


Limb salvage surgery in extreme situations of prosthetic complications (ex: infections with bone loss)



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Introduction

The treatment of periprosthetic hip and knee infection associated with loss of bone substance, as well as the treatment of the infection of large structural allografts used in tumoral reconstructive surgery, are a major challenge to the orthopaedic surgeon. Indeed, these are chronic conditions which are submitted to multiple surgeries and prolonged antibiotic therapy in socially and professionally vulnerable patients. Many of these cases receive proposals for limb amputation/disarticulation or extraction of the prosthesis without structural reconstruction aggravating, even more, their suffering and functional disability. The aim of this study is to show the results of a treatment of complex hip and knee periprosthetic infections and of a structural allograft, in the context of limb salvage surgery.

Material and Methods

9 patients were treated, minimum age of 22 years and maximum of 77 years with multiple surgeries and from different national hospitals. Six of these patients had periprosthetic infection of the hip and knee (primary, revision and tumoral prostheses) and two of the patients showed an apparent allergic reaction to metal/iodine. The remaining case, an infection of a large femoral structural allograft, used in tumoral surgery. The main cause of the infection was the St. aureus multiresistant. One of the patients showed multimicrobial multiresistant flora. Treatment consisted in 2 different operative stages. First stage (7 to 9h of surgery): Extraction of the prosthesis or allograft; debridement and extensive excision of the periprosthetic infected and devitalized bone and soft tissue, a minimum thickness of 4 mm; pulsatile wash of the bleeding “surgical bed” with betadine / H2O2 and 6lt of saline; implantation of large methyl methacrylate with gentamicin spacer. Triple intravenous antibiotic therapy was made for 8 to 9 weeks, with rigorous analytical control, and some of the patients were able to walk with the support of axillary support crutches. The second surgical stage (5 to 7h of surgery) takes place after normal levels of C-Reactive Protein: spacer excision with prosthetic joint reconstruction in 8 cases and in one case a silver coated knee arthrodesis prosthetic implant (bactericidal effect). So, 3 silver coated total femoral prostheses and 5 silver coated total hip prostheses, with the reconstruction of the proximal half of the femur, were applied. The interventions took place between July 2014 and April 2016.

Results

Patients were discharged after being able to walk with the help of crutches and kept taking oral antibiotics until the normalization of CRP in 3 consecutive analytical assessments spaced by 15 days. After a clinical/ analytical evaluation, all patients showed a normal CRP, without pain and without signs of infection and/or active fistulas. Currently 5 patients walk without external support. The oldest case has 34 months of follow-up and all have a minimum follow-up of 13 months, average of 23,5 months.

Examples of 2 Clinical Cases:

