

## Special Article - Family Practice

# The Obvious versus not so Obvious

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## Case Presentation

Mrs. M is a 70 years old aboriginal lady who was admitted to a rural city hospital for long term care since December 2014. Her medical diagnoses include diabetes mellitus, hypertension, dyslipidemia, chronic renal failure, schizophrenia, osteoarthritis, obstructive sleep apnea and gastro-oesophageal reflux diseases (GERD). Her conditions have been stable until she tripped and fell on her left side whilst maneuvering her wheeled walker. She denied any dizziness, chest pain or unilateral weakness prior to her fall.

Upon direct questioning, patient complained of a dull, non-radiating pain over her left hip with a rating of 6/10 at rest and 10/10 with movements. She had stayed in bed since the fall and refused to mobilize. She denied pain in other parts of her body or her head.

On physical examination, her BP was 138/80, pulse was 89/min, regularly regular. Her left leg was shorter than right, in fixed abduction and externally rotated. There was no ecchymosis or obvious laceration.

Palpation of the left thigh revealed no crepitation. Local tenderness was elicited over the trochanteric area, but none over the distal femoral shaft or pelvis. There was minimal active and passive range of motions at the femoral joint or the knee joint. Examination of the spine and contra lateral hip was unremarkable.

### 1. What immediate investigations would you consider?

- CT pelvis
- Full blood count
- Anteroposterior (AP) views of the pelvis and hip
- ESR
- MRI of hip and pelvis

Answer: c)

X-Ray of the pelvis and hip (anteroposterior views) is the first investigation to be ordered as it has the highest sensitivity for diagnosing fracture or dislocation. Internal blood loss and septic focus is unlikely due to stable blood pressure and lack of fever in the patient.

2. X-Ray was performed which showed a not-so-obvious finding in the hip. What was it?

- Inter-trochanteric femur fracture
- Femoral neck fracture with impaction
- Femoral shaft fracture
- Posterior dislocation of hip
- Anterior dislocation of hip

Answer: a)

X-Ray shows an intertrochanteric fracture. The fracture line was not obvious, but on closer inspection, is found to run between the trochanters with minimal angulation and displacement of bone. (See Figure 1 and Figure 2) This is consistent with the history of fall on the affected side with local tenderness, inability to mobilise and reduction in movement ranges and fixed abduction and external rotation. This is not a femoral neck fracture because it does not involve the femoral neck. There is no disruption of Shenton's line, nor loss of bone contour along the margins of the femoral neck and inferior edge of the superior pubic ramus.

3. In the pelvic X-Ray, there is an obvious incidental finding (Figure 1). What is the most likely diagnosis?

- Bladder stone
- Hydatidiform mode
- Pelvic sarcoma
- Calcified uterine fibroid
- Singleton fetus

Answer: d)



Figure 1: Pelvic X-Ray showing radio-opaque mass in pelvis and possible disruption of bone contour along lesser trochanter on left femur.



**Figure 2:** Another view of neck of left femur showing inter-trochanteric fracture.

There is a radio-opaque mass measuring 9 cm in diameter in the pelvic cavity showing classic “popcorn” appearance. This refers to the amorphous calcifications, often with rings and arcs, resembling popcorn kernels [1,2].

This type of popcorn calcification may be seen in many radiological settings including chondroidlesion, fibrous dysplasia, pulmonary hamartoma, degenerating fibro adenoma of breast and calcified uterine fibroid. Bladder stone usually exhibits smoother surface without the popcorn appearance [3]. Hydatidiform mole and pelvic sarcoma grows rapidly and rarely calcifies [4,5]. Finally, a demised singleton fetus will show skeletal structures instead of an amorphous mass.

#### 4. What immediate test would you order for this pelvic finding?

- Pelvic Magnetic resonance imaging (MRI)
- Pelvic computed tomography (CT)
- Exploratory Laparotomy
- Pelvic Ultrasound
- None

**Answer: e)**

No immediate test is deemed necessary as our patient has no abdominal or uro-gynecological complaint. However, to confirm the diagnosis of a calcified fibroid, a pelvic ultrasound is the most cost-effective initial test to detect the highly echogenic mass [6]. If findings reveal areas of cysts or echogenic heterogeneity suggestive of calcified malignancies, MRI is warranted to delineate relationships of surrounding structures and their textures. Exploratory laparotomy is not considered unless true malignancy or total resection of the mass is indicated [7].

#### 5. What is the management and prognosis of the incidental finding?

Calcified fibroids develop when fibrotic tumors outgrow their blood supply, resulting in necrosis, degeneration and subsequent



**Figure 3:** Post-operative X-ray showing fixation of the fracture with the trochanteric nail fixation system.

calcification. Once calcified, a fibroid is considered at its end stage and will persist indefinitely. There is usually no need for treatment except for continued pain or pressure effect, where the gold standard is surgical removal of the fibroids or even the uterus. However other options include selective arterial embolization [8] and high intensity focused ultrasound [9]. That said, fibroids treated with uterine artery embolization may end up as with partial or total calcifications [10].

Uterine fibroids are one of the most common benign gynecologic tumors. They mostly occur in child-bearing age. The etiology is unclear but there are several theories that have been considered including the effect of estrogen/progesterone levels and genetic predisposition. There is an increased likelihood of this calcification process to occur during menopause as fibroids tend to regress after serum estrogen levels drop after menopause [11,12].

Symptoms of a calcified fibroid may vary depending on its size and position in relations to other anatomical structures. Pressure from the sheer weight of a calcified fibroid may lead to constant abdominal and flank pain [13].

Disease progression for calcified fibroid is very uncommon. Enlargement may occur at a young age, but there is no increased risk for uterine cancer [14].

### Case Conclusion

Mrs. M was transported to the nearest provincial hospital for surgical treatment of the left inter-trochanteric hip fracture. An open reduction of the fracture was performed with titanium trochanteric fixation nail system (TFN, Syntnes®). (Figure 3) Patient made an uneventful recovery and was discharged on day 4 post-operatively. Subsequent physiotherapy was provided and the patient ambulated satisfactorily, albeit slowly, in the following 4 weeks.

### Summary

In medical imaging studies, we often say there are more findings than those that obviously greet our eyes. The authors use this case study and the X-rays to illustrate the importance to look for both obvious and not-so-obvious findings in medical imaging and be able to appraise their relative significance. Readers should focus on those

findings that are consistent with the clinical history even though they are not so obvious—in this case the subtle fracture of the hip—while equally be cognizant of obvious findings that may be totally irrelevant to the context—in this case, the calcified uterine fibroid.

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