Technical Tip: New Tools for Protection from Sharps Injuries

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Abstract Sharps injuries are an area of concern for healthcare workers. This article discusses clinical use of a blunt suture needle and an absorbable skin staple in upper limb operations. These devices may reduce the need for sharp needles in the surgical field during selected procedures on the upper limb.

Keywords Needlestick injuries · Infectious diseases

Sharps injuries are a source of concern to healthcare workers. In the preantibiotic era, physicians died from skin wounds contracted in the operating and autopsy rooms [1]. In present times, viral agents such as human immunodeficiency virus (HIV) and hepatitis B and C are feared in association with sharps injuries. Transmission rates after percutaneous exposure can range from 30% for hepatitis B to 1.8% for hepatitis C to 0.3% for HIV [2]. Sharps injuries also cost money to evaluate, and these injuries can take an emotional toll on affected healthcare workers. After personally experiencing sharps injuries in the operating room, I looked for any way possible to reduce the overall need for sharp needles during procedures.

I have been using Ethicon's (Ethicon, Somerville, NJ, USA) CTB-1 needle for 0 and 1 vicryl (polyglactin) since about 2003 (Fig. 1). In over a thousand cases since then, no one on my surgical team has been injured by one of these needles. I had suffered several sticks prior to that with

conventional needles during wound closure. This is especially a concern at the end of lengthy cases.

The Insorb (Incisive Surgical, Plymouth, MN, USA) bioabsorbable subcuticular stapler (polylactic–polyglycolic acid copolymer) (<http://www.insorb.com/why-theStaple.html>) has also been helpful (Fig. 2). This device will accomplish a subcuticular closure without the need for a suture and swaged-on needle. There are needles within the housing to place the staple, but it would be difficult indeed to injure oneself with this device as the needles are recessed

Figure 1 Vicryl suture on the CTB-1 needle.

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Figure 2 InSorb stapler.

deeply with the housing. This staple leaves a scar that is quite acceptable cosmetically for limb reconstruction.

In terms of disadvantages, both the stitch and staple materials can “spit.” This can be disconcerting to patients, but reassurance is all that is typically needed. I do not perform aesthetic cosmetic surgery, but I theorize extrusion of these stitches and/or staples may be of concern in an elective aesthetic surgical setting. Additionally, the InSorb staple does not obtain a particularly robust hold on the tissues, so use in severely swollen areas is not recommen-

Table 1 Costs associated with exposure testing.

Test	Hospital Cost
HIV rapid (source)	\$35.28
HIV1/HIV2 (employee only)	\$9.04
Hep B surface Ag (source and employee)	\$4.28
Hep B surface Ab (source and employee)	\$5.90
Hep C Ab (source and employee)	\$7.40

Table 2 Costs associated with the various wound-closure devices.

Item	Hospital Cost
InSorb absorbable stapler (#20 per item)	\$39.50
Skin staples, stainless, wide (#35 per item)	\$9.00
Skin staples, stainless, regular (#35 per item)	\$9.01
Suture 0—vicryl pop-off CT1 needle (sharp)	\$10.09
Suture 0—vicryl pop-off CTB-1 needle (blunt)	\$12.67
Suture 1—vicryl pop-off CT1 needle (sharp)	\$12.67
Suture 1—vicryl pop-off CT1 needle (sharp)	\$12.67
Suture 5-0 monocril	\$3.68

ded. Costs associated with exposure testing and for the various wound-closure devices are summarized in Tables 1 and 2. The InSorb has a higher initial cost, but I would argue that the cost is offset by a decreased need for exposure testing.

In summary, the use of the CTB-1 vicryl and inSorb combination for limb reconstruction has eliminated the need for certain sharps from the surgical field in my practice. Injuries from Kirschner wires, scalpel blades, and bone shards still occur, but the CTB-1 needle and inSorb can reduce the need for potentially hazardous sharp suture needles in limb wounds otherwise amenable to subcuticular closure.

References

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