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Commentary

Commentary: Iliac crest bone graft: are the complications overrated?

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COMMENTARY ON: Howard JM, Glassman SD, Carreon LY. Posterior iliac crest pain after posterolateral fusion with or without iliac crest graft harvest. Spine J 2011;11:534–7 (*in this issue*).

The authors of the preceding article seek to definitively address the issue of how painful iliac crest site harvest is for patients undergoing posterior lumbar fusion [1]. They designed their study to address some of the shortcomings of prior studies, including palpating both iliac crests for all patients, including patients who had not had bone graft harvested from their crests at all, and having the same midline incision used for harvest in these patients so they would not know which side had been harvested.

Given the less invasive nature of current bone graft harvest compared with historically more extensive harvest, for example, of the entire outer table of the iliac crest, it is reassuring to learn that their study showed that only 19% of their patients had pain over the iliac crest after it had been harvested, at minimum time after surgery of 6 months (ranging from 6 to 211 months, mean 25 months postoperation). Interestingly, of 59 patients without any iliac crest bone graft (ICBG) harvesting, 30 had tenderness over the iliac crest (51%); whereas of 53 patients who actually did have ICBG harvesting, these were equally likely to have tenderness over the untouched ilium as the one that actually was harvested. That is at the time of testing, having had bone graft harvesting did not predict iliac crest pain.

A frequently cited justification for use of artificial bone substitutes, such as bone morphogenetic protein (BMP), is the donor site morbidity. Although no other complications were described in this article, pain is the most common complication reported in most studies of donor site morbidity. This study disputes the severity and frequency of this complaint and puts it in the perspective of the general gluteal area pain experienced by patients after posterior lumbar fusion. Although this study did not assess early pain related to bone graft harvest because their minimum time at follow-up was 6 months, certainly this is within the time frame that patients' postoperative pain diminishes.

Reported fusion rates in single-level posterior instrumented lumbar fusion with ICBG are generally 75% to 95% [2,3] as assessed by a variety of methods. However, in smaller comparison studies between ICBG and BMP, fusion rates from 70% to 86% versus 82% to 96% were observed [4–6], including one study that did not show a significant difference in fusion rates when using BMP versus autograft in patients older than 65 years. Although the comparisons with BMP seem to demonstrate improved fusion rates, the discrepancy varies among studies [7]. Because the fusion rates for these cases can be quite acceptable, it would be important for studies to improve stratification of patients who may have increased risk for pseudoarthrosis, both commonly accepted and less well described and understood, so that surgeons can better weigh the costs of using BMP versus ICBG.

Certainly the present study lends further support to the consideration that the oft-cited ''painful iliac crest donor site'' is less serious and frequent than BMP enthusiasts would have us believe. Besides the potential benefit of BMP leading to variably higher fusion rates, the incidence of swelling and inflammation, radiculitis, osteolysis, and ectopic bone formation need to be included in the consideration of its use. Given the increasing attention focused on appropriate health care costs, cost benefit considerations for use of BMP should be better directed at those specific patient groups at greater risk for pseudoarthrosis.

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The disclosure key can be found on the Table of Contents and at www.TheSpineJournalOnline.com.

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References

[1] Howard JM, Glassman SD, Carreon LY. Posterior iliac crest pain after posterolateral fusion with or without iliac crest graft harvest. Spine J 2011;11:534–7.

[2] Dimar JR 2nd, Glassman SD, Burkus JK, et al. Two-year fusion and clinical outcomes in 224 patients treated with a single-level instrumented posterolateral fusion with iliac crest bone graft. Spine J 2009;9:880–5.

[3] Sengupta DK, Truumees E, Patel CK, et al. Outcome of local bone versus autogenous iliac crest bone graft in the instrumented posterolateral fusion of the lumbar spine. Spine 2006;31:985–91.

[4] Dawson E, Bae HW, Burkus JK, et al. Recombinant human bone morphogenetic protein-2 on an absorbable collagen sponge with an osteoconductive bulking agent in posterolateral arthrodesis with instrumentation. A prospective randomized trial. J Bone Joint Surg Am 2009;91:1604–13.

[5] Dimar JR 2nd, Glassman SD, Burkus JK, et al. Clinical and radiographic analysis of an optimized rhBMP-2 formulation as an autograft replacement in posterolateral lumbar spine arthrodesis. J Bone Joint Surg Am 2009;91:1377–86.

[6] Lee KB, Taghavi CE, Hsu MS, et al. The efficacy of rhBMP-2 versus autograft for posterolateral lumbar spine fusion in elderly patients. Eur Spine J 2010;19:924–30.

[7] Papakostidis C, Kontakis G, Bhandari M, Giannoudis PV. Efficacy of autologous iliac crest bone graft and bone morphogenetic proteins for posterolateral fusion of lumbar spine: a meta-analysis of the results. Spine 2008;33:E680–92.