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Since the introduction of the inflatable penile implant in 1973, the only device advancements to reduce infection have been the addition of an antibiotic coating in 2001 and a hydrophilic coating in 2002.[1-3] These coatings elute antibiotics into the surgical space for 48 hours; however, any remaining, viable biofilm-forming bacteria are then able to colonize the implant. These coatings have helped to decrease, but not eliminate, the risk for clinical infection and device malfunction. Therefore, it was our goal in this review to provide all potential avenues to decrease infection based on the vast experience of orthopaedic surgery.

Integrating antibiotic coatings for orthopaedic joint prostheses is perhaps a greater technical challenge than penile implants. Joint prostheses need to accommodate several different environments (soft tissue, bone, and synovial fluid) while also meeting mechanical/surface requirements (weight bearing, fixation, insertion, osseointegration, and durability). Joint prostheses may also be comprised of several materials (stainless steel, titanium, chrome, cobalt, or polyethylene) and interchangeable parts. Combined with abrasive mechanical insertion and possible use of cements, it is understandable how an antibiotic coating for joint prostheses is no trivial task.

For both specialties, it is vital that novel methods are developed to mitigate the damaging physical and psychosocial consequences of implant infection. Several general approaches exist to reduce infection including application of pharmacologically active agents (i.e. antibiotics, antiseptics, or other organic/inorganic substances), surface chemistry or structure modifications, and perioperative antibacterial local carriers that applied during surgery and not directly part of the device. Due to the significant effort required to obtain Federal Drug and Administration approval for new drug/device combinations in penile implants, the latter approaches may be the most ideal pathways for new development.

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