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Modular prosthesis with a silver porous surface modification for periarticular reconstruction of the lower limb

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Background:

Infection in orthopedic surgery is a dreadful complication. Patients are often subjected to several surgeries with prolonged antibiotic treatment, and the risk of persistent infection and poor functional outcome is high. In most of cases, a residual massive bone defect is present, due to extensive debridement to remove necrotic or infected bone. The antimicrobial activity of silver ions has been known since ancient times (silver cups and cisterns for drinking water) and in recent years has been applied in everyday life (toothbrushes, underwear) as well as in medicine (wound dressings).

Methods:

Recently, an evolution of modular prosthesis MegasystemC® (Waldemar Link®, Hamburg, Germany) with a silver porous surface modification (PorAg) was developed. At our Institution, from 2010, 16 prostheses were implanted in 15 patients with a history of septic arthroplasty (7 cases, 3 hip and 4 knees) or septic meta-epiphyseal post-traumatic deformity or nonunion (6 cases, 2 proximal and 4 distal femur), and as primary reconstruction in 3 oncologic patients. There were 9 males and 6 females with a mean age of 54 years (30-75). One patient underwent only 1 surgery before resection and modular silver-coating prosthesis, while in all other revision cases the number of previous surgeries ranged from 3 to 8. In 12 cases the reconstruction was performed with a mobile joint prosthesis (6 proximal femur and 4 distal femur) and in 4 cases with a knee arthrodesis prosthesis.

Results:

Monitoring of inflammatory markers (ESR, C-reactive protein, fibrinogen) showed resolution of the infection in all previously infected cases. At a mean follow up of 13 months (1-27), 2 dislocations of proximal femur prosthesis occurred, treated with closed reduction in 1 case and open revision and new silver coated implant in 1 case. Functional results following MSTS evaluation system showed an average score of 60% (43%-90%).

Conclusion:

In conclusion, the preliminary results of MegasystemC PorAg are encouraging, although a larger series of patients with longer follow up is needed. Our experience suggests that modular prostheses with silver porous surface modification may be indicated in periarticular bone loss in septic failures and as primary oncologic reconstruction in selected patients.

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