

## Pertrochanteric Fractures: Extramedullary or Intramedullary Fixation Is it Surgeon Choice or not?

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### Abstract

For many years, extramedullary fixation (Sliding Hip Screw) was the standard treatment of pertrochanteric fractures. Despite the high failure rate of this kind fixation in certain types of these fractures. It provides stable fixation with excellent results in pertrochanteric fractures (AO: 31-A1). Else it is a safe and easy procedure with less intra operative complications.

### Mini Review

Fracture collapse and shaft medialization during fixation is a common complication. This high failure rate of SHS in unstable pertrochanteric fracture ((AO: 31-A2), (AO: 31-A3)) guide the surgeons to search for a new method of fixation to overcome these complications. The era of intramedullary fixation (Proximal Femoral Nail) began early in 1988. It provides many advantages than extramedullary fixation. It was:

- Biomechanically superior for load transfer.
- Theoretical biologic advantages like minimally invasive surgical technique with shorter healing and recovery times and proposed improved functional outcome.
- It appears to decrease the likelihood of excessive fracture collapse and the resultant lower limb shortening in cases of unstable pertrochanteric fractures with posteromedial comminution (AO: 31-A2) [1].

The occurrence of Shaft medialization and fracture collapse decrease with the use of intramedullary device as the proximal fragment will abut against the nail to provide stable fixation. However, the dream of intramedullary fixation is not complete. Complications of the intramedullary fixation as iatrogenic fracture and more comminution to the fracture during nail insertion, excessive exposure to radiation. Else it is a difficult technique needing high specialized surgeon. All these complications limit the use of intramedullary devices and the surgeon prefers the easy and safe way with less complication.

Research supports the use the intramedullary fixation in subtrochanteric fracture, fractures at the level of lesser trochanter and reverse obliquity fractures (AO: 31-A3) as it provides more stable fixation than extramedullary fixation however research is still not enough to support the use of intramedullary fixation in unstable trochanteric fracture with posteromedial comminution (AO: 31-A2) [2].

The primary function for treating pertrochanteric fracture is to produce controlled fracture impaction through sliding of the neck screw with torsional stability. The Extramedullary fixator provides sliding capacity with minimal torsional stability. Rotational stability requires a contact between the medial fragment (head fragment) and lateral fragment (lateral cortex).

This is not possible in case of unstable trochanteric fractures (AO: 31-A2) and (AO: 31-A3) so high failure rate occur with the use of extramedullary fixation in these types as fracture collapse and backing out of lag screw and limb shortening will occur later on even without weight bearing. Intramedullary fixation overcome this problem as it allows controlled impaction until the proximal fragment abuts the intramedullary nail and therefore, nails would substitute for deficient lateral support and lateral bony cortex [3].

The role of surgeon (in particular orthopedic surgeon) is to choose the best implant for the fracture and for the patient taking in his consideration many aspects as patient age, fracture characteristics (type, classification, comminution, stability). When you are going to treat a patient with trochanteric fracture,

at first decide the type of fracture then you can determine the best implant of the fracture. If it is stable trochanteric fracture (AO: 31-A1) with no posteromedial comminution, Extramedullary fixation (Dynamic Hip Screw) is your best choice. If it is trochanteric fracture (AO: 31-A3) with posteromedial comminution, Intramedullary fixation (Proximal Femoral Nail) is your choice.

### Conclusion

But if it is unstable trochanteric fracture (AO: 31-A2) with posteromedial comminution. It is Controversial between Extramedullary fixation and intramedullary fixation. Extramedullary fixation was associated with fracture collapse and limb shortening while intramedullary fixation appears to

decrease excessive fracture collapse and the resultant lower limb shortening so the best choice in trochanteric fracture (AO: 31-A2) is intramedullary fixation.

### References

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