Letters to the Editor

Dynamic hip screw blade fixation for intertrochanteric hip fractures

To the Editor:

I read with interest the article by Leung et al. They used an extramedullary collapsing device for fixation of relatively stable intertrochanteric fractures (AO 31-A1 and 31-A2 fractures). A triple reamer was used before the insertion of the Dynamic Hip Screw (DHS) blade. This is crucial, especially in osteoporotic patients, when there is an iatrogenic rupture of the greater trochanteric lateral buttress wall. This converts a stable intertrochanteric to an unstable intertrochanteric fracture, and in such cases the use of a telescoping implant like the DHS blade is questionable. It is worth knowing whether there is a difference in the incidence of iatrogenic lateral wall rupture while using the triple reamer for the DHS lag screw or the helical blade.

The authors stated that interfragmentary rotation was prevented as the blade screw was locked after plate fixation, but it occurred while reaming with the triple reamer before the screw was placed and locked. Hence, the fracture site must be stabilised rotationally with 2 pins or a 6.5-mm partially threaded cannulated cancellous screw with washer, before the triple reamer is used. Hence, this technique warrants further comments.

Moreover, what type of barrel plate was used and what was the locking mechanism to achieve rotational locking of the blade? Four factors have been reported to affect the sliding of the screw/blade within the barrel. They are the coefficient of friction between the barrel and the shaft of the lag screw/blade, the force acting perpendicular to the screw/blade, the length of the screw/blade outside the barrel, and the length of contact between the barrel and the shaft of the screw/blade. The latter determines the type of locking mechanism preventing the rotation. In one study, the locking mechanism was faulty owing to a very small contact area of the lock key, which prevented rotation between the blade shaft and barrel. It led to burning and jamming of the blade shaft. The lock key was then modified to increase its length of contact area. Long barrel plates are recommended, as they decrease the length of the blade shaft outside the barrel and prevents jamming of the screw/blade secondary to impingement of the shaft within the barrel on eccentric loading. Jamming of the blade shaft within the barrel converts a sliding compression device to a fixed angle device, which increases chances of within-head toggle of the screw/blade, especially in osteoporotic patients.

I would like to know the authors’ opinion on the potential utility of hydroxyapatite-coated DHS blades for osteoporotic patients. They have better osteointegration after the blade is hammered into place. This is an extrapolation of the use of hydroxyapatite-coated stems in cementless bipolar hemiarthroplasty for osteoporotic patients.

The mean age of the patients was 83 years. It would have been useful to quantitate the osteoporosis by stating the preoperative T and Z scores to facilitate comparison. It would also be useful to know if there was any anti-osteoporosis drug protocol during the peri-operative period.

The authors presented a case of revision of an operated DHS blade with a cemented bipolar hemiarthroplasty. A long-stem (rather than the conventional short-stem) bipolar hemiarthroplasty is preferable in cases with intertrochanteric fractures (in which the proximal femoral region is violated). The stress on the lateral femoral wall is less marked when a long stem is used. In addition, a simple DHS plate was used, and at the time of revision the lateral femoral wall had already been weakened by under-plate osteoporosis. It is advisable to use a locking DHS side barrel plate, especially in osteoporotic patients. This may avoid poor cementation in Gruen’s zones 6 and 7 and a cantilever bending, which may increase stress on the lateral femoral wall and lead to lateral thigh pain or even stem cut-out.

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Authors’ reply
We acknowledge the comments to our article for which many of the points are very important in addressing intertrochanteric fractures.

An iatrogenic lateral wall fracture at the time of triple reaming converts a stable A2 fracture into an unstable A3 fracture. In principle, a sliding hip screw or blade design should not be used in A3 fractures owing to a lack of lateral buttressing. Doing so can result in fracture collapse, non-union, and implant cut-out. The operating surgeon must be careful at the time of reaming and meticulously assess whether such a fracture has occurred after reaming.

When a lateral wall fracture is identified intra-operatively, we recommend provision of lateral support with a trochanteric stabilisation plate, or converting the fixation system to a cephalomedullary device as long as the bone stock for fixation in the femoral head is adequate.

In our study, a lateral wall fracture identifiable intra-operatively would be classified as an A3 type, and thus be excluded. We did encounter a few cases of postoperative lateral wall fracture that resulted in more fracture collapse, but none resulted in non-union. The incidence of lateral wall fractures was not documented.

We have no experience with hydroxyapatite-coated DHS blades, as both conventional DHS and DHS blade systems have provided satisfactory results in many studies and in our routine practice. Our opinion is that hydroxyapatite-coated DHS implants are not currently used as mainstream treatment options of intertrochanteric hip fractures.

In our practice, patients with osteoporotic fractures are usually given calcium and vitamin D supplements after surgery. Yet, routine DEXA scans and other forms of pharmacological treatment for osteoporosis are not universally provided owing to financial constraints.

In our case of subcapital neck fracture after DHS blade fixation, the fracture at the trochanteric region healed at the time of revision. The lateral wall void following implant removal required more careful handling during cementation and pressurisation. For hemiarthroplasty, a conventional stem provides adequate stability when the length of distal fixation is far more than double that of the femoral shaft diameter. We acknowledge that longer stems may provide better fixation in such situations, but may also increase the risks and technical demands associated with their revision and therefore are not routinely used.

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REFERENCES
1. Leung F, Gudushauri P, Yuen G, Lau TW, Fang C, Chow SP. Dynamic hip screw blade fixation for intertrochanteric hip fractures. J Orthop Surg (Hong Kong) 2012;20:302–6.
2. Huang X, Leung F, Xiang Z, Tan PY, Yang J, Wei DQ, et al. Proximal femoral nail versus dynamic hip screw fixation for trochanteric fractures: a meta-analysis of randomized controlled trials. Sci World J 2013;2013:8.
3. Haydon CM, Mein R, Burnett S, Rorabeck CH, Bourne RB, McCalden RW, et al. Revision total hip arthroplasty with use of a cemented femoral component. Results at a mean of ten years. J Bone Joint Surg Am 2004;86:1179–85.
Intramedullary nailing supplemented with Poller screws for proximal tibial fractures

To the Editor:
We read with interest the article by Kulkarni et al.1 The authors used poller screws to facilitate the reduction of the proximal tibial fractures during intramedullary nailing. Poller screws helped avoid malreduction owing to increased diameter of the medullary cavity in the metaphyseal regions. Postoperatively, 65 of the 75 fractures exhibited no deformity. It is obvious that the authors meant no sagittal plane deformity. It would have been better if the authors could clarify this. In the results section, the authors stated that “Preoperatively, of the 75 cases, 40 cases had procurvatum, 28 had recurvatum, and 17 had no deformity”. The sum of these numbers is 85. Would the authors please clarify this?

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REFERENCE
1. Kulkarni SG, Varshneya A, Kulkarni S, Kulkarni GS, Kulkarni MG, Kulkarni VS, et al. Intramedullary nailing supplemented with Poller screws for proximal tibial fractures. J Orthop Surg (Hong Kong) 2012;20:307–11.

Authors’ reply
Thank you for your comments. There was a typographical error and we meant to say: “Preoperatively, of the 75 cases, 40 cases had procurvatum, 28 had recurvatum, and 7 had no deformity”.

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