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Comparative Study Of Primary Suturing Versus V-Y Advancement Flap Technique In Resurfacing Post Excisional Defect In Cases With Pilonidal Sinus Disease

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I. INTRODUCTION

Pilonidal disease is a common anorectal issue that manifests itself most frequently in the hair follicles of the sacrococcygeal region. The prevalence of pilonidal illness is estimated at 26 cases per 100,000 people. Due to differences in hair features and development patterns, Caucasians are significantly affected by this ailment, which commonly affects teenagers and young adults up to the third decade of life.(1–3)The hirsute nature of men has made them a recognized risk group with a male to female ratio of 4:1. Other risk factors for pilonidal sinus include being overweight (37%), having a sedentary job (44%), and experiencing local irritation or trauma (34%).(4,5)Karydakis simplified the explanation of the etiologic process noting three essential factors- the hair or foreign body, a force inducing deposition of hair into the sinus, and skin susceptibility.(6)

Acute pathology can be treated by abscess drainage and curettage, but chronic disease requires more precise surgical therapy. Since 1965, tract curettage/brushing with excision of follicular opening, phenol injection into tract, diathermy of pilonidal pit, lying open of sinus and healing by granulation, excision and primary closure, and excision up to sacrum and skin flaps have been used to treat the sinus. Asymmetric closure is promising because to its speedy recovery, low recurrence rate, minimal patient annoyance, and minimal time off work.(5,7)

Despite dispute regarding the best surgical method, an ideal surgical operation was believed to be simple, not necessitate a lengthy hospital stay, have a low recurrence rate, minimum discomfort and wound care, and a desirable cosmetic result when feasible.(8)Traditional midline pilonidal sinus disease repair methods have a high wound infection incidence, poor aesthetic outcomes, and a protracted healing time. Limiting sinus tract and diseased tissue excision with primary closures has a high recurrence risk. Due to early wound healing, minimal complications, and low recurrence rates, flap procedures have grown popular globally.(9)

II. AIMS AND OBJECTIVES

To compare the rate of occurrence and nature of complications in comparative study of primary suturing vs v-y advancement flap technique in resurfacing post excisional defect in cases with pilonidal sinus disease.

III. MATERIALS AND METHODS

The present study was planned as prospective, randomized comparative study conducted for a period of one year i.e., from June 2021 to May 2022 in Department of General Surgery in Maharajah's Institute of Medical Sciences, Nellimarla in Andhra Pradesh.

50 patients of pilonidal sinus disease were randomized into two groups with Group A receiving Primary suturing and Group B receiving V-Y plasty. Patients with malignancy, with acute disease and age <15 years were excluded.

Patientsprovided written informed consent and data on printed Proforma.The postoperative course was monitored for morbidity, hospital stay, and subsequent infections. Postoperative antibiotics were based on pus

culture and sensitivity. Complications which occurred intraoperatively and afterwards were noted.Patients were monitored for six months.

Methylene blue and hydrogen peroxide were injected into the sinus to eliminate all remains before wide local excision. To prevent cavity during approximation and to preserve blood flow, the sinus was excised vertically down to the fascia alone. Sinuses were removed en-bloc. Reassessing defect size after limited debridement. V-Y design was marked on both sides of defect. Avoiding sharp angles at corners was a design priority. Avoiding flap undermining reduced perforator injury.

The flap falls midline after being released from all sides. The advancing edges were sutured in two layers, and the initial V was sutured as Y to cover sacral defect with low tension across suture line to avoid suture breakdown.

To eliminate dead space, the flap was undermined from sacral fascia for 2–3 cm and sutured to opposite soft tissue.We tested tension-free closing after lifting the flap. When in doubt, bilateral flaps of differing size were utilised to avoid midline scar and natal cleft obliteration.

In large pilonidal sinus repair, the SUPERIOR GLUTEAL ARTERY perforator-based advancement flap concept redistributes tissue and reduces suture line stress. Fasciocutaneous VY advancement flaps can be unilateral, bilateral, bilateral equal, or unequal depending on local defect size. The average flap operation took 1 hour. Post-op stays averaged 4 days. After suture removal, patients were instructed to oil massage flaps, silicone gel scars, and shaving or depilation with cream, hair remover, or laser in natal cleft.

IV. RESULTS

Out of the 50 patients, males were 36 (72%) and females were 14 (28%). The most common age group was 25-29 (38%), followed by 20-24 (22%). It is most commonly found in students (18%), followed by taxi drivers (12%) and daily wagers (10%). Swelling was the most common sign (82%), followed by sinus (92%) and discharge (90%). It is most common in the patients with BMI 30.1-35. The most common organism identified was Bacteroides fragilis (34%), followed by E. coli (22%), Staphylococcus aureus (20%) and Pseduomonas (8%).

Wound infection was more among the patients who underwent primary suturing (14%), whereas it was only 2% among V-Y plasty patients.

