

Three Years of use of a Tri-calcium Phosphate (β) Substitute in Bone and Joint Surgery

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INTRODUCTION: The bone grafting is a very common procedure in bone surgery and has a great place in the treatment of bone repair. The complication's rate of autologous removal, possible major infectious risk of allograft, directed us towards the use of synthetic substitute and its easier handling.

Three years ago, we made confidence with a tricalcium phosphate substitute; in the same time we started to use locking screw devices for osteosynthesis which allows bridging of the fractured site, and minimal invasive procedure, thus stressing the biological and vascular aspect of the osseous healing.

The purpose of this study is to share our experience using the substitute and, may be, to find, at the moment, what are exactly the indications, the choice of its physical form, the practical use, in preparing the use of the next products or process upstream in the bone formation.

METHODS: The field of indication was initially wide, as the same as for autologous graft that we did previously

- acute traumatology to fill the bone loss due to the fracture or after reduction,
- revision surgery in pseudarthrosis or for revision arthroplasty,
- arthrodesis of the spine,
- proximal tibial open osteotomy
- benign bone tumour or bone dystrophy

For most of the cases, we used the substitute alone, and in addition to bone bank, or autologous graft, for few of them, to reduce the cost and the volume of the removal.

We did 184 cases, and we can say that the substitute disappears and it is changed into normal bone; the time to be replaced depends on the site, the volume to fill, the vascular and mechanical conditions.

We always, except for the beginning of our serie, filled the substitute with the blood of the patient under negative pressure in a syringe.

We did not see any adverse effect due to the substitute.

DISCUSSION & CONCLUSIONS: If the autologous graft may be considered as the gold standard, the totally resorbable substitute as a tricalcium phosphate (β) is very useful and its handling is comfortable and safe. With using the locked screw devices the number of indications for grafting will decrease because the gain in stability is so good that the bone can heal by itself in some cases.

The injectible substitute is useful to; it increases the surface of contact between the substitute and the receiving bone so improving the exchanges; its handling has to respond to strong rules; its use for joint's fracture needs a clear intra articular control; we used it in several cases as a temporary spacer to stabilise the bone after reduction and before inserting the final device without any disturbing temporary device, as wires or clamp.

The totally resorbable substitute is specially indicated for benign bone tumour or dystrophy, without any disadvantage for the further X-rays control.

From few "border line" cases, we learned that the most important factors to succeed in these procedures are the characteristics of the receiving site.

We have to answer to some questions:

- What is the location of the defect and the volume to create?
- What is the vascular status?
- What are the mechanical conditions?
- What are the walls of the defect?
- What is the local capacity of bone regeneration?

At the end of these analysis, we think that we can define the need of a substitute and arguments for its choice.

REFERENCES: P.Eggl, et.al.*Clinical Orthopaedics*,1988, vol.232

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