# Koebnerization in Pemphigus Foliaceous following Total Knee Replacement - A Rare Entity

Dear Editor,

A 72-year-old female, a known case of pemphigus foliaceous (PF) for 8 years, was on regular medications including prednisolone in tapering doses and immune modulators (azathioprine) in twice daily doses. The disease was in remission. The patient was posted for total knee replacement (TKR) surgery of the left knee, after 2 months of which she presented with lesions over the left knee joint. Cutaneous examination revealed multiple, well-defined erosions of sizes ranging from 1 × 2 cm to 2 × 3 cm, with crusts, surrounding the left knee joint, involving the lower part of the thigh and the upper part of the lower leg [Figure 1]. A few scattered erosions with crusting were present over the scalp, malar aspect of the face, and back. Nails, genitals and oral cavity were normal. The cement and implants used in the surgery were polymethyl methacrylate and cobalt chrome, respectively. A biopsy was taken, which showed an intact basal layer of epidermis with focal acantholysis. Bulla at the level of stratum corneum, filled with mixed inflammatory cells predominately comprised of many neutrophils, a few plasma cells, lymphocytes, and eosinophils with nuclear debris. The underlying dermis was oedematous and contained focal lymphoid aggregates, with areas of hemorrhage [Figure 2]. The changes were suggestive of PF. The patient was treated with steroids and immune-modulators and experienced relief. The patient was taken for the right-sided TKR surgery after 10 months with the implant material used being stainless steel. The cementing material used was the same. After 1.5 months, she developed skin lesions surrounding the right knee. On examination, a few erosions over the right knee were seen [Figure 3]. Patient was a known case of diabetes mellitus type 2 and hypertension for 12 years, on regular medications for both.

Koebnerization at previously uninvolved sites following surgical trauma in a documented case of PF has been an underdiscussed and intriguing topic. The Koebner's

