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V-Y ADVANCEMENT FLAP TECHNIQUE IN RESURFACING POSTEXCISIONAL DEFECT IN CASES WITH PILONIDAL SINUS DISEASE IN A TERTIARY CARE CENTER.

1. DR PRAKASH KUMAR M N 2. DR PRAMOD T [1] *

3. DR AKSHATHA H S

[1] Associate Professor, Department of General Surgery, Kodagu Institute of Medical Sciences, Madikeri.

[2] Senior Resident, Department of General Surgery, Kodagu Institute of Medical Sciences, Madikeri.

***corresponding author**

DR PRAMOD T

Associate Professor, Department of General Surgery, Kodagu Institute of Medical Sciences, Madikeri.

Mailing address – Department of General Surgery, Kodagu Institute of Medical Sciences, Madikeri. Pin code - 571201

Email – pramodthejoram@gmail.com

Mobile - 9844558073

Institution – Kodagu Institute of Medical Sciences, Madikeri, Karnataka.

Abstract

Background

Pilonidal sinus disease is a chronic inflammatory condition affecting the natal cleft in the sacrococcygeal region. The diagnosis is done by identifying a sinus or a network of sinuses in the skin of natal cleft. The basic principle of treatment now is excision of the sinus completely and covering the defect with a flap.

Materials and methods

Each patient underwent surgical excision followed by V-Y advancement flap cover. In the immediate post-operative period, the flap was monitored for any complications. The outcome was noted in terms offlap survival, successful coverage of the defect, and other complications. total hospital stay and chances of recurrence during follow up were documented.

Results

In our study, the youngest patient was 16 years and oldest was 56 years. The average age was 29 years. The male to female ratio was almost equal with 7 female patients and 6 male patients. Discharge was the most common complaint in 10 out of 13 patients (77%). The duration of symptoms ranged from 1 month to 2 years, average being 300 days. The time spent sitting by patients ranged from 6 hours per day to 12 hours per day, average being 8.7 hours. Wound swab culture was negative in 11 patients(85%) and Gram + organisms in 2 patients(15%). Healing time of the wound ranged from 8 days to 14 days, average being 10 days. Flap insert dehiscence was seen in 3 patients (23%). Itching was a post operative complaint in 7 patients (53%) and

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

hypertrophic scar formed in same no of patients. Recurrence was seen in 2 patients (15%) with follow up upto 6 months

Conclusion

V-Y advancement flap surgery has distinct advantages in terms of simple to learn, less demanding and safe technique for patients with primary pilonidal sinus disease compared to other complex procedures.

Key words

V-Y advancement flap, Sacrococcygeal pilonidal sinus,

Introduction

Pilonidal sinus disease is a chronic inflammatory condition affecting the natal cleft in the sacrococcygeal region. It was first reported close to 200 years ago by Herbert Mayo as a congenital condition and 'pilonidal' being coined by Herbert Hodges in 1880 as a 'nest of hairs' [1] Incidence of pilonidal disease is about 26 per 100,000 population [2]. It predominantly affects young adults [3]. The diagnosis is done by identifying a sinus or a network of sinuses in the skin of natal cleft. During the Second World War the condition was common in jeep drivers, hence the term 'jeep disease' [4]

Present understanding is that it is a chronic acquired infection of the natal cleft skin and subcutaneous fat which manifests acutely or more commonly as intermittent symptoms over several years. Prevalence amongst men is two to three times that of women [5,6]. It causes significant burden on the young people in their productive years with socioeconomic problems. It can be debilitating, causing discomfort and affecting normal work.

In recent years various methods of treatment have been advocated to minimise the risk of recurrent disease. The various methods described are tract curettage/brushing with excision of follicle opening [7], phenol injection into tract [8], diathermy of pilonidal pit [9], laying open of pilonidal sinus and healing by granulation [10], excision and primary closure [8, 11], and excision up to sacrum and skin flaps [12].

The basic principle of treatment now is excision of the sinus completely and covering the defect with a flap. Asymmetric closure appears most promising, as there is fast recovery and low recurrence rate, minimal patient inconvenience, and minimum time off work.[13]

The primary aim of the flap is to transfer the tension scar in the midline to a cosmetically acceptable tensionless area. For a flap to be designed, its dynamics have to be understood. After excising the pilonidal sinus, the defect which is created becomes primary defect to which the flap has to cover. Then the flap movement creates a secondary defect. The objective is to cover the primary defect while minimising secondary defect.

Every flap has a pedicle which contains its blood supply which is vital. The width of the flap should be equal to the breadth of the defect. The length of the flap should be three times the width to ensure good blood supply. The thickness of the flap should be proportional to the defect and must comprise a layer of subcutaneous fat.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

Materials and methods

This study was conducted in general surgery department in Kodagu institute of medical sciences, Madikeri, where about 13 patients presenting with sacrococcygeal pilonidal sinus were included. Pregnant patients and immunocompromised patients were excluded from the study. The objective was to determine the etiology, presentation of the disease, close the defect by V-Y advancement flap, and study the outcome of the patients with this procedure.

The patients included were interviewed by using a structured questionnaire after consent for the study. The demographic data of all cases, including patient's profession, age, gender, weight, and height were documented. Moreover, time spent seated per day, number of baths per week and family history of Sacrococcygeal Pilonidal Disease were recorded. Each case was assessed thoroughly for detailed history, general, and local examination.

Each patient underwent surgical excision followed by V-Y advancement flap cover. In the immediate post-operative period, the flap was monitored for any complications. The outcome was noted in terms of flap survival, successful coverage of the defect, and other complications. total hospital stay and chances of recurrence during follow up were documented.

