

PILONIDAL SINUS: SURGICAL EXCISION OF PILONIDAL SINUS AND SUTURING SKIN EDGE TO PRE-SACRAL FASCIA (PARTIAL CLOSURE)

By

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Abstract

Surgical treatment of pilonidal sinus is by surgical excision of sinus and partial closure by suturing skin to pre-sacral fascia. This study was carried out on 20 patient with pilonidal sinus admitted to surgical department in Kobry-El-Kobba Military Medical Campus. This patient was treated by surgical excising of pilonidal sinus and partial closure of the wound by suturing skin edge to pre-sacral fascia. This study covers the introduction and incidence, pathology, clinical presentation and different method in management of pilonidal sinus. This study proposes that excision of pilonidal sinus and partial closure of the wound by suturing skin edge to pre