

suggesting that gastrectomy is a safe procedure with respect to these side effects.

Lehnert et al.⁴ recommended two-stage gastrectomy for the management of perforated gastric cancer. They reported that primary repair was the preferred option before a second, radical operation at a later stage. However, 57.9 per cent of patients in these studies died of disease progression before the second operation, and only 28.5 per cent received secondary curative gastrectomy. We found that the repair group survived 4.0 ± 1.1 months on average, and none of these patients underwent further gastrectomy as a result of complications or disease progression. In our experience, reoperation for recurring cancer or perforated ulcer within one or two months of primary surgery is associated with difficulties resulting from adhesions and inflammation. The most severe abdominal adhesions and fibrosis were observed in patients who had had peritonitis.

In conclusion, emergency curative gastrectomy should be performed in patients with perforated gastric cancer without metastases. In addition, we recommend emergency palliative gastrectomy instead of primary repair for perforated gastrectomy with metastases if the primary gastric cancer is resectable.

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Allergic Contact Dermatitis after Repeated Exposure to DermabondTM

Use of the adhesive 2-octyl cyanoacrylate, also known as DermabondTM (Ethicon, Inc., Somerville, NJ), has

become routine in surgical wound closure. Approved in 1998 by the U.S. Food and Drug Administration, the compound serves not only as an aid in wound approximation, but is also reported to improve on wound strength and provide a microbial barrier to skin pathogens.^{1, 2} The liquid compound is composed of monomer subunits that become polymerized on tissue application, providing a flexible, adherent skin barrier. We report a series of three patients who developed contact dermatitis after application of DermabondTM despite prior uncomplicated exposures to the compound.

A 35-year-old woman with no known drug allergies presented with an enlarging right breast mass. Core needle biopsy two years prior revealed adenosis. Significant interval growth was demonstrated on subsequent ultrasound, and excision of the mass was recommended. The 2.2-cm mass was removed through an upper outer quadrant incision and the wound closed in layers with a 4-0 monofilament absorbable suture used to approximate the skin. DermabondTM was applied over the skin closure.

The patient presented to urgent care eight days later with a progressive rash and significant pruritus around the incision that had started the day after surgery. Physical examination revealed an erythematous maculopapular rash extending from the wound onto the ipsilateral chest wall and medial arm (Fig. 1). The patient was afebrile, and the incision remained closed without infection. Ultimately, the DermabondTM polymer shed from the skin, and the rash and pruritus resolved. Final pathology of the mass revealed a fibroadenoma. This patient had undergone a laparoscopic appendectomy two years previously. DermabondTM had been applied over the three incisions without any skin reaction.

A 39-year-old woman with no known allergies presented with a recurrent breast mass after having undergone a previous excision of an intraductal papilloma at the same location in the breast 2.5 years earlier. A core needle biopsy confirmed the recurrence of a benign papilloma. Operative excision was again performed and the wound was reapproximated in layers with a 4-0 monofilament absorbable suture in the skin. As was done after the first excision, DermabondTM was applied over the skin closure.

At her postoperative visit, the patient reported that she had developed an erythematous, pruritic rash around the incision site, which had immediately improved after she removed the DermabondTM glue with tweezers. On physical examination, the patient was afebrile with a faint maculopapular rash immediately around the wound. Hydrocortisone cream was prescribed and the rash had completely resolved by the next visit a month later. Final pathology revealed a

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FIG. 1. Patient 1 - Nine days postoperatively.



FIG. 2. Patient 3 - Five days postoperatively.

large disrupted papilloma. This patient had undergone a laparoscopic hysterectomy and unilateral oophorectomy in the time between her two open excisional breast biopsies, also using DermabondTM over the skin closures.

A 61-year-old woman, diagnosed with invasive left breast cancer, underwent lumpectomy and sentinel node with DermabondTM used over the skin closures at both sites. Final pathology revealed a positive margin, and the patient was taken back for re-excision. DermabondTM was again used with no evident skin reaction. The margin was extremely close and the patient opted for simple mastectomy given the extent of disease. Mastectomy flaps were approximated using a running 3-0 absorbable barbed suture in the deep dermis and a 4-0 monofilament absorbable suture in the epidermis. DermabondTM was applied over the length of the wound.

During the patient's follow-up visit five days after surgery, she had an extensive pruritic and erythematous maculopapular rash surrounding the mastectomy incision (Fig. 2). The DermabondTM glue was immediately removed, and the patient was prescribed cetirizine. She reported significant symptomatic relief over the next few days with complete resolution of the rash one month later. Final pathology revealed no residual malignancy.

