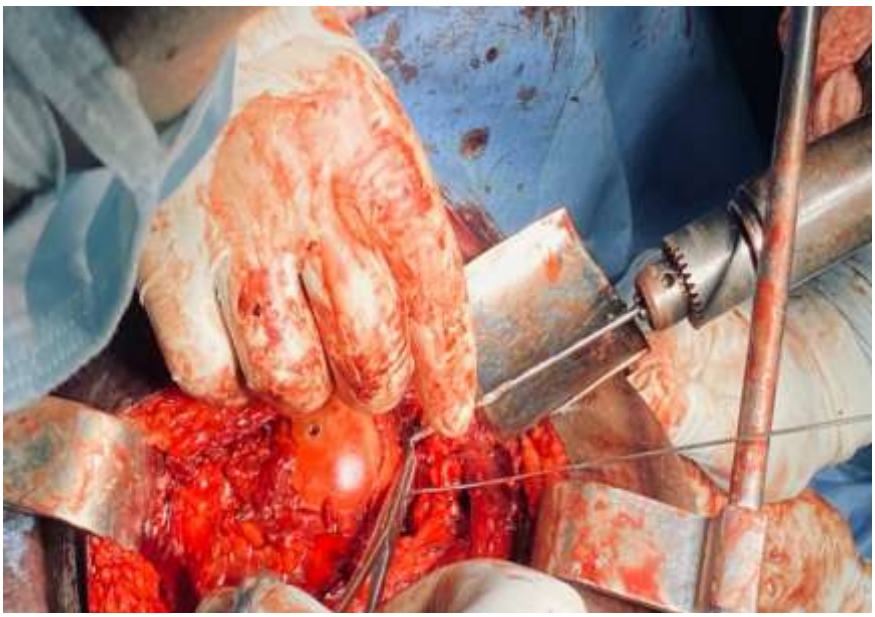
Hole was drilled with 2.7mm cannulated drill bit and near cortex for head of screw was drilled with 3.5 mm drillbit.

3 HERBERT SCREW were used to fix the fracture giving LAG EFFECT.Screws were kept perpendicular to the fracture site for providing maximum compression using DIFFERENTIAL PITCH LENGTH principle.

RELOCATION OF RECONSTRUCTED HEAD

Reconstructed head was carefully reduced in the acetabulum





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Wound closure:
Wound was closed in layers
Capsule was repaired
Short external rotators were sutured
Gluteus medius was repaired
TFL was repaired
Suction drain was given and sub cuticular suture was given
and skin was closed

Post Operative care and rehabilitation:
In the Immediate post op period .Skeletal Traction with 15 pound weight was applied and Antibiotics were started and DVT prophylaxis was given.Patient should be kept in Absolute Non Weight Bearing Condition For 2 months.
Static Quadriceps and Hamstring exercise can be started as soon as pain subsides.knee bending may be started when pain subsides.

Follow up:
Patient was followed up as per protocol and stitch was removed after 14 days .
Patient was put on SLR exercise and gradual hip mobilizing exercise but without weight bearing for 12 weeks.
On second follow up patient was put on toe touch weight bearing and progressive return to activity. Patient only complained of pain and restriction of movement.Patient was advised aggressive physiotherapy with pain medication.On Xray union was evident and no AVN changes were noted

On third follow up Patient was asymptomatic with Active range of motion in FLEXION-0-100 degree,Exension -5 degree,Adduction-5 degree ,Abduction -5 degree internal rotation-10 degree and external rotation -20 degree with functional range of motion at knee without any AVN changes at the head of femur.

Thank You