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CASE REPORT
Reconstructive

Type IV Hypersensitivity Reaction to Dermabond Prineo in Plastic Surgery Patients: A Report of 4 Cases

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Summary: Dermabond Prineo, a 2-octyl cyanoacrylate-based skin closure system, is widely used in surgical procedures, but reports of adverse effects remain limited. This study aimed to report and analyze 4 cases of type IV hypersensitivity reactions to Dermabond in plastic surgery patients. The study was conducted in a private hospital in Cali, Colombia, between 2022 and 2024. Four patients who underwent reconstructive surgery and presented type IV hypersensitivity reaction after the use of Dermabond were included. Variables such as time of onset of symptoms, number of Dermabond applications, and postoperative management were considered. A literature review was performed for the analysis. All patients developed type IV hypersensitivity reactions after Dermabond application. Symptoms included erythema, pruritus, and other localized signs. These reactions improved significantly after the withdrawal of Dermabond and treatment with topical corticosteroids. All patients had been previously exposed to Dermabond in previous procedures. Dermabond reexposure in sensitized patients may induce type IV allergic reactions. Early identification and treatment of these reactions is crucial. *(Plast Reconstr Surg Glob Open 2025; 13:e6523; doi: 10.1097/GOX.0000000000006523; Published online 10 February 2025.)*

Sutures are classically considered the preferred choice for the mechanical closure of tissue injuries. However, suturing implies an additional trauma to the wound.[1] Currently, other strategies for wound closure have been implemented. Dermabond Prineo from Ethicon (J&J MedTech EMEA) is a skin closure system that integrates 2-octyl-cyanoacrylate with a self-adhesive polyester-based mesh, providing secure fixation,[2] and has become one of the options used in surgery to glue the sides of an incision or injury. It is considered to have advantages over the risk of infection, comfort, and optimal final scar outcome. The mechanism of action involves the lipophilic 2-octyl groups of Dermabond, which, upon contact with skin moisture, undergo a Michael addition reaction. This process leads to the formation of polymers that function as an effective tissue adhesive.[3] Although tissue adhesives are very well tolerated, tissue adhesives can induce a localized allergic response in 0.5%–14% of patients.[2] Allergic response can result in wound dehiscence, patient discomfort, increased healing time, and suboptimal aesthetic results. The allergy associated with the use of Dermabond is a type IV hypersensitivity reaction, a delayed immune response that occurs after an individual has been sensitized to an antigen through prior exposure.[4]

We present 4 cases (Table 1) of patients who experienced allergic reactions to Dermabond. These patients had a history of injections of nonmedical substances (biopolymers) into the buttocks, in which reconstructive surgery was performed to remove the foreign body.

CASE DESCRIPTIONS

Case 1

A 54-year-old female patient with a 12-year history of injections of large volume nonmedical substances (biopolymers) for aesthetic purposes in the buttocks presented persistent pain and paresthesia that worsened when sitting for a long time 5 years after the injections. She underwent 7 reconstructive procedures for foreign body removal, the first with a closed technique and the remaining 6 with an open technique due to persistent symptoms and dissatisfaction with the cosmetic results. Our team performed the last 2 procedures. In the first one, Dermabond was applied without complications. Two

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Table 1. Patient Variables for 4 Cases of Hypersensitivity to Tissue Adhesive

Variables	Case 1	Case 2	Case 3	Case 4
Age, y	54	31	33	32
IMC	23.3	23.3	25.9	19.1
Fitzpatrick Scale	Type III	Type III	Type IV	Type II
Biopolymer application time, y	12	8	12	3
Interval to symptoms, d	7	9	11	5
History of atopy	No	No	No	No
Gluteal reconstruction	0	1 (allergy to Dermabond)	2 (allergy to Dermabond in the last surgery)	1 (allergy to Dermabond)
Biopolymers removal	7 (allergy to Dermabond in the last surgery)	1	1	1
No. application Dermabond	2	2	3	2

