Abstract:

Background: Surgical site infection (SSI) largely implicates the patient’s endogenous skin microbiota. Perioperative disinfection protocols do not follow a general agreement.

Aim: To compare antisepsis and skin protection protocols on quantitative analysis of recolonization in the operating room at regular time-steps. The study hypothesis was that one protocol would be more effective than others.

Methods: A single-centre prospective interventional study was conducted between January and June 2019. Healthy volunteers were randomized between protocols and served as their own controls. The protocols began ahead of scheduled orthopaedic surgery with a preoperative shower, mechanical cleansing, application of major antiseptics (alcoholic Bétadine™ 5% or alcoholic chlorhexidine 0.5%), sterile draping, then adhesive draping (3M™ Steri-Drape™ or iodine-impregnated 3M™ Ioban2™). Sampling was by swabbing in the operating room at 30 min intervals up to 90 min after draping. Cultures were performed under aerobic and anaerobic conditions. Qualitative and quantitative (cfu/mL) bacteriology was performed in the laboratory by direct reading on the blood agar plates.

Findings: Thirty subjects were included; none was lost to follow-up or excluded from analysis. Bacterial load before manipulation (T0) was significantly higher in males (P < 0.0001) despite a significantly shorter shower-to-sampling interval (P = 0.03). Smoking (P = 0.85), body mass index (P = 0.38), and depilation (P = 0.50) did not significantly affect preoperative load. Mean load increased significantly under all protocols up to T90 min, without significant superiority for any one protocol. Associated Bétadine™/Ioban™ showed the lowest T90 load, and chlorhexidine alone the highest, but without significant difference. Isolates at T0 were predominantly healthy skin commensals: coagulase-negative staphylococci, micrococci, and coryneforms.

Conclusion: No one protocol demonstrated superiority, whether in immediate bactericidal action or in preventing skin recolonization in the operating room. Further studies are needed to define generally agreed protocols for SSI risk management.

Reference: