

## CASE REPORT

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## A rare case: Epidermoid cyst development after groin flap for a fingertip following a gunshot injury

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### Abstract

Pedicled groin flaps are effective surgical techniques used in cases of defective skin injuries on the hand. However, various complications can arise postoperatively. In this report, we aim to present the development of an epidermoid cyst in the flap area ten years after performing a groin flap for a finger tip skin defect due to a fire arm injury. A 45-year-old male patient presented with defective skin injury to the distal phalanx of the second finger of his left hand due to a shotgun. The skin was closed with a pedicled groin flap. At the end of the 15th day, the flap was separated and it was observed that the flap maintained its viability. After 10 years of follow-up, he complained of swelling and pain in the area where the fingertip flap was applied. As a result of the examinations, it was seen that there was a cystic formation. The cyst was excised and the pathology was reported as epidermoid cyst. No problems or recurrences were observed in the flap area during follow-up. In our case of a rare epidermoid cyst developing years after a groin flap, total excision was successfully performed, preserving the flap's viability and achieving a successful surgical outcome. Epidermoid cyst development after groin flap surgery is extremely rare. Total excision of the cyst is important for treatment and prevention of relapses.

**Keywords:** Defect, epidermoid cyst, finger, groin flap

### Introduction

Various pedicled and free flaps have been described for the surgical treatment of defective injuries on the dorsal, volar, and fingertip areas of the hand to close the defect [1,2]. Among these, the pedicled groin flap is considered to be the preferred safe surgical technique [3,4]. The literature reports several complications following flap surgery, such as necrosis and hematoma. However, the long-term development of epidermoid cysts in the flap area is a rare complication. Epidermoid cysts are cysts that contain keratin and are located in the subcutaneous tissue [5]. The most common form of epidermoid cysts is subcutaneous cysts, which are most frequently localized in the hands. Epidermoid cysts are the third most common mass on the hand [6]. Trauma is often the primary etiological factor for epidermoid cysts. Repetitive trauma can cause keratinized epithelial fragments to become embedded in the deep subcutaneous tissue, leading to cyst formation [7]. Epidermoid cysts are more commonly seen in men [6]. The differential diagnosis of epidermoid cysts should include ganglion

cysts, foreign body granulomas, mucous cysts, tendon sheath giant cell tumors, lipomas, fibromas, hemangiomas, glomus tumors, other malignant tumors, and osteomyelitis [7]. Diagnosis is usually made through physical examination, but ultrasonography (USG) or magnetic resonance imaging (MRI) can also be used for differential diagnosis [7]. They are typically mobile masses and do not exhibit neoplastic behavior [8]. In this case report, we aim to present the development of an epidermoid cyst in the flap area 10 years after a groin flap and the treatment method we applied.

### Case Presentation

Written consent was obtained from the patient for the case images and information in this study. The study was performed in the Department of Orthopaedics and Traumatology of İnönü University. A 45-year-old male patient presented to another clinic's emergency department 10 years ago with a shot gun injury to the distal phalanx of the second finger of his left hand. The distal phalanx had a skin defect on the finger tip. Since the

### CITATION

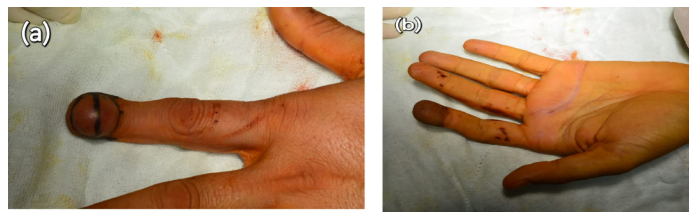
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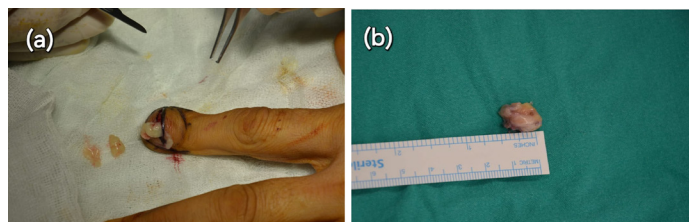
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skin defect on the finger was not suitable for the primary closure of the distal phalanx, a pedicled groin flap was applied under general anesthesia. Two weeks postoperatively, the flap was separated from the surgical site, and the fingertip closure was completed. Active distal interphalangeal joint movements were initiated after six weeks. The patient was followed up long-term by another clinic and returned 10 years later with complaints of gradually increasing swelling in the fingertip.

