

## Intertrochanteric Neck Femur Fractures and Scope of Ayurveda as a Supportive Medicine : A Short Communication

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### Abstract

Intertrochanteric femur fractures are a common injury in the elderly population. Understanding the pathophysiology and appropriate treatment options is crucial to significantly reduce the risk of mortality and morbidity associated with this condition. This article reviews the evaluation and treatment of intertrochanteric femur fractures and highlights the role of an inter-professional team in managing patients with this injury. In Ayurvedic literature, the femur is classified as *Nalakasthi*, a long bone, with the femoral head integral to the hip joint.

**Keywords:** Intertrochanteric femur fractures, Ayurveda, Nalakasthi, hip joint, supportive

### Introduction

Intertrochanteric fractures are extracapsular fractures of the proximal femur occurring between the greater and lesser trochanters.<sup>(1-2)</sup> This region, composed of dense trabecular bone, is located between the greater trochanter (insertion site for gluteus medius, gluteus minimus, obturator internus, piriformis, and origin for vastus lateralis) and the lesser trochanter (insertion site for iliacus and psoas major, collectively known as the iliopsoas). The calcar femorale, a vertical wall of dense bone extending from the posteromedial femur shaft to the posterior femoral neck, determines fracture stability. The metaphyseal region's abundant blood supply results in higher union rates and lower osteonecrosis compared to femoral neck fractures.<sup>(3-4)</sup>

### Etiology

Intertrochanteric fractures occur in both elderly and younger populations but are more prevalent in the elderly with osteoporosis due to low-energy mechanisms. The female-to-male ratio ranges from 2:1 to 8:1, and these patients are typically older than those with femoral neck fractures. In younger individuals, these fractures result from high-energy mechanisms.<sup>(5)</sup>

### Epidemiology

Intertrochanteric fractures, along with other hip fractures, are associated with high morbidity and mortality. Approximately 280,000 hip fractures occur annually in the United States, with nearly half being intertrochanteric. By 2040, this number is projected to increase to 500,000.

### History and Physical

Patients typically present with a shortened and externally rotated lower extremity. A thorough medical and social history is essential for optimizing perioperative management

and planning postoperative rehabilitation. The skin (open vs. closed fracture) and neurovascular status should be evaluated. Pain often limits range-of-motion assessment. Basic laboratory studies, including complete blood count, comprehensive metabolic panel, and coagulation studies, are necessary to identify abnormalities requiring correction before surgical stabilization. Early involvement of an inter-professional team, including anesthesia and internal medicine or geriatrics, optimizes surgical candidates for operative repair.

### Diagnosis

Plain radiographs are the initial imaging choice, including anteroposterior (AP) pelvis, AP and cross-table lateral of the affected hip, and full-length radiographs of the affected femur. Pelvic films aid in preoperative planning for neck-shaft angle restoration, while full-length femur radiographs assess deformities affecting intramedullary nail placement or prior distal femur implants. CT and MRI are generally not indicated but may be used if radiographs are negative despite clinical suspicion of a fracture. MRI is particularly useful for suspected intertrochanteric extension in isolated greater trochanteric fractures. A physician-assisted AP traction view of the injured hip can further characterize fracture morphology and determine the feasibility of closed or open reduction techniques.<sup>(6-7)</sup>

### Structural Changes in Intertrochanteric Femur Neck Fractures

These fractures, often resulting from ground-level falls in the elderly, are classified as stable or unstable based on the integrity of the posteromedial cortex. Stable fractures have an intact cortex, resisting compressive loads once reduced. Unstable fractures include those with posteromedial cortex comminution, thin lateral walls, displaced lesser trochanter

fractures, subtrochanteric extensions, or reverse obliquity fractures. The Evans classification categorizes these fractures by displacement, number of fragments, and type of fragment displaced:

- Type I: 2-part fractures (A: non-displaced, B: displaced).
- Type II: 3-part fractures (A: separate greater trochanter fragment, B: separate lesser trochanter fragment).
- Type III: 4-part fractures.

In *Sushruta Samhita*, ancient Ayurvedic practitioners used “kapata shayana,” immobilizing the fractured femur with two nails (*keelaka*) on either side and one below the foot dorsum.<sup>(8)</sup>

### Risk Assessment and Post-Operative Complications

Regardless of treatment, there is a 20%–30% mortality risk in the first year post-fracture, with higher rates in males. Nonoperative treatment is associated with cardiopulmonary issues, thromboembolism, and sepsis. Operative complications include blood loss anemia, infection, nonunion, and implant failure, such as screw cutout (often due to a tip-apex distance >25 mm). Corrective osteotomy or hip arthroplasty may be required in younger or elderly patients, respectively. Anterior perforation of the distal femur cortex is a recognized complication in elderly patients with long intramedullary devices due to mismatched curvature. Nonunion incidence is low (<2%).

### Scope of Ayurveda as a Supportive Medicine in Intertrochanteric Neck Fractures

1. Ayurvedic drugs like *Lakshadi Guggul*, *Kukutandtwak Bhasma*, *Gandha Taila*, and *Pinda Taila* are effective in promoting fracture healing.
2. Panchakarma procedures such as *Basti*, *Snehana*, and *Swedana* aid in pain management for femur neck fracture patients.
3. Internal oleation (*Abhyantar Snehapana*) with *Gandha Taila* supports fracture healing.
4. Internal oleation with *Pinda Taila* strengthens muscles, counteracting disuse atrophy in intertrochanteric fractures.
5. Ayurvedic analgesics like *Maha Vata Widhwans Rasa*, *Vatagajankush Rasa*, *Brihat Vata Chintamani Rasa*, *Langallyadi Guggul*, and *Raupya Yukta Mahayograj Guggul* are recommended to avoid long-term side effects of allopathic analgesics, such as gastritis, gastric ulcers, colitis, and kidney injury.

### Discussion

1. Patients should be educated on postoperative rehabilitation, physiotherapy, and the importance of prompt treatment for intertrochanteric fractures.

2. Awareness is needed about the risks of not reducing these fractures, which can lead to life-threatening complications such as fat embolism, thromboembolism, myocardial infarction, pulmonary embolism, thromboembolic stroke, or deep vein thrombosis.

3. Elderly patients, in whom these fractures are most common, should be informed that untreated fractures can significantly impair quality of life.

**Source of Support:** Nil

**Conflict of Interest:** Nil

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