Bacterial Contamination Of Diathermy Tips Used During Orthopaedic Procedures

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Introduction: The role of diathermy in orthopaedic surgical practice has increased since its introduction. It is widely used for underlying tissue dissection, cutting, and haemostasis. Previous studies have compared electrosurgical and scalpel incisions in terms of wound infection, wound-related pain, and blood loss. There are well documented hazards associated with diathermy use including burns injury, electrocution, hypoxic stress, inhalation of diathermy plume, and gene mutation. No single study to date has focused on the potential for diathermy tips to cause wound contamination and infection. We sought to identify whether diathermy tips could be possible sources of infection in orthopaedic procedures.

Methods: To determine the prevalence of bacterial contamination of diathermy tips during orthopaedic surgery and to assess any correlation with surgical site infections.

From July 2013 to September 2013, the diathermy tips from 86 consecutive orthopaedic procedures using diathermy were cultured using direct and enriched media. None of the diathermy tips were used for the skin incision. All patients underwent an orthopaedic procedure for a non-infected condition. For each procedure an unused control diathermy tip was placed on the instrument table at the beginning of the procedure and processed similarly. All patients were followed for any postoperative complications.

Results: 108 diathermy tips from 86 orthopaedic procedures were cultured. None of the tips cultured directly on blood agar demonstrated bacterial growth. Following enrichment culture, 6 (5.6%) of the procedure diathermy tips and 1 (0.92%) of the control tips demonstrated bacterial growth. Coagulase-negative staphylococci (83.3%) and propionibacterium (16.7%) were cultured from the tips. 1 of the patients who had bacterial growth from the diathermy tip developed a superficial surgical site infection.

Discussion: Surgical site infections contribute substantially to orthopaedic surgical morbidity and mortality each year. The prevention of these infections encompasses careful operative technique, preoperative antibiotics, and a number of important measures to minimize the risk of bacterial contamination posed by operative staff, the operating theatre environment, and the patient’s endogenous skin flora. Identifying potential bacterial sources is an important component of surgery. The two bacteria cultured in our study (coagulase-negative staphylococci and propionibacterium) are both well known major culprits in orthopaedic infections, responsible for up to 70% of early and late peri-prosthetic infections. Our study suggests diathermy tips and the tissue coagulated by its use may not be as sterile as previously thought.

Significance: There may be benefit in changing the diathermy tips during orthopaedic procedures as they may represent a possible source of bacterial contamination.

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