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A PROSPECTIVE STUDY OF Z-PLASTY IN MANAGEMENT OF PILONIDAL SINUS

GENERAL SURGERY

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ABSTRACT

INTRODUCTION: Pilonidal Sinus was first described by Hodges in 1880.It is one of the common problems encountered in general surgical practice. The management of this disease is variable, contentious and problematic . Principles of treatment include eradication of sinus tract, complete healing and prevention of recurrence. Although several surgical techniques are described over the years, its management still remains controversial.

AIMS AND OBJECTIVES: The aim of this study is to compare the two techniques – Open method and Z- Plasty in management of pilonidal sinus in terms of healing time, rate of surgical site infection, time before return to work, morbidity, recurrence, cost and determine the most appropriate technique for the management of chronic pilonidal sinus disease.

MATERIALS AND METHODS: This is a prospective study which was conducted in the surgical department of Sree Balaji Medical College and Hospital over a period of 2 years(August 2017-July 2019).A total of 30 cases were included in this study.Of these,23 cases were operated by Z-plasty and 7 cases by the Open technique.

OBSERVATION AND RESULTS : In our study, maximum patients were in third decade of life and male to female ratio was 4:1. Mean hospital stay and total recovery time was significantly higher in open technique group as compared to Z-plasty group Mean post operative pain score was more in open group. Recurrence was found in open technique and there was no recurrence in Z-Plasty group.

CONCLUSION: Excision with Z-Plasty is a better technique as it has lesser total recovery time, lesser hospital stay, less post-operative pain, lesser recurrence and better quality of scar.

KEYWORDS

INTRODUCTION

The pilonidal sinus was first described by Hodges in 1880.It is diagnosed by finding a characteristic epithelial tissue track (sinus),situated in the skin of natal cleft, short distance behind the anus and usually contains hair, hence the name pilonidal from Latin which means nest of hair during second world war. The disease was common in Jeep drivers , hence called Jeep disease. A similar condition is arising functionally in the cleft between fingers of the left hand of hair dressers .Also rarely arise in the umbilicus and axilla. Pilonidal sinus is of unknown etiology but acquired theory is acceptable. It is a common disorder among adult males in the 15-30 year group. It is associated with considerable morbidity and has significant socio-economic impact on affected individuals. The management of pilonidal sinus is variable, contentious and problematic. Principles of treatment require eradication of sinus tract, complete healing and prevention of recurrence. Several techniques like cryosurgery, Z-Plasty, lancing under local anaesthesia, vacuum assisted closure, excision with secondary healing, excision with primary closure are described. This study was done to compare the results of excision of sinus followed by secondary healing with primary closure by Z-Plasty technique.

MATERIALS AND METHODS

Source of Data: Patients admitted in Sree Balaji Medical College and Hospital over a period of two years.

Methods of Data Collection:

A. Study Design: A Prospective and descriptive study

B. Study Period: 2 Years(August 2017-July 2019)

C. Sample Size: 30 cases(23 cases by Z-Plasty and 7 cases by econdary healing)

D. Inclusion Criteria:

1.) Patients of age 18-60 years

2.) Pilonidal sinus present at the natal cleft

E. Exclusion Criteria:

1.) Age < 18 years

2.) Patients presenting with conditions mimicking pilonidal sinus.

3.) Pregnant/Lactating women

4.) Immunocompromised patients

5.) Pilonidal sinus present in other parts of the body

METHODS

Preoperative and Intraoperative measures:

After preliminary investigations, confirmation of diagnosis and pre-anaesthetic check-up, patients were counselled about the nature of surgery . Patients were assigned in two different groups. On the day of surgery, all the patients were prepared 2 hrs before the surgery by shaving of natal cleft and back areas. Pre-operative prophylactic antibiotics in the form of injection Amoxyclav 1.2 g and injection metronidazole 500 mg intravenous were administered to all the cases in both groups. All cases were operated under spinal anaesthesia and in Jack Knife position. The natal cleft was mechanically exposed by strapping buttocks apart using adhesive tapes . The natal area was thoroughly cleaned with 10% povidoneiodine. Prior to incision methylene blue was instilled using infant feeding tube into the sinus opening to map the sinus cavity and its lateral extensions if any and hence that the whole sinus and ramifications were fully demarcated. Vertical elliptical incision was made including the affected skin and deepened up to the fascia covering the sacrum. The sinus tract was excised en-block, including granulation tissue and sinus tracts at the lateral edges . The excised specimen was checked for adequacy of the excision. . Diathermy was used to achieve full haemostasis and sinus tract was sent for histopathological examination.

