What Do I Do when Bone Hits the Ground?

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While performing a distal first metatarsal bunion correction, care is always taken to stabilize the capital fragment during relocation and until fixation is completed. The underlying concern is that one false move could cause the capital fragment to end up on the floor. There are articles relating what surgeons have done when this has happened, but there is no evidence-based literature relating to guidelines or policy for decontaminating dropped bone. This case study relates what happened to me after saying, “Can you pick that up for me please?” (J Am Podiatr Med Assoc 101(2): 190-191, 2011)

A 70-year-old patient was taken to the operating room for an Austin bunionectomy. The patient was given 1 g of cefazolin sodium (Ancef; GlaxoSmithKline, Research Triangle Park, North Carolina) 30 min before the procedure, and a tourniquet was also used. Incision and soft-tissue dissection was completed uneventfully. After performing the fibular sesamoidectomy, attention was then directed to the first metatarsal head, where the typical 60° chevron osteotomy cuts were made. While manipulating the capital fragment and transposing it laterally, it came out and fell to the operating room floor. The fragment was immediately picked up and placed in a sterile bowl of normal saline containing 1 g of cefazolin sodium (Ancef). After 10 min of soaking, it was rinsed multiple times with normal saline and placed back in the foot. The procedure continued without complications, and stable fixation with a 0.062 Kirschner wire was used. Full disclosure of the event was made to the patient postoperatively. After surgery, the patient was dispensed amoxicillin-clavulanate (Augmentin; GlaxoSmithKline), 875 mg twice daily, for 10 days owing to the break in sterility. The patient had an unremarkable postoperative course, with no incision dehiscence or signs of infection. Three months after the event, serial films showed that the osteotomy site is now completely healed, with no signs of infection or avascular necrosis ever noted.

A similar incident was published in 1992 when, during an Austin bunionectomy, the capital fragment was dropped on the floor.1 The fragment was soaked in saline with bacitracin and Neosporin added. The patient was given three more doses of intravenous antibiotics. The patient went on to heal without complication.

Clinical Orthopedics and Related Research published a study2 in 1993 determining the amount of contamination present on bone that was dropped on the operating room floor. Fifty pieces of bone were dropped on the floor and then cultured, and 50 pieces were not dropped and were cultured as the control group. No positive cultures were obtained from either study group.

A Neurosurgery article3 in 2006 reported 14 instances where bone was dropped on the floor. The bone was decontaminated using a variety of methods and was replaced in 11 of the 14 incidences. No infections were reported in any of the 14 cases.

In a 2008 article published in the Journal of Orthopedic Trauma, 104 orthopedic trauma surgeons responded to a survey related to decontamination of native, living bone inadvertently dropped off the sterile field.4 The dropped tissue was decontaminated according to the surgeon’s preferred method of cleaning the tissues and was replaced in the patient. No specific protocol was used, and a variety of techniques were used. None of the respondents reported that dropping the bone out of the sterile field definitively resulted in a surgical site infection.

In the previously mentioned studies, there is no single standout method that is universally accepted for decontamination of bone that has been dropped on the floor. Cleaning methods used include, but are not limited to, irrigation with chlorhexidine solution, low-pressure lavage, soak in bacitracin solution, soak in povidone-iodine solution, soak in hydrogen peroxide, and autoclave.1-5 The use of postoperative oral antibiotics is also common in these cases.
It is a defining moment as a surgeon when you look down on the floor and what you are staring at is the bone that is supposed to be sterile. Current limited available literature highlights that the risk of infection is low in this setting and that the risk of postoperative infection is lowered even further when common sense decontamination methods are used. However, further evidence-based research is needed to determine standardized decontamination methods.

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**References**