Efficacy of surgical preparation solutions in foot and ankle surgery.

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BACKGROUND: Previous studies have demonstrated higher infection rates following orthopaedic procedures on the foot and ankle as compared with procedures involving other areas of the body. Previous studies also have documented the difficulty of eliminating bacteria from the forefoot prior to surgery. The purpose of the present study was to evaluate the efficacy of three different surgical skin-preparation solutions in eliminating potential bacterial pathogens from the foot. METHODS: A prospective study was undertaken to evaluate 125 consecutive patients undergoing surgery of the foot and ankle. Each lower extremity was prepared with one of three randomly selected solutions: DuraPrep (0.7% iodine and 74% isopropyl alcohol), Techni-Care (3.0% chloroxylenol), or ChloraPrep (2% chlorhexidine gluconate and 70% isopropyl alcohol). After preparation, quantitative culture specimens were obtained from three locations: the hallux nailfold (the hallux site), the web spaces between the second and third and between the fourth and fifth digits (the toe site), and the anterior part of the tibia (the control site). RESULTS: In the Techni-Care group, bacteria grew on culture of specimens obtained from 95% of the hallux sites, 98% of the toe sites, and 35% of the control sites. In the DuraPrep group, bacteria grew on culture of specimens obtained from 65% of the hallux sites, 45% of the toe sites, and 23% of the control sites. In the ChloraPrep group, bacteria grew on culture of specimens from 30% of the hallux sites, 23% of the toe sites, and 10% of the control sites. ChloraPrep was the most effective agent for eliminating bacteria from the halluces and the toes (p < 0.0001). CONCLUSIONS: The use of effective preoperative preparation solution is an important step in limiting surgical wound contamination and preventing infection, particularly in foot and ankle surgery. Of the three solutions tested in the present study, the combination of chlorhexidine and alcohol (ChloraPrep) was most effective for eliminating bacteria from the forefoot prior to surgery.