

Rhomboid Flap - A Versatile Technique of Wound Coverage

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Abstract

Introduction: Skin defects may result following trauma or excision of cutaneous lesions not amenable to primary closure. In such situations the rhomboid flap can be used. First put forward by Alexander Limberg in 1945, the rhomboid flap is dynamic, versatile and safe to use. **Objective:** This observational study demonstrates the widespread utility of the rhomboid flap in various clinical situations.

Methods: A retrospective observational study of 14 patients with different surgical lesions was carried out from 2015 to 2019, in the Department of Surgery at a Medical College Hospital.

Results: The patients with a mean age of 35 years were 36% females and 64% males. 21% of the patients presented with Hidradenitis Supparativa. 21% of patients presented following traumatic injuries. Basal cell carcinoma (BCC) and dermoids were seen in 14% patients, each. Single cases, amounting to 7% each, presented with porokeratosis, compound naevus, pilonidal sinus, and steroid ulcer at HT scar site. The face was the most commonly affected anatomical entity with 7 cases (50%). Complications seen in 1 patients (7%) wound infection.

Conclusion: The rhomboid flap is indeed a versatile flap for reconstruction of skin defects.

Key words: Rhomboid Flap, Versatility, Technique of wound coverage

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Introduction:

Rhomboid flap is a reconstructive technique for full thickness skin loss by any means, where primary repair is not possible or appropriate. In this technique a local flap is transposed using geometric principles. The rhomboid flap is a versatile and safe percentage.¹ Procedure is used in different surgical principles for reconstructive purpose

such as plastic surgery, head neck surgery, ophthalmology, proctology etc. Rhomboid flaps maintain continuity of texture, color and vascularity with the surrounding tissue, resulting in a better aesthetic and functional outcome.² The flaps are designed as a rhomboid with angles of 60° and 120°. The primary defect is made or imagined as a rhomboid; the secondary defect is closed primarily.^{1,3}

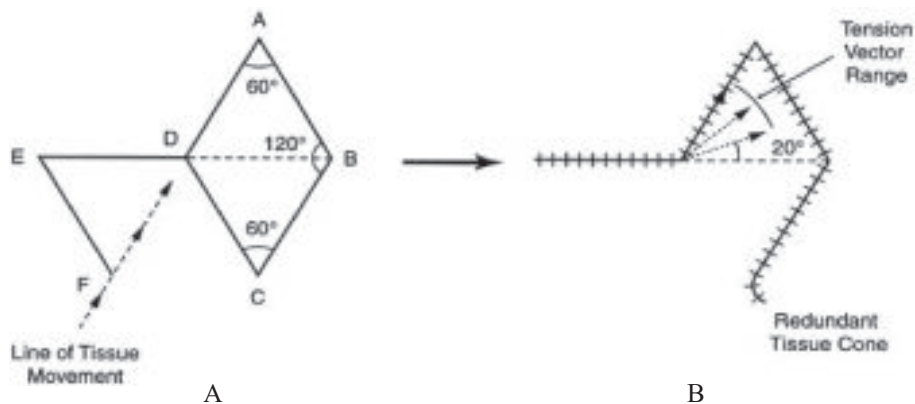


Fig.-1: (A) Rhomboid flap marking with internal angles of 60 and 120 degrees. (B) Final configuration of the scar.¹

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The length and width ratio of the flap is 1:1. Good planning of the entire procedure is pivotal to a satisfactory outcome.^{1,2} The flap is raised and transposed tension-free onto the primary defect following meticulous haemostasis.

This study aims to share our experience with this reconstructive technique.

