

Autologous Tricortical Iliac Bone Grafting in Large Defect of Supracondylar Femur Fracture

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INTRODUCTION:

Different types of autologous bone grafts have variable properties associated with structural anatomy. Cortical autografts provide a structurally sound osteoconductive medium with minimal osteoinductive and osteogenic properties. Cancellous autografts provide a highly osteoconductive, osteoinductive, and osteogenic substrate while corticocancellous grafts provide some benefits of both. The iliac crest remains the most common donor site for autologous bone graft, providing sufficient quantities of corticocancellous bone for most clinical settings, but with donor-site morbidity. Alternative donor sites include the proximal part of the tibia, distal end of the radius, distal aspect of the tibia, and greater trochanter.

REPORT:

A 30-year-old, female was brought to ED after being thrown off from her motorbike while trying to avoid a car. After advanced trauma life support assessment, she was found to have an open severe comminuted fracture supracondylar of left femur. Further examination did not revealed any neurovascular deficit. Wound debridement and left high tibial pin insertion were performed on the same day. All nonviable soft tissues and bone were removed and debrided. Subsequently, she underwent corticotomy of left femur and ring external fixator application to stabilize the fracture. However during serial follow up in clinic, the bone transport was failed due to severe defect of the distal left femur. She was planned for bone grafting surgery and tricortical anterior iliac crest bone was chosen. The graft harvested in the standard manner. The length of the graft was approximately 5cm, based on the size and length of the defect. It must be large enough to fully reconstitute the bone defect and allowing some resorption of the graft over time. No complications arose following the bone grafting

surgery. Six months later, the fracture had consolidated and the ring fixator was removed. Knee range of motion and gait training exercise was initiated and she was allowed full weight bearing as tolerated.

DISCUSSION :

The anterior iliac crest is the most common donor site, compared to posterior iliac crest. The techniques for anterior iliac crest bone grafting include the curettage technique, bicortical or tricortical technique, trapdoor technique, trephine technique, and acetabular reamer technique. The complications of anterior iliac crest grafting are pain, nerve injury, hematoma formation, infection, incisional hernia, vascular injury, and donor site fracture.



Figure 1 : Radiograph post Ilizarov fixation

Figure 2 : Radiograph at 6 months post tricortical bone grafting

CONCLUSION:

Autologous corticocancellous bone graft remains a reliable treatment option when structural stability is required, bone healing augmentation is desired or presence of large bone defect, especially in our case.

REFERENCES:

1. Jia-Fu Zhu¹ JF, Xu WX et al Iliac Bone Harvesting Techniques for Bone Reconstruction. Comparative Study Between Tricortical Bone Harvesting vs Trapdoor Technique. Therapeutics and Clinical Risk Management 2020;16 559–565