

Silver coating of prosthesis is one of the methods studied so far. A number of retrospective studies have reported a decrease in the infection rate following use of silver-coated endoprosthesis. However, evidence from prospective and randomized trials is lacking [1]. See Table 1.

The Kanazawa group developed an iodine coating and published their results for the first time in 2012. In their study, 222 patients received iodine-coated implants of which 64 had active infection [2]. Their results suggest an even greater efficacy in prevention of infection as compared to silver coating interval and even eradication of infection in cases with active infection. Subsequent reporting by the same group in 2014 has also shown

greater efficacy of iodine-treated implants in patients with trauma, bone loss due to infections and tumor resection as well as revision setting with previously infected implants [3].

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Authors: Mitchell Schwaber, Yaakov Dickstein, Elizabeth Temkin

QUESTION 8: What is the most optimal local antimicrobial delivery strategy during limb salvage: antibiotic cement, silver-coated implant, iodine-coated implant, topical vancomycin powder, injection of antibiotics via drain tubing or other?

RECOMMENDATION: Unknown. No direct comparison has been made of different antimicrobial delivery strategies in oncological patients undergoing limb salvage procedures.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 100%, Disagree: 0%, Abstain: 0% (Unanimous, Strongest Consensus)

RATIONALE

Surgical excision of primary malignant tumors and metastases of the bone frequently leads to large skeletal defects. While once amputation was typically the only solution, the introduction of megaprotheses and later modular megaprotheses has led to limb salvage becoming the standard of care [1]. Despite falling rates of mechanical failure, the risk of periprosthetic infection remains high in comparison with conventional arthroplasty [2]. Treatment of periprosthetic infections often requires surgical intervention and prolonged antibiotic therapy [3]. Ongoing efforts directed at finding an effective means of infection prophylaxis have been examined exclusively in small observational studies without direct comparison between methods, thus limiting their conclusions.

Published studies appear to support the use of silver-coated implants. Data exist for limb salvage in sites including the hip, proximal and distal femur, pelvis, proximal and distal tibia, humerus and radius [4-10]. Six cohort studies, all but one retrospective, compared oncological patients who received silver-coated implants with non-coated (mostly titanium) implants [4-8,10]. The results across the studies were uniform with fewer patients who received silver-coated implants developing periprosthetic infections than the patients who received non-coated prostheses.

Weak evidence from a single retrospective cohort study indicates that alloy-type megaprosthesis may influence the risk of subsequent infection [11]. Significantly more patients who received a cobalt-chrome prosthesis developed infection than patients who received titanium prostheses.

Very weak evidence exists suggesting that iodine-coated megaprotheses may reduce risk of periprosthetic infection [12]. Similarly, there are limited data supporting the use of iodine-coated hardware in patients undergoing reconstruction [13].

Despite the body of evidence on antibiotic-impregnated cement in arthroplasty, only one case series examined its effects specifically in orthopaedic oncology patients who underwent total knee prostheses [14].

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