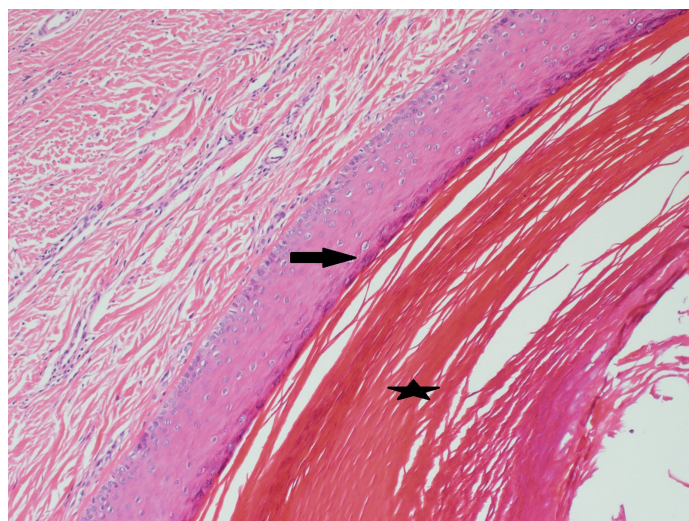
Upon evaluation, a painless swelling was observed at the fingertip where the flap surgery had been performed (Figure 1). We thought that the growth was tissue originating from the flap. We evaluated only by physical examination. Surgical excision was planned. During surgical exposure under local anesthesia, a cystic formation was identified and completely excised (Figure 2). Ten days postoperatively, skin sutures were removed, and active range of motion exercises were initiated. No recurrence was observed during six months of follow-up. Pathological examination of the surgically excised cyst specimen confirmed it to be an epidermoid keratinous cyst (Figure 3).



**Figure 1.** Preoperative views of the finger: (a) dorsal view, (b) palmar view



**Figure 2.** Intraoperative views: (a) ruptured cyst, (b) totally excised cyst



**Figure 3.** Pathological view: Epidermoid cyst lined by multilayered keratinized squamous epithelium with a granular layer; Dense keratin (star) with squamous epithelium (arrow)

## Discussion

Groin flaps are among the surgical procedures used for fingertip injuries with significant defects and tissue loss. Complications such as infection, necrosis, and hematoma have been reported following flap surgery [9]. Epidermoid cysts most commonly localize in the hands but cyst formation in the flap area is rare [10]. In this case, swelling developed at the fingertip 10 years after the groin flap procedure, which was reported as an epidermoid cyst.

Epidermoid cysts are slow-growing soft tissue masses containing keratin, often found in the hands or fingers [10]. In our case, the cyst emerged 10 years after the groin flap procedure and grew within six months in the hand. Epidermoid cysts can also invade bone and cause destruction [11]. In our case, the cyst was subcutaneously located in the flap area without causing bone destruction. It is generally believed that minor trauma can lead to the formation of these cysts. The trauma experienced before the flap surgery and the flap area being on the fingertip, subjecting it to years of micro traumas, are thought to have contributed to cyst formation [7]. Indeed, the development of epidermoid cysts can occur years after exposure to trauma. According to the study by Linkoski et al., the most common reason for patients presentation, as in our case, is a painless, slowly growing mass [7]. The curative treatment for epidermoid cysts is total excision of the cyst and its wall [12]. Cyst lining by stratified squamous epithelium with a granular layer and no significant nuclear atypia just like our pathology results [13]. In our case, the cyst and its wall were completely excised using an appropriate surgical method, preserving the viability of the flap applied years earlier and achieving a successful outcome.

## Conclusion

In conclusion, the development of epidermoid cysts after flap in the flap area is quite rare. Flap tissue growth, cyst or even malignancy may be considered. If the correct diagnosis and treatment methods are applied, successful results are obtained.

### Conflict of Interests

*The authors declare that there is no conflict of interest in the study.*

### Financial Disclosure

*The authors declare that they have received no financial support for the study.*

### Patient Informed Consent

*An informed consent form was taken from the patient.*

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