Complication	Primary Closure	V-Y Plasty	*p*-Value
Wound infection	14%	2%	0.03
Purulent discharge	14%	2%	0.04
Wound dehiscence	10%	0	0.03
Recurrence	8%	0	0.01
Mean duration of hospital stay (in days)	11.2	5.6	0.02
Mean duration of surgery in minutes	26.6	55.2	0.01
Mean time for healing (in days)	16.2	6.2	0.02

V. DISCUSSION

Pilonidal sinus disease occurs most often in young or teenage males with a family history of deep natal clefted broad hip or obesity, as well as variables including professions that involve sitting, travelling, or driving, excessive hairiness, and poor regional cleanliness. The rotating hip movement during walking pushes shed hair into the skin in the deep gluteal region, generating an acute or persistent foreign body response. Obese people have wet, fragile skin around the intergluteal sulcus, making it more evident. No agreement has evolved since all treatment approaches have had variable degrees of recurrence. The depth of the fissure and the midline hair portal caused hair penetration recurrence (the wound). The surgical removal of chronic pilonidal sinus tissue down to the presacral fascia is universally acknowledged, but the management of the remaining defect is still debated. Methods include open excision, primary closure, and excision and flap closure. Due to deep natal cleft, primary closure has a 5–7% recurrence risk. As the incision is in midline with this technique, it fails to flatten the natal cleft. Excision with local flap treatments have the lowest recurrence rates, but they are technically difficult and only used for recurrent complicated pilonidal sinus.(5,7)

As in other studies, there was a male sex preponderance in pilonidal sinus disease with 72% being males. The most common age affected was 25-29 years (38%). Age or sex differences between the two groups in the study were not statistically significant.In a study by Demiryilmazet. al., 95.5% were males and in Badr SA.Et. al.'s study, 82.6% were males.The natural features of the long-known pilonidal sinus are shown by the average age of 28 years in the present study and previous studies, which lies within the third decade. The low prevalence of female patients can be attributed to hirsutism in females being less common than in males, which lowers the frequency of pilonidal sinus disease in females.(7,9)

Occupation affects pilonidal disease.Jeep drivers had it during World War II, thus the moniker "Jeep bottom". It affects those who sit for extended periods and operate near vibrating surfaces.In the present study,pilonidal sinus affected students more commonly (18%) in our study followed by taxi drivers (12%). Dumanet. al.'s study noted similar observation with students being the most commonly affected. (10)

The disease most commonly affected patients with BMI between 30.1-35 in the present study showing that obesity plays a role in the etiology as forementioned in the literature. (2,4,10)

The most common organism isolated was *Bacteroides fragilis* (34%), followed by *E.coli* (22%) in the present study. Other organisms isolated were *Staphylococcus aureus* (20%) and *Pseudomonas* (8%).Ardeltet.al.'s study conducted on infected recurrent pilonidal sinus disease stated that while individuals with rPS (recurrent Pilonidal sinus) have a majority of aerobic/facultative anaerobic and Gram-positive bacteria, those with pPS(primary Pilonidal sinus) often have mixed infections with a predominance of anaerobic and Gram-negative bacteria.(11)

In 50 patients included in the present study, 2 groups of 25 each were randomly allocated and Group A received primary suturing and Group B received V-Y plasty as treatment. There was statistically significant difference of incidence of wound infection, purulent discharge, mean hospital stay, mean time for healing between both the groups. All the parameters being low in Group B (V-Y plasty) than Group A (primary suturing). Wound infection was observed in 14% among Group A vs 2% only in Group B. Wound dehiscence was observed in 10% cases of Group A whereas none of the patients in Group B had such complication. These results were similar toDemiryilmazet.al.'sstudy where there was no patient with V-Y plastyhad wound dehiscence or flap necrosis post-operatively.(7)Mean hospital stay was higher in Group A than B(11.2 days vs 5.6 days).

In the present study, mean time required for healing post operatively was higher in Group A (16.2 days vs 6.2 days). These results were consistent with Demiryilmaz et.al.' and Sahasrabudheet.al.'sstudyin which, 7± 2.2 days and 8 days respectively was the mean healing time post V-Y plasty procedure. (7)

Recurrence post procedure was seen in Group A (8%). None of the cases of Group B showed recurrencein the present study. Sahasrabudheet.al.'s study concluded that although primary wound closure is an uncomplicated procedure, it has a high recurrence risk (5-7%) because of the persisting deep natal cleft.(5)No recurrences were seen in V-Y plasty similarly in Demiryilmaz et.al.andSahasrabudheet.al.'sstudy in 6 months – 1 yearfollowup period. (5,7)

Even though the mean time for conducting the procedure was more in V-Y plasty, the reduced post-operative complications and zero recurrences makes it one of the best options for treating Pilonidal sinus disease.

VI. CONCLUSION

Given its lower requirements and operator independence, V-Y-plasty is a preferable option among the flaps.Therefore, we draw the conclusion that hairy, obese men with sedentary lifestyles are more likely to have pilonidal sinus.It is more successfully treated with broad local excision followed by asymmetric closure by unilateral or bilateral V-Y fasciocutaneous advancement, with 0% recurrence rate and fewer sequelae.

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