

MEDULLARY CANAL REAMING IN THE STANDARD PROXIMAL FEMORAL NAILING PROCEDURE FOR UNSTABLE TROCHANTERIC FRACTURE FIXATION: IS IT A REQUISITE?

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INTRODUCTION:

Femoral endosteal medullary reaming is regarded as unnecessary technical step of the standard proximal femoral nail (PFN) in unstable trochanteric fracture fixation. This study aims to compare the post-operative outcomes of femoral medullary reaming with the standard unreamed technique PFN for unstable trochanteric fracture fixation.

METHODS:

This single centre prospective quasi clinical study, compares the post-operative outcomes of medullary reaming in PFN fixation (n=30) with conventional unreamed control PFN group (n=60). All patients were followed up for 6 months. Outcome measures; operation time, fracture union, nail position and fracture displacement were recorded at three weeks, six weeks, three months and six months.

RESULTS:

Both groups had similar baseline peri-operative demographic profiles: age ($p=0.426$), gender ($p=0.765$) and Evan Classifications ($p=0.710$). Lesser incidence of nail displacement in the intervention group (3.3%) was compared to the control group (16.7%). The intervention group had neutral nail position 5.80 times more often than control group. The mean (SD) operating time was significantly longer in the intervention group ($\bar{x}=93$ (10.31)) compared to the control group ($\bar{x}=83$ (16.06) minutes, $t=3.19$, $p=0.002$). There was no statistically significant finding on overall effect of intervention and Evan's classification on the haemoglobin drop. Duration of Fracture union and fracture displacement were similar for both groups ($t=0.09$, $p=0.765$) and ($\chi^2=0.13$, $p=0.722$) respectively.

DISCUSSIONS:

The nail position was more likely remained in neutral position in the intervention group as early

as three weeks follow up contradicting with the previous study [1]. A well-fitted nail in the reamed group with Dorr type A bone gives a higher ratio of nail to canal diameter. Nail to canal ratio of non-neutral nail position in the control group is 0.56 compared to 0.95 in the intervention group, corresponded with previous study [2]. Reaming transformed the champagne shaped bone to more uniform endosteal thickness, allows insertion of larger nail diameter and reduced risk of toggled nail. The load sharing is more efficient in the neutral nail during weight bearing [3].

CONCLUSION:

Despite longer operation time, medullary reaming in the standard PFN offers less incidence of non-neutral nail position and no significant haemoglobin drop post operatively. Determination of nail to canal ratio and medullary reaming should be considered preoperatively in treating unstable trochanteric fractures to prevent further complication particularly fixation failure.

REFERENCES:

1. Vaquero J, Munoz J, Prat S, Ramirez C, Aguado HJ, Moreno E, et al. PFNA versus G3N for IM nailing of unstable trochanteric fracture. A randomised comparative study. *Injury* 2012; 43 (Supl. 2): S47-S54.
2. Miller MJ, Wilkinson A, Navarre P, Steiner J, Vohora A, Hardidge A, et al. 2018. Nail Fit: Does Nail Diameter to Canal Ratio Predict the Need for Exchange Nailing in the Setting of Aseptic, Hypertrophic Femoral Nonunions? *J Orthop Trauma*. 2018 May; 32(5):245-250.
3. Ozhan K, Turkmen I, Sahin A, Yildiz Y, Erturk S, Soylemez MS. A biomechanical comparison of proximal femoral nails and locking proximal anatomic femoral plates in femoral fracture fixation., *Indian J Orthop*. 2015; 49 (3): 347- 51