

*Aktuelne teme/
Actual topics*

BEZIER FLAP- A USEFUL OPTION FOR
RECONSTRUCTION OF
POST-EXTRAVASATION CUBITAL FOSSA
ULCERS

BEZIEROV REŽANJ- KORISNA OPCIJA ZA
REKONSTRUKCIJU
POST-EKSTRAVAZACIJSKIH ULCERACIJA
KUBITALNE JAME

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Ključne reči

Bezier flap, perforatorski režanj,
perforazomi, lokalna plastika.

Abstract

Extravasation injuries are among the most common reasons for prolonged care, hospital stay and higher hospital costs. The plastic surgeon should be familiar with this pathology since the majority of these patients end up with skin and soft tissue defects that have to be reconstructed. Nowadays a plenty of reconstructive options exists in the armamentarium of the reconstructive surgery. The Bezier flap concept is an option which is not so popular in the daily practice. In the present article a brief review of the Bezier flap technique was made. Two clinical cases with post extravasation necrosis and skin defects in the cubital fossa are presented and discussed in order to illustrate the abilities of that approach. The Bezier island flap seems to be a sophisticated and relatively easy option for defect closure, especially in the cubital fossa. It could be also applied in other areas of the human body. However, this surgical concept still remains not so unpopular among the majority of the plastic surgeons.

INTRODUCTION

Closure of skins and soft tissue defects is a mainstream procedure in the field of reconstructive plastic surgery. The major goal of wound closure is to restore the skin's integrity in order to reduce the risk of infection, scarring, and impaired function⁽¹⁾. Many times a plastic surgeon has to deal with difficult defects and a great variety of reconstructive options have been invented⁽²⁾. One of the most frequent iatrogenic injuries in the clinical practice are the wounds after skin necrosis due to extravasation of medications applied via peripheral venous cannula⁽³⁾ being the upper limb the most affected part of the human body⁽⁴⁾. The leak of the administered material to perivascular tissue often leads to extensive morbidity due to subsequent soft tissue loss, scarring, secondary infection, tendon adhesions, contracture of affected limbs and even amputations⁽⁴⁻⁷⁾. It is an expensive complication for the hospital as it may prolong care and hospital stay⁽⁴⁾.

The aim of the present article is to make a brief review of the Bezier flap technique and to illustrate its abilities for reconstruction of post extravasation skin defects in the cubital fossa.

Bezier flap technique

The Bezier flap is an island perforator flap which is based on the French curve design of opposing ellipses (Fig. 1)⁽⁸⁾. The flap becomes a template of the excisional defect (Fig. 1A) and is composed of skin, fat and either underlying fascia or muscle depending upon the anatomical site. The flap is advanced into the area that requires cover, with enough freeing of the deep fascia or muscle attachment to allow movement on one side, yet not detaching the flap fully from such underlying supports as to imperil its viability (Fig. 1B). The leading edge is undermined deeply by blunt dissection, as is the peripheral margin of the flap, while retaining all vascular connections where feasible. The advantage of the Bezier design is that the apex of the flap is

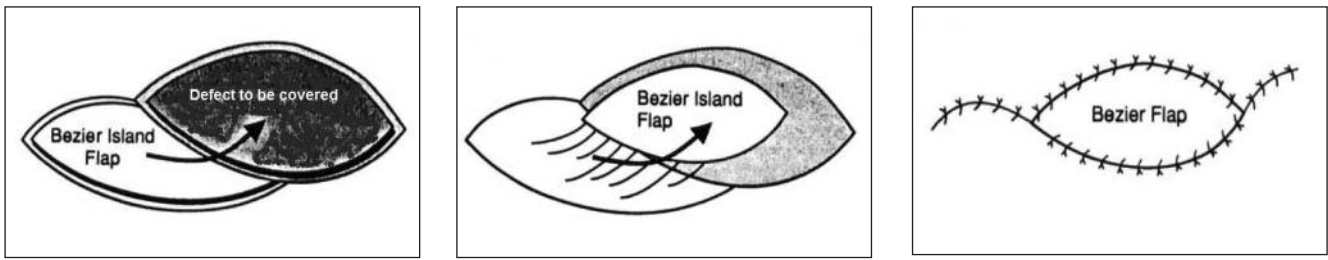


Figure 1. The Bezier flap technique. (A) The Bezier flap advanced into the defect to be reconstructed. The fascial release occurs along one side of the elliptical shaped Bezier flap. (B) The Bezier flap movement: the fascial release on the side of the larger arc allows advancement of the elliptically shaped flap to fill the defect. (C) Double V-Y apposition proximally and distally with the Bezier flap centrally placed in the wound. (8)

halfway along the defect before any V-Y closure is commenced. The apices of the flap thus fit into the defect, employing a double V-Y apposition for closure (Fig. 1C). The points of V-Y apposition may need a two layered suture technique, the remainder requiring a single layer skin closure only.