Patient A . 77y. Pre-op X-Rays



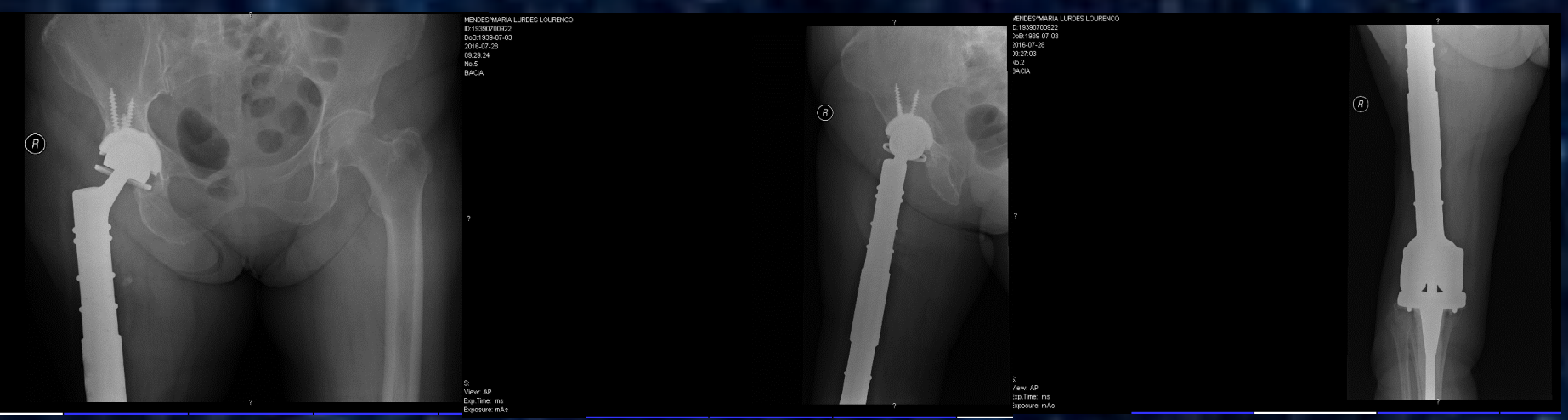
Patient A. 77y. X-Ray after 1st surgery



Patient A. 77y. 2nd surgery



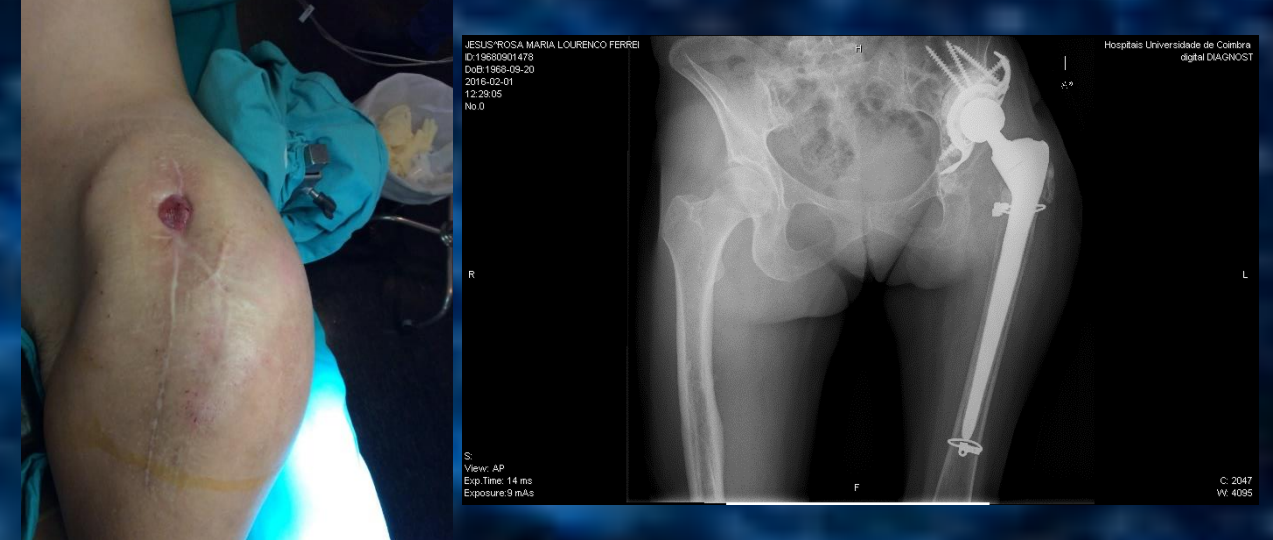
Patient A. 77y. X-Rays after 2nd surgery



