ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 10 | October - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A COMPARATIVE STUDY OF Z-PLASTY & LIMBERG FLAP IN MANAGEMENT OF PILONIDAL SINUS - A RANDOMISED CONTROL STUDY

Plastic Surgery

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KEYWORDS

INTRODUCTION

Pilonidal sinus disease was first coined by Hodges in 1880 and is diagnosed by the finding of a characteristic epithelial track situated in the skin of the natal cleft, a short distance from the anal verge which containing hair.1 It is a common disorder among young adults, in the age group 15-30 years, after puberty when sex hormones are known to affect pilo sebaceous glands and *change healthy body hair growth. The patients usually present with complaints of painless,* continuous or periodic discharge. Pilonidal sinus incidence is 26 per *1,00,000 people and* observed at a rate of 0.7% in the general population[2] Karyadaki's theory is the most popular theory accepted to explain the pathogenesis of the disease. He proposed that pilonidal sinus results from the interplay of three main factors resulting in the insertion of hair into the natal cleft which are: The presence of loose hairs (the invader), some force facilitating hair insertion into the skin, and the vulnerability of the skin, such as intergluteal sulcus depth.

The ideal method of pilonidal sinus disease treatment is still controversial. There are many surgical and conservative (medical) methods used for treatment. The main bases of surgical treatment of pilonidal sinus treatment including surgicalexcision of the sinus tracts followed by either primary closure, flap procedure or left open the wound for secondary healing.

Surgical methods as mentioned for example simple incision, drainage, unroofing, curettage and spontaneous secondary healing, excision-flap sliding, Karydakis, Bascom methods, modified Limberg flap, Z plasty flap and modified Bascom cleft lift procedures are the most commonly used surgical methods.

The aim of the Our study is to compare the Limberg flap versus the Z plasty flap technique in the treatment of pilonidal disease regarding postoperative complications, hospital stay, days off works, recurrence rates, postoperative cosmetic appearance and patient's satisfactions.

Aims & Objectives

Aim- A comparative study between Z -Plasty And Limberg flap as a treatment of symptomatic & asymptomatic pilonidal sinus. Objectives:- To identify best treatment modality among Z-Plasty And Limberg Flap for pilonidal sinus.

METHOD & MATERIAL

A Randomised control study was conducted in the Department of General Surgery, Mahatma Gandhi Medical College, Jaipur.

A total of 60 cases were included, of which 30 underwent Limberg flap procedure and 30 underwent Z-plasty.

Inclusion Criteria –

All Age group asymptomatic & symptomatic patient with pilonidal sinus not having discharge and who is fit for anaesthesia and planned for z-plasty and limberg flap.

Exclusion Criteria –

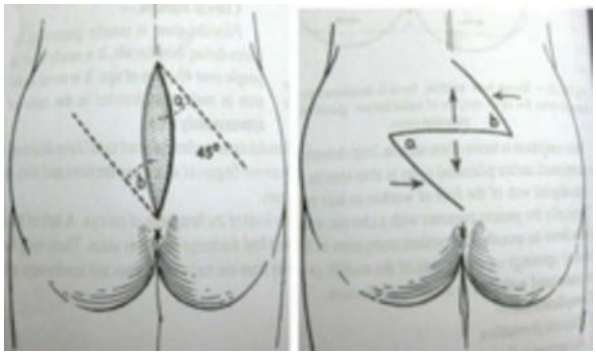
All symptomatic patients having discharge-Patient unfit for anaesthesia-patient having uncontrolled bleeding, diasthesis.

All patients in both treatment groups were given Anesthesia and placed in the prone position with buttocks taped apart.

Z-Plasty-

Principle - Obliterating the natal cleft and increasing the transverse length by recruiting the lateral tissue.

