CASE REPORT

# The Koebner phenomenon and breast reconstruction: Psoriasis eruption along the surgical incision

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The present report describes a recent case of recurrent infection in a breast reconstruction patient with a history of psoriasis. Following surgery, the patient developed psoriatic plaques along the incision scars. This phenomenon is known as Koebnerization, and has been found to affect surgical incisions. Cases of psoriatic patients being denied surgical procedures because of their inherent risk to Koebnerize have been previously reported. Similarly, such patients have been denied surgical procedures because of their increased risk of infection. The present case and literature review on this subject is described.

**Key Words:** *Breast reconstruction; Koebner phenomenon; Plastic surgery; Psoriasis*

## Le phénomène de Koebner et la reconstruction mammaire : une éruption de psoriasis le long de l'incision chirurgicale

Le présent rapport décrit un cas récent d'infection récurrente chez une patiente ayant subi une reconstruction mammaire et ayant des antécédents de psoriasis. Après l'opération, la patiente a développé des plaques de psoriasis le long des cicatrices d'incision. Il s'agit du phénomène de Koebner, qui s'attaque aux incisions chirurgicales. On a déjà rendu compte de cas de patients psoriasiques à qui on avait refusé des interventions chirurgicales en raison du risque inhérent de phénomène de Koebner ou de leur risque accru d'infection. Les auteurs exposent le cas ainsi qu'une analyse bibliographique sur le sujet.

The Koebner phenomenon is the development of isomorphic, pathological lesions to traumatized, uninvolved skin of a patient with pre-existing cutaneous disease. It was first described in 1872 by Heinrich Koebner, a German dermatologist, as a clinical hallmark of psoriasis, but has also been associated with other cutaneous conditions including vitiligo, eczema and pyoderma gangrenosum (1). Although limited, there have been various cases reporting the occurrence of this phenomenon following plastic surgery procedures.

## CASE PRESENTATION

A 36-year-old woman who was BRAC2 positive elected to undergo a prophylactic bilateral mastectomy with immediate breast reconstruction. At this initial operation, the patient had insertion of bilateral tissue expanders in the subpectoral space. The patient completed expansion and, at 19 months, had the tissue expanders removed and saline implants inserted. Approximately six months later, the patient was seen by a dermatologist for psoriasis that had developed on the right axillary scar. This was treated with topical steroids.

At six years postoperation, a grade 3 capsular contracture was detected on the right-hand side. The exchange of saline implants for silicone cohesive gel implants was decided by the patient to add softness to the appearance of the reconstruction.

The patient then developed infection one month later on the right side. She was put on levofloxacin and rifampin. The infection persisted for three months, and the patient was taken to the operating room, and the right implant was explanted. She had insertion of a silicone implant two months later. One month postoperatively, she developed an infection in the right chest wall that failed to respond to treatment with levofloxacin and rifampin. At this time, the psoriasis was quiescent. The right silicone prosthesis required explantation; it was replaced two months later and it has remained infection free.

One month after the right silicone prosthesis was replaced, the patient was admitted with an infection on the opposite (left) side. She was initially treated with cefazolin and ciprofloxacin intravenously, and then switched to oral keflex for one month. Two small areas of dehiscence developed and drained; thus, the patient had the left breast implant removed. Four months after the operation, a silicone implant to the left chest wall in the subpectoral space was inserted. The patient was seen one month after the operation, and she was referred to the dermatology department. The incision had healed well, but there were visible psoriatic plaques occurring along the left incision. This was treated with topical protopic ointment for two months; the patient was completely healed with no signs of infection.

Thirteen months after the left breast originally became infected, it started to drain again. The patient was again seen by the dermatology department. It was clear that a psoriatic plaque had developed over the final operative site. Topical protopic ointment was again prescribed, and the plaques resolved. The incision dehisced and started to drain through a small area on the lateral aspect of the left breast. She was started on oral linezolid.

The chronically infected left silicone prosthesis was explanted. She subsequently developed psoriasis on the newly healing left incision line. These plaques resolved after two weeks of Elocom cream (Merck Canada Inc) application. The patient declined alternate methods of reconstruction, and six months later, she had insertion of a tissue expander into the left chest wall. Four months later, she had a silicone implant inserted to the left chest wall. At one month postoperation, there was evidence of psoriatic plaque eruption occurring along the lateral aspect of the left breast. This was treated with a polytopic cream. The patient remains closely monitored by plastic and dermatology specialists, and remains recurrence free.

In summary, the present patient with a pre-existing history of psoriasis developed four postoperative infections with Koebner phenomenon along the incision lines. She required multiple procedures, but successfully underwent bilateral reconstruction with silicone prostheses.

## LITERATURE REVIEW

Psoriasis is a common T cell-mediated immune disorder that occurs worldwide, with a prevalence of 0.1% to 2.8% in the general population (2). It is characterized by scaly, round, red plaques with an overlaying silver-white scale. Psoriatic lesions on previously occurring scars

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have been shown to display a different histology compared with normal lesions (3).

The development of psoriatic lesions on scars can be viewed as an example of the Koebner phenomenon. This phenomenon has been shown to occur in 20% to 76% of psoriatic patients (4). The time period from injury to psoriatic lesion development varies, although it generally takes 10 to 20 days (5). For the phenomenon to occur, both the epidermis and the dermis need to be involved in the injury. There also appears to be no anatomical site preference for Koebnerization. No known studies involving topical steroids have been performed to illustrate a similar outcome.

Although case reports of Koebnerization following plastic surgery are limited, the phenomenon has been shown to occur following various types of surgeries including breast reductions and cosmetic procedures (1,4,6,7). One case reported the development of new psoriatic lesions on the suture lines following a mastectomy with immediate reconstruction using a latissimus dorsi flap and implant (4). A different study reported a patient with psoriasis who developed lesions on the periumbilical and lower abdominal scars following an abdominoplasty (1). Another study reported primary eruption of a psoriatic plaque in a 72-year-old man on the donor site of a split-skin graft at the anterolateral aspect of the thigh (6). Furthermore, wearing a mastectomy sleeve to reduce lymphoedema elicited the Koebner response, suggesting that the pressure produced as a result of of applying the sleeve resulted in epidermal and dermal trauma necessary for Koebnerization (7). Ryan (8) reported a case of developing psoriatic skin dermatitis following a distal interphalangeal joint arthrodeses in a patient with advanced psoriatic arthritis in both hands.

With respect to infection, studies have attempted to address the issue of whether a higher postoperative infection rate exists in psoriatic patients. The resultant data have been inconclusive. The thought stems from the presence of higher bacterial counts on psoriatic skin compared with normal skin. The bacteria cultured most commonly include *Staphylococcus aureus* and *Staphylococcus epidermidis* (2). Infections that generally occur heal and can be treated with typical dermatological regimens and prolonged prophylactic perioperative antibiotics (9).

Surgeons should be aware of the Koebner phenomenon in patients with psoriasis because it may detract from the outcome, especially in cosmetic procedures. This condition, however, is transient and is not known to affect the long-term aesthetic outcome.

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