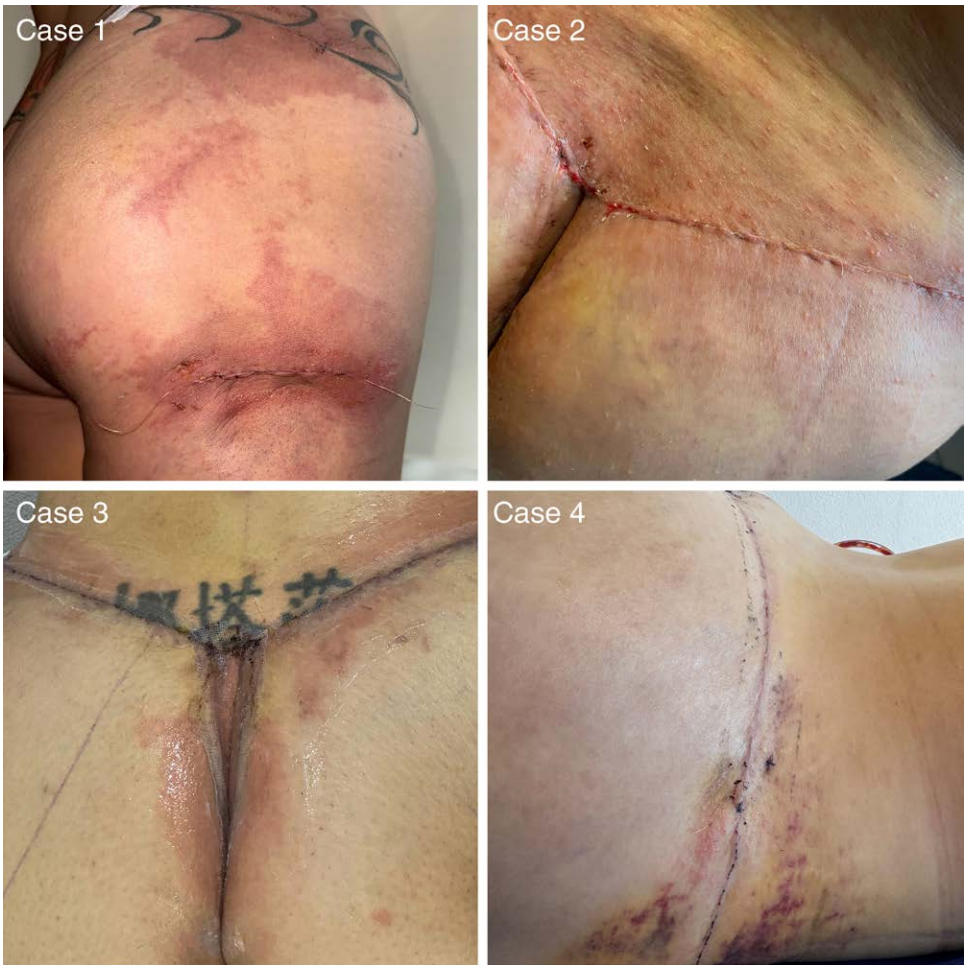

Fig. 1. Clinical signs of type IV hypersensitivity reaction induced by Dermabond Prineo application.

years later, the patient returned with pain in the hips and thighs, and biopolymer removal was performed in the areas where it had migrated, followed by gluteal reconstruction with a flap; Dermabond was placed again. Seven days after surgery, erythema appeared in the Dermabond area (Fig. 1); the Dermabond was immediately removed, and topical steroid treatment led to significant improvement, with complete resolution within 48 hours and no further scar complications.

Case 2

A 31-year-old female patient with a history of injections of nonmedical substances (biopolymers) in the buttocks 10 years ago presented persistent changes in the skin of the injection site for 8 years. Reconstructive surgery was performed to remove the biopolymers, and Dermabond was placed over the surgical wound, without complications. The patient reconsulted after 1 year and 8 months after surgery due to gluteal ptosis secondary to significant

weight loss; gluteal reconstruction was performed, and Dermabond was placed again. Nine days after surgery, erythema and small vesicles appeared around the Dermabond area (Fig. 1); the Dermabond was removed, and topical steroids were applied, resulting in gradual improvement and complete resolution in 1 week, with no sequelae.

