# Evidence in focus

Publication summary

Santoni BG, et al. *J Orthop Trauma* (2016)*

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## Significantly less varus collapse with INTERTAN◇ than a single lag screw device

Cadaver testing also indicated significantly less femoral head rotation with INTERTAN

### Study design

- A biomechanical analysis in which an unstable intertrochanteric (IT) fracture was created in 11 pairs of cadaveric female hemi-pelvises (mean age, 73 years) with intact hip joint and capsular ligaments
- Stabilisation was assessed using both INTERTAN integrated compression screws and a single lag screw device (Gamma3™; Stryker)
- Specimens were cycled for up to 13.5k cycles to simulate 3 months of worst-case scenario loading; surviving constructs were subjected to additional step-wise incremental loading for 2k more cycles or until failure

### Key results

- Compared with the single lag screw design, INTERTAN resulted in:
  - Significantly less varus collapse over 15.5k loading cycles (Figure 1) and femoral head rotation at any time through the first 13.5k loading cycles (Figure 2)
  - 7x less average maximum femoral rotation at any time throughout entire 15.5k cycle loading protocol (35.4 vs 5.5 degrees; p=0.006)

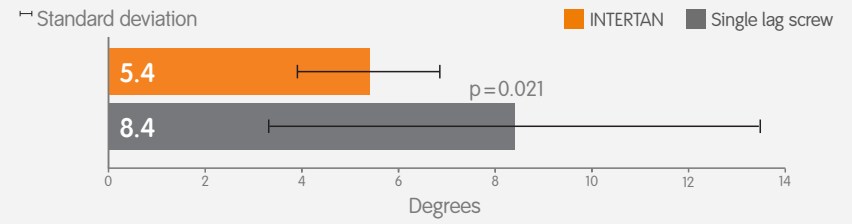


Figure 1. Average varus collapse over entire loading protocol (up to 15.5k cycles)

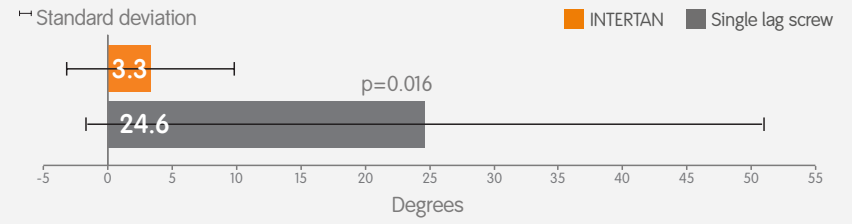


Figure 2. Average femoral head rotation during three months (13.5k cycles) simulated loading

### Conclusion

**Compared with a single lag screw, INTERTAN produced significantly less femoral head rotation and varus collapse in this worst-case model of osteopenic, unstable IT fractures. Stability was noted for INTERTAN throughout the time interval necessary for fracture healing. The authors concluded that INTERTAN provided significantly greater stability and resistance to femoral head rotation and varus collapse, likely due to its larger surface area, noncylindrical profile, and fracture compression.**

### Study citation


Santoni BG, Nayak AN, Cooper SA, et al. Comparison of femoral head rotation and varus collapse between a single lag screw and integrated dual screw intertrochanteric hip fracture fixation device using a cadaveric hemi-pelvis biomechanical model. *J Orthop Trauma.* 2016;30:164-169.



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