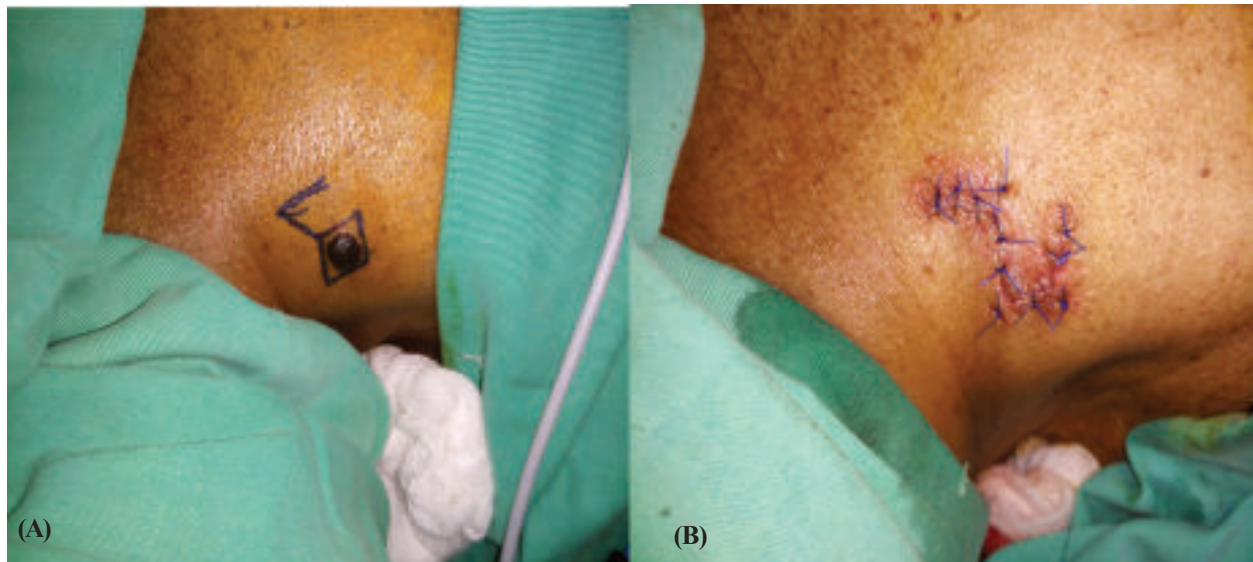


Fig 2: (A) Preoperative plan of flap for a benign skin lesion. (B) After flap inset.



Fig.3: (A) Preoperative preparation for flap in a pilonidal sinus. (B) After inset of flap.

Methods:

The study was retrospective and observational. A total number of fourteen rhomboid flaps were done at a teaching hospital within the period of 2015 to 2019. Written informed consent was given by each patient for the procedure along with consent regarding the photographs taken and its use solely for this study. All operations were done using same

surgical technique. The sampling of cases was purposive. No definitive inclusion or exclusion criteria were set. A checklist was used to collect the following data from patients such as age and gender of the patient, nature of the primary lesion, anatomical location of the flap and measurements of the flap. Data were analyzed manually and presented in table and charts.

There is no conflict of interest in this study.

Results:

In this study the mean age of the patients was 35 years. The female patients comprised 64% of this study with the male 36%.

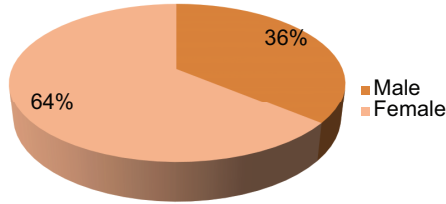


Fig.-4: Gender distribution of cases. Female (64%), male (36%). (n=14)

The age group of 21 -30 years comprised the majority of cases. (n=14)

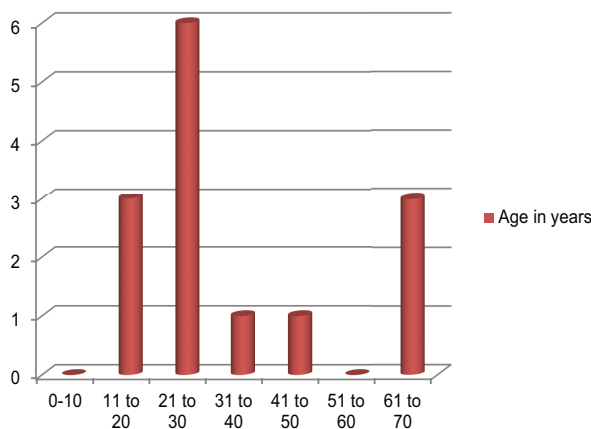


Fig.-5: Age distribution of the patients. Mean age 35 years (n=14)

Among the different anatomical locations where the flaps were done, face was the commonest location. (n=14)

