The Second Hip Fracture—An Analysis of 84 Elderly Patients

To the Editor:

We read with interest the paper by Shabat, et al, (J Orthop Trauma 2003; 17:613–617). The authors noticed a tendency for a second hip fracture (HF) to be the same type as the previous one. This observation is in agreement with previous reports.1–4 The authors found an incidence of a second HF of 9.5% which corresponds with some published data (8.3%–11.8%)5–8 but higher than others (5.5%–6.6%).2–4 They also correctly concluded that with the growing elderly population the rates of second HF would increase. In older persons with a HF, the risk of a second HF is 6 to 10 times higher, occurring with a rate of 1.5% to 2.9% per year.5,8,9 For this reason it is important to identify potential precursors of a second HF, to determine its outcomes and implement adequate preventive strategies. Because these issues received little attention, we would like to add to this discussion by reporting our observations.

We performed a retrospective analysis of 321 patients (60 years of age and older) who presented with an osteoporotic HF over a 3-year period (2000–2003) to The Canberra Hospital (a 450-bed tertiary care academic institution). A second HF occurred in 30 (9.3%) patients including 8.9% of all women and 10.5% of men. Twenty-six (9%) additional subjects had a known prior vertebrae (5.5%) or arm fracture (3.4%). All patients had operative fracture treatment. A comparison between the patients with second HF and first HF was performed by an unpaired t-test. This revealed no significant differences with regard to the mean age (82.3 vs 87.6 years), gender (F:M ratio 2.3:1 vs 2.8:1), type of fracture (cervical 63.3% vs 56.7%, trochanteric 36.7% vs 43.3%), mean total length of hospital stay (23.1 vs 24.8 days), in-hospital mortality (7.1% vs 6.9%), co-morbid conditions including cognitive impairment (26.7% vs 32.6%), hypertension (50% vs 39.2%), coronary artery disease (23.3% vs 21.6%), chronic obstructive pulmonary disease (13.3% vs 26.8%), cerebrovascular diseases (6.7% vs 8.6%), renal impairment (30% vs 37.6%) or smoking history (10% vs 17.8%).

There was no difference in the frequency of anaemia (haemoglobin less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%), hypoalbuminaemia (less than 33 g/L, 23.3% vs 37.5%) or lymphopaenia (less than 115 g/L in women and less than 135 g/L in men, 36.7% vs 38.1%).

The most important difference between the two groups was vitamin D status. In patients with a second HF, the incidence of low-serum concentration of 25(OH) vitamin D (less than 39 nmol/L) was significantly higher than in persons with the first HF (76.7% vs 62.8%; P < 0.05), and vitamin D deficiency [25(OH) vitamin D less than 25 nmol/L] was 1.6 times more common (66.6% vs 42.3%; P < 0.01). Moreover, only 5 (16.7%) of 30 patients who sustained a second HF were taking calcium and none was receiving antiresorptive agents (bisphosphonates). In other words, the majority of these high-risk subjects did not receive antiresorptive treatment, and none received adequate treatment. Our data confirm that a second HF occurs in 1 in 10 patients but is not predictive of increased risk of poor outcome compared to first HF, although half need a walking aid. Low vitamin D status and inadequate antiresorptive treatment after the first HF are important predisposing factors in development of a second HF. Current practice for treatment of osteoporosis in subjects who sustain a HF is inadequate, and greater education of orthopaedic surgeons, general physicians and the public, is urgently required.

Alexander A. Fisher, MD, FRACP, PhD
Michael W. Davis, MBBS, FRACP
Department of Geriatric Medicine
The Canberra Hospital
Woden, ACT, Australia

Shyan Goh, MBBS
Paul N. Smith, MBBS, FRCS
Department of Orthopaedic Surgery
The Canberra Hospital
Woden, ACT, Australia

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In Response:

The prevalence of elderly in our society is increasing. About 13% of the population in the United States are older than 65 years today, and this rate is ex-
pected to rise to about 20% in the year 2030. In addition, the number of persons aged 80 years or more is expected to increase from 9.3 million in the year 2000 to 19.5 million in 2030. The incidence of osteoporosis and as a subsequent hip fractures, increases with age, therefore the number of hip fractures is anticipated to double or even triple in the next two to three decades.

In this retrospective cohort letter, Fisher et al report on 321 patients (more than 60 years old) who had hip fractures in the years 2000–2003. Their goal was to identify potential precursors for second hip fractures, and by that to try implement some preventive strategies. Overall, this is an important goal. In their study 30 patients (9.3%) had a second hip fracture. This correlates well with the published data. Although their assumption that these patients were osteoporotic is most probably correct, they did not perform any tests to verify that, so this should be stated with caution. Unfortunately, they also did not report thorough comparison between the first and second fractures in this group of patients. In their analysis, they compared the group of patients who had first hip fractures to those who had second hip fractures, and they did not find any statistical significance in terms of age, gender, fracture type, hospital length of stay, cognitive impairment or comorbidities. Like other authors, they found that a second hip fracture is not indicative of poor outcome. Interestingly, they report of low concentration of vitamin D in the second hip fracture patients in comparison with the first hip fracture patients, and only 16.7% of the former group of patients received calcium supplements and none received bisphosphonates agents. This was also reported by Shabat et al. Freedman and co-workers observed that only 24% of women who had distal radius fractures underwent diagnostic evaluation or treatment for osteoporosis. Similar numbers were also reported by others. Although an increased rate of patients with hip fractures were discharged in recent years with some medications targeting their osteopenia, only 6% were prescribed with medications to actively prevent bone reabsorption (bisphosphonates).