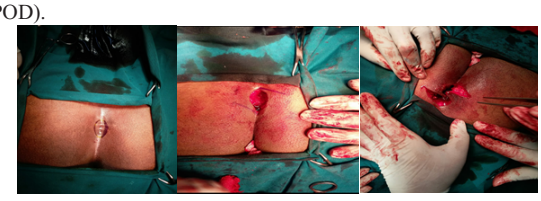
Open Method Group :

In the open method technique, after achieving complete haemostasis, the wound was packed with 10% povidone-iodine soaked gauze and post-operatively daily dressing were carried out. The pack was removed after 24 hrs and the patient was given sitz bath with 10% povidone-iodine solution . Daily dressing was carried out using gauze soaked in 10% povidone-iodine solution and this was repeated daily

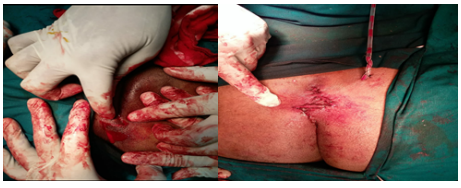
until wound healed completely.

Z-PLASTY GROUP

Elliptical excision of the sinus tract including the narrow margins of healthy surrounding skin was carried out down to fascia to achieve excision of main and secondary sinus tracts. Limbs of the Z-plasty were marked. If the defect was up to 5 cm in length then single Z-plasty was carried out . If the defect was more than 5 cm then multiple Z-plasty were carried out . Skin flaps were raised and transposed. Each limb of Z was equal in length. Angle of the flaps was roughly equal to 50°.The wound was closed in two layers after keeping a suction drain (Romo Vac drain no: 14) . The dressings were checked after 48 hrs and subsequently on alternate days till the sutures were removed. Suction drain was removed when drain output was <10 ml/24 hrs and it was serous in nature. Sutures were removed on 10th post-operative day (POD).



(A) (B) (C)



(D) (E)

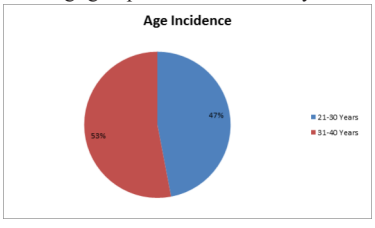
Z-PLASTY-ON TABLE PROCEDURE-Fig(A):Markings for incision ; Fig(B):After excising the tract and marking for the flap ; Fig(C):Flaps created ; Fig(D):After achieving hemostasis and making a "z" the flaps are sutured primarily leaving a DT ; Fig(E):Z-Plasty

Post-operative measures

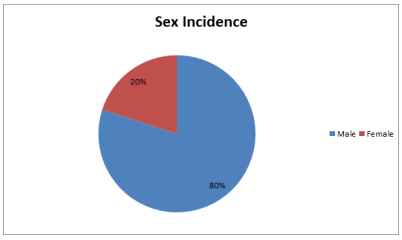
Patients were nursed in the prone position post-operatively for first 48 hrs. All patients were given injection amoxyclav 1.2 g 8th hourly and injection metronidazole 500 mg 8th hourly for first 3 days followed by oral amoxyclav 625 mg 8th hourly and metronidazole 400 mg 8th hourly for 5 days. Pain was assessed using visual analog scale on POD 1, POD 2 and POD 3 before analgesics were administered. VAS was recorded 8 hourly and the mean value was calculated for each on POD 1, POD 2 and POD 3. In both groups, patients were started on full diet on the evening of surgery. Time of complete healing was recorded in each case.

