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Femoral Malunion Reconstruction using ReadiGraft® BLX Putty and Cortical/Cancellous Bone Chips

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1. Abstract

A fracture that heals in an abnormal anatomical position is considered a malunion [1]. Similar to non-unions, malunions occur due to a disruption in the natural bone healing process [2]. There are several treatment options for malunions, including the use of demineralized bone matrices (DBM). The advantages of these allografts include potentially sparing costly operating room time while also eliminating the donor site morbidity and restricted available associated with autografts [3]. One such DBM, ReadiGraft® BLX Putty, has potential for treating malunions. Furthermore, cortical/cancellous (C/C) bone chips can be used as a graft extender to aid in healing.

2. Introduction

ReadiGraft BLX Putty is a demineralized bone matrix (DBM) used in orthopedic and spine procedures. This graft is biocompatible, osteoconductive, and osteoinductive. ReadiGraft BLX Putty is moldable, allowing it to conform to the surgical site, and resists migration under irrigation. If desired, ReadiGraft BLX Putty can be combined with Bone Marrow Aspirate (BMA), which will provide an osteogenic component.

3. The Case

The following case involves a 34-year-old patient with a femoral diaphysis malunion repaired with ReadiGraft BLX Putty and cortical/cancellous bone chips (Lifenet Health, Virginia, USA).

4. Patient

34-year-old, male.

5. Diagnosis

Left femoral diaphysis malunion.

Figure 1: Malunion of the femoral diaphysis.

6. Treatment

Applied 10cc of ReadiGraft BLX Putty mixed with 30cc of cortical/cancellous (C/C) bone chips and intramedullary nail was placed.

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Figure 2: ReadiGraft BLX Putty and C/C bone chips with intramedullry.

7. Outcome

X-rays showed complete healing at 9 months post-operative with the application of ReadiGraft BLX Putty and C/C bone chips.

Figure 3: 7 months post-operative.

Figure 4: 9 months post-operative

8. References

1. UPMP Health Beat. Malunion vs. Nonunion Fractures 2019.
2. Buza JA 3rd, Einhorn T. Bone healing in 2016. Clin Cases Miner Bone Metab. 2016; 13:101-105.
3. Mendicino SS, Rockett A, Wilber MR. The use of bone grafts in the management of nonunions. J Foot Ankle Surg. 1996; 35:452-457.

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