ABSTRACT

Introduction:

Osteosynthesis of femoral neck fractures is related up to 46% rate of complications. The novel method of biplane double-supported screw fixation (BDSF; Filipov’s method) offers better stability using three medially diverging cannulated screws with two of them buttressed on the calcar. Biomechanically, the most effective component is the distal screw placed at steeper angle and supported on a large area along the distal and posterior cortex of the femoral neck following its spiral anterior curve. Thereby, BDSF achieves the strongest possible distal-posterior cortical support for the fixation construct, which allows for immediate full weight-bearing.

Aim:

The aim of this study was to evaluate the functional and radiological outcome of femoral neck fractures treated by biplane double supported screw fixation method.

Materials and Methods

Subject of this study were 22 patients with displaced Garden III–IV femoral neck fractures treated with BDSF. Three 6.5-mm cannulated screws were laid in two medially diverging oblique planes. The distal and the middle screws were supported on the calcar. The distal screw had additional support on the posterior neck cortex.
Results

The outcomes in 22 patients were analysed for minimum 6 months, maximum up to 24 months follow-up. Bone union occurred in 90% of the cases (18 patients). Rate of nonunion was 10%. Rate of AVN was 12.1% (males 4.8%, females 13.9%, P = 0.12). Modified Harris hip score was 90.13 (range 10–100)

Conclusion

By providing additional cortical support, the novel BDSF method enhances femoral neck fracture fixation strength.

Keywords

BDSF, Biplane, Femoral neck fracture, Fixation, Osteosynthesis, Hip fractures.