

Allergic contact dermatitis caused by wound closure tape in a pediatric patient

Idy Tam MS¹  | JiaDe Yu MD^{2,3} ¹Tufts University School of Medicine, Boston, MA, USA²Contact Dermatitis and Occupational Dermatology Clinic, Department of Dermatology, Massachusetts General Hospital, Boston, MA, USA³Harvard Medical School, Boston, MA, USA**Correspondence**JiaDe Yu, MD, Department of Dermatology, Massachusetts General Hospital, Harvard Medical School, 50 Staniford Street, 2nd Floor, Boston, MA 02114, USA.
Email: jdyu@partners.org**Abstract**

Wound care products are emerging as causes of allergic contact dermatitis (ACD). There are increasing reports of ACD to certain medical adhesives; however, there are no published reports of contact sensitization solely due to wound closure tape such as Steri-Strips™. Herein, we present the first confirmed case of ACD in a child caused by wound closure tape.

KEYWORDS

acrylates, adhesives, allergic contact dermatitis, patch testing, wound closure tape, wound dressing

1 | INTRODUCTION

Acrylates present in wound dressings are leading causes of contact sensitization postoperatively.¹ Postoperative allergic contact dermatitis (ACD) can frequently be confused for an infection leading to unnecessary antibiotic use or reoperation. There are increasing reports of ACD to certain medical adhesives such as Dermabond in adults and children^{2,3}; however, there are no published reports of contact sensitization due to wound closure tape such as Steri-Strips™ (Cardinal Health). Herein, we present the first confirmed case of ACD in a child caused by wound closure tape.

2 | CASE REPORT

A 12-year-old girl was referred for patch testing for suspected ACD to medical adhesives following surgery. She underwent two surgeries for a complex fracture of the distal left humerus. Her incisions after the first and second surgery were dressed using Dermabond® (Ethicon, Inc), Steri-Strips™, petrolatum gauze, tincture of benzoin, and bacitracin. She developed pruritus at incision sites after the first surgery which self-resolved. However, 3 days after her second surgery, her incision sites became pruritic, blistering, and oozing (Figure 1A). She was started on cephalexin for concern for cellulitis. After completing the antibiotic course, her incision sites remained

edematous, pink, and vesiculobullous (Figure 1B). Following removal of all medical adhesives, the rash slowly improved over 2 months.

She subsequently underwent patch testing to the North American 80 Comprehensive Series, acrylate and epoxy series (Dormer Laboratories Inc), and wound care products that she was exposed to. Patches were applied on her back with IQ chambers (SmartPractice) affixed with Scanpor™ tape and read at 48 and 96 hours. She developed a 2+ reaction to Steri-Strips™ and 1+ reaction to ethyl cyanoacrylate. She had an irritant reaction to Dermabond® manifested as pustules on final reading. She had a negative reaction to all other acrylates, bacitracin, and tincture of benzoin.

3 | DISCUSSION

We report the first confirmed case of a patient who developed ACD to wound closure strips diagnosed through patch testing. The first reported case can be found in the US Food and Drug Administration's manufacturer and user facility device experience (MAUDE) adverse events report.⁴ This highlights that allergy to wound closure tapes may be a bigger problem than once perceived and reporting such findings is important.

Studies have been performed to identify appropriate allergens to screen for medical adhesive sensitization.¹ However, some medical adhesives contain allergens not found in most acrylate test

