

Scalpel Safety

Staying Safe While Working on the Cutting Edge

Marc Crandall had been a trauma surgeon for more than 10 years when he suffered a serious cut on his right hand during a fast-paced coronary procedure during which he was trying to save the life of a gravely injured 25-year-old gang member.

The doctor and his colleagues had known for years that scalpels are the second most frequent cause of injury, after needlesticks among operating room personnel.¹ But by the time Crandall had undergone the time-consuming and expensive work needed to repair the wound on his hand and allow it to heal, that medical error had cost him months of time and tens of thousands of dollars of income. On top of that was the gut-wrenching fear of suffering and possibly dying from infection by a bloodborne pathogen such as HIV/AIDS, hepatitis B virus, or the hepatitis C virus. Like so many of his colleagues, Dr. Crandall knew that the cost of even an uncomplicated injury could range from \$500 to

\$2,000—or if the injury required microsurgery, it might cost as much as \$100,000 plus up to three months of rehabilitation, along with the loss of his salary.²

Although Dr. Crandall is fictitious, the threat of injuries from scalpel blades and other sharps injuries was real enough to spur the Occupational Safety and Health Administration (OSHA) to issue in 1992 the Bloodborne Pathogens Standard (29 CFR 1910.1030)³ to protect workers from this risk. In 2001, in response to the Needlestick Safety and Prevention Act, OSHA revised the Bloodborne Pathogens Standard. The revised standard clarifies the need for employers to select safer needle and sharps devices and to involve employees in identifying and choosing these devices. The updated standard also requires employers to maintain a log of injuries from contaminated sharps.

The Centers for Disease Control and Prevention (CDC) estimates that each year 385,000 needlesticks and

other sharps-related injuries are sustained by hospital-based health care personnel—an average of 1,000 sharps injuries per day.⁴ Scalpel blade injuries account for 7% to 8% of those sharps injuries.⁵

“It’s very unfortunate that injuries such as these occur,” says Jerry Gervais, C.H.F.M., C.H.S.P., associate director, Standards Interpretation Group, The Joint Commission. “And it’s not just clinicians who are at risk. Potential victims include other health care workers such as maintenance, laundry, and housekeeping personnel who pick up trash. Needles and scalpel blades must be put in self-sealing containers where the door shuts behind them, then sent to an approved medical destruction site that’s regulated by the state and the federal Environmental Protection Agency so they can be disposed of properly.”

Why Is the Injury Rate So High?

One reason the rate of injuries from scalpel cuts is so high is the nature of scalpel blades themselves. While relatively small, scalpel blades are razor-sharp instruments designed and used to penetrate skin and other tissue during surgery. A scalpel blade is affixed to a handle that may be flat or round but is often slippery with blood and other body fluids. In case of an accident, the risk of injury and potential infection from bloodborne pathogens is very high. Scalpel blades are likely to penetrate the flesh of the surgeon or other personnel in the operating room more deeply than needlestick injuries and therefore can cause more serious harm.



Scalpel blade injuries are a concern for OR staff.



Safety technologies and products help minimize risk.

Safety Scalpels

Safety scalpels require users to retract the blade into the handle after use or to slide a cover over the blade and before passing the scalpel to another member of the surgical team. Some users contend that the term *safety scalpel* is a misnomer because no evidence exists that they're safer than traditional scalpels.

Many surgeons feel that safety scalpels compromise the care they give their patients. To them, these scalpels feel too light and/or too clumsy or don't accommodate their grip. According to others, the retractable shields and other safety mechanisms interfere with their view of the blade and make the devices a bad choice for a deep incision. Another objection is that a clinician has to deliberately activate the product's safety features to retract or shield the blade between use. Some surgeons are concerned that injuries could occur as these steps are taken.

Scalpel Safety

Michael Sinnott, M.D., is a senior emergency physician in the emergency department at Princess Alexandra Hospital in Brisbane, Australia. Sinnott coined the term *scalpel safety* (vs *safety scalpel*) to emphasize the choice of techniques to reduce the risk of staff injury from scalpel blades. The new technique—which involves using a

single-handed scalpel blade remover and hands-free passing technique (HFPT)—avoids potential patient safety concerns by allowing the surgeon to continue using a traditional reusable scalpel handle. In HFPT, staff members never pass the scalpel from hand to hand. Instead, the scrub nurse places the item on a passing tray or in a neutral zone. The surgeon then picks it up. The process is reversed for the surgeon to return the item to the scrub nurse. HFPT is not a new concept, and many surgical suites have now prohibited hand-to-hand passing of scalpels in favor of using passing trays in an effort to reduce injuries. This move is supported by OSHA, the Association of periOperative Registered Nurses (AORN), the American College of Surgeons (ACS),⁶ and the International Sharps Injury Prevention Society (ISIPS).⁷

Another option is combining a reusable traditional metal handle with a single-handed scalpel blade remover and HFPT. Another point of danger for operating room personnel is when a disposable blade is detached from the scalpel handle. Sinnott cites an OSHA interpretation⁸ which states that “in situations where an employer has demonstrated that the use of a scalpel with a reusable handle is required, that blade removal must be accomplished through the use of a mechanical device or a one-handed technique. The use of a single-handed scalpel blade remover meets these criteria.”

Sinnott advocates a method in which the scalpel blade remover is held in a single-handed fashion and the top half of the scalpel blade is placed into the remover. The handle is withdrawn, leaving the blade inside the remover cartridge. “While some removers call for the user to use two hands,” he says, “the best are those that are single-handed and give the user an audible signal as the blade drops into the remover cartridge.”

Joint Commission Standards

The Joint Commission standards that relate to scalpel safety include the following:

- EC.02.01.01, EP 3: The hospital takes action to identify, minimize, or eliminate safety risks in the physical environment.
- EC.02.02.01, EP 1: The hospital maintains a written, current inventory of hazardous materials and waste that it uses, stores, or generates. The only materials that need to be included on the inventory are those for which the handling, use, and storage are addressed by law and regulation.
- EC.04.01.01, EP 1: The hospital establishes processes for continually monitoring and internally reporting and investigating ... occupational illnesses and staff injuries.
- IC.02.01.01 EP 6: The hospital minimizes the risk of infection when storing and disposing of infectious waste.

OSHA Requirements

No matter which of these two types of strategies is selected—safety scalpels or scalpel safety—safety should be the primary consideration. In fact, OSHA requires that frontline workers participate in identifying, evaluating, and implementing which safety products best meet the needs of patients and staff.

Many surgeons and safety experts advocate HFPT, which ensures that the surgeon and the scrub nurse never touch the same instrument at the same time. The OSHA requirements for sharps injury prevention assert that preventing exposures requires a comprehensive program that includes engineering and work practice controls. Proper work practice controls include a

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no-hands procedure for handling contaminated sharps and eliminating hand-to-hand instrument passing in the surgical suite.

This does not mean that every instrument has to be passed using the hands-free technique, but instruments that are sharps hazards should be passed using the hands-free technique. This includes items such as hypodermic and suture needles and, of course, scalpels, which are transferred from one person to another via a passing tray.

“I believe that the traditional scalpel handle will remain the first choice of the

surgeon and that to ensure staff safety, a single-handed scalpel blade remover and hands-free passing technique will become the norm in all operating suites in the next five years,” says Sinnott. “When that happens, there will be a whole new era of safety for operating room personnel.” The mythical Dr. Crandall might well agree. 

References

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