

Allergic contact dermatitis caused by surgical mesh after umbilical hernia surgery

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CASE REPORT

A 62-year-old man was referred to our Contact Eczema Department with eczematous rash on the umbilical area after umbilical hernia surgery that had been performed 4 weeks earlier. The patient had no personal history of interest. He was operated twice on the umbilical hernia with Paritene macroporus mesh (Covadient, Medtronic, Spain), and polyglactin copolymer suture (Vicryl, Ethicon Inc., USA). The first surgery was performed in August 2019. The patient had a relapse of the umbilical hernia in February 2020.

On physical examination, severe eczema in the umbilical and peri-umbilical area was observed (Figure 1). Moreover, the patient showed pruriginous disseminated eczematous plaques on the trunk and extremities. Systemic corticosteroid (prednisone 0.5 mg/kg/d) achieved complete clearance by day 7 of treatment.

Patch tests were performed with the European Comprehensive Baseline Series (Chemotechnique Diagnostics, Vellinge, Sweden) and

antiseptics series (AllerEaze, Smart Practice, Alberta, Canada), triclosan (Chemotechnique Diagnostics), a leg ulcer series (Chemotechnique Diagnostics), Paritene macroporus mesh "as is" and Paritene macroporus mesh "as is" after sonication in physiologic saline for 10 minutes at 40 Hz (Figure 2A). The results were interpreted according to the criteria of the International Contact Dermatitis Research Group (ICDRG). Patch tests were read on day (D) 2 and D4. The patient showed a positive patch test reaction to Paritene macroporus mesh "as is" after sonication (Figure 2B). Of note, he developed itchy papules over the navel area following the patch test (Figure 2C).

Allergic contact dermatitis (ACD) caused by surgical mesh was diagnosed. Follow-up ultrasound showed fibrosis on the surgical mesh. The patient did not show further eczematous lesions. No recurrence was observed during 3 months of follow-up.

DISCUSSION

Repair of an umbilical hernia is a common surgical procedure. The choice of surgical method generally depends on the size of the hernial sac and the fascial defect. The early complications occur in 4.3% of patients with mesh repair. A recurrence may appear in 21.3% of cases. Older age, increases in the size of the hernia sac and fascial defect, and underlying type 2 diabetes convey an increased risk of complications.¹ ACD has hitherto not been reported.

Paritene macroporus mesh is a sterile, non-absorbable mesh designed for open hernia repairs. It is made from a transparent macroporus polypropylene. The manufacturer (Covadient Medtronic) was contacted for information on the material. We received this information, but it was not possible to obtain the independent components of the surgical mesh. The patch tests with the surgical mesh "as is" showed no skin reaction. However, the sonicated piece yielded a



FIGURE 1 Eczematous rash on navel

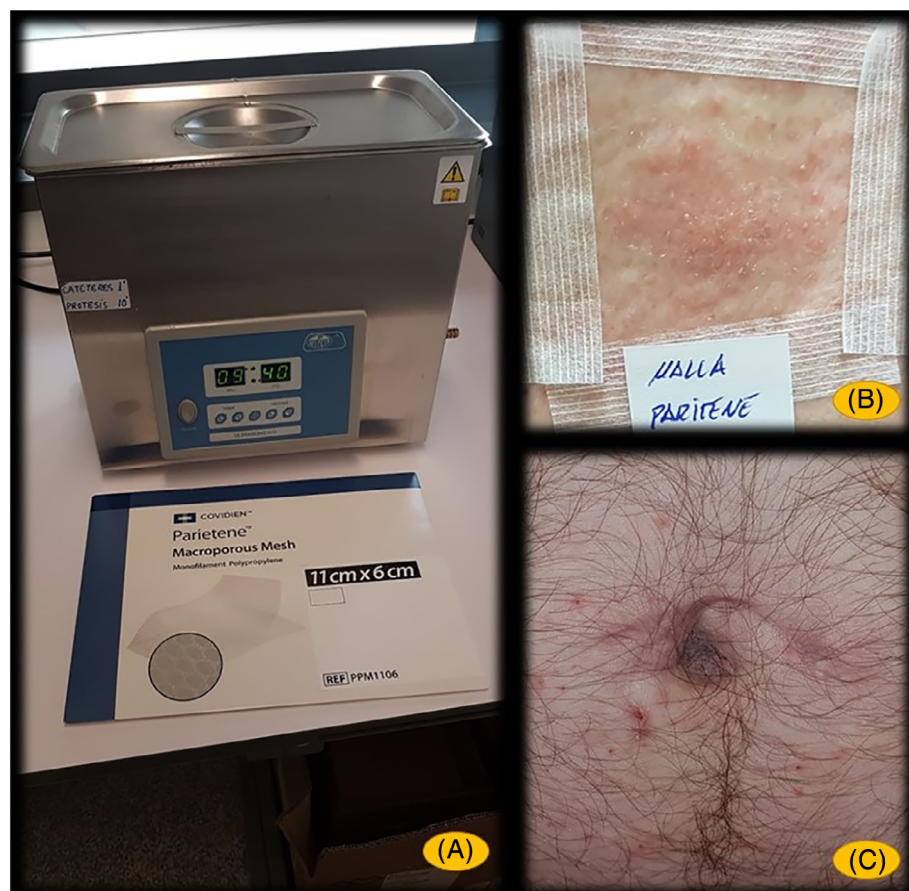


FIGURE 2 (A) Ultrasound bath with surgical mesh. (B) Positive patch test to sonicated surgical mesh (D4). (C) Pruriginous papules around the navel after patch test

positive reaction. The presence of eczematous lesions on the navel was an interesting finding that supported type IV hypersensitivity, which we suspected. Antioxidants such as irganox, benzenecetic acid and other ester compounds, 1-hexadecanol, and metal traces, among others, must be considered as possible allergens.

Few cases of ACD to surgical mesh have been reported. Holte et al² reported allergic contact dermatitis caused by 2-octyl-cyanoacrylate adhesive. Reports on ACD^{3,4} and delayed foreign body granuloma⁵ to polypropylene sutures have also been published.

Studying this type of patient through patch tests can be difficult. It is usually not possible to obtain the individual mesh components. Through fibrosis the surgical material can be isolated, increasing its tolerance. To our knowledge, this is the first report concerning ACD caused by surgical mesh.

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AUTHOR CONTRIBUTIONS

Francisco J Navarro-Triviño: Conceptualization; data curation; formal analysis; investigation; methodology; project administration;

resources; software; supervision; validation; visualization; writing-original draft; writing-review and editing. **Ricardo Ruiz-Villaverde:** Conceptualization; methodology; project administration; supervision; validation; visualization; writing-original draft; writing-review and editing.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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