All the patients were operated by the same surgeon in prone jack knife position under spinal anaesthesia. All patients received preoperative ceftriaxone injection and continued post operatively for 5 days. The extension of the sinus was noted after injection of methylene blue through one of the sinus and wide local excision done. All patients underwent unilateral V-Y advancement flap. Romovac drains were placed and removed on 4^{th} post operative day. Skin sutures were removed on 14^{th} post operative day. The patients were ordered not to sit on suture line for 15 days and were followed at 1 month and upto 6 months. The mean operating time for flap reconstruction was 1.5 hours.

Results

In our study, the youngest patient was 16 years and oldest was 56 years. The average age was 29 years. The male to female ratio was almost equal with 7 female patients and 6 male patients. Discharge was the most common complaint in 10 out of 13 patients (77%). Pain was the next common complaint in 9 out of 13 patients (69%). Ulcer was present in one patient. The duration of symptoms ranged from 1 month to 2 years, average being 300 days. 9 patients had single sinus, 3 patients had 2 sinus, and one patient has more than 2 sinuses. The time spent sitting by patients ranged from 6 hours per day to 12 hours per day, average being 8.7 hours. No of baths taken per week was 2 in 10 patients and 3 in 3 patients. Wound swab culture was negative in 11 patients(85%) and Gram + organisms in 2 patients(15%). Diabetes mellitus was seen in 3 patients (23%) Healing time of the wound ranged from 8 days to 14 days, average being 10 days. Flap insert dehiscence was seen in 3 patients (23%). Itching was a post operative complaint in 7 patients (53%) and hypertrophic scar formed in same no of patients. Recurrence was seen in 2 patients (15%) with follow up upto 6 months.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

Master chart

Pt no	Age	Sex	symptoms	Duration (days)	No of sinus	Time sitting (hours)	No of baths (per week)	Pus culture	DM
1	20	M	Pain Discharge	120	2	8	2	No growth	No
2	56	M	Discharge	180	3	10	2	No growth	Yes
3	23	F	Pain	30	1	8	2	No growth	No
4	40	M	Ulcer Pain	730	1	7	3	No growth	No
5	38	F	Discharge	365	1	6	2	No growth	Yes
6	29	M	Discharge	365	2	6	2	No growth	Yes
7	21	M	Pain Discharge	120	1	7	3	No growth	No
8	28	F	Discharge	180	2	8	2	No growth	No
9	17	F	Pain Discharge	730	1	12	2	No growth	No
10	16	F	Pain Discharge	60	1	12	3	No growth	No
11	25	M	Pain Discharge	180	1	10	2	Gram+ cocci, Group D strepto	No
12	40	F	Pain	730	1	8	2	No growth	No
13	26	F	Pain Discharge	120	1	12	2	Gram+ cocci, Group D strepto	No

TABLE -1

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

Master chart (continued)

Pt no	Healing time (days)	Flap insert dehiscence	Itching	Hypertrophic scar	Recurrence
1	12	No	Yes	Yes	No
2	14	Yes	Yes	Yes	No
3	9	No	No	No	No
4	8	No	No	No	No
5	12	No	Yes	Yes	Yes
6	9	No	No	No	No
7	10	No	Yes	Yes	No
8	10	No	No	No	No
9	10	No	Yes	Yes	No
10	9	No	No	No	No
11	10	No	Yes	Yes	No
12	10	Yes	No	No	No
13	8	Yes	Yes	Yes	Yes

TABLE – 2

FIGURE -1 Pilonidal sinus with multiple sinuses

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

FIGURE – 2 Excision of sinus

Figure – 3 V-Y Advancement Flap

Figure – 4 Completion Of Flap

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

Figure – 5 Wound Healed

Figure – 6 Follow Up Scar

Discussion

The etiology of pilonidal sinus disease is not completely known, although various factors like sitting for prolonged times, excessively hairy back, obesity leading to deep natal cleft and poor hygiene are proposed as the cause in young adult population. When hair is shed in natal cleft, it is pushed into the skin by negative pressure leading to chronic foreign body reaction. It is more apparent in obese patients because the skin covering the intergluteal sulcus is usually moist and fragile [14]

Many different surgical closures have been advocated after excision of the sinus. Just leaving it open to heal by secondary intention [15,16] is the simplest technique. The recurrence rates are low, the duration of healing, hospital stay, and time required to resume daily activities are long [17-19].

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

Various flap methods which are advocated are Rhomboid, Limberg, V-Y advancement flap, Z-plasty, W-plasty. [20-24]. An ideal technique should be simple to perform, with short hospital stay and lowest recurrence rate. The main reasons for recurrence could be excess tension on suture line, scar falling in midline where healing is poor and also incomplete excision of the sinus.

In comparison to a study by Sahasrabudhe et al. [13] who reported wound healing time as 8 days without any recurrence in 6 months, our study showed 10 days, with 15% recurrence. Itching and hypertrophic scar formation was seen in more than 50% patients, which was a significant post operative morbidity compared to the previous study. Massaging over the scar post operatively may help reduce this morbidity.

While no recurrence was observed in a study by Ismail Demiryilmaz et al [25] and 6.9% in a study by Altıntoprak et al [26], our study it showed up recurrence in 15% patients.

V-Y advancement flap is prepared in V fashion and closed in Y fashion. There is reduced tension in suture lines and can cover large area, suture line is not midline and there is flattening of the natal cleft. It is easy to learn and with no complex planning, in most of the cases, it is a viable alternative to more complicated procedures.

Conclusion

V-Y advancement flap surgery has distinct advantages in terms of simple to learn, less demanding and safe technique for patients with primary pilonidal sinus disease compared to other complex procedures. It should be considered in patients with poor hygiene, prolonged sitters, obesity, deep natal cleft with single or multiple sinuses.

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ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 04, 2024

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