

Case Report

Limberg flap for reconstruction after excision of multiple conglomerate epidermoid cysts

Nida Khan^{1*}, Karna Chedda¹, Dipesh Goel², Rontgen Rajakumar¹, Pragati Singhal¹

¹Department of Surgery, ²Department of Pediatric and General Surgeon, Dr D. Y. Patil Hospital and Medical College, Navi Mumbai, Maharashtra, India

Received: 13 December 2018

Revised: 17 November 2019

Accepted: 28 November 2019

*Correspondence:

Dr. Nida Khan,
E-mail: khannida08@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Epidermoid cysts are common, subepidermal, keratin containing nodules, found anywhere on the body in 3rd and 4th decade of life. Surgical treatment is by complete excision with wall of cyst intact. Author presents a 40-year-old male with multiple sebaceous cysts in close proximity to one another on his left thigh. Individual cyst excision would have lead to a difficult primary closure, need for multiple incisions, with contracture and poor cosmesis due to the close proximity of the cysts. instead, the cysts were excised in mass and limberg flap was used for reconstruction and primary closure. Patient was followed up for 6 months. The objective of this study was to prove that limberg flap yields superior cosmesis and healing by primary intention in reconstruction after excision of multiple epidermoid cysts.

Keywords: Epidermoid cyst, Limberg flap, Reconstruction flap, Rhomboid flap

INTRODUCTION

Epidermoid cyst, is a benign subepidermal, encapsulated, cyst containing keratin. Most common locations are the face, neck, and trunk, but they can be found anywhere on the skin, including the scrotum, genitalia, fingers, with cases reported within the buccal mucosa.¹ They may increase in size or remain the same over years. They are benign in nature but may rarely turn malignant.

They are sporadic in occurrence but may be found in association with Gardner's syndrome and Gorlin Syndrome, in Favre-Racouchot syndrome (nodular elastosis with cysts and comedones) in elderly patients, epidermoid cysts may result from chronic sun damage. Patients on BRAF inhibitors can develop epidermoid

cysts of the face. Lately, imiquimod and cyclosporine have been noted to cause epidermal inclusion cysts.² They are the commonest of all epidermal cysts. They are seen in 3rd and 4th decade and more in males than females. They are lined with stratified squamous epithelium that leads to an accumulation of keratin within the subepidermal layer or dermis. Clinically, they are a few millimeters to several centimeters, non-fluctuant, compressible masses. A central, dark come done opening (punctum) may or may not be present. They are mobile, unless associated with fibrosis.

Diagnosis is clinical. Treatment is complete surgical excision with cyst wall intact. Elliptical incision including the punctum is commonly employed. However for multiple cysts in close proximity, primary closure is

difficult for individual cysts with a poor cosmetic scar. Instead a rhomboid flap can be used to close the defect. Author report a case of Limberg flap used to excise and reconstruct a conglomer of epidermoid cysts on thigh.

CASE REPORT

A 45-year-old man presented to the outpatient department with multiple lumps over his left thigh since 3 years. On examination, there were multiple (5) epidermoid cysts of 0.5x1 cm (smallest) to 2x2.5 cm (largest) in size, adjacent to one another. Each had a punctum. They were non tender, non-fluctuant. Excision of individual cysts was difficult as they were only a few millimeters apart. Moreover, the resultant scar would have lead to poor cosmesis. Decision was taken to excise the cysts en mass and reconstruct a Limberg flap, thus avoiding multiple incisions and contracture.



Figure 3: Intra operative picture of excised epidermoid cysts in a rhomboid manner.



Figure 1: Preoperative picture of multiple epidermoid cysts.



Figure 4: Immediate postoperative picture after making a rhomboid flap.



Figure 2: Preoperative skin marking of multiple epidermoid cysts.



Figure 5: Post-operative day 14, picture of rhomboid flap.



Figure 6: Picture of flap six months after follow up.

Consent was taken for the procedure, parts were shaved and prepared. Patient was given spinal anesthesia and placed in lateral position. A Rhombus shaped incision was made around the cysts, after marking with skin marker. The incision was deepened to subcutaneous tissue. Area within the rhombus was excised. Skin flap raised and sutured in two layers with vicryl 2-0 and ethilon 2-0. Subcutaneous removal drain was kept in situ for 7 days then removed. Sutures were removed on the 14th day of surgery and patient was followed up for 6 months. There was no recurrence of the cysts. Patient had a healthy scar (Figure 1-6).