Fisher et al correctly conclude that the current practice for treatment of osteoporosis in subjects who sustain a hip fracture is inadequate, and that greater education of orthopaedic surgeons, general physicians and the public is urgently required. Although cost benefits for the society of treating patients with hip fractures with medications that are aimed to reduce their osteoporosis have not been extensively reported thus far, it seems that these medications end up being cost saving. Moreover, more papers show that these medications have advantages for the individual with hip fractures. We are now in an era called the bone and joint decade. In my point of view, we should focus on both primary and secondary prevention of hip fractures, which includes patient and primary-care physician education, and appropriate treatment medical, surgical or rehabilitative.

I thank Fisher and his colleagues for communicating on our paper. Identifying potential precursors of hip fractures is important, and more research like theirs needs to be done to formulate and implement adequate preventive strategies.

Dr. Shay Shabat
Orthopaedic Surgery Department
Sapir Medical Center
Kfar-Saba, Israel

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Distal Locking of Femoral Nails Under Direct Vision Through A Cortical Window

To the Editor:
We read with great interest the article entitled “Distal Locking of Femoral Nails Under Direct Vision Through a Cortical Window” by Kanellopoulos et al (J Orthop Trauma 2003;17:574–577). It is a good salvage technique, described as a consequence of intraoperative fluoroscopy system failure. It was a chance finding on retrospective review of the patients rather than an innovative technique. There are a few points in this article, which need further clarification about the stated treatment strategy.

Firstly, the technique was used in the selected younger group of patients (average age, 29.6 years). There is no doubt that there are limitations to apply the same for the older population. Osteoporosis, fragility, co-morbidities and poly-pharmacy would be unfavorable
factors and the window is likely to fail as a result of potential stress riser. Also, the possibility of cortical propagation of the fracture line along the diaphysis cannot be underestimated. The length of the window made was approximately 3–4 cm and its width was approximately 1.5–2.0 cm. This is a significant iatrogenic bone defect. Although, there were no fractures occurred through the cortical window in the published series, which may be attributed to the selective younger patients and a protected postoperative rehabilitation regime. To be noted that the protected weight bearing rehabilitation is poorly complied by the geriatric population.

Secondly, it is very important to recognize the fact that the nail of the similar length may not always be readily available on shelf. At the same time, the sterile intramedullary nail is also wasted which raises serious concerns about implying cost effectiveness in the theatre management.

In the conclusion the authors stated that this technique is a way to offer the benefit of distal interlocking to a broader patient group with femoral shaft fractures that would otherwise be treated with a less effective method. We agree with the authors relatively with regard to its use in the younger patient group. We recommend inserting two screws tangentially around the nail in geriatric patients rather than creating big windows and leaving a potential stress riser for subsequent fracture in an osteoporotic fractured femur if the situation arises with the intraoperative dysfunctional radiography. This is enough to fulfill the primary purpose of distal locking by virtue of providing additional rotational stability and thereby allowing early mobilization.

**Himanshu Sharma**  
Specialist Registrar in Trauma and Orthopaedics  
Southern General Hospital  
Glasgow, United Kingdom

**Rachna Sharma**  
Clinical Observer in Emergency Department  
Falkirk and District Royal Infirmary  
Falkirk, Stirlingshire, United Kingdom

**In Response:**

It is really a pleasure to entertain the remarks that were kindly stated by Mr. Sharma regarding our paper “Distal Locking of Femoral Nails Under Direct Vision Through a Cortical Window” (J Orthop Trauma 2003;17:574–577).

As far as the age of our patients, since this was a retrospective study we identified patients already subjected to this method so we do not accept that the group of patients we studied was ‘selected younger’ as Mr. Sharma states in his letter. Advanced age is not a contraindication for performing antegrade intramedullary nailing for a diaphyseal femoral fracture. Antegrade femoral nailing can offer up to 100% union rates in the elderly patient population1 although standard interlocking in osteoporotic patients is problematic and modified interlocking techniques should probably be used.2 As far as the cost issue, the second nail is not discarded, on the contrary it can be cleaned and sterilized, which depending on the available facilities can take minutes. We all agree that for an institute that cares for trauma patients, availability of two nails of the same length is not a costly luxury but a necessity.

Finally, creating the window definitely weakens the bone at that area. Although, this is not a permanent but rather a temporary cortical defect since we are folding back the elevated cortex trying to maintain continuity at its sides with the adjacent cortex, that heals quickly restoring the mechanical properties of that area of the bone. As far the proposed alternative way of locking by Mr. Sharma it is more of nail blocking than interlocking and needs to prove that it can yield similar bending and torsional stiffness to standard interlocking techniques prior to application in the clinical setting. Nevertheless we would like to emphasize that the presented technique is merely a salvage procedure and should not be employed routinely as a substitute for the standard interlocking procedures.

**Anastasios D. Kanellopoulos, MD**  
**Christos K. Yiannakopoulos, MD**  
Department of Pediatric Orthopaedics  
KAT Accident Hospital  
Athens, Greece

**Ioannis Vossinakis, MD**  
**Leonidas S. Badras, MD**  
Orthopaedic Department  
Volos General Hospital  
Volos, Greece

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