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Research Article

Versatality of Limberg Flap

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ABSTRACT

Background: *Pilonidal sinus is a relatively common condition affecting men twice as often as women. Decubitus ulcer is more prevalent in elderly and mainly at sacral region. The management of pilonidal sinus disease or sacral decubitus ulcer remains controversial and gold standard treatment modality has yet to be established. Limberg procedure is a safe and reliable technique in the treatment of sacrococcygeal sinus/ ulcer disease, with low complication and recurrence rates if performed according to appropriate surgical principles.*

Methods: *This is a Prospective study on 25 patients between Jan 2016 to july 2017 at General surgery Department at a tertiary care hospital.. Patients having primary or recurrent pilonidal sinus disease, Decubitus sacral ulcer and Malignant sacral ulcer underwent this operation.*

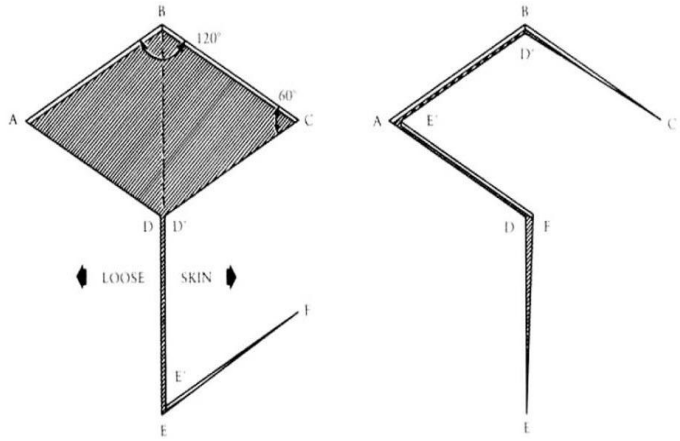
Results: *Twenty five patients had this surgery. Among them, 22 (88%) were males and 3 (12%) were female. Of all patients operated, 21 (84%) presented with Pilonidal sinus, 3 (12%) with decubitus sacral ulcer and one (4%) with malignant ulcer in the natal cleft region. The mean age was 36, (Range: 19–75 years). 3 (12%) presented with recurrent sinus and 1 of them had previous surgery on more than one occasions. Twenty three patients (92%) had full primary healing without any complication. One (4%) patient had minimal epidermolysis of flap corners. One (4%) patient developed Venous congestion of the flap in immediate post-op.*

Conclusion: *Limberg's transposition flap is an effective treatment in terms of its low complication rate, a short hospital stay, short time to return to normal activity, low recurrence rate, patient comfort and good long term results. The surgery can be easily mastered.*

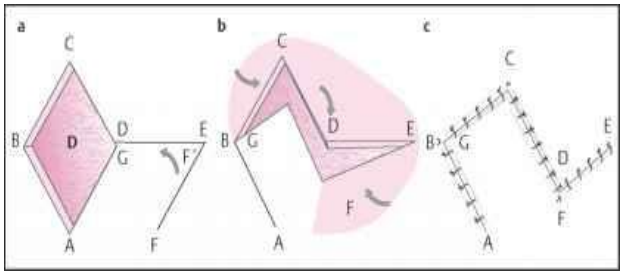
INTRODUCTION

Professor AA Limberg of Leningrad devoted his entire career to flap design, publishing first on the subject in 1928. His first treatise in English was a chapter in Modern Trends in Plastic Surgery, edited by Thomas Gibson of Glasgow University (Glasgow, Scotland) in 1963. In that chapter, he outlined his rhomboid flap. It is basically a parallelogram with two angles of 120° and two of 60°. These angles, of course, can be modified

depending on the shape of the lesion or defect. All sides of the rhomboid and all sides of the flap are equal. As many as four flaps can be raised from one rhomboid, if required. Often, a myriad of flaps are outlined, but the student or resident is not given an opinion as to which one might be useful in the majority. The proper technique for raising these flaps is described.



There are nine articles on its use for pilonidal sinus and three for hand surgery, as well as several examples of its use in ophthalmology and otolaryngology. This flap is obviously an attractive choice in many body areas.



The technique of its elevation is simple. The elevated flap requires sufficient subcutaneous fat, and dissection must be carried past its base to prevent an elevated bump when it is transposed.

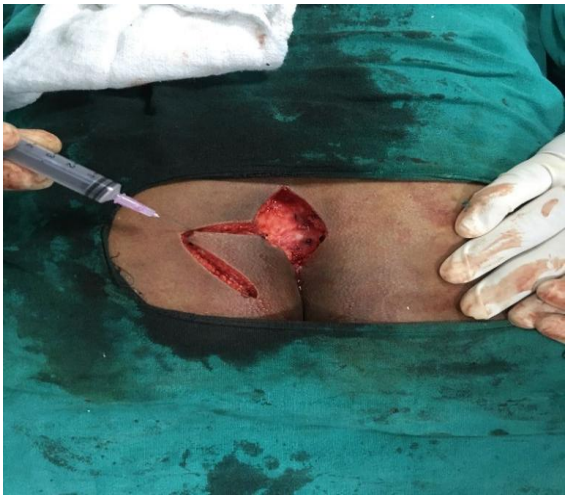
MATERIAL AND METHODS

This is a Prospective study on 25 patients between Jan 2016 to july 2017 at General surgery Department at a tertiary care hospital. The cases which have been included in the study are pilonidal sinus, sacral pressure sores and malignant ulcerative lesion at gluteal region.