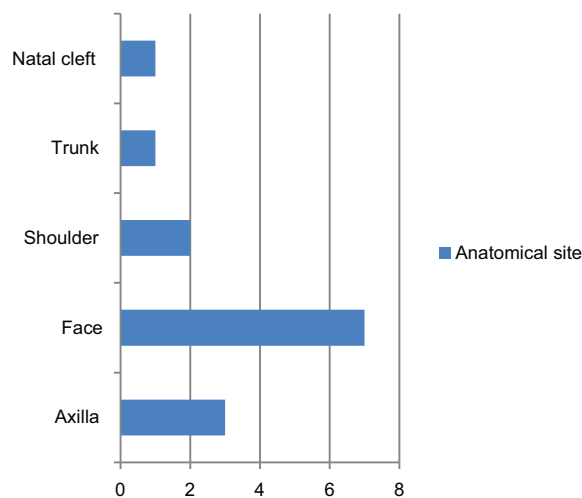


Fig. 6: Anatomical locations of flaps. (n=14)

Among the different primary lesions in this study benign skin lesions were the majority. (n=14)

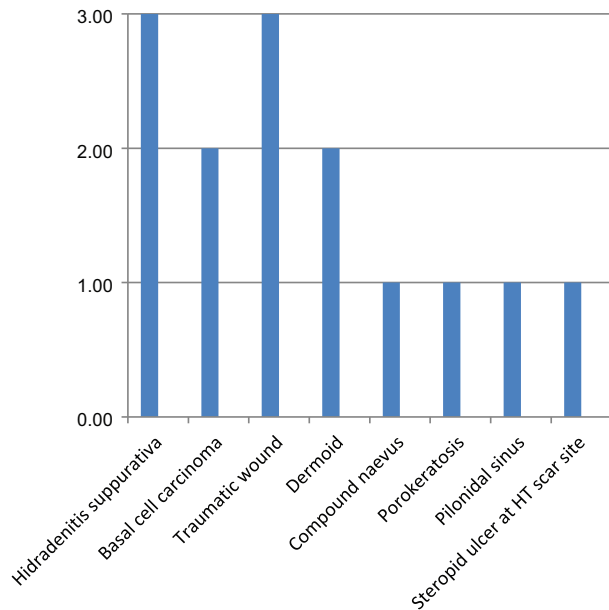


Fig. 7: Types of primary lesions. (n=14)

Table-1

Breakdown of individual flap measurements. (n=14)

Number	Flap measurement (in cm)	Number	Flap measurement (in cm)
1	10x10	8	10x12
2	10x8	9	5x5
3	3x2	10	6x6
4	7x7	11	2x2
5	3x2	12	1.5x2
6	2x2	13	3x2
7	2x2	14	1x1

Discussion:

From our observational study we reaffirm the versatility of the rhomboid flap, as observed by other authors. The flap allows the defect to be covered by tissue of the same colour and structure. Closure of larger skin defects by primary skin closure is difficult. Coverage by skin grafts is relatively inferior as they don't maintain sub-papillary and sub-dermal vascular plexuses.² Gustavo Steffen Alvarez et al.⁴ found the average age of their study of 38 patients to be 59.6 years as opposed to the average age of our study being 35 years. Similar to our commonest anatomical

site, the face was their commonest site of flap reconstruction, too. Complication was seen in 1(7%) out of the 14 cases in the form of wound infection. The wound infection healed following regular dressing and use of antibiotics.⁴ Rhomboid flaps maintain such vascularity through their pedicle and can be used anywhere provided tissue is available.⁶ Scar complications as trapping and hypertrophy were not seen; only a single case of wound infection was found. Facial reconstructions favour cutaneous flaps to primary closure or grafting to avoid distortion of adjacent structures.⁷ In our study, face (50%) was the commonest site of reconstruction.

G.D. Lister and T. Gibson in their study agree to the major advantage of the Limberg flap-its simplicity.⁸ Although only one pilonidal sinus case was reconstructed, rhomboid flap is considered the best option for treating sacrococcygeal pilonidal disease.⁹

Conclusion:

The rhomboid flap may be considered as a good option to reconstruct the full thickness skin defects at various anatomical locations. It is an easily applied flap and has very few complications. The study maybe used in a larger group for further evaluation.

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