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Geert H.I.M. Walenkamp, editor. Local antibiotics in arthroplasty. State of the art from an interdisciplinary point of view. New York: Thieme; 2007. 170 pages; ISBN-13: 978-1588906076; price: € 127.95.

Field of medicine: Bone and joint surgery.
Audience: Orthopedic surgeons, traumatologists, microbiologists, infectologists.
Purpose: This book presents in a clear and comprehensive way the place of local antibiotics in arthroplasty. It also discusses successes, limitations, and further developments in polymethylmethacrylate bone cement as a local carrier of active substances, as well as the aspects of the prophylactic and therapeutic treatment of infections in endosurgery.
Content: The 17 chapters of the book offers reviews on all important aspects of antibiotic loaded bone cement.

The first chapter presents infection as a serious complication following joint replacement surgery. A prosthesis-related infection is difficult to treat, due to many factors, such as the immunoincompetent zone around prosthesis, reduced sensitivity of bacteria growing in the biofilm, and relatively poor availability of antibiotics from the bloodstream at the site of infection. Several options for the treatment of infected joint replacements have been established, depending on multiple factors (type of infection, isolated pathogen, fixation of device, quality of the bone stock, and experience of the orthopedic surgeon). For successful reimplantation, high local concentrations of antibiotic are needed to cure the infection.

A variety of methods for antimicrobial coating of endoprosthesis are discussed in the third chapter. Postoperative osteitis is mainly caused by gram positive germs (*Staphylococcus aureus*, *Staphylococcus epidermidis*). These germs are a part of the natural skin flora of humans and occur ubiquitously. Of all postoperative infections, 50-80% is associated with microbial contamination. After the microbial colonization of the implant, the germs can hardly be destroyed by the natural immune system or systemically administered antibiotics due to formation of a biofilm.

The fourth chapter gives an insight into different bone cements on the market. Users should be careful when selecting the type of bone cement; the best results are obtained with normal-temperature and medium- and high-viscosity cements.

The fifth chapter describes the use of antibiotic-impregnated cancellous bone as an alternative or a supplement to the use of antibiotic-containing bone cement in the revisions of aseptic and septic loosened prostheses.

The seventh chapter discusses local application of antibiotics in the therapy of bone infection. Antibiotic-loaded acrylic cement (ALAC) may be used for both prophylaxis and therapy. When bone cement is used for the fixation of permanently indwelling devices, it substitutes the surface of artificial joint replacements and protects the sur-

face from being colonized by bacteria originating from the human flora or, in the case of infection, the remaining bacteria in the operation field. ALAC may also be used as a carrier for antibiotics in cavity management after the debridement of infected bone tissue. In periprosthetic infection, ALAC is of benefit in one- or multiple-staged revision arthroplasty.

The ninth chapter describes major bacterial pathogens involved in infected arthroplasties, such as staphylococci that are now frequently resistant to gentamicin. Vancomycin is effective against nearly all staphylococci and the addition to bone cement seems to be reliable and effective.

In the United Kingdom (chapter 11), two stage exchange, with the use of antibiotic-loaded acrylic bone cement spacers, a period of systemic antibiotics, and a relatively long interval period before reimplantation of a new joint, is a common strategy for the management of suspected/confirmed joint replacement infection. Single-stage exchange is advocated by some experts in specialist centers, but there should be favorable conditions.

Italian, Dutch, and Greek experience suggests (chapters 12, 13, 14) two stage reimplantation using an interval spacer of antibiotic-impregnated bone cement as a method to eradicate infection and prevent limb shortening.

According to the Norwegian and Swedish (chapter 15) arthroplasty registers, the best revision results for infected total hip arthroplasty are also achieved with two-stage procedures, followed by one-stage reimplantation and partial revision.

The last chapter describes Girdelstone resection arthroplasty as a frequent procedure in the management of infected hip replacements.

Highlights: The book offers an excellent insight into the practices of treatment of infected endoprostheses in most of the European countries. The primary goal when treating an infected arthroplasty is to relieve pain, eradicate the infection, and to restore a functional extremity. The different treatment options include: one-stage reimplantation, two-stage reimplantation, resection arthroplasty, soft tissue debridement with retention of the prosthesis, and chronic suppressive antibiotic treatment only.

Limitations: Concerns surrounding the increased use of antibiotics and increased resistance of bacteria to the antibiotics should be borne in mind.

Commentary: Infection is a serious complication following joint replacement surgery. Over the past decades it has been attempted to prevent and cure joint replacement infections by incorporating antibiotics in polymethylmethacrylate bone cements, both in primary and revision surgery.

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