These patients were advised to return to normal activities after removal of stitches, after about 2 weeks, but to avoid excessive physical strain and strenuous sports for following 4 to 6 weeks. Follow up of all patients was performed on outpatient basis, every 2 weeks for first two months and then monthly for a period of six months.

Surgery is performed mainly in spinal anesthesia but in one patient general anesthesia was preferred due to her previous spinal surgery. Patient is placed in jackknife position with buttocks strapped for wide exposure. After adequate shaving and skin preparation, area to be excised is carefully marked and flap lines are mapped on the skin.

Planed surgery maping



Flap elevation

Flap insertion

Immediate post-op

After suture removal

The rhomboid incision including the sinus / ulcer and its extensions is made down to the pre-sacral fascia. Flap is constructed by extending the incision laterally and down to the fascia of the underlying muscle. The diseased area is removed en bloc. Flap should be exactly of the same angles and length of the defect made by the excision. Thus a rhombic shaped fasciocutaneous flap is developed. The flap is transposed into the rhombic defect without tension. Suction drain is placed in the wound cavity, through a separate stab incision. Subcutaneous tissue is approximated with interrupted 3/0 vicryl. Skin is closed with mattress interrupted stitches with prolene 4/0 or skin staplers. Antibiotics are given for seven days, initial intravenous and then oral. The suction drain is removed on after 48 hrs. Sutures are removed on 10th post operative day.

RESULTS

Twenty five patients had this surgery. Among them, 22 (88%) were males and 3 (12%) were female. Of all patients operated, 21 (84%) presented with Pilonidal sinus, 3 (12%) with decubitus sacral ulcer and one (4%) with malignant ulcer in the natal cleft region. The mean age was 36, (Range: 19–75 years). 3 (12%) presented with recurrent sinus and 1 of them had previous surgery on more than one occasions. Twenty three patients (92%) had full primary healing without any complication. One (4%) patient had minimal epidermolysis of flap corners. One (4%) patient developed Venous congestion of the flap in immediate post-op, since he was mentally challenged and was putting his buttocks tight all the time and it was managed by regular massaging of the flap to reduce edema. However that also healed completely with conservative treatment. The length of hospital stay was 9 days and most patients returned to work within 4 weeks.

DISCUSSION

The exact cause of Pilonidal sinus is not clear. There are various theories. For example, one

theory is that the problem may develop from a minor abnormality you were born with, in the skin between the buttocks. This may explain why the condition tends to run in some families. Part of the abnormality in this part of your skin may be that the hairs grow into your skin rather than outwards. Another theory is that you develop skin dimples (skin pits) in the skin between your buttocks. These may develop as a result of local pressure or friction causing damage to the small structures below your skin which are responsible for making hairs (the hair follicles). Because of local pressure, growing hair in your natal cleft may become pushed into your skin pits.

Whatever the cause, once hair fragments become 'stuck' in your skin they irritate it and cause inflammation. Inflamed skin quickly becomes infected and so a repeated (recurrent) or persistent infection tends to develop in the affected area. The infection causes the sinus to develop which often contains broken pieces of hair.

Decubitus ulcers are areas of necrosis and ulceration where tissues are compressed between bony prominences and hard surfaces. They are caused by pressure in combination with friction, shearing forces, and moisture. Risk factors include elderly people, impaired circulation, immobile-zation, under nutrition, and incontinence. Severity ranges from nonblanchable skin erythema to full-thickness skin loss with extensive soft-tissue necrosis. Diagnosis is clinical. Prognosis is excellent for early-stage ulcers; neglected and late-stage ulcers pose risk of serious infection and are difficult to heal. Treatment includes pressure reduction, avoidance of friction and shearing forces, and diligent wound care. Sometimes, skin grafts or myocutaneous flaps are needed to facilitate healing.

Adipo-fasciocutaneous flap, classic Limberg flap, and modified Limberg flap techniques are the most recently favored techniques. Compared with open packing and marsupialization, excision and primary closure is known to provide quicker healing and quicker return to work. Most patients return to work in 3 to 4 weeks.[1] However, a high complication rate has been reported because of tissue tension, although some surgeons have reported good results after primary closure.[2-3]

Flap techniques have been associated with lower infection and recurrence rates, shorter hospital stay, and better aesthetic results. With this technique, the internal cleft can be flattened, and tissue can be approximated without tension. The importance of the post-operative wound care should also be stressed. Exercise or sitting down on the wound should be avoided for two weeks and the patient has to return slowly to normal activities. Hair removal either by shaving the edges of the wound is mandatory. This has to be continued at least until complete healing of the wound, but preferably on a long-term basis. [4]

Comparison with other studies

Patients (no.)	Hospital stay (days)	Complications (%)	Recurrence (%)	Reference
25	4.0	16	-	(5)
102	3.7	7	4.9	(6)
40	5-11	40	10	(7)
110	3.0	5	1	(8)
238	2-3	2	1.26	(9)
411	3.2	15.75	2.91	(10)
25	9	8	-	Current study

Benefits of Limberg flap-

- Flattens the natal cleft with a large well vascularised pedicle that can be sutured without tension.
- Midline dead space and scar is avoided.
- Useful in complex sinuses with multiple pits where radical excision leaves large defect.
- Easy to perform, learn and design.
- Useful in recurrent pilonidal disease, sacral pressure sores.
- Reduces hospital stay and time to resume normal activities.

CONCLUSION

Although the study had a small number of patient's and short follow-up period, but it can be safely said that for primary sacrococcygeal pilonidal sinus disease or sacral pressure sores,

Rhomboid excision with Limberg's transposition flap is and effective treatment in terms of its low complication rate, patient comfort and good long-term results. The surgery can be easily mastered.

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