RESULTS

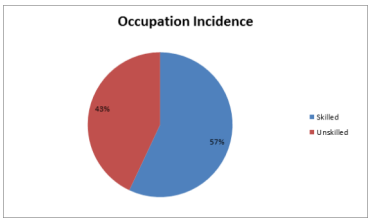
AGE INCIDENCE: In this study demonstrated, the highest incidence were in the age group of 31-40 and 21-30 years.



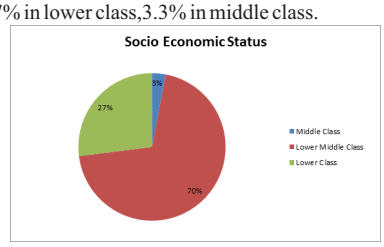
SEX INCIDENCE: In this study, the highest incidence results were in males which was 80% than in females which was 20%



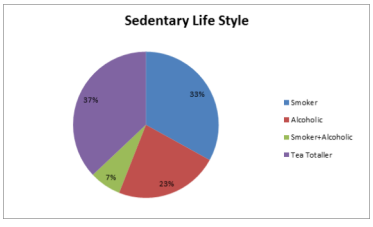
OCCUPATION INCIDENCE: In this study demonstrated,bthe highest incidence were in skilled-56.7%,followed by unskilled 43.3%



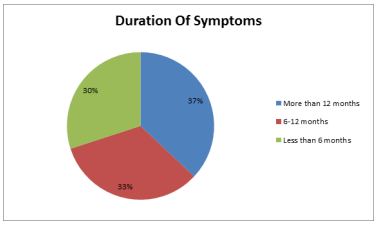
SOCIO ECONOMIC STATUS: In this study demonstrated, the highest incidence were in lower middle class which is .70% followed by 26.7% in lower class,3.3% in middle class.



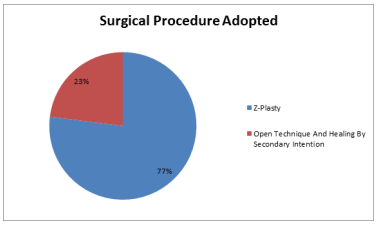
SEDENTARY LIFE STYLE INCIDENCE: In this study, 36.7% are tea-totallers,33.3% are smokers,23.3% are alcoholics, 6.7% are both alcoholic+smoker.



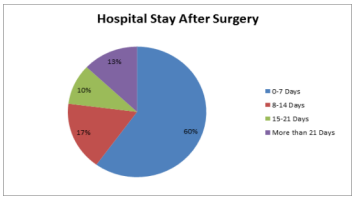
DURATION OF SYMPTOMS INCIDENCE: In this study, the duration of symptoms > 12 months, the cases are 36.7%,6-12 months, the cases are 33.3% and < 6 months cases are 30%



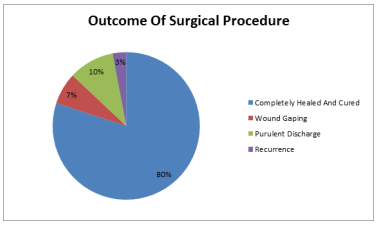
SURGICAL PROCEDURE ADOPTED: In this study, Z-Plasty was compared with Open Technique and Healing by Secondary Intention.



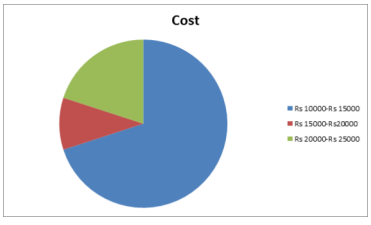
HOSPITAL STAY AFTER SURGERY: 60% of patients stayed between 0-7 days in hospital after surgery,16.7% stayed between 8-14 days ,13.3% stayed more than 21 days and 10% stayed between 15-21 days.



OUTCOME OF SURGICAL PROCEDURE: Patients who underwent the procedure were assessed in the post operative period for the outcome of the surgical procedure.80% of patients were completely healed and cured,10% developed purulent wound discharge,6.7% developed wound gaping and 3.3% presented with recurrence.