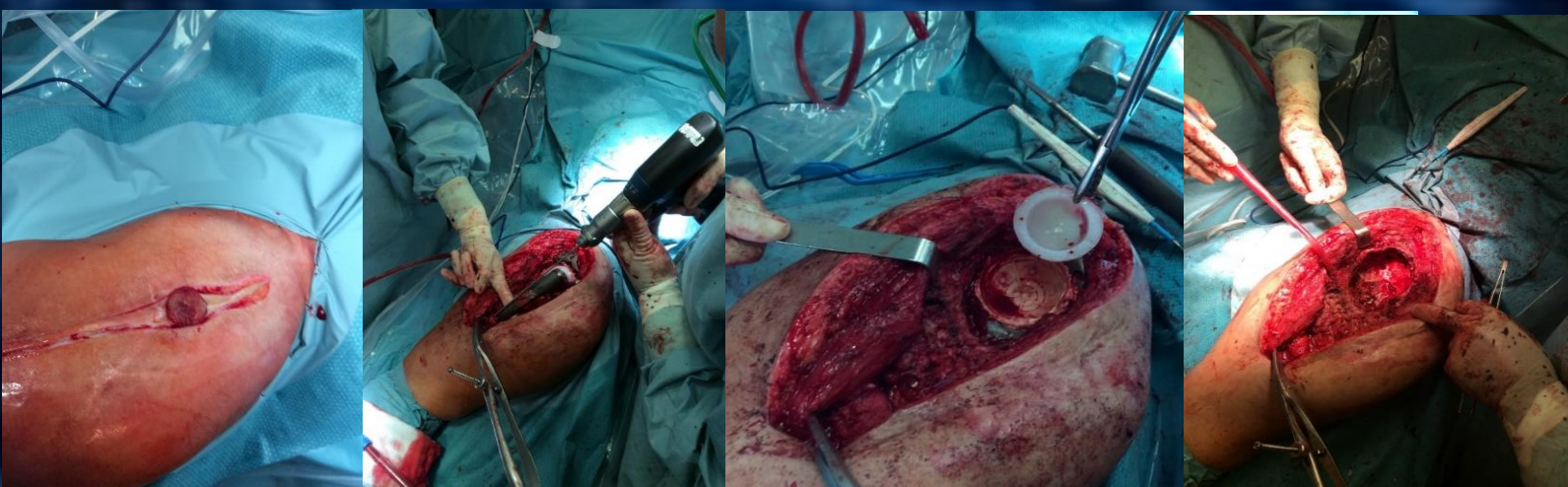
Important surgical steps:



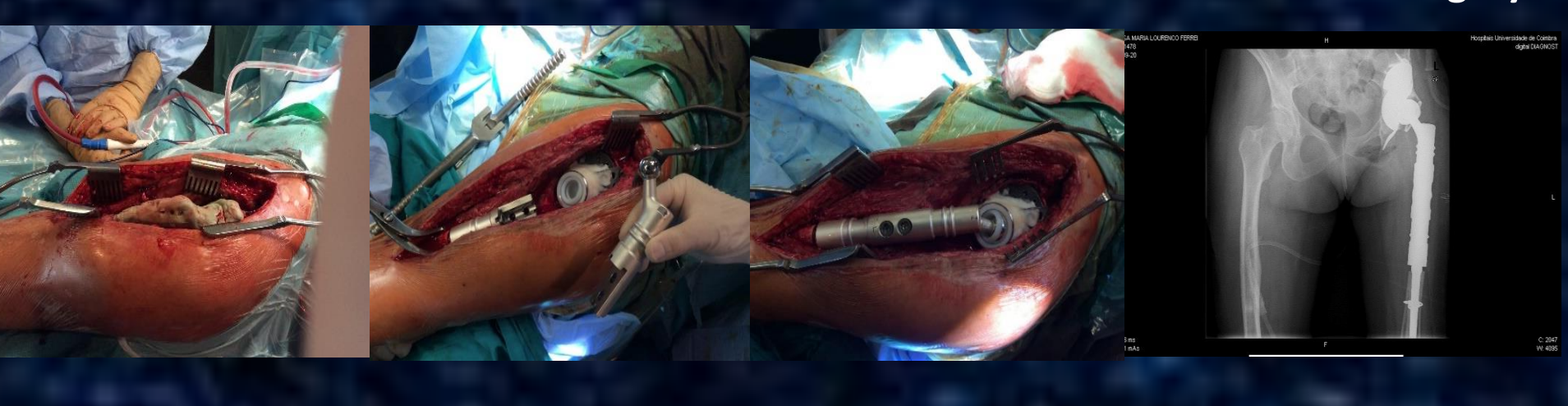
Patient B. 48 y. Pre-op



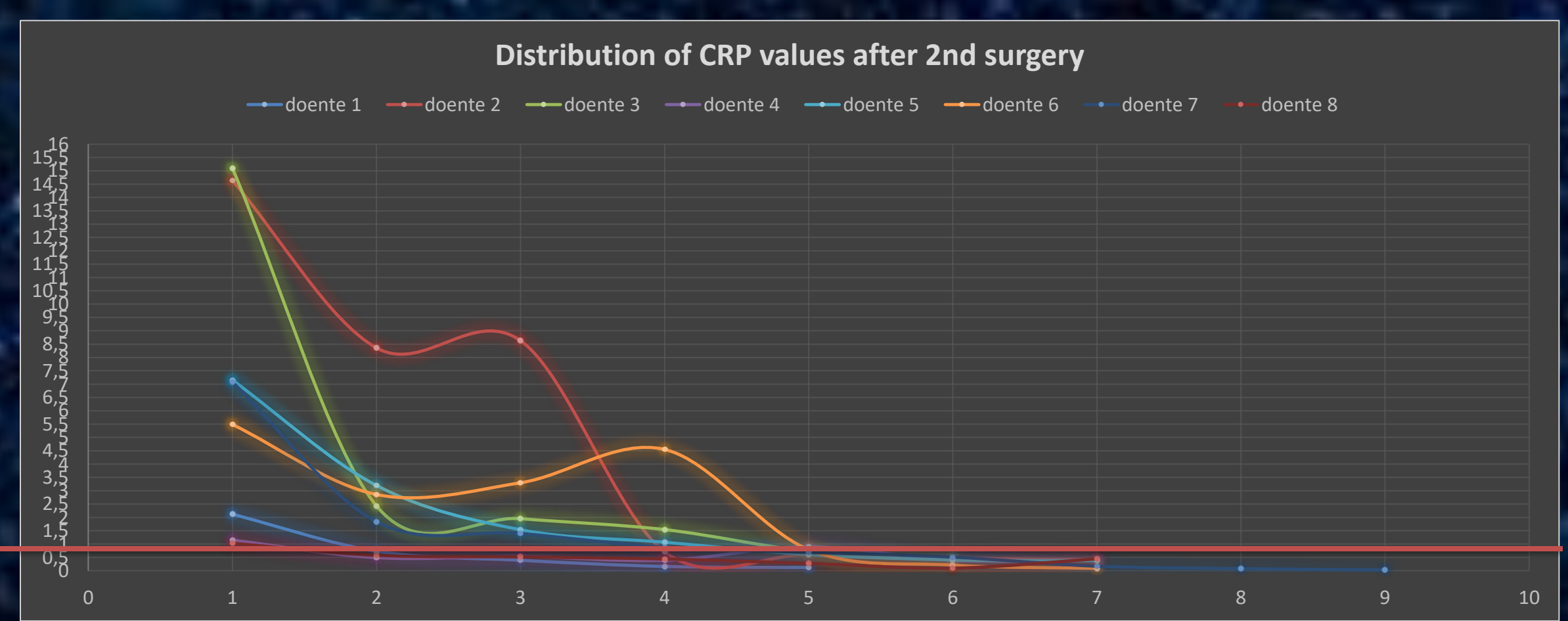
Patient B. 1st surgery



Patient B. 2nd surgery



Horrendoplasties



After some time all patients come to have CRP below 0,5 which means that they all stop having analytical signs of infection.

Discussion

Chronic relapsing, multidrug-resistant, periprosthetic infection (with or without bone loss) should be treated aggressively in a combination of surgical techniques of prosthetic revision and tumoral surgery, first through an extended debridement of devitalized tissue and the extraction of the prosthesis with the appropriate antibiotic therapy; second, with the reconstruction of the bone loss with silver coated modular prostheses, using the silver bactericidal properties, which are indicated in order to prevent the mutilating surgery and to provide the restoration, as much as possible, of the functional capacity.

Conclusion

The results obtained have been very satisfactory, although the follow-up time is insufficient to draw definitive conclusions about the infectious relapse. Such limb salvage surgery is indicated for the treatment of complex clinical situations as an alternative to the disarticulation / limb amputation, i.e. supports the hope of clinical cure in surgical situations that many surgeons designate by horrendoplasties.

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