Tissue adhesives have been in existence for decades with the initial development of cyanoacrylate compounds in 1949. Early use was complicated by the frequent development of inflammatory reactions.³ Two of the key degradation products of cyanoacrylate include formaldehyde and cyanoacetate, which can induce inflammation as levels build up within the tissue. The solution to the rapid absorption of these byproducts was the development of longer chained molecular structures such as 2-octyl cyanoacrylate, which degrade more slowly. Now, the use of these adhesives is pervasive in the surgical suite, emergency department, and outpatient areas with a vast majority of patients not experiencing an adverse reaction.

When the first patient returned postoperatively with a maculopapular rash and itchiness, the connection to DermabondTM was not immediately made. Instead, the iodophor-in-isopropyl skin preparation was suspected as the source. The association with DermabondTM was made two months later when the second patient presented with a similar postoperative rash and reported significant improvement after removing the glue. When the third patient presented, the diagnosis of contact dermatitis resulting from the cyanoacrylate glue was made and management was initiated early.

The most definitive treatment of contact dermatitis is avoidance of further contact with the inciting allergen in addition to treatment with a topical steroid or oral antihistamine as necessary. Early recognition and prompt removal of the glue can limit the extent of the inflammatory response and provide immediate symptomatic relief. The manufacturer recommends the use of petroleum jelly or acetone to aid in glue removal.⁴ We found that the glue can be removed easily with forceps. Patients should then be educated about the allergy so that they can avoid future contact.

On review of these cases, it was noted that all of the patients had prior exposures to DermabondTM without any adverse reactions. This suggests that there may be an immune sensitization to the metabolites of 2-octyl cyanoacrylate. In over five years of routine use of this product by the authors, we had not seen any cases of contact dermatitis until the first case we detailed in this report. It is possible that, only now, patients are having multiple applications of cyanoacrylate

glues and this adverse reaction is becoming more prevalent. Another consideration was that Ethicon updated the formulation of DermabondTM in 2011, calling the new product Dermabond AdvancedTM after adding plasticizers to make the product more pliable. Whereas the first two patients had the former DermabondTM applied at the time of their prior surgeries and the new formula applied most recently, the third patient had Dermabond AdvancedTM placed at all three operations, only reacting to the last application. Therefore, it is unlikely that the reaction is explained by the change in formula.

Heightened awareness to potential postoperative skin reactions involving Dermabond is necessary, particularly in patients with prior exposures. We suggest educating patients undergoing multiple applications of DermabondTM of this potential adverse reaction.

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Evaluating Informed Consent Obtained by Surgical Residents

The surgical informed consent is perhaps the most important discussion that a surgeon has with a patient. This conversation outlines the risks and benefits of the proposed procedure and possible alternative therapies. Informed consent for surgical patients is often quite different from consent for nonsurgical patients in part

as a result of the invasiveness of the procedure and the patient's inability to make decisions while under the influence of anesthesia.

Despite the knowledge of and ability to obtain an adequate surgical informed consent, this skill is rarely taught in medical schools, surgical residencies, or to practicing surgeons. The skill is often developed by surgeons based on observations during training and experiences during practice. Currently, there are no standardized methods for teaching informed consent methods to surgical residents, and likely few residency programs have instruction on this important skill. The purpose of this project was to evaluate the patient's impression of the informed consent given by surgical residents.

Over a 3-year period, 2010 to 2012, patients who were to undergo a surgical procedure scheduled in the surgical resident clinic of our medical center were asked to take part in a study evaluating the resident's thoroughness in obtaining the informed consent. Per standard protocol in this clinic, the patient was evaluated by a resident and then presented to the attending overseeing the clinic. If a patient was appropriate for a surgical procedure, the resident was instructed to obtain informed consent for that particular procedure. After this, in a blinded fashion by a single surgical attending, a questionnaire was given to all consenting patients asking about the thoroughness of the consent procedure relative to the specific surgical operation. The attending physician then obtained informed consent from the patient for the procedure based on his or her standard practice.

A questionnaire to evaluate the resident's presentation of informed consent information was created for six surgical procedures most often scheduled for patients in this clinic. These included endoscopy, inguinal hernia, ventral hernia, intestinal surgery, laparoscopic cholecystectomy, and other/miscellaneous procedures. All surveys had eight similar questions related to the understanding of the consent given by the resident, risks of the surgery, operative and postoperative complications, alternatives and benefits, and suggestions for the resident physician in providing information more clearly in the future. In all surveys except the other/miscellaneous procedure survey, two additional questions were asked related to specific complications associated with the particular procedure and the patient's understanding of this. The additional questions included risk of perforation and bleeding in endoscopy procedures, risk of hernia recurrence and chronic groin pain in inguinal hernia, risk of bowel injury and possibility of ostomy in intestinal surgery, risk of bile duct injuries and conversion to open in laparoscopic cholecystectomy, and risk of bowel injury and recurrence in ventral hernia. A final question graded the overall

Data from this study were presented in poster form at the Southeastern Surgical Congress, Jacksonville, FL, February 9-12, 2013.

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