COST: Patients who underwent the surgical procedure were assessed to have a cost effective treatment postoperatively. 70% were treated with amount between Rs.10000- Rs.15000, 20% patients were treated with amount between Rs.15000- Rs.20000,10% patients got treated with Rs.20000-Rs.25000 .



Z-PLASTY VS OPEN TECHNIQUE COMPARISON

GENDER

GENDER	SURGICAL PROCEDURE	TOTAL		
	Z-PLASTY	OPEN TECHNIQUE		
MALE	COUNT	17	7	24
	% OF TOTAL	56.7%	23.3%	80.0%
FEMALE	COUNT	6	0	6
	% OF TOTAL	20.0%	0.0%	20.0%
TOTAL	COUNT	23	7	30
	% OF TOTAL	76.7%	23.3%	100%

OCCUPATION

OCCUPATION	SURGICAL PROCEDURE	TOTAL		
	Z-PLASTY	OPEN TECHNIQUE		
SKILLED	COUNT	14	3	17
	% OF TOTAL	46.7%	10.0%	56.7%
UNSKILLED	COUNT	9	4	13
	% OF TOTAL	30.0%	13.3%	43.3%
TOTAL	COUNT	23	7	30
	% OF TOTAL	76.7%	23.3%	100.0 %

SOCIO ECONOMIC STATUS

SOCIO ECONOMIC STATUS		SURGICAL PROCEDURE		TOTAL
		Z-PLASTY	OPEN TECHNIQUE	
MIDDLE CLASS	COUNT	1	0	1
	%TOTAL	3.3%	0.0%	3.3%
LOWER MIDDLE CLASS	COUNT	16	5	21
	%TOTAL	53.3%	16.7%	70.0%
LOWER CLASS	COUNT	6	2	8
	%TOTAL	20.0%	6.7%	26.7%
TOTAL	COUNT	23	7	30
	%TOTAL	76.7%	23.3%	100.0%

SEDENTARY LIFE STYLE

SEDENTARY LIFE STYLE		SURGICAL PROCEDURE		TOTAL
		Z-PLASTY	OPEN TECHNIQUE	
SMOKERS	COUNT	7	3	10
	%TOTAL	23.3%	10.0%	33.3%
ALCOHOLIC	COUNT	4	3	7
	%TOTAL	13.3%	10.0%	23.3%
SMOKING+ ALCOHOLIC	COUNT	2	0	2
	%TOTAL	6.7%	0.0%	6.7%
TEA TOTALLER	COUNT	10	1	11
	%TOTAL	33.3%	3.3%	36.7%
TOTAL	COUNT	23	7	30
	%TOTAL	76.7%	23.3%	100.0%

DURATION OF SYMPTOMS

DURATION OF SYMPTOMS		SURGICAL PROCEDURE		TOTAL
		Z-PLASTY	OPEN TECHNIQU	
MORE THAN 12 MONTHS	COUNT	7	4	11
	%TOTAL	23.3%	13.3%	36.7%
6-12 MONTHS	COUNT	9	1	10
	%TOTAL	30.0%	3.3%	33.3%
LESS THAN 6 MONTHS	COUNT	7	2	9
	%TOTAL	23.3%	6.7%	30.0%
TOTAL	COUNT	23	7	30
	%TOTAL	76.7%	23.3%	100.0%

HOSPITAL STAY AFTER SURGERY

HOSPITAL STAY AFTER SURGERY		SURGICAL PROCEDURE		TOTAL
		Z-PLASTY	OPEN TECHNIQUE	
0-7 DAYS	COUNT	18	0	18
	%TOTAL	60.0%	0.0%	60.0%
8-14 DAYS	COUNT	5	0	5
	%TOTAL	16.7%	0.0%	16.7%
15-21 DAYS	COUNT	0	3	3
	%TOTAL	0.0%	10.0%	10.0%
MORE THAN 21 DAYS	COUNT	0	4	4
	%TOTAL	0.0%	13.3%	13,3%
TOTAL	COUNT	23	7	30
	%TOTAL	76.7%	23.3%	100.0%