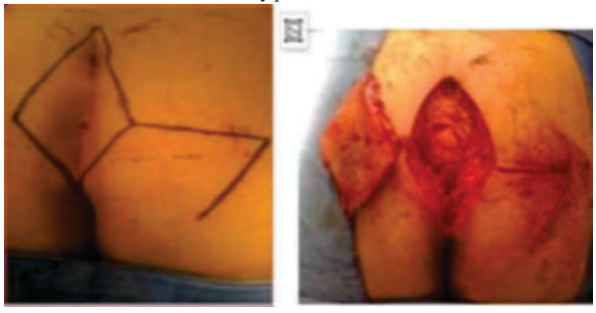
Procedure - Excision of the midline sinus, from the ends of the midline wound, the limbs of the "Z" are cut, subcutaneous flaps are raised upto the level of fascia, Transposition of the flaps carried out, skin is closed.



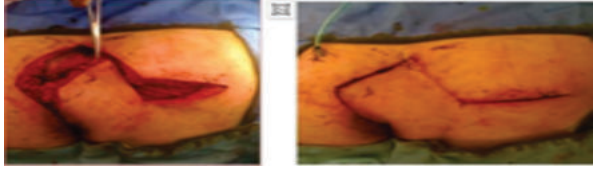
a. marking of Z limbs A and C
b. Flaps created and transposition done and skin closed B and D

Limberg Flap

Rhomboid incision made around the pilonidal sinus and excision of all the existing sinuses down upto the presacral fascia carried out. Incision enclosed rhombic area of skin, subcutaneous fat and sinuses excised along with lateral extensions. Long axis of the rhomboid is in midline and the short axis is transversely placed.



A-Plan for excision and incision of flap,
B-Excised specimen with incision over the flap,



C-Rotation of flap to cover the defect D-Flap in place with drain,

Final appearance of wound F-Operated site at the end of after flap closure 6months.

Two methods were compared with respect to the duration of surgery, postoperative pain and complications, average time of drain removal, mean duration of hospital stay and recurrence.

RESULTS

Table 1: Age Distribution

	Limberg		Z plasty	
	Number of Cases	%	Number of Cases	%
20-30	20	66.66	17	56.66
31-40	10	33.33	13	43.33
Total	30	100.00	30	10.00
Mean±SD	29.53±4.92		29.30±6.08	
P value	0.870 (NS)			

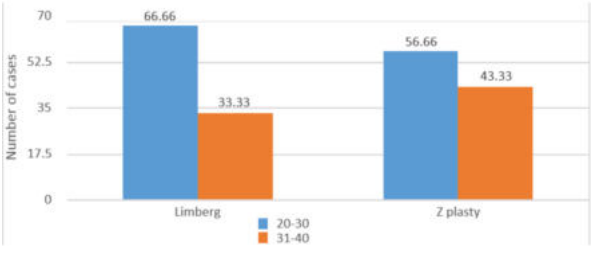


Figure 1. *Depicts Age Distribution*

Table 2: Sex Distribution

	Limberg		Z plasty	
	Number of Cases	%	Number of Cases	%
Male	24	80.00	25	83.33
Female	6	20.00	5	16.66
Total	30	100.00	30	100.00

Chi-square = 0.000 with 1 degree of freedom; P = 1.000 (NS)

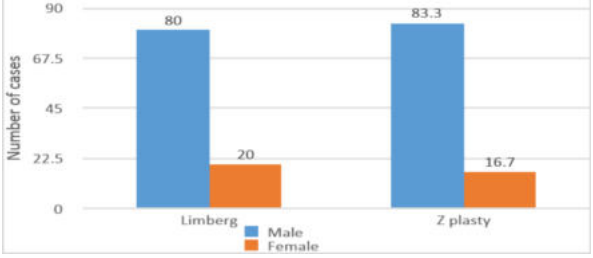


Figure2 *.Depicts sex distribution*

Table 3: Duration Of Operation

	Limberg		Z plasty		P value
	Mean	SD	Mean	SD	
Duration of Operation (minutes)	35.83	4.75	45.00	8.41	P<0.001(S)
Range	30-45		30-60		

