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Perspective

How to navigate the landscape of trochanteric hip fracture implants

Frede FRIHAGEN

Department of Orthopaedic Surgery, Østfold Hospital Trust, Grålum and Institute of Clinical Medicine, University of Oslo, Oslo, Norway
Correspondence: ffrihagen@gmail.com
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A widespread change from sliding hip screw (SHS) to intramedullary nails (IMN) in the treatment of trochanteric fractures has occurred during the last decades. This happened without scientific backing, rather the contrary, as there was a reported higher risk of peri-implant fractures with nails, but otherwise very similar results. Some suggested reasons for the transition are intensive marketing of the new implants, and surgeons' belief in the theoretical advantages of the nails. The SHS has remained virtually unchanged for a long time, whilst both entirely new nails and new designs of older nails are frequently introduced. The manufacturers claim that these changes are improvements, but, more often than not, with inadequate scientific backing for their claims. The perfect nail has yet to come, and there is a shortage of high-quality data comparing different nails. The most recent trials comparing SHS and nails, however, may indicate an improvement in nail design and technique. The increased risk of peri-implant fracture with nails persists, but is balanced by fewer complications in other areas, as indicated in the recently published Cochrane Review (1). Still, this does not explain the change in treatment that came before these results were available. With the current knowledge, it is not possible to give a strong recommendation on whether to use SHS or IMN, based on complications and functional results (1).

Recently, Acta Orthopaedica has published 2 articles on treatment of trochanteric fractures.

Schmitz et al. (2) should be commended for studying quality closely when they introduced a new nail for hip fractures. The paper does not state clearly why the nail was replaced, but it may be suspected that the cost of the implant itself was a driver. Even though the new implant was less well documented than the old, the two nails were believed to perform equally in the clinic. The implant cost is a small part of the total cost of treating a hip fracture. Moreover, the cost of the change to a new implant itself may be high. The learning curve might be associated with more complications initially; an inferior design will lead to a permanently increased risk of complications. Schmitz et al. have provided insight into potential consequences of implant changes, a change at least partly driven by forces outside the clinical realm. Possibly, they have also provided insight into the performance of 2 common nail designs, but this must be confirmed by controlled clinical trials. While management may be tempted by reduced costs, and orthopedic surgeons by perceived—and often theoretical—benefits, there is, regardless of reason, still a strong case to be made for caution when considering a new implant. A change of implant should be driven by evidence. Support from surgeons must be ensured, and a plan made for its safe introduction. This is especially important with hip fractures, which constitute a high-volume procedure, often performed by a large number of surgeons with varying experience.

Wolf et al. (3) discuss the "hardest" outcome measure of all, mortality. Potential differences in mortality between commonly used fracture implants are – perhaps fortunately – too small to be detected by most randomized clinical trials. However, any difference in mortality between 2 treatments is an important finding. Large databases and registers ensure adequate numbers to study rare events. Wolf et al. found an increased mortality after IMN at 30 days after the surgery compared with SHS when analyzing 19,935 patients from the Swedish Fracture Register (SFR). The treatment groups were balanced in size and patient demographics. SFR registers fracture classification, which enabled Wolf et al. to exclude the unstable AO/OTA A3 fractures. Whitehouse et al. (4) have previously also reported higher early mortality after IMN compared with SHS. In both papers a potential causality from the instrumentation of the femoral canal necessary to implant an IMN is discussed. However, as the authors of both papers point out, even with all possible statistical adjustments, an uncertainty regarding unmeasured confounding, especially confounding by indication, remains.

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The final word on implants for trochanteric fractures has by no means been said, but we may witness an emerging discussion on early mortality. This has interesting parallels to the findings of increased very early mortality after cemented femoral stems compared with uncemented stems in the treatment of femoral neck fractures (**5**). As with IMN, there has been a shift in implant use not easily explained by evidence. The excess mortality suspected is too small for randomized trials to detect. The proposed mechanism is similar because increased femoral intramedullary pressure, and entry of bone marrow content into the circulation, may be a culprit in both instances. However, there are important benefits with a cemented femoral stem. These benefits include fewer periprosthetic fractures, improved early mobility, and improved health-related quality of life (**6,7**). Hence, weighing the available evidence, cement is the recommended method of fixation. Still, a safer bone cementation process would be high on the wish list of surgeons—and anesthesiologists.

Regardless of which implant we choose for our hip fractures, a never-ending attention to quality is paramount. Hospitals should monitor performance on functional results, complications, and mortality. Leaving young surgeons alone in the OR at odd hours is not acceptable. As stated, the perfect implant has yet to come, but the same goes for the perfect surgeon.

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