

What Happens When Autogenous Bone Drops out of the Sterile Field During Orthopaedic Trauma Surgery

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There are no published guidelines for the decontamination of native, living, autogenous bone if it is inadvertently dropped off the sterile field (eg, dropped on the floor) during surgery. We set out to determine how often autogenous bone is dropped on the floor during orthopaedic trauma surgery and to determine what decontamination protocols were used to in such circumstances. Study subjects were orthopaedic surgeons who routinely perform orthopaedic trauma surgery as part of their practice. An anonymous survey was sent to orthopaedic trauma surgeons. It was sent electronically to members of the Orthopaedic Trauma Association (OTA), and a paper copy was distributed at the 2004 AO North America Solutions for Fracture Fixation Problems Course. Prior approval was obtained from the OTA and AONA.

A total of 104 orthopaedic trauma surgeons participated in the survey (73 of 333 active members of the OTA and 31 of 70 surgeons in attendance at the AONA course). The mean age of respondents was 46 years, the mean number of years in practice was 13.5 (range, 0 to 35 years), and the mean number of surgeries performed per week was 10 (range, 4 to 40). Forty surgeons (38%) reported that they had at least 1 case where autogenous bone was dropped out of the sterile field during surgery. Of the 40 surgeons with at least 1 case of dropped autogenous bone during surgery, decontamination of the bone was done with 1 or more of the following methods: irrigation with low-pressure lavage (90%), soak in bacitracin solution (70%), soak in povidone-iodine solution (65%), autoclave (18%), soak in hydrogen peroxide (10%), or other, unspecified methods (68%). Twenty-one respondents (20%) reported that they prolonged the course of perioperative antibiotics if bone was dropped out of the sterile field. None of the respondents reported that dropping bone out of the sterile field definitively resulted in a surgical site infection.

Our study demonstrates that approximately 1 in 3 orthopaedic trauma surgeons have experienced at least 1 instance when autogenous bone was dropped out of the sterile field during surgery. However, relative to the average number of surgeries performed per year by these surgeons, the estimated frequency of such an event over the years of a surgeon's practice is low. Our survey suggests that multiple methods are used for decontamination in such instances, possibly reflecting the variable decontamination procedures noted in the literature¹⁻⁴ and a lack of consensus guidelines. In addition, the true likelihood of subsequent infection is unclear, especially because none of 50 dropped bone grafts reported in 1 study had bacterial contamination.⁵ Further research is needed to determine the clinical significance of these events and how best to prevent them. The FDA has published guidelines regarding proper procurement and storage of human tissue, including bone allografts, to limit microbial contamination.⁶ Guidelines that address the need for and procedures used to decontaminate autogenous bone after exposure to a nonsterile, intraoperative environment would be helpful in mitigating any additional risk posed to surgical patients.

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