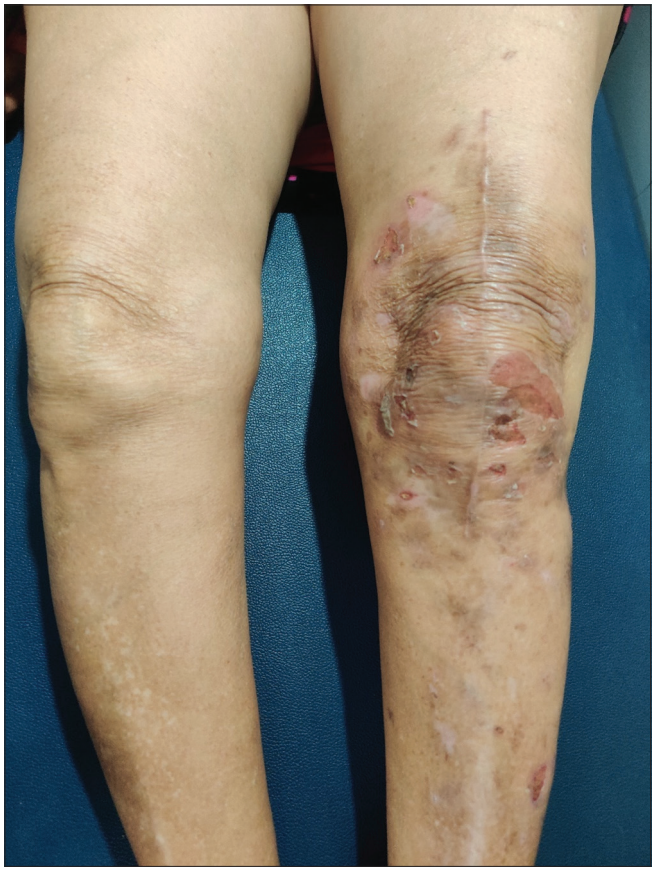

**Figure 1: Erosions and crusting surrounding the left knee joint**

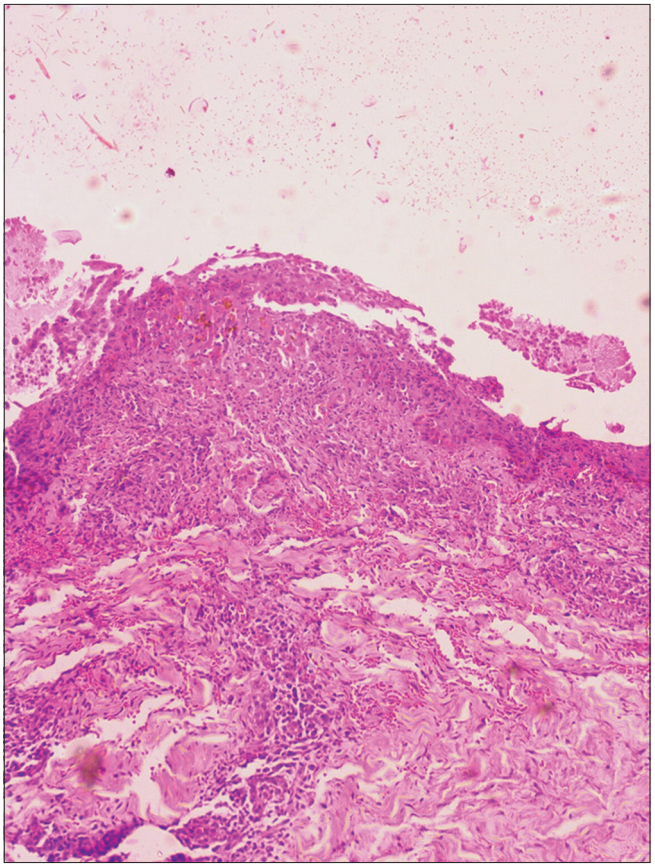

**Figure 2: An intact basal layer of epidermis with focal acantholysis and bulla at the level of stratum corneum, filled with mixed inflammatory cells predominately comprised of many neutrophils, few plasma cells, lymphocytes, and eosinophils with nuclear debris. (H and E, 10×)**

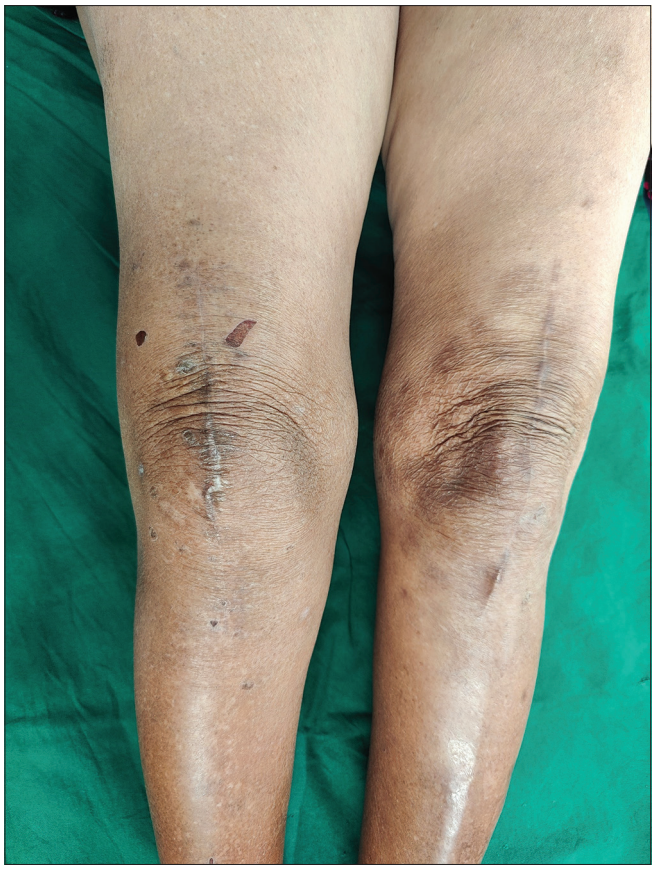

**Figure 3: Erosions over the right knee joint**

phenomenon, also known as the isomorphic response, is the development of pre-existing skin disease following trauma to uninvolved skin. Various cutaneous disorders have been described to arise at surgical wounds and scars.

Pemphigus, a group of autoimmune vesiculobullous disorders, has rarely been described to arise following exposure to radiation and mechanical trauma to the skin.[1] There are several theories have been proposed to explain the development of pemphigus at postoperative sites, including epitope spreading, exposure of "hidden" antigens, disruption of normal keratinocyte differentiation, and local changes in vascular and connective tissue function.[2-5] Trauma to the dermo-epidermal junction might result in increased exposure of epidermal antigens resulting in epitope spreading and increased antigen presentation.[5] Disruption of normal keratinocyte differentiation in regions of prior trauma (i.e. scars) might result in increased susceptibility of keratinocytes to circulating pemphigus autoantibodies via defective or deficient levels of cadherins. Intraoperative shearing forces, postoperative oedema or rehabilitation devices might provoke clinical unmasking of previously normal skin.

Unlike pemphigus vulgaris, PF histologically demonstrates a more superficial epidermal acantholytic process and clinically presents with scaly and crusted plaques rather than frank bullae.[6] Thus, lesions of pemphigus foliaceus can more closely mimic postoperative wound infections and contact dermatitis. This may lead to a delay in diagnosis, particularly in patients without a history of disease. Our patient, as described above had a history of PF and hence there was a high degree of suspicion, leading to a quicker diagnosis.

## *Declaration of patient consent*

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.


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Nil.


## *Conflicts of interest*

There are no conflicts of interest.


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