Reducing the Risk of Orthopedic Infections: The Role of Innovative Suture Technology

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Surgical Procedure NEBH Infections Cases NEBH Rate NNIS Rate* P Value

Knee Prosthesis: 1 1747 0.63 7 (64%) 0.40

Knee Prosthesis: 2+3 3 178 1.7 2.26 NS

Knee Prosthesis: 2+3 2 203 1.0 2.26 NS

Hip Prosthesis: 1 2 762 0.3 1.65 0.011*

Hip Prosthesis: 0 0 685 0.0 0.00 0.00

Hip Prosthesis: 1 2 782 0.3 1.65 0.011*

Hip Prosthesis: 2 0 153 0.0 0.00 0.00

Hip Prosthesis: 2 0 153 0.0 0.00 0.00

Hip Prosthesis: 1 2 782 0.3 1.65 0.011*

Anesthesia Cart

Computer Desk

Bovie Cart

Type of Joint #SSI # Procedures Rate %Staph aureus SSI Rate *62% reduction in Staphylococcus aureus in treated group

Pre-trial 15 3413 0.26 0.44 0.74

Total 12 3678 0.33 4 (33%) 0.11*

Discussion

The Centers for Disease Control and Prevention (CDC) define SSIs as those occurring within 30 days of skin incision and within 1 year of a non-human derived implant being placed surgically. Clearly evaluate a surgical technique, antimicrobial prophylaxis, skin preparation, and a competent infection control program are mainstays for preventing surgical site infections. In addition, other adjunctive strategies such as iodophor-impregnated incise drapes, appropriate hair removal techniques, ventilated surgical suits, laminar air flow, limited access to the operating room during procedures have been reported in the literature to be important strategies to reduce the risk of surgical site infections. Emerging technologies aiming at reducing postoperative SSIs have included gycogenic coatings, nontoxic coating, combinatorial bandage technology, antibiotic impregnated, antibiotic cement spaces, antibiotic wound dressings, hypothermia, biologically imprinted impaired devices. The specific risk factors for wound healing are designed to augment the host wound defense process or to diminish wound bed factors, including an emergent intervention for wound healing.

It has been long assumed that the implanted suture material can serve as a reservoir for bacterial colonization by virtue of being a foreign body, hence the infection rate monitored development of a surgical wound bed contamination, permitting an emergent intervention for wound healing.

Methods: In order to evaluate the efficacy of impregnated suture technology to reduce the risk of surgical site infections.

Results: During the suture evaluation period, 12 patients of 3678 total joint procedures were closed using a triclosan-coated polyglactin 910 suture material. Because of implantation of a biomedical device, active surveillance extended a full 12 months post-device implantation. The surgical infection rate observed during this follow-up period is 0.20%. No significant difference was documented. A total of 6 fewer Staphylococcus aureus infections in the triclosan-coated suture group (September 2005 - August 2006) compared to the historical control (N = 10).

References

1. Edmiston CE. Seabrook GR. Goheen MP. Krepel CJ. Johnson CP. Lewis BD. Brown KR. Towne JB. Surgical site infection rates and a 62% reduction in total joint infections involving Staphylococcus aureus. Emerging technologies are the key to improving clinical outcomes in the surgical patient population.


6. Edmiston CE. Seabrook GR. Goheen MP. Krepel CJ. Johnson CP. Lewis BD. Brown KR. Towne JB. Surgical site infection rates and a 62% reduction in total joint infections involving Staphylococcus aureus. Emerging technologies are the key to improving clinical outcomes in the surgical patient population.