DISCUSSION

Professor A A Limberg of Leningrad designed the rhombus flap.⁴ He published numerous articles on the same. His first English publication was a chapter in *Modern trends in Plastic Surgery*. It is a parallelogram with two angles of 120° and two of 60°. All sides of the parallelogram are of equal size. The flap has to be of sufficient thickness and including the subcutaneous fat. It can be used anywhere on the body. It is robust and can be tailored to the patient's need. Many studies demonstrate its use in the treatment of pilonidal sinus. It has been applied for various body parts like chin, alar rim, digits, floor of the nose and eyelid. It is versatile in that a random pattern flap can be raised from any one or all corners of the rhombus.¹ The defect is filled with tissue of the same thickness and colour, and with good vascularity. Unlike smaller lesions where elliptical incision allows easy primary closure, for larger lesions, skin flap is necessary to close the defect.

In designing the flap, surgeon draws a line from the outer point of 120 degree angle, this line then bisects the angle, with its length being then equal to the side of the rhomboid.⁵ From the outer point of this line, another line is drawn at 60 degree parallel to the side of the rhombus defect. The length of this line is same as that of the size

of rhombus. Success of the flap depends on correct placement of base of triangle in relation to the axis of maximum extensibility, which is at right angle to relaxed skin tension line. Its closure should not distort local anatomical features. The angles of the flap are closed by three point sutures. Rhombus flap is a transposition flap, its base is adjacent to the defect. The donor site is closed directly. An understanding of flap anatomy and physiology is important to see its successful implementation. Flap survival depends on two factors: blood supplied through the base of the flap and the growth of new vascular channels between the flap and recipient wound bed. Neovascularization typically occurs 3 to 7 days after flap transfer. Before this time, flap is supplied by perfusion pressure provided from base of flap and imbibition of nutrients from the wound bed itself. Area of skin selected should have adequate laxity. An evaluation of relaxed skin tension line and line of maximum extensibility to maximize scar camouflage and minimize closure tension.⁶ Limberg flap is highly predictable and consists of straight, precise lines, not all of which run parallel to relaxed skin tension lines. The surgeon can easily visualize the anticipated scar configuration and approximate vector of maximum wound closure tension by drawing the flap and then covering the two parallel sides of the flap with his or her fingers.

Another similar flap was designed by Dufourmental where the angles instead of 120/60 degrees are 30/150 degrees.⁷ It is used for closing larger defects. There is a Japanese study demonstrating use of the same in bed sores.⁸

It also avoids multiple incisions and wound contracture.

In this case, it also helped avoid recurrence.

CONCLUSION

Limberg flap yields superior comsesis and healing by primary intention in reconstruction after excision of multiple epidermoid cysts.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Chasmar LR. The versatile rhomboid (Limberg) flap. *Canad J Plastic Surg.* 2007;15(2):67-71.
2. Zito PM, Scharf R. Cyst, Epidermoid (Sebaceous Cyst). *Stat Pearls.* 2019.
3. Balasundaram P, Garg A, Prabhakar A, Joseph Devarajan LS, Gaikwad SB, Khanna G. Evolution of epidermoid cyst into dermoid cyst: Embryological explanation and radiological-pathological correlation. *Neuroradiol J.* 2019;32(2):92-7.

4. Limberg AA. Modern trends in plastic surgery: design of local flaps. *Mod Trends Plast Surg.* 1966;2:38-61.
5. Lister GD, Gibson T. Closure of rhomboid skin defects: the flaps of Limberg and Dufourmentel. *Br J Plast Surg.* 1972;25:300-14
6. Smoot EC. Removal of large inclusion cysts with minimal incisional scars. *Plastic Reconstruct Surg.* 2007;119(4):1395.
7. Dufourmentel C. An L-shaped flap for lozenge shaped defects. Principle-Technique-Application. *Trans. Third Internat. Cong Plast Surg.* 1964:772-3.
8. Lu CX. Use of a dufourmentel flap in repairing lumbosacral bed sore (a report of 7 cases). *Zhonghua zheng xing shao shang wai ke za zhi= Zhonghua zheng xing shao shang waikf [ie waike] zazhi= Chinese J Plastic Surgery Burns.* 1989 Sep;5(3):197-8.

Cite this article as: Khan N, Chedda K, Goel D, Rajakumar R, Singhal P. Limberg flap for reconstruction after excision of multiple conglomerate epidermoid cysts. *Int J Res Med Sci* 2020;8:371-4.