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Avascular Necrosis of the Femoral Head in a Case of Intertrochanteric Fracture of the Femur: A Case Report

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ABSTRACT

The occurrence of avascular necrosis (AVN) of the femoral head in a case of intertrochanteric fracture of the femur is a rarely reported entity. We report such a case; the patient developed a painful hip due to AVN of the femoral head after fixation for the intertrochanteric fracture of the femur. She had to undergo a hemiarthroplasty for the same. Hence AVN of the femoral head a rare but distinct possibility in a case of intertrochanteric fracture of the femur.

Keywords : Avascular Necrosis (AVN), Intertrochanteric fracture

Introduction

Avascular Necrosis (AVN) of the femoral head a a distinct and common occurance in cases of Intracapsular fractures if the femoral neck.[1,2] However it has only been rarely reported in cases of Intertrochanteric fractures of the femur.[3,4,5,6,7,8] This is assumed to be due to the preservation of the blood supply of the femoral head in cases of intertrochanteric fracture of the femur. We report a case of histologically and radiologically proven case of AVN of the femoral head in an operated case of intertrochanteric fracture of the femur.

Case report

A 75 years old female presented with an intertrochanteric fracture of the left femur (Figure 1 A & B). She was given skin traction immediately and a Thomas splint was applied. She was operated 5 days later with Closed Reduction and Internal Fixation with Trafon Nail (Trochanteric Femoral Nail) on a Fracture table. Intraoperatively the reduction was acceptable and the fracture fixation was stable. The post-operative check X-Rays were done, they showed good alignment of the fracture and well placed implants (Figure 2 A & B).

Figure – 1 (A) : A-P view

Figure – 1 (B): Lateral view

Figure – 2 (A) : A-P view

Figure – 2 (B) : Lateral view

She was mobilized 2nd post-operative day with partial (toe touch) weight bearing with a walker support. Her sutures were removed on the 14th postoperative day and the wound healed well.

She presented 6 weeks postoperatively with inability to walk, the right lower limb in external rotation and a swollen right lower limb. A Venous Doppler was done to rule out Deep Venous Thrombosis which was normal. X-Rays of the Right Hip with Femur were done which showed an ununited fracture with backout of the proximal bolts (Figure 3 A & B).

Figure – 3 (A) : A-P view

Figure – 3 (B): Lateral view

A Triphasic Technitium (Tc 99) Bone Scan was done which showed Avascular Necrosis of the Femoral Head (Figure 4).

Figure – 4 : Bone Scan report

As the viability of the proximal fragment was compromised it was decided to replace the Femoral Head using a Bipolar prosthesis. Intra-operatively the Femoral Head was sclerotic suggestive of Avascularity. She was re-operated with Implant removal and Hemiarthroplasty using uncemented bipolar prosthesis (Figure 5).

Figure – 5 : Post-op Xray

The femoral head was sent for histo-pathology which confirmed the diagnosis of Avascular Necrosis of the Femoral Head.

She was mobilized postoperatively with partial (toe touch) weight bearing walking. Her wound healed well and the sutures were removed 15 days post-operatively.

DISCUSSION

The possibility of AVN of the femoral head occurring in a case of Intertrochanteric fracture of the femur is rare. Mattan Y and Dimant A et. al reported a retrospective series of 10 patients of Intertrochanteric fractures of the femur who underwent dynamic hip screw fixation for intertrochanteric fractures and subsequently developed painful AVN as their primary presentation.[3] They concluded that AVN of the femoral head should be considered if the patient presents with a painful hip after fixation of the intertrochanteric fracture. Baixauli EJ, Baixauli F Jr reported that although the pathogenesis of AVN is unknown, the patients who develop pain after intertrochanteric fractures, osteonecrosis should be included in the differential diagnosis, especially in cases with risk factors for osteonecrosis or a proximal intertrochanteric fracture line that perhaps disrupts the vascular anastomotic ring at the base of the femoral neck.[4] Shih LY, Chen TH suggested that the possible etiologies of this complication include a more proximal intertrochanteric fracture, a high-energy injury with fracture displacement resulting in vascular damage, and adverse influences of the operative procedures on the vascularity of the femoral head.[5] Bartonícek J and Fric V concluded that AVN of the femoral head following surgical treatment of pertrochanteric fractures is probably due to injury to the deep branch of the medial circumflex artery at time of fracture. Other possible risk factors include high-energy trauma, comminution, displacement of the fragments, and atypical fracture line.[6] Wang Jing-Sheng and Pei Fu-Xin suggested that a cementless revision stem should be used in cases of revision.[9]

In our case the fracture anatomy was more of a basi-cervical fracture. This could also be the reason behind the development of Avascular Necrosis of the Femoral head. Osteoporosis could be another reason for the Implant Backout / failure.

CONCLUSION

Avascular Necrosis of the Femoral head is a rare but distinct possibility in cases of Intertrochanteric fractures of the Femur. It must be considered in cases of non-union of the Intertrochanteric fractures after fixation or after Implant backout / failure or when the patient presents with a painful hip in the post-operative period.

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