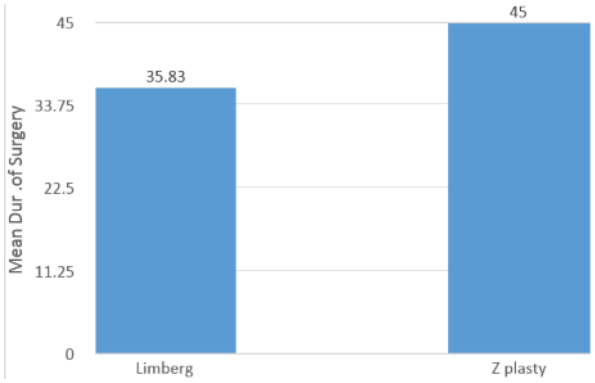


Figure 3. *Depicts Duration Of Operation*

Table 4: Post Operative Pain Score

	Limberg		Z plasty		P value
	Mean	SD	Mean	SD	
Post Operative Pain	3.80	0.81	4.43	0.68	0.001 (S)
Range	3-5		3-5		

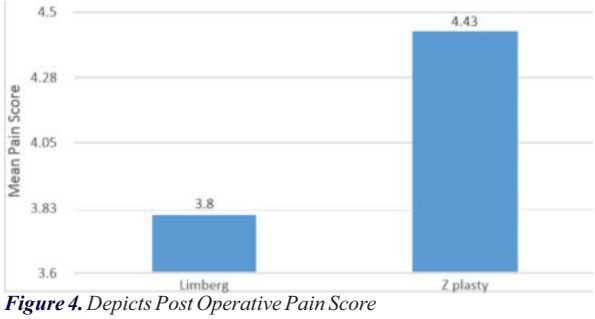


Figure 4. *Depicts Post Operative Pain Score*

Table 5: Drain Usage

	Limberg		Z plasty		P value
	Mean	SD	Mean	SD	
Drain Usage	3.03	0.72	6.87	0.94	P<0.001 (S)
Range	2-4		5-8		

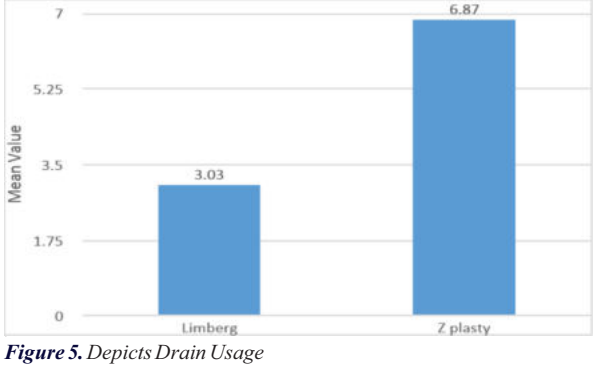


Figure 5. *Depicts Drain Usage*

Table 6: Hospital Stay

	Limberg		Z plasty		P value
	Mean	SD	Mean	SD	
Hospital Stay	1.47	0.51	3.40	0.77	P<0.001 (S)
Range	1-2 days		3-5 days		

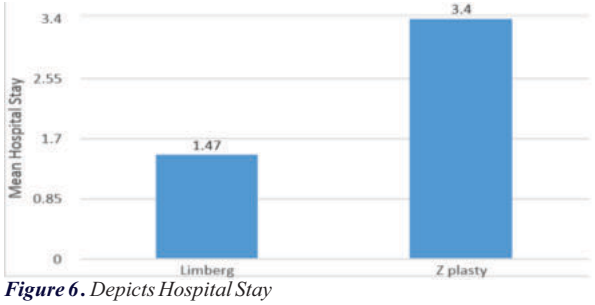


Figure 6. *Depicts Hospital Stay*

Table 7: Complete Healing

	Limberg		Z plasty		P value
	Mean	SD	Mean	SD	
Complete Healing	*14.33*	*1.09*	*15.93*	*2.08*	*0.0004 (S)*
Range	*13-17*		*12-20*		

