

# Pyoderma Gangrenosum Developed At The Split-Thickness Skin Graft Donor Site In A Patient With Diabetes Mellitus: Case Report

## *Diabetes Mellituslu Bir Hastada Kısmi Kalınlıklı Deri Grefti Alanında Gelişen Piyoderma Gangrenozum: Olgu Sunumu*

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### ÖZ

Bu yazıda, diyabetik ayak şikayeti ile kliniğimize başvuran 70 yaşında erkek hastada görülen postoperatif piyoderma gangrenosum vakasını sunmaktayız. Yara yeri debride edildikten sonra kısmi kalınlıklı deri grefti ile onarım yapıldı, iyileşme göstermeyen donör alandan alınan tam kat deri biyopsinin sonucu piyoderma gangrenosum olarak raporlandı. Bu tip greftin donör bölgesinde postoperatif piyoderma gangrenozumun gelişebileceği daha önce bildirilmediğinden dolayı daha fazla cerrahi girişimden kaçınıldı ve hastaya kortikosteroid tedavisi uygulandı. Tam iyileşme yaklaşık 2 aylık tedaviden sonra gerçekleşti.

**Anahtar Kelimeler:** Deri grefti, Diabetes mellitus, Piyoderma gangrenozum

### ABSTRACT

Herein we report a case of postoperative pyoderma gangrenosum in a 70-year-old man suffering from diabetic foot ulcer. When the wound was treated with split thickness skin graft, the patient developed pyoderma gangrenosum lesions on the donor site of split thickness skin graft. Since it has not been reported before that postoperative pyoderma gangrenosum can develop at this type of graft's donor area; we did not apply any more surgical interventions, and the patient treated with corticosteroids. Complete healing occurred after approximately 2 months of treatment.

**Key words:** Diabetes mellitus, Pyoderma gangrenosum, Skin graft

## INTRODUCTION

Pyoderma gangrenosum (PG) is a rare, chronic inflammatory skin disease with unknown etiology, which takes a place in the spectrum of neutrophilic dermatoses. The cause is still unclear, but the disease may be associated with neutrophil dysfunction, release of inflammatory mediators, or genetic susceptibility (1). The incidence of the disease is unknown, but it is reported to be between 3 and 10 in 1.000.000. PG develops a necrotic ulcer with a characteristic lesion that is painful, puffy from the skin, irregularly bounded, with an undermined red border, healing with cribriform scar (2). The pathological damage in the skin presents as necrosis and ulceration in the central epidermis and dermis, with dense infiltration of various inflammatory cells around the ulcer; however, the pathological manifestations are not characteristic. Pathergy positivity is found in 25% of the patients (3).

PG can occur spontaneously, as well as after minor trauma or surgery. Postoperative pyoderma gangrenosum (PPG) is the condition where lesions are seen 4 days to 6 weeks after surgical intervention is done, which is associated with pathergy phenomenon. In the literature, there are many cases of PG seen after septic or non-septic surgical procedures such as breast surgery, coronary bypass surgery, cesarean section, thyroidectomy, splenectomy, appendectomy, endoscopic tube application, pacemaker implantation, orthopedic surgery and thoracic surgery (4).

Although many different cases of PG have been reported, the authors failed to find any studies in the literature on PG associated with split-thickness skin graft donor area. Although using skin grafts as treatment method for PG have been reported, none of these studies have mentioned the donor area healing process.

## CASE

A 70-year-old male patient diagnosed with diabetes in 2004 was hospitalized due to a 10 x 8 cm in size chronic diabetic wound that started 8 months ago on the plantar face of the right foot (Figure 1). The patient had multiple scars on his both lower limbs due to previous PG disease (Figure 2). At the last hospitalization, patient's blood pressure was 130/80mmHg, pulse rate was 80 beats per minute and Oxygen saturation was %98. The patient's HGA1C value was 9 and he had no additional diseases except diabetes. In the medical history of the patient there was metformin 2 x 500 mg, Insulin Lispro + Insulin Lispro Protamin (Humalog Mix®) 25 units /morning and 25 units/ evening. Debridement was applied for the chronic wound on plantar face of the right foot. As an extra wound care method, intermittent Vacuum Assisted Closure therapy was also applied for three days to enhance the development of granulation tissue in the defect area. After



**Figure 1.** Diabetic ulcer on the right foot

the granulation tissue was formed, approximately 12x8 cm in size and 1/4 mm in thickness a split-thickness skin graft was taken from the lateral region of right thigh and was adapted on the defect. Tie-over dressing was applied over the graft. On postoperative day 5, when the skin graft recipient and donor area dressing were opened, black and white necrotic tissues were observed on a superficial ulcerative ground (Figure 3). Both the graft recipient and donor site were followed up by dressing therapy. Although wound healing problems can be seen in diabetic patients, observing that the necrosis in the