Case 3

A 33-year-old female patient with a history of injections of a nonmedical substance (biopolymers) in the buttocks 12 years ago consulted for marked skin irregularities and intense pain 5 years after the injections. We performed reconstructive surgery of foreign body removal with an open technique, and Dermabond was placed in the wound without complications during the follow-up. One year and 4 months later, after reconsultation for gluteal ptosis, we performed gluteal reconstruction and placed Dermabond again, without postoperative complications. Seven months after the surgery, after significant weight loss, she presented again with gluteal ptosis; we performed another gluteal reconstruction, placing Dermabond again. Eleven days after surgery, erythema and pruritus appeared around the area treated with Dermabond (Fig. 1). Dermabond was removed and topical steroids were applied, leading to complete resolution in 6 days, with no further scar complications.

Case 4

A 32-year-old female patient with a 12-year history of injections of a nonmedical substance (biopolymers) to increase the volume of the buttocks consulted for skin discoloration 2 years after injections. We performed reconstructive surgery to remove the foreign body, with placement of Dermabond over surgical wounds, without complications during the follow-up. Eleven months after surgery, the patient reconsulted for gluteal ptosis. A reconstruction surgery was performed, and Dermabond was placed again. Five days after surgery, erythema, pruritus, and small vesicles appeared around the area in contact with Dermabond (Fig. 1). Dermabond was removed and topical corticosteroids were applied, and the scar resolved completely within a week without further complications.

CLINICAL FINDINGS

Clinical signs of type IV hypersensitivity reaction induced by Dermabond Prineo application is shown in Figure 1.

DIAGNOSTIC ASSESSMENT

The diagnosis of type IV hypersensitivity reaction in these cases was based entirely on clinical evaluation, without the use of additional diagnostic tools.

THERAPEUTIC INTERVENTION

Upon diagnosing a type IV hypersensitivity reaction, Dermabond was immediately removed from the surgical wound, and topical corticosteroids were prescribed to treat local symptoms.

FOLLOW-UP AND OUTCOMES

Patients were evaluated during postoperative appointments. All showed significant improvement and complete resolution of the skin lesions in less than a week, without affecting the healing process.

DISCUSSION

Studies affirm the efficacy, safety, ease of application, and reduction in surgical duration of Dermabond, contributing to its growing utilization.[5,6] However, in clinical practice, adverse events associated with Dermabond, such as allergic reactions affecting wound healing, have been documented.[7] This report analyzes allergic reactions to Dermabond in patients undergoing reconstructive surgery for foreign body removal due to a clinical history of the application of nonmedical substances (biopolymers) in their buttocks.

In the 4 cases reviewed, repeated exposure to Dermabond during previous procedures remains a consistent variable, reinforcing the theory of a type IV hypersensitivity[8] reaction triggered by prior sensitization to the allergen and subsequent reexposure.[9] Recent studies link this allergic response specifically to 2-octylcyanoacrylate.[3] Additionally, other case reports of type IV hypersensitivity to Dermabond found in the current literature involved patients with no history of biopolymer injections,[3,10] suggesting that the presence of biopolymers is not a precursor for the development of the allergic reaction.

Another common observation is the improvement of allergic reactions following immediate Dermabond removal upon detecting allergy symptoms, along with the use of topical corticosteroids. This approach helps prevent progression to severe type IV hypersensitivity reactions without sequelae, which can otherwise compromise the wound healing process.

CONCLUSIONS

Type IV hypersensitivity reactions are attributed to reexposure to Dermabond. Upon identifying symptoms of type IV hypersensitivity, immediate withdrawal of Dermabond and topical corticosteroid application should be initiated to prevent complications related to Dermabond allergy and to safeguard the healing process.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article. Patients in clinical cases experienced minimal discomfort from hypersensitivity reactions to Dermabond without affecting the healing process and final scar outcome.

PATIENT CONSENT

All patients provided informed consent and authorized photographic reports, and the procedures followed institutional, national, and international ethical research standards.

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