Adhesives vs Sutures: Not a Sticky Issue

Tissue adhesives have been used as an alternative or an adjunct to sutures and staples for several decades. Tissue adhesives are even preferred in some cases in which tissue is sensitive to minor mechanical deformation. This study evaluated the use of radiochemically sterilized Tissumend II Sterile in repairing corneal defects and kidney lacerations in rabbits and lung lobe lacerations in cats and dogs. 

**Cornea:** Eight rabbits were anesthetized, and ulcers were surgically created. Ulcers were dried with a cellulose spear, and adhesive was applied to the ulcer bed. They were evaluated twice daily for the first 5 days and then at least once a day until the corneal adhesive was extruded or the animal was euthanized. The adhesive adhered well to the ulcers but poorly to the intact cornea. All animals appeared to revert to normal behavior 1 day after surgery. In most cases, the treated eye appeared normal at 1 week and became indistinguishable from the control eye at 2 weeks. Histologically, the treated and control rabbit corneas at 3 and 4 weeks had normal wound-healing patterns with a fully healed site at week 4. 

**Kidneys:** Kidneys were also evaluated in rabbits. Two separate 2-cm incisions were made in the left kidney. The edges of the tissue were reapproximated and closed using Tissumend II, Vicryl suture, or PDSII suture. Tissues were evaluated for histologic processing 1 to 3 weeks after the surgery. Incisions repaired with tissue adhesive appeared to elicit a tissue response similar to that of tissue repaired with Vicryl suture in the 2-week study and quality of wound edge approximation may have been higher. For the 3-week study, tissue reaction seemed virtually nonexistent in the PDSII and Tissumend II samples. 

**Lungs:** Lacerated lung tissue was apposed, and Tissumend II Sterile was applied at the wound edges. Bonding and setup time was 3 to 20 seconds for cats and 8 to 11 seconds for dogs. Animals were necropsied at days 7, 14, and 21. Some of the lung lobes adhered to the thoracic wall in both the dogs and cats at both the suture sites and the adhesive sites. The adhesive worked well on distal lung lobe lacerations. Postoperative leakage was minimal.

**COMMENTARY:** Tissumend II is a methoxypropyl cyanoacrylate adhesive that absorbs via hydrolysis. The availability of a sterile product increases its usefulness in surgery on internal organs. Tissue adhesives have advantages for some tissues, but the proper method of application needs to be followed.—*The Editors*