

Dilemma in Fixing Femur Neck Fracture ‐ Is there Any Difference in Neck Shortening between Femoral Neck System and Multiple Cancellous Screws? A Double-Blinded Prospective Randomized Controlled Trial

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INTRODUCTION:

Osteo-synthesis for fracture neck femur (FNF) is associated with increased morbidity and socio-economic burden. Thus, the implant of choice for femoral neck fracture fixation is one of the most challenging management controversy in present times. The study prospectively compared femoral neck shortening after internal fixation of femoral neck fracture with femoral neck system (FNS) or multiple cancellous screws (MCS).

METHODS:

This was a prospective parallel interventional non-inferiority double-blinded single-center randomized controlled trial. Ethical approval was taken from Institutional Ethical Committee (IEC) and Clinical Trials Registry, India. All patients between 18 and 60 years of age undergoing internal fixation for subcapital or transcervical fracture neck femur were included. Patients were randomized and allocated into one of the two groups - the Test group (Group FNS) and the Control group (Group MCS).

Specific objective was to determine if implant selection influences final neck shortening in patients with fracture neck femur. We hypothesized that since FNS is an angular stable implant it will provide more load to failure and less neck shortening compared with MCS. Primary outcome was determined by measuring 1-year femoral neck shortening difference on radiographs between FNS and MCS and, secondarily, correlating it with PROMs in the form of modified Harris hip score (HHS) at the end of 1-year follow up.

RESULTS:

From December 1, 2021, to March 30, 2022, 60 patients were prospectively enrolled; 30 were randomly assigned to the FNS test and the MCS control groups. The primary outcome at the final follow up, femoral neck shortening, was 3.77 ± 1.87 mm in group FNS which was significantly lower than in the control group MCS, 6.53 ± 1.59 mm. Though the 3-month HHS was higher for the FNS group, no difference was seen at 1-year.

DISCUSSION AND CONCLUSION:

FNS had significantly lower femur neck shortening than the MCS group. There was no statistically significant difference in PROMs at 1-year follow up compared to MCS. Overall, this study suggests that FNS can be a rational alternative implant for internal fixation in young adults (<60 years) with transcervical and subcapital femur neck fractures.