OUTCOME OF SURGICAL PROCEDURE

OUTCOME OF SURGICAL PROCEDURE		SURGICAL PROCEDURE		TOTAL
		Z-PLASTY	OPEN TECHNIQUE	
COMPLETELY HEALED AND CURED	COUNT	22	2	24
	%TOTAL	63.3%	16.7%	80.0%
WOUND GAPING	COUNT	2	0	2
	%TOTAL	6.7%	0.0%	6.7%
PURULENT DISCHARGE	COUNT	0	2	2
	%TOTAL	0.0%	10.0%	10.0%
RECURRENCE	COUNT	0	2	2
	%TOTAL	0.0%	3.3%	3.3%
TOTAL	COUNT	24	6	30
	%TOTAL	76.7%	23.3%	100.0%

COST

COST		SURGICAL PROCEDURE		TOTAL
		Z-PLASTY	OPEN TECHNIQUE	
RS.10,000-RS.15,000	COUNT	21	0	21
	%TOTAL	70.0%	0.0%	70.0%
RS.15,000-RS.20,000	COUNT	2	1	3
	%TOTAL	6.7%	3.3%	10.0%
RS.20,000-RS.25,000	COUNT	0	6	6
	%TOTAL	0.0%	20.0%	20.0%
TOTAL	COUNT	23	7	30
	%TOTAL	76.7%	23.3%	100.0%

DISCUSSION :

Sacro-coccygeal pilonidal sinus has been surgically managed for many years, but the ideal surgical technique remains controversial. The aim of treatment in pilonidal sinus disease is to render cure of the disease, minimize chances of recurrence and early return to work. In our study, 80% of patients were male and 20% of patients were in the age group of 20-40 years. Maximum number of patients (79.9%) were in third decade and male:female ratio was 4:1. In our study, mean post-operative pain score was higher in the open technique group on POD 1, 2 and 3 than in Z-plasty technique group. In the present study, total hospital stay was taken as a time of complete healing of the wound. This was time elapsed from the end of surgery until complete wound healing. Mean hospital stay in open technique group was 31.7 and in Z-plasty group was 15.88 days. Total recovery time in our study was defined as time after surgery until date on which the patient returned to normal activities, including employment. Mean recovery time in open technique group was 36.6 and in Z-plasty group was 19.6 days, which also compares favourably with study done with wound healing , where wound healed faster in Z-plasty group (15.4 days in Z-plasty group and 41 days in excision and delayed healing group and return to normal activity 17.5 days for conventional group and 11.9 for Z-plasty group).

In our study, redness around the wound was noted in 16% of patients in both groups. Discharge from the wound was noted in 10% of patients,only in open technique group and none in Z-plasty group had discharge. Tip necrosis of flaps and partial wound dehiscence was found in 6.7 % of patients,only in Z-plasty group. These complications were managed conservatively by the broad spectrum antibiotics and daily dressing of the wound with betadine soaked gauze dressings. In a previous study,it is noted that no difference in post-operative complications regarding bleeding , hematoma and infection between Z-plasty group and delayed healing by secondary intention of the wound after excision of the sacral pilonidal sinus. In the present study, recurrence was defined as the presence of any persistent purulent or blood stained discharge from the previously operated or the nearby area during the follow-up. Recurrence was found in 3.3% in open technique group and there was no recurrence in Z-plasty group.

CONCLUSION

1. Total recovery time and hospital stay was significantly more in open technique group than in Z-plasty group.
2. Recurrence was insignificantly more in open technique group than in Z-plasty group.
3. Limitation of the study is the sample size of 30 cases which gave a good overview but when studying two groups the sample size was small and hence consistent inferences pertaining to each group cannot be derived. 15 patients out of 30 patients not turned up for follow-up at 6 months and hence the late complications of the two groups could not be evaluated as the follow-up patients were less. Thus excision and Z-plasty may be may be a good alternative to open technique as it has lesser total recovery time, lesser hospital stay, less painful, lesser recurrence and better quality of scar, but a larger randomized study is required for definitive conclusions and recommendation.

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