Clinical case 1

A 50-year-old otherwise healthy man was consulted because of a left cubital fossa ulcer presented for 3 weeks after being discharged from another hospital where he had been treated because of suicide intention (Fig. 2). The defect was oval in shape, 6,5 cm x 4 cm and covered by thick eschar (Fig 2A). Upon debridement, the resulting defect was not closable by direct closure (Fig. 2B) so Bezier flap was dissected in a slightly oblique fashion for the reconstruction

aim (Fig. 2C). The defect was closed under minimal tension (Fig. 2D) and at 1 month follow up good clinical outcome was registered (Fig. 2E).

Clinical case 2

A 60 year-old female operated on because of advanced breast cancer presented with a cubital fossa ulcer (Fig. 3A). The defect was present for more than 3 months after an extravasation of a cytostatic medication and subsequent necrosis of the overlying skin. The defect was circular in shape with measuring about 4cm in diameter. A wide excision of the chronic ulcer was performed taking out all the scar tissue. Bezier flap was designed and a sophisticated closure was achieved. The postoperative period was uneventful and good anatomic, functional and aesthetic outcome was obtained (Fig. 3B).

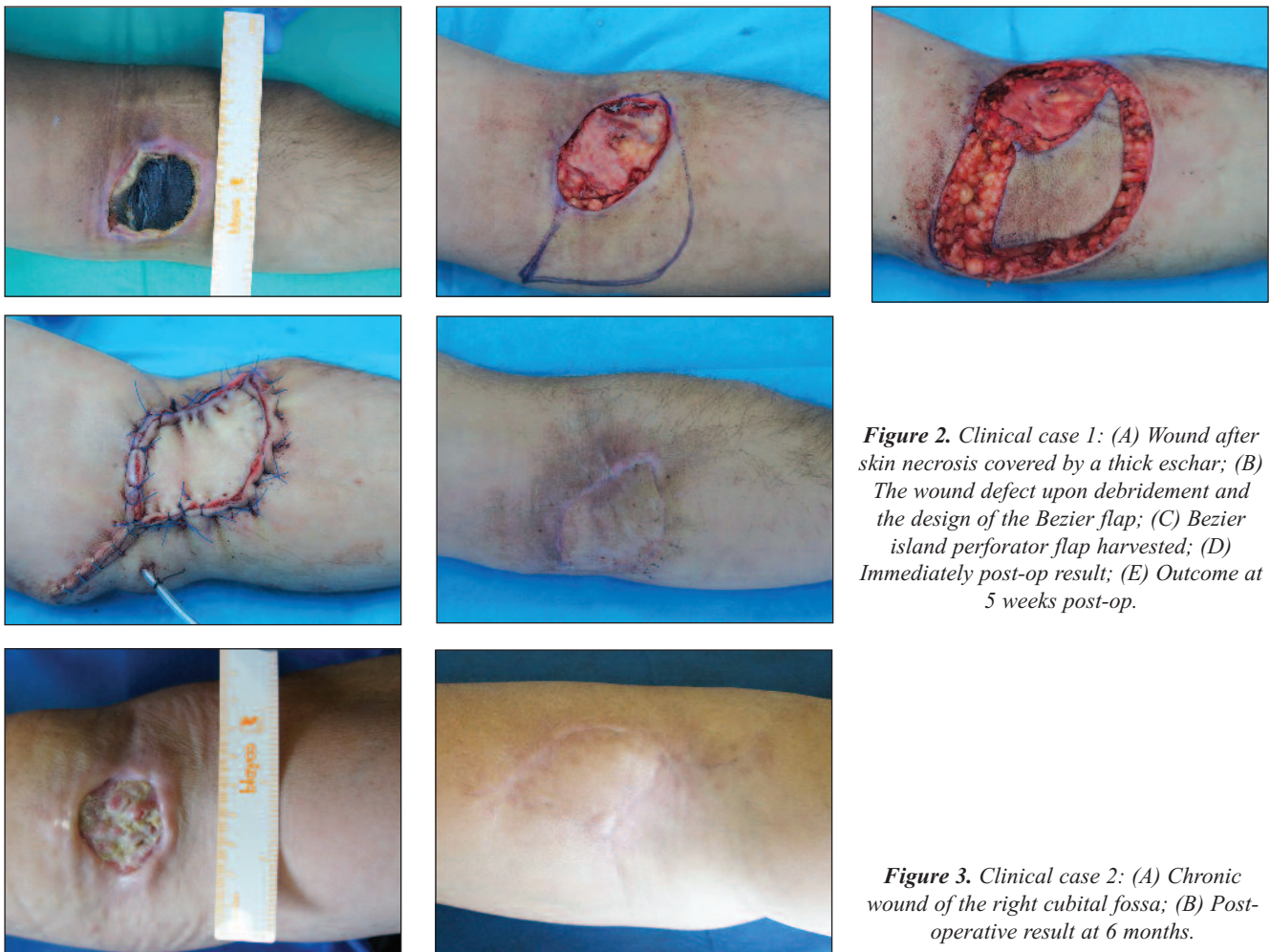


Figure 2. Clinical case 1: (A) Wound after skin necrosis covered by a thick eschar; (B) The wound defect upon debridement and the design of the Bezier flap; (C) Bezier island perforator flap harvested; (D) Immediately post-op result; (E) Outcome at 5 weeks post-op.

Figure 3. Clinical case 2: (A) Chronic wound of the right cubital fossa; (B) Post-operative result at 6 months.

DISCUSSION

The Bezier flap was introduced to deal with elliptical defects not closable by direct apposition and virtually is an elegant extension of the V-Y advancement principle (i.e. limited in terms of advancement) (8). The gentle curve of the Bezier flap uses Langer's lines to minimize the visibility of scars and to maximize the aesthetic result. The first surgeon who stressed on the importance of this technique was Felix Behan in 1995 (8). In subsequent years, the design of the Bezier flap evolved. The gentle curve of this design was retained at the wound margin, but it was identified that having two regions for V-Y advancement and these areas further away from the long axis of the wound would provide improved tissue laxity and greatly aid