

A New Favorite For Bone Regeneration: Proximal Tibia Bone Graft

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INTRODUCTION:

Autogenous bones are the best origin for bone grafts, with inherent osteogenic, osteoconductive, and osteoinductive properties. Most surgeons prefer anterior iliac crest for its abundant cortical and cancellous bone. Despite being the favorite choice, it remains as high donor site morbidity, such as donor site hematoma, chronic pain, infection, incisional hernia, paresthesia, and even fracture.¹

METHODS:

We retrospectively reviewed 49 patients undergoing lower limb autologous bone graft surgery in between January 2017 and June 2018. All patients pain score evaluated at post operative day 1, 2, 3 and at 2 weeks follow up. Standardized pain score evaluation done using visual analogue scale (VAS). Indications in our study included trauma cases with bone loss, non union, malunion, joint replacement, and reconstruction surgery post tumor resection. Exclusion criteria are: less than 18, cognitive impairment, combined spinal epidural (CSE) after surgery and missing pain score data. Grafts were harvested from the anterior iliac crest (AIC) in 21 patients and from proximal tibia (PT) in 28 patients. Final study data after exclusion criteria include total 39 patients.

RESULTS:

All patients showed average pain score that classifies under mild pain score. No significant difference noted in the average VAS score at post operative day 1, 2 and 3 between both groups. However, VAS score in PT group averages lower compare to AIC group. Significant reductions seen on VAS score at two weeks follow up. Marked reduction VAS scores at two weeks, with AIC doubles compare to PT. Evaluated complications are nerve injury, wound breakdown and early infection. Superficial surgical site infection noted in four patients, three in AIC group and one in PT group. One patient each had wound breakdown for AIC and PT. Two patients reported nerve

injury over AIC harvest site, as none over PT group.

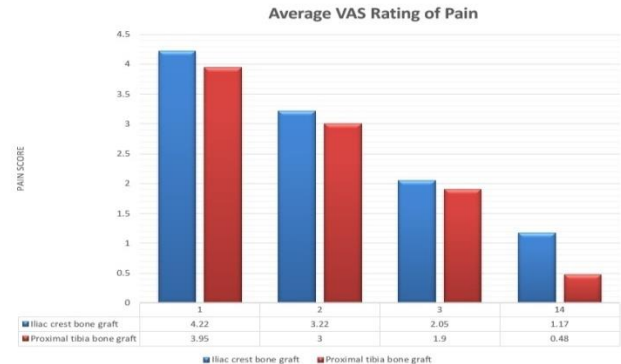


Figure 1: VAS Rating of Pain

DISCUSSION

Autologous iliac crest bone graft has been considered as the “gold standard” and remains as surgeon’s preferred choice. Various complication and morbidity associated with AIC harvest site reported yearly. Chronic persistent pain that functionally limiting with a small fragment falls into depression remains as a major concern.¹

Numbness from AIC donor site reported at 29.1%, with 11.3% found the numbness bothersome.² Graft volume from proximal tibia was larger than the iliac crest, with the less complication than AIC donor site.²

CONCLUSION:

AIC and PT remain as optimal harvest site with both site able to provide best origin of bone grafts. However, PT harvest site proven par ahead with patient experience lesser pain with no limitations to activity of daily living and lesser complication rate.

REFERENCES:

1. Kim DH, Rhim R, Li L, et al. Prospective study of iliac crest bone graft harvest site pain and morbidity. *Spine J.* 2009; 9:886–92.
2. Huang YC, Chen CY, Lin KC, et al. Comparing morbidities of bone graft harvesting from the anterior iliac crest and proximal tibia: a retrospective study. *J Orthop Surg Res.* 2018; 13(1):115. Published 2018 May 16.