Bone Morphogenetic Protein (Bmp) As An Adjunct Treatment For Tibia Nonunion With Large Bone Defect: A Case Report

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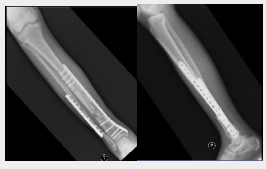
Introduction:

The treatment of infected nonunion for lower extremity long bone fracture varies. Treatment options include bone grafting, bone transport (Ilizarov technique), or implantation of various biomaterials. We report a case of infected tibia nonunion using bone morphogenetic protein (BMP) as an adjunct to artificial and autogenous bone graft.

Report:

A 19 years old gentleman sustained an open fracture of the right tibia (Gustillo-Anderson Type III) with exposed fracture ends of right tibia penetrating through an open wound. Plain radiographs showed comminuted fracture of right distal tibia and fibula (Fig.1). Emergency wound debridement and external fixation of the right lower limb was performed. Plating was performed for the right tibia and fibula after one month (Fig.2). However patient developed complications which were managed with antibiotics, leading to resolution of symptoms. After nine months of follow-up there were no signs of union and a decision was made for autogenous and artificial bone grafting, with BMP as an adjunct to treatment. Complete union was achieved clinically and radiographically after 6 months from the procedure (Fig.3).

Results:

Figure 1 Xray of right tibia/fibula	
Figure 2 Xray post plating of right tibia/fibula	
Figure 3 Xray post 6 months illiac bone graft, BMP and artifical bone graft	

Discussion:

The standard of care when there is a bone defect is the application of autologous bone graft (ABG)[1]. Although it may be considered a necessity, it may not be sufficient in terms of volume, increased donor site morbidity and risk of potential complications[1]. The addition of BMP, which plays a crucial role in organogenesis during embryonic development, also helps regulate important physiological processes of bone and cartilage tissue[2]. Usage of bone morphogenetic protein (BMP) as an adjunct to artificial and autogenous bone graft enhances the union process and increase bone histocompatibility,osteogenicity, osteoinductivity, and osteoconductivity.

Referrences:

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