the primary close of larger defects. This resulted in an arch of tissue being raised on underlying perforators; hence, it was initially coined the „arch” flap. It was renamed a keystone flap due to its resemblance to the keystone of archways(9). The usefulness of the new keystone conception was largely proofed (9-13) and in the author's hands it is a technique which works very well (14).

Beside all above mentioned regarding the anatomy and aesthetics, the functionality of the Bezier flap technique is another very important issue especially when dealing with defects localized in a highly mobile area like elbow and the cubital fossa- this technique allows a patient to be left without any immobilization. The follow up of the two patients of the present study was conducted up to 1 year post-op and no pathologic scarring, no functional impairment were observed, respectively no rehabilitation was needed. This is a very important issue especially in patients who need to go back to work as soon as possible which was the case of both of the patients presented above.

CONCLUSION

The Bezier perforator island flap seems to be a sophisticated and relatively easy option for defect closure, especially in cases with post extravasation ulcers in the cubital fossa. The knowledge of the vascular supply of the skin and soft tissue mobility is of paramount importance for the proper design and execution of this technique.

Sažetak

Ekstravazacione povrede su jedan od najčešćih razloga za produženu negu, boravak u bolnici i veće troškove bolnice. Plastični hirurg treba da bude upoznat sa ovom patologijom, jer većina ovih pacijenata završi sa defektima kože i mekih tkiva koje treba rekonstruisati. Danas u praksi rekonstruktivne hirurgije postoji puno rekonstruktivnih opcija. Bezierov koncept kožnog režnja je opcija koja nije toliko popularna u svakodnevnoj praksi. U ovom članku napravljen je kratak pregled „Bezier flap” tehnike. Prikazani su i diskutovani dva klinička slučaja sa nekrozom post-ekstravazacije i defektima kože u kubitalnoj fosi kako bi se ilustrovala mogućnosti tog pristupa. Izgleda da je Bezierov režanj sofisticirana i relativno laka opcija za zatvaranje defekata, naročito u kubitalnoj jami. Može se primeniti i u drugim delovima ljudskog tela. Međutim, ovaj hirurški koncept i dalje nije toliko popularan kod većine plastičnih hirurga.

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