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CORR Insights®: Does Teriparatide Improve Femoral Neck Fracture Healing: Results From A Randomized Placebo-controlled Trial

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Where Are We Now?

Some studies are performed because they are likely to be successful, others because there is a burning question that must be addressed. In my view, the current study by Bhandari and colleagues is an example of the latter.

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During the past several decades, there have been two philosophical camps addressing the repair of femoral neck fractures in the elderly. One camp has maintained that the best approach to treatment of the displaced or nondisplaced femoral neck fracture is to reduce and fix the fracture, preserving the patient’s own femoral head and avoiding the increased risk associated with prosthetic femoral head and total hip replacement. The other camp advocates for joint replacement, arguing that femoral head preservation is unlikely for a large proportion of these patients, and that the best opportunity for the fullest possible recovery is through total hip replacement.

Why is femoral head preservation unlikely? These fractures occur in patients who are elderly and often osteoporotic with bone quality that is not ideal for fixation, poor healing potential due to compromise of

femoral head blood supply, and mechanics across the fracture site that confound attempts to provide stable fixation. Teriparatide, a systemically administered bone anabolic agent, has aided the recovery of patients with distal radius fractures [1], as well as stable nondisplaced pelvic ring fractures [7]. Bhandari and colleagues addressed whether Teriparatide can do the same for a much more challenging fracture.

An international, multicenter, randomized controlled trial was idealistically designed and implemented. I add “idealistically” because of the obvious immense challenges involved in such a study. Not surprisingly, enrollment was difficult with only about 10% of the projected number of subjects being enrolled and the study was terminated prematurely. Still, 159 patients were enrolled and randomized between those administered Teriparatide in addition to reduction and fixation of the fracture and those that received fixation with placebo. No difference in any of the multiple outcome assessments could be found between the two groups

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leading the authors to conclude that Teriparatide cannot effectively improve the rate of healing or the functional outcome of femoral neck fracture in the elderly.

Where Do We Need To Go?

Internal fixation of femoral neck fractures—either displaced or nondisplaced—is associated with a risk of need for reoperation due to nonunion, avascular necrosis, or poor function and pain [4]. Arthroplasty as a treatment has become increasingly popular due to the decrease in reoperation rates and better outcomes in terms of morbidity and mortality, particularly in the 65- to 80-year-old population [8]. With the acceptance of dual-mobility hip acetabular component designs, the potential to substantially reduce the risk of postoperative dislocation has become a reality [3]. Comanagement approaches between surgeons and subspecialized geriatric hospitalists decreases the risks of surgery and seems to improve patient survival, quality of care, and functional recovery [2, 6]. For me, the question is should we continue to invest in efforts to avoid total hip replacement in this setting?

How Do We Get There?

This question can be answered by mining the data from our national databases. Both the American College of Surgeons and the Medicare Inpatient Sample databases are resources that can be used once and for all to put this question to rest. The Swedish registry approached this topic in 2009, and found that in their population, THA was a safe treatment for patients with femoral neck fractures [5]. Since most hip fracture patients are Medicare beneficiaries, our current national databases most likely contain the data needed for such an analysis. I believe that this approach will be more fruitful than attempting further randomized controlled trials on this topic.

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