Atypical Femoral Fractures: How to Improve Surgical Outcomes

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Atypical femoral fractures defined as transverse or short oblique subtrochanteric or femoral shaft fractures resulting from no or minimal trauma

* most associated with the use of **bisphosphonates** typically used for treatment of osteoporosis

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|  | **Typical Femur Fractures** | **Atypical Femur Fractures** |
| Population | Young males | Older women |
| Mechanism of injury | High energy (ex. MVA) | Low energy (ex. Fall from standing) |
| Radiographic Features | Butterfly fragment  Comminution  Segmental Femur 1.bmp | Medial spike  Cortical thickening  Mayme1.jpg |

Management of Atypical Femur Fractures:

* Complete fractures require **surgery** in addition to the following:
  + Stop bisphosphonates
  + Calcium and Vitamin D Supplementation
  + Consider Teraparatide
  + Evaluate Contralateral femur for incomplete insufficiency fractures which may be treated surgically or non-surgically
    - La Rocca Vierira R et al. (2012) analyzed 200 femur radiographs in 100 asymptomatic patients found a 2% incidence of atypical femur fractures1
* Incomplete fractures may require surgery
  + If symptomatic
  + If fracture line visible

Outcomes of Surgically treated Atypical Femur Fractures:ustain incomplete bisphosphonateop Trauma. 2013 Jun;27(7):331-5.nal outcomes for patients who sustain incomplete bisphosphonate

* Weil et al. (2011) studied 15 patients with 17 AFF (all of which had been on BP for over 3 years) who were treated with IMN or CMN had re-operation rates up to 46%2
* Prasarn et al. (2012) studied 25 patients with treated with IMN or plate and screws had high complication rates (33% had iatrogenic fracture during IMN and 30% had plate failure)3
* Banffy et al. (2011) studied 34 patients with 40 AFF; of the 12 incomplete fractures, those that were treated non-operatively had longer hospital stays than those initially treated prophylactically4
* Egol et al. (2013) studied 31 patients with 43 incomplete fractures demonstrating that a higher percentage of patients treated surgically become asymptomatic and demonstrated **radiographic evidence of healing earlier** than those treated nonsurgically5

Anatomic Factors affecting implant choice:6,7,8

* Varus femur neck-shaft angle
* Lateral bowing
* Cortical thickening

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