

Gait Analysis Following Intertrochanteric Hip Fractures: Does Shortening Result in Gait Impairment?

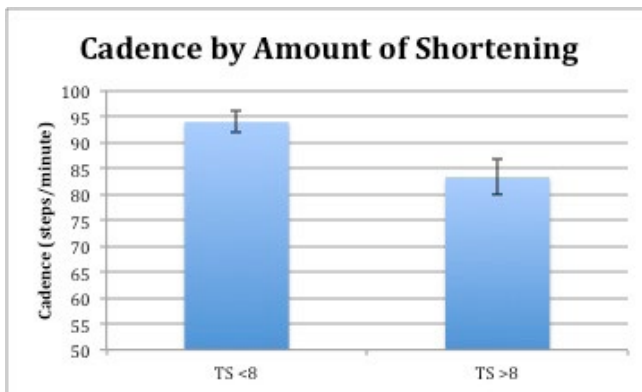
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Purpose: The objective of this study was to determine risk factors for gait impairment following hip fracture fixation. We hypothesized that radiographic shortening and greater trochanter malunion would result in decreased cadence and increased double stance time.

Methods: Patients who sustained intertrochanteric (IT) fractures treated with cephalomedullary nailing between 2012 and 2016 were recruited to participate in the study. At follow-up appointments, temporospatial gait parameters were measured and recorded. Patients also completed the Harris hip score (HHS), visual analog scale (VAS) for pain, and the Short Form-36 Mental Component Summary and Physical Component Summary (SF-36 MCS and PCS) at each visit. Radiographs were analyzed at the time of surgery and at each follow-up visit. The amount of radiographic femoral neck shortening was measured after correcting for image magnification and rotation.

Results: A total of 76 patients were enrolled in the study and the mean age was 79.3 years. The mean amount of shortening was 4.8 mm (± 0.6 mm). Patients with increased shortening demonstrated increased terminal double stance time ($P = 0.002$) and decreased cadence ($P = 0.030$) (Fig. 1). Patients with greater trochanteric malunions had lower HHS ($P = 0.013$). The SF-36 PCS, SF-36 MCS, and VAS were not significantly associated with shortening or greater trochanteric malunions.



Conclusion: Shortening following cephalomedullary nailing of IT fractures is associated with increased double stance time and decreased cadence. Similarly, increased shortening of the femoral neck and greater trochanteric malunion result in decreased HHS outcome scores in hip fracture patients.