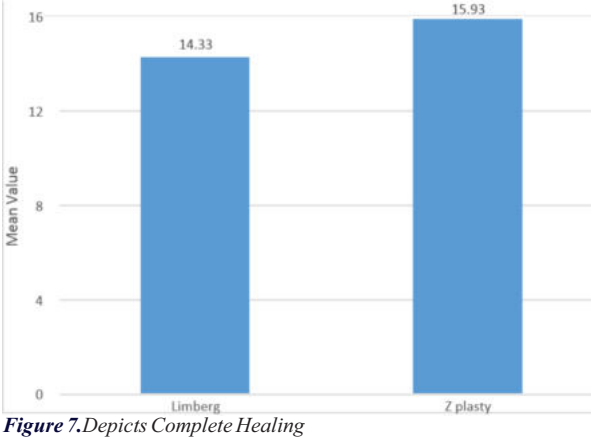


Figure 7.*Depicts Complete Healing*

Table 8: Complication

	Limberg		Z plasty	
	No.	%	No.	%
Seroma	*0*	*0*	*0*	*0*
Haematoma	*0*	*0*	*0*	*0*
Infection	*0*	*0*	*0*	*0*
Necrosis	*0*	*0*	*1*	*3.33*
Wound dehiscence	*0*	*0*	*0*	*0*
None	*0*	*0*	*29*	*96.66*
Total	*30*	*100.00*	*30*	*100.00*

Figure 8. *Depits Complication*

DISCUSSION

Limberg flap method and Z-plasty are the two common methods followed in surgical practice. This study was conducted to compare the two methods in various aspects so as to arrive at the conclusion which method is better.In this study, most of thepatients were male in their 3rd decade of life. Most of the patients presented with pain and seropurulent discharge as common complaints.

In a study conducted by Khan,[4] most patients were also in the 3rd decade with male preponderance which is comparable with our study.In the our study, duration of surgery was comparatively short for Limberg method. Which were 30-45 minutes in limberg method where as duration of surgery in z- plasty method were 30-60 minutes.In the our study, duration of surgery was comparatively short for Limberg method.

The mean postoperative pain score was significantly less in Limberg flap method when compared to Z-plasty.mean postoperative pain in limberg method were 3-5 days and 5-7 days in z-plasty method. The drain was removed earlier in patients who underwent Limberg procedure, and it was statistically significant when compared to Z-plasty.range of drain in limberg surgery were 2-4 days and in z-plasty it was 5-8 days.so drain was removed earlier in patient who underwent limberg method. The complete healing range was earlier who underwent limberg procedure which is 13-17 days and 12-20 days postoperatively healing was observed in z-plasty.

Duration of hospital stay was decided when the patient could walk freely without any significant pain and mean average duration of hospital stay was 1-2 days in limberg surgery and 3-5 days in z-plasty in our study. In a study conducted by Akin et al.,[5] mean duration of stay was 3.2 days for Limberg method which is comparable with our study. According to study conducted by Priyadarshini et al.,[6] on Z-plasty postoperative complications were present in 36% and recurrence in 5% of subjects. In the our study, 14% patients had postoperative complications and zero recurrence. In a study conducted by Akin et al.,[5] on Limberg flap postoperative complications were present in 16% and recurrence in 3% of patients.In the our study, it was 12% and 0%, respectively There was no statistical difference with respect to postoperative complications and recurrence between Limberg and Z-plasty in our study.

CONCLUSION

Postoperative pain was significantly more in the patients who underwent Z-plasty than in the patients who underwent Limberg flap procedure.The drain could be removed earlier in the Limberg flap procedure than in the Z-plasty technique, the difference being statistically significant. The duration of operation was insignificantly more in the Z-plasty procedure than in the Limberg flap procedure.

The postoperative complications was more in z-plasty procedure than in limberg flap.The mean duration of hospital stay was less in patient who underwent limberg flap procedure then z-plasty.

Thus, Limberg flap may be a better alternative to Z-plasty in the management of pilonidal sinus as it has a shorter duration of operation, lesser postoperative pain, and earlier drain removal time.

Review Of Literature

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