

Role of Innovative Splints in Protecting Flaps

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Abstract

Loco-regional flaps are most common surgeries performed in field of plastic surgery. Post-operatively patient may need to maintain the particular position to preserve the vascularity of the flap to prevent the direct pressure application over the recently raised loco regional flap. Local flaps over the back will be very cumbersome for the patient postoperatively to maintain the prone and lateral position to prevent the direct pressure over the flap. In this case report we will assess the role innovative splint to prevent the application of direct pressure over loco-regional flap in lower back.

Keywords: Flaps; Protective splints; Innovation.

INTRODUCTION

A local flap is created when the surgeon transfer the tissue from one part of your body to the surgical location that needs to be covered, known as the recipient site in the local site. Local flaps can be utilized to recreate a variety of body parts. The head, neck, chest, or breast areas, arms and legs, and the lower back, buttocks, or vagina are all examples. The tissue used in a local flap remains linked to the body and has its own blood supply. The flap's other end is separated from the original location. The surgical site is covered with this end. Extra skin

will be taken from another location, usually the thigh, if extra skin is required to cover the surgical incision. In this case report we will assess the use of innovative ring splints in postoperative care of the surgical site.

MATERIALS AND METHODS

In this case report, 32 year old male came to Jipmer Hospital with the chronic non healing ulcer over the lower back of size 5 X 5 cm for past 10 year post electrical burns. After wide local excision of the ulcer histopathology report came as Squamous cell carcinoma with all margins negative for tumor. After tumor removal size of the tumor ulcer size was around 8 x 8 cm. In view of scarred tissue all around the ulcer, local keystone flap based on the perforator on the right side of the ulcer and transposition flap on left side of the ulcer planned. The raw area created post local flaps from the donor site was covered with split skin grafting from the left thigh. Post-operative care for the flap and skin graft was done with innovative ring splint made from cotton roll and pad made into a ring and fixed

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around the flap site so that even if the patient lies flat flap site was protected by the splint from direct pressure over the flap site. The cost of making the innovative splint is very minimal and is readily and easily applicable.

RESULTS

In this case report, patient was comfortable postoperatively with the splint, the patient compliance is good as patient can mobile in any direction in bed without any harm to the flap site. The patient was very happy with splint as he feels less pain postoperative with well-padded splint even if the patient lies flat with the surgery over the lower back region.

DISCUSSION

Loco regional and free flaps are to be monitored post surgery, for monitoring and splinting we will splint the region with the customized splint or Plaster of Paris along with a window to monitor the flap.¹ This method helps in both ways by protecting and monitoring of the splints. The positioning and

splinting should be important post surgery for flaps and skin grafting as it minimizes edema formation, prevent tissue destruction, maintain soft tissue in an elongated state to facilitate recovery and adopt the anti-contracture position. Physical therapy and splinting should immediately after the injury as they play an important role in different body parts function, especially in hand function. The splints are used to hold parts of the body so that the skin graft and flaps can be immobilized and protected while healing.² The skin can be prevented from shrinkage and contractures while healing. The new grafts and flaps are protected. The deformity is prevented and/or corrected. There are 3 types of splints usually used with namely static, static progressive and dynamic splints.^{3,4} Static or Primary splints are used in the acute phase for skin graft protection after surgery or anti-contracture positioning. These splints are applied to adjacent intact skin. Static progressive or postural splints are used after the graft phase when there is no sufficient Range of movements (ROM) obtained with static positioning and exercise. These splints may be implemented for correction and contractures commonly used in burns patients. Dynamic or follow-up splints are used to increase function by providing a slow force



Fig. 1: Transposition flap.



Fig. 2: Protective ring splint for local flap

Table 1: Different splints and body parts.

Body Part and purpose	Type of Splint
Anterior Neck Burns	Halo neck splint that positions the neck in extension using the head and upper torso for stabilization.
Neck Contractures	Watusi Collar (a series of cylindrical plastic foam tubes fastened circumferentially around the neck)
Chest	Back brace or Spinal support
Shoulder or Axilla	Airplane or axillary splint
Finger	Finger extension splint or a thumb spacer
Mouth	Mouth Splint to keep the skin from shrinking around during the healing process and restore motion of the shoulder
Hand	Hand splint
Wrist	Wrist splint or wrist orthosis
Elbow	Elbow splint
Hip	Anterior hip spica splint
Knee	Common knee splints are: Gutter or / trough splint: knee comforter
Ankle and foot	Posterior foot splint: anterior ankle comforter and toe comforter

to stretch a contracture or provide resistive force for exercise post surgery or post burns (Table 1).

CONCLUSION

Loco regional flaps, free flaps, Skin grafts are commonly performed procedures in plastic surgery department. In this study we can able to appreciate the role of Innovative Splint in Protection of loco regional flaps. This was based on single case report, so validity of the splints should be tested by using it widely in many patients in future. These splints can be easily adaptable and can be used in any hospital.

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