

Case Report

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Tensor Fascia Latae Assisted Keystone Flap

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Abstract

Keystone flap is a local fasciocutaneous advancement perforator flap based on the underlying perforators. No perforator mapping is necessary. Tensor Fasciae Latae (TFL) is used as an autologous tissue substitute, which provides useful in reconstructive surgery is well known. In this case report, the author present the experience of using TFL as autologous tissue substitute while doing a keystone flap.

Keywords: Keystone; Tensor fascia latae; Flap.

Introduction

Keystone flap is a local fasciocutaneous advancement perforator flap based on the underlying angiosomes that makes use of the choke vessels between them. No perforator mapping is necessary. Donor site closure is achieved in a double V-to-Y manner. Tensor Fasciae Latae (TFL) is used as autologous tissue substitute. In this case report, the author present the experience of using TFL as an autologous tissue substitute while doing a keystone flap.

Materials and methods

The study was carried out in a tertiary care hospital in South India after receiving approval from institutional ethical council. The patient was a 24-year-old male with history of road traffic accident following which he sustained an open Type 3C fracture of

proximal tibia left leg with popliteal artery injury. He was initially managed with knee spanning External fixation with popliteal artery exploration and repair. He underwent wound debridement followed by Illizarow fixation in subsequent week. Later he underwent wound debridement and skin grafting. A raw area with exposed bone persisted in the lateral aspect of left knee joint area (Figure 1). Wound Bed preparation done with hydrojetdebridement, low level laser therapy, autologous platelet rich plasma, and scaffold application. After wound bed preparation, Keystone flap was planned. As the defect was larger and deeper, autologous tissue substitute tensor fascia latae was harvested from the opposite thigh to fill in the defect and granulation to develop over the exposed bone (Figure 2). A type 2 A keystone flap was performed (Figure 3).

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Figure 1: Raw area with bone exposed in the lateral aspect of left knee joint.



Figure 2: Harvesting of Tensor Fascia Latae.



Figure 3: Keystone Flap Type 2a with Tensor Fascia Latae.

Results

Tensor Fascia Latae helped in the development of granulation tissues over the exposed bone. The Keystone Flap had taken well (Figure 4). As the bed was infected, further flap planning was deferred.



Figure 4: Keystone Flap Type 2a with Tensor Fascia Latae.

Discussion

The Keystone Design Perforator Island Flap (KDPIF) was first described by Behan et al. in 2003 as a surgical technique for defect closure after skin cancer excision [1]. It is an adaptation of the “Bezier type flap.” The flap design resembles the keystone of Roman arches. Four subtypes have been described depending on whether the deep fascia is incised or not (no incision with type I), if skin grafting to the donor site is necessary (type IIa: No skin grafting; type IIb: With skin grafting), if 2 opposing flaps are used (type III), and if partial flap undermining is used (type IV) [2]. The versatility and reliability of these flaps have been well documented.

Keystone perforator island flaps combine the safety and reliability of perforator flaps with the simplicity, efficacy and low donor site morbidity of local flaps. They can be used in almost every part of the body for a variety of defects, ranging from superficial small defects to large defects with exposed prominent structures.

In our study, after the wound, bed preparation a keystone flap was planned and Tensor Fascia Latae was used as a autologous dermal substitute for exposed tibia bone in the leg upper leg. Tensor Fascia Latae helped in the development of granulation tissue. TLF use in reconstructive surgery is well known [4] The Keystone flap has taken up well.

However, since it is a single centered study involving a single subject, there is a need for Multicentric randomized controlled trials for further assessment of the effectiveness of the same before it can be accepted as the standard of care.

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