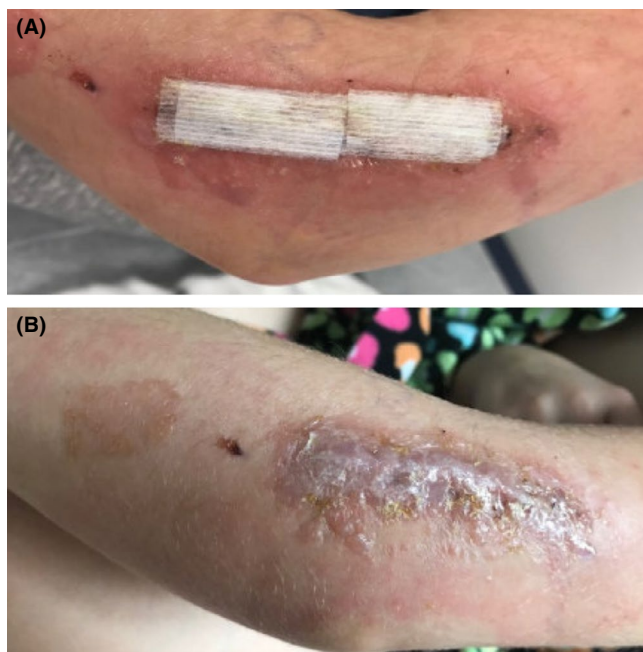


FIGURE 1 Patient's elbow at day 3 postoperatively with erythema and edema surrounding wound closure adhesive (A). Patient's left elbow at 4 wks postoperatively with exuberant vesiculobullous reaction (B)

series, such as isobornyl acrylate in glucose sensors.^{1,5} Therefore, these series may not be sufficient to detect medical adhesive allergies.

Unfortunately, the exact compounds cannot be identified because manufacturers often withhold such information as proprietary or “trade secrets,” as in the case of 3M™ Steri-Strips™ being labeled as “pressure-sensitive” acrylate adhesive without further information regarding types of acrylates present.⁶ This creates difficulty in testing patients for medical adhesive allergy and advising patients to avoid adhesives selectively. Patients who have developed ACD to medical adhesives may therefore benefit in pre-operative patch testing to wound care products to identify adhesives that can be safely used.⁷ Alternatively, the American Contact Dermatitis Society has suggested potentially safe medical adhesives for patients with adhesive allergy.⁸

It is important to consider ACD in patients with chronic wound and/or exposure to adhesives. Regulatory efforts are necessary to require more transparency as well as easier methods to report adverse events associated with medical adhesive allergies.

ORCID

Idy Tam  <https://orcid.org/0000-0002-6936-3905>

JiaDe Yu  <https://orcid.org/0000-0002-0874-3170>

REFERENCES

1. Spencer A, Gazzani P, Thompson DA. Acrylate and methacrylate contact allergy and allergic contact disease: a 13-year review. *Contact Dermatitis*. 2016;75:157-164.
2. Cook KA, White AA, Shaw DW. Patch testing ingredients of Dermabond and other cyanoacrylate-containing adhesives. *Dermatitis*. 2019;30:314-322.
3. Liu T, Wan J, McKenna RA, et al. Allergic contact dermatitis caused by Dermabond in a paediatric patient undergoing skin surgery. *Contact Dermatitis*. 2019;80:61-62.
4. U.S. Food and Drug Administration. MAUDE Adverse Event Report: 3M STERI STRIP STERI STRIPS. https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfmaude/Detail.CFM?MDRFOI_ID=1743013. Accessed November 7, 2019.
5. Herman A, Aerts O, Baeck M, et al. Allergic contact dermatitis caused by isobornyl acrylate in Freestyle® Libre, a newly introduced glucose sensor. *Contact Dermatitis*. 2017;77:367-373.
6. MTM Steri-Strip™ Wound Closure System. Commonly Asked Questions. <https://multimedia.3m.com/mws/media/820980/common-questions-steri-strip-wound-closure-system.pdf>. Accessed November 7, 2019.
7. Hammarsten R, Hammarsten J, Jemsby P. Preoperative skin testing of materials used in surgical procedures. *AORN J*. 2003;77:769-771.
8. Scheman A, Hylwa-Deufel S, Jacob SE, et al. Alternatives for allergens in the 2018 American contact dermatitis society core series: report by the American contact alternatives group. *Dermatitis*. 2019;30:87-105.

How to cite this article: Tam I, Yu J. Allergic contact dermatitis caused by wound closure tape in a pediatric patient. *Pediatr Dermatol*. 2020;00:1-2. <https://doi.org/10.1111/pde.14084>