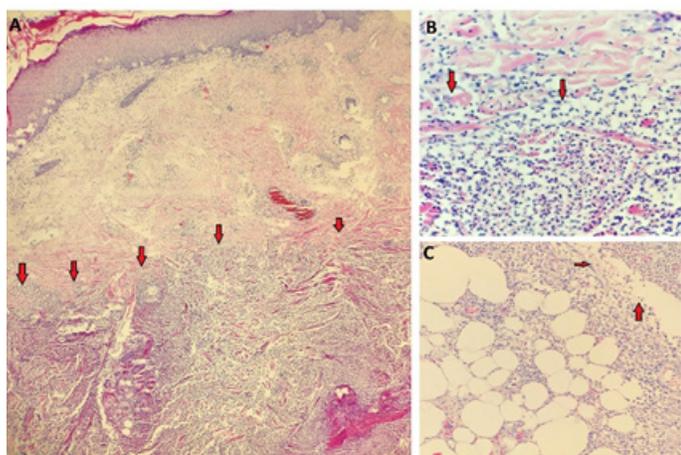


**Figure 2.** Multiple scars on the patient's both lower limbs due to previous PG lesions



**Figure 3.** Necrotic ulcer on the skin graft donor site, early postoperative photograph

donor site is extending towards the dermis led us to take a full-thickness skin biopsy from the donor site. The biopsy result was reported as pyoderma gangrenosum (Figure 4), the patient was consulted to the dermatology department. For a systemic and topical steroid therapy, Prednisolone 3x5mg/tablet, 2x1 Methylprednisolone cream was started. Wound secretion culture taken from donor area was resulted



**Figure 4.** A) X40, H&E, B) X400, H&E, C) X200, H&E, Nonspecific abscess formation and pyogenic inflammation with neutrophils (red arrow); involves deep dermis and subcutis (C)



**Figure 5.** Epithelization developed in most of the skin graft donor area, late postoperative photograph

as *Corynebacterium minutissimum*, so we requested an infectious diseases consultation and the patient was treated with ciprofloxacin 2x400 mg, no additional surgical intervention was applied. On the 11th day of corticosteroid treatment, the progression of necrosis had completely regressed, and the topical corticosteroid treatment was stopped by reconsulting the dermatology department. The patient was followed up with systemic corticosteroid and topical antibiotic treatment. On postoperative day 30, Systemic corticosteroid treatment was stopped by decreasing the dose gradually, and wound site was followed up only with moist dressing. On postoperative day 70, the diabetic wound on the right foot has completely secondary healed and epithelization developed in most of the skin graft donor area (Figure 5).

## DISCUSSION

Pyoderma gangrenosum (PG) is a noninfectious, rare dermatological disease which causes ulcerative lesions. Many patients can relate the development of the skin lesions to recent trauma to the affected area, a condition known as pathergy phenomenon. Based on pathergy, it has been suggested that minor trauma to the skin may initiate the development of PG. Failing to consider postoperative pathergy phenomenon, which is likely to occur in previously undiagnosed cases of PG, usually leads to debridement that worsens the lesions (5).

Although most of the reported PPG cases occurred after abdominal or breast surgery, it can develop in any part of the body where the surgical intervention was performed. Therefore, PPG must be in the differential diagnosis for non-

healing wounds after surgery (6).

Medical applications such as systemic steroids and cyclosporine form the basis of PG treatment. However, in special cases, such as the need to close large defects, surgical intervention may be required. Pathergy response to surgical intervention in the active period can exacerbate the disease and lead to negative consequences up to amputation. After controlling the inflammatory phase of PG with medical treatment, a surgical intervention is recommended (6,7).

Although the Split thickness skin graft used in the surgical treatment of pyoderma gangrenosum was reported to be rejected within 7 to 13 days resulting with complete failure, successful graft applications were reported when hyperbaric oxygen and Vacum-Assisted Closure therapy were combined (8).

Split-thickness skin graft (STSG) includes only a portion of the dermis and although it can be taken from any part of the body, the thigh area is generally preferred. STSG donor area are left for secondary healing which leaves a large donor area morbidity. The full thickness skin graft (FTSG) contains the entire dermis layer and can be taken from selected areas such as the inguinal and supraclavicular regions. FTSG donor area has the advantage of being sutured primary which leaves a lesser donor area morbidity. In the literature, skin grafts used for surgical treatment of PG lesions were taken as STSG (9,10).

## CONCLUSION

In this case, we used a STSG to cover a diabetic foot wound on the plantar face of the right foot, which resulted in a large necrotic ulcer at the anterior surface of the right thigh. Although the patient had a history of pyoderma gangrenosum, we could not consider that PG could develop in a split-thickness skin graft donor area. We would like to emphasize that one should be cautious in such patients and, if possible, full-thickness skin grafts should be preferred first, as it has lesser donor site morbidity

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