tor, depositing the sealant mixture into the fistula tract, bleeding point or whatever site you wish to seal. The adhesive or tensile strength of the glue is related to the fibrinogen concentration, whereas the rapidity of the coagulation and sealing property seem to be related to the thrombin content. Obviously there is a trade-off and the glue can be customized to the use intended.

Although fibrin glue has been primarily used to provide hemostasis in such areas as cardiothoracic and vascular surgery and liver and splenic trauma, the article abstracted above describes its successful use in the sutureless repair of four out of five rectovaginal fistulae. Autologous fibrinogen concentrate was prepared from the patient’s own blood, thereby avoiding the theoretical problem of viral transmission. Although the authors do not describe the size or precise location of the fistulae, they do say that unfavorable results were more common in short fistula tracts (less than 1 cm). Another series of 23 patients with a perineal sinus tract or fistula reported that the diameter of the tract varied from 4 to 9 mm with a length of 4 to 12 cm (Hjortrup et al., Dis Colon Rectum 1991;34:752). Most rectovaginal fistulae seen in obstetrics and gynecology are shorter than this, but over the years I have seen a few pinpoint fistulae that might be amenable to this approach. It is so simple, and it does not destroy the surrounding tissue or produce scarring so that subsequent conventional surgical repair is not jeopardized. It sounds as if it might be worth a try as a first step in some patients.—HWJ,III

Abdominal Wound Problems After Hysterectomy With Electrocautery Versus Scalpel Subcutaneous Incision

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A randomized clinical trial was designed to evaluate the relationship between postoperative abdominal incision infection or separation due to any cause, and dividing subcutaneous abdominal wall tissues with either a scalpel or electrocautery before elective abdominal hysterectomy.

Between July 1987 and November 1988, 380 women were enrolled in this clinical trial. The indications for surgery, similar in the two patient populations, were uterine leiomyoma, chronic pelvic pain or abnormal bleeding unresponsive to medical management, stress urinary incontinence, adnexal mass, and cervical intraepithelial neoplasia plus abnormal uterine bleeding. There was no significant correlation between the preoperative diagnosis and the development of a postoperative wound problem. Sixty-two per cent of the incisions were vertical, and the remainder were low transverse. The direction of abdominal wall incision was evenly distributed in women with each type of subcutaneous incision.

The clinical and surgical variables were similar in the two groups of women with the exception of race which was not significantly related to the development of a wound problem after surgery. There were no cases of fascial dehiscence. More women whose subcutaneous tissues were opened with cautery did develop wound problems, but this difference was not statistically significant (P = 0.4).

Diabetes and asthma were not risk factors for wound problems, and no women were receiving steroids. Pelvic infection was a risk factor. Twenty-eight women (7.4 per cent) developed a postoperative pelvic infection requiring parenteral antimicrobial therapy; 13 of these had scalpel and 15 had electrocautery subcutaneous entry (P = 0.7). The mean hospital stay for these 28 women was 8.7 days, signif-
icantly ($P < 0.001$) prolonged over the entire group, as would be expected. Hospital stay associated with any type of wound problem was similar ($P = 0.8$), and was 2 days longer than that observed for women with pelvic infection only ($P < 0.001$). Heavier women had deeper subcutaneous tissues, which increased significantly ($P = 0.04$) the likelihood of developing a postoperative wound problem. This applied to women with vertical and horizontal incisions. When evaluated by multiway analysis of variance, with subcutaneous depth as the dependent variable, increased age ($P = 0.01$) and Quetelet's index ($P = 0.0001$) were important, but the type of incision (horizontal or vertical) was not related ($P = 0.2$) to the development of a postoperative wound problem.

(It’s amazing how very little we know about some of the common techniques used in everyday practice. Although almost everyone has an opinion of the value or risk of using electrocautery in surgical wounds, there is relatively little hard data. In this study of 380 women undergoing elective hysterectomy there was no difference in wound problems between the scalpel and electrocautery incision groups. A similar study of 240 abdominal incisions from England also found no difference in either the wound infection rate or the time required to open the abdomen (3.4 minutes) (Br J Surg 1990;77:626).

The study abstracted above was a little "contaminated" because electrocautery could be used in the scalpel incision group to obtain hemostasis in the subcutaneous tissue. I have been involved in some cases where the hospital lights would dim because of the kilowatts being used by the surgeon, who zapped everything in sight. Coagulation results from thermal injury to the blood vessels and surrounding tissue, but this tissue damage may also result in necrosis, which can contribute to wound infection. The amount of thermal injury produced is directly related to the power used, the time the electrode is in contact with the tissue, the size of the electrode tip, and the waveform of the cautery current. Therefore, “cutting” or “blend” mode should be used when using the cautery as a scalpel to divide the subcutaneous tissue. Ideally, the “blend” mode available on most modern electrosurgical generators provides some minimal coagulation, which is often adequate to control small bleeders in the subcutaneous tissue without significant thermal injury. When using the coagulation currents, a small tissue bite should be grasped to minimize tissue necrosis.

Another concern that has recently been raised about electrocautery is the potential risk of the smoke to operating room personnel. Gatti et al. reported that electrocautery smoke and associated particles within the plume were mutagenic using standard bacterial tests for mutagenicity (Plast Reconstr Surg 1992;89:781). The significance of these findings is unclear, but similar concerns have been voiced about the laser plume, especially when HPV-associated lesions are being vaporized. At the present time it seems that, although DNA fragments are definitely present and detectable in the plume, the true infectivity and/or mutagenic potential in humans remains unknown. It is therefore probably reasonable to provide good smoke evacuation during the use of the cautery or laser so as to minimize exposure of the surgical team.—HWJ,III)