

Author's reply

Sir,

We thank the authors¹ for the interest shown in our paper.² We would like to address the issues raised.

The tightening of a single screw may produce some tilting (angulation), but not rotation. There is no similarity between dynamic hip screw (DHS) screw insertion and cannulated cancellous screw (CCS) fixation. DHS "holds" large area of bone and tightening can result in a good amount of rotation of the head. On the other hand, CCS holds small area of bone and its tightening especially in osteoporotic bone should produce minimal rotation if any. As elaborated in the discussion, there is no vascular insult to the femoral head to start with in this low energy fracture and torque of CCS insertion will not increase the insult.

The order of screw compression depends on residual displacement after closed reduction. If gap or distraction is present on any cortex that side is compressed first to close the gap. If comminution is present, then also that side is compressed first, just sufficient enough to bring fragments closer. While doing this, care is taken not to distract the opposite cortex. On the other hand, if non comminuted side is compressed first, the gap on the comminution side can get widened; it will be further difficult to bring the fracture fragments closer with prior fixation of one screw. If gap persists, tendency for head tilting and collapse will be there in most cases of comminution irrespective of fixation method and order of fixation, unless stability in the form of bone grafting is provided. Four quadrant parallel peripheral fixation (FQPP) will negate the tendency better than other constructs and healing can happen without screw cutting through the head. The traditional obsession to get anatomical union should be resisted as nonanatomical and "nonanatomical" union can give satisfactory function similar

to proximal humerus fractures where significant degrees of "malunion" is accepted with good functional results.

Irrespective of the fixation method, the fundamental aim in fracture neck femur (FNF) fixation surgery is to get maximum fixation in the head fragment. This is mathematically and technically possible only with four (or more) screws placed peripherally or circumferentially. If the head is small, small diameter (6 mm, 5 mm, or 4 mm) screws or combination of screws can be used. However, we could use 7 mm or 6 mm screws in all cases.

If the near cortex hole has inadvertently become big, then to avoid screw head crossing the cortex washers can be used. We have not used washers in our study. There is no biomechanical reason by which washers can improve the union rate or functional outcome. With washer, probably surgeon could have done compression with more confidence, which could have yielded better results. With FNF fixation, surgeon needs to have the tactile feedback of two things: screw head touching the femoral cortex and interfragmentary compression. Washers prevent this important tactile feel and excessive tightening over washers will result in loss of fixation in head fragment.

This is a technical issue. Repeated multiple drill holes in the same area can weaken the bone resulting in subtrochanteric fractures. We have carried out more than 200 cases in the past 6 years and have not encountered any subtrochanteric fracture. As said earlier, if the bone is considered small, small diameter screws can be used.

One hundred eighty patients were the total number of femoral neck fracture cases operated during that period by screw fixation or hemiarthroplasty or total hip arthroplasty surgery. Among the screw fixation group, 64 patients who satisfied the inclusion criteria were included in the current study. Two patients who were included initially, but could not complete the 2 years followup were excluded from the study. These two patients had their fracture healed and had excellent functional score at 1 year followup.

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