

THE ROLE OF LATERAL FEMORAL WALL THICKNESS IN INTERTROCHANTERIC FRACTURE

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ABSTRACT: In intertrochanteric Fracture, the posteromedial Portion was regarded as the most important prognostic factor in the outcome of fixation by DHS. But recently it has been demonstrated that integrity of the lateral wall is essential for successful results. In our study, Patients with AO31-AI & AO31A2 intertrochanteric fracture. Total 48 patients (30 male & 18 female) Jan 2012 to Dec 2013. The incidence of post-operative lat. wall fracture was significantly higher in A2 fracture than in A1 fracture. The fracture of lat. wall occurred in 9 pt. (20%). We found that lat. wall thickness was a reliable predictor of post-operative lat. wall fracture with a threshold value of 20.5 mm. From this we suggest that treatment with a DHS is not advisable in the presence of a lat. wall thickness is reliable predictor of operative lat. Wall fracture. Intertrochanteric fracture.

KEYWORDS: Intertrochanteric wall thickness in intertrochanteric fracture.

INTRODUCTION: Previously, the condition of the posteromedial portion was regarded as the most important prognostic factor in the outcome of fixation using a dynamic hip screw but recently it has been demonstrated that integrity of the lateral wall is essential for successful results. The importance of the integrity of the lateral femoral wall is increasingly being recognized in the treatment of intertrochanteric fracture. Thickness of the lateral wall is a simple and quantifiable parameter for pre-operative evaluation of the anatomical structure. In this study, we investigated the reliability of lateral wall thickness as a predictor of lateral wall fracture after implantation.

PATIENT AND METHODS: Patients with AO31-AI & AO31-A2 intertrochanteric fracture. Who were treated with DHS fixation in my Hospital Jan 2012 to Dec 2013 Total 48 patients (30 male & 18 female) were identified. Right side was affected more than left & their mean age at operation of 60 years.

Fracture fixation was undertaken in a conventional manner using a DHS on a fracture table under fluoroscopic control. Post-operative lateral wall fracture was defined as the presence of new fracture lines occurring at the site of insertion of the barrel plate or lateral displacement of fracture fragment on the radiograph.

Failure of the treatment was defined when the following event occurred:

1. Penetration of the femoral head.
2. Breakage of the barrel plate or its screws.
3. Patient underwent a second operation due to other cause of implant failure.

4. Successful treatment was defined as continuous bridging callus seen on the AP and lateral radiographs, and no pain during the movement head on AP. Poor fracture reduction was defined as $<20^\circ$ angulation on the lateral radiograph, and $< 4\text{mm}$ of displacement of any fragment. The lateral wall thickness was defined as the length of the channel created by the triple reamer on the lateral wall.

RESULTS: The incidence of post-operative lateral wall fracture was significantly higher in A2 fracture than in A1 fracture. The fracture of lateral wall occurs in 9 patients (20%). The mean preoperative lat. wall fracture was 2cm compared with 2.8cm in 39 patients without lat. Wall thickness of 22 A1 fracture was 3mm which was significantly thicker than the mean of 22 mm found 26 A2 fracture.

DISCUSSION: We found that lateral wall thickness was a reliable predictor of post-operative lateral wall fracture with a threshold value of 20.5 mm. From this we suggest that treatment with a DHS is not advisable in the presence of a lateral wall thickness $<20.5\text{ mm}$. The high success rate in the A1 group may be as a result of the poster medial section of the femur preventing excessive sliding of the screw and proximal fragment after lateral wall fracture. However, when a lateral wall fracture occurs in an A2 fracture, the screw and proximal fragment slide laterally and there is no structure to block this movement. Further stress on the femoral head will cause screw penetration or loosening. This suggests that the intact posteromedial femoral section imparts important support in the event of lateral wall fracture in DHS treatment. However if the femur does not have a stable posteromedial section, the quality of the lateral wall plays a decisive role in the DHS outcome. This hypothesis could explain why A2 fracture patients with trochanter buttress plate-mounted DHS had better outcomes in then those with DHS alone.

The lateral wall fracture occurred more frequently in A2 fracture where the bone was generally thinner, then that in A1 fracture. We postulate that the thinner lateral wall was created by the lower fracture line that simultaneously caused comminution of the posteromedial section.

CONCLUSION: We conclude that,

1. Lateral wall thickness is a reliable predictor of post-operative lateral wall fracture.
2. Applying a $>20.5\text{ mm}$ threshold value for the use of a DHS can be expected to minimise the risk of post-operative lateral wall fracture.
3. Intertrochanteric fracture with a lateral wall thickness $<20.5\text{ mm}$ should not be treated with a DHS alone.

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