Influence of Nail Prominence and Insertion Point on Anterior Knee Pain After Tibial Intramedullary Nailing

To the Editor:

We read with interest the article “Influence of Nail Prominence and Insertion Point on Anterior Knee Pain After Tibial Intramedullary Nailing.” The source of anterior knee pain following tibial intramedullary nailing remains unknown and is most likely multifactorial.

We believe that having 2 groups of patients with homogeneous characteristics minimizes the effects of multiple causes of anterior knee pain. This methodology can be found in a study exploring the relationship between anterior knee pain occurring after tibial intramedullary nailing and the localization of the nail in the proximal tibia. In that study, all of the patients had the same type of fracture treated with the same technique, healed without malalignment, and had no muscle weakness.

Although the patients of the current study had several similarities (eg, surgical technique, type of nail), and 3 patients who had pain prior to the injury were excluded, much more could have been done. We would like to know whether the patients had thigh muscle weakness postoperatively and whether any patients healed with tibial malunion, which also could have led to anterior knee pain. The numbers of patients with AO/OTA type 42B and type 42C were low. The patients would have been more homogeneous if only type 42A fractures had been evaluated. We would like to know the authors’ thoughts regarding this as well.

The article mentioned that 50 of 60 patients with anterior knee pain underwent nail removal, meaning 10 did not. The indication for nail removal was just a subjective observation, as the article does not provide visual analog scale scores before and after removal.

We thank the authors for this article and for their efforts to increase the knowledge on this subject.

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The authors have no relevant financial relationships to disclose.

REFERENCES


Reply:

We are happy to respond to Dr Yalcinkaya and colleagues regarding our recently published article. They highlight the important conclusion that the cause of anterior knee pain following tibial intramedullary nailing remains unknown, with multifactorial sources having been reported.

In our study, there were 2 patients with thigh muscle atrophy and weakness in group N and group P, respectively. According to patients’ descriptions, significantly reduced activity after surgery may be the cause of muscle atrophy. Because we rarely encountered the patient complaint of thigh muscle weakness, we did not perform muscle strength measurements in our case series. However, Vaisto et al reported 40 patients with nailed tibial shaft fractures and isokinetic muscle strength measurements being done at an average of 3.2±0.4 years after nail insertion. They found that only deficiency in the flexion strength of the thigh muscles (hamstrings) at high angle speed (180° per
second) is related to anterior knee pain after tibial intramedullary nailing.

Malunion (>5° of angulation in any plane) causing alteration in loading force over the knee and ankle could cause a predisposition to osteoarthritis. Knee pain also may occur in this situation. Because we chose AO/OTA type 42 in our series, no patient healed with unacceptable malunion.

We studied fewer AO/OTA type 42B and type 42C patients than AO/OTA type 42A patients. In our opinion, the fracture pattern was no longer the main cause of knee pain if the fracture eventually united. Because only proximal or distal fracture patterns may result in malunion, and cause further osteoarthritis, we included all AO/OTA type 42 patients.

Keating et al and Court-Brown et al concluded that nail removal partially lessens anterior knee pain but may not guarantee complete relief of symptoms. We usually recommend that patients with knee pain undergo nail removal after union. In our study, 10 patients did not undergo surgery for removal because they found their level of pain acceptable and were concerned about surgical risks. At the last outpatient clinic follow-up visit before nail removal and 1 year after nail removal, we used the visual analog scale to estimate the severity of anterior knee pain experienced by the patients during 7 activities. The severity of anterior knee pain associated with all 7 activities had diminished statistically significantly after nail removal. However, pain associated with squatting, kneeling, and ascending stairs did not decrease significantly. The other 4 activities—resting, walking, running, and descending stairs—resulted in a significantly lower incidence of anterior knee pain. Thus, we could conclude that nail removal appears to diminish anterior knee pain, but not to the same extent for every patient or every activity.

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The authors have no relevant financial relationships to disclose.

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doi: 10.3928/01477447-20140528-02