

"Z-EFFECT PHENOMENON" IN INTERTROCHANTERIC FRACTURES TREATED WITH A PFN

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PURPOSE: We analysed "Z-effect phenomenon" in a series of patients who had a intertrochanteric fracture treated with proximal femoral nail (PFN). **MATERIALS AND METHODS:** A retrospective analysis was done on 70 cases of intertrochanteric fracture treated with PFN and available for follow-up over one year. The average age was 71.8 years. The radiological analysis included fracture stability, bone quality, accuracy of reduction, position of the implant, tip-apex distance (TAD) of the lag screw, and TAD of the hip pin. The correlation between radiological parameters and the occurrence of Z-effect was analysed. **RESULTS:** The incidence of Z-effect was 5.7% (4 cases). There was no correlation between age, sex, fracture stability and the occurrence of Z-effect. Because most patients had osteoporosis, there was no statistical significance between bone quality and Z-effect. Placement of the lag screw was not associated with Z-effect. Z-effect occurred in two of 15 cases with a TAD of the lag screw more than 25mm and in two of 55 cases with a TAD of the lag screw 25mm or less ($p=0.152$). But in case of hip pin, Z-effect occurred in zero of 44 cases with a TAD more than 25mm and in four of 26 cases with a TAD 25mm or less ($p=0.007$). Reduction status was also associated with Z-effect ($p=0.05$). **CONCLUSION:** To reduce the Z-effect phenomenon, careful surgical technique including anatomical reduction should be recommended and hip pin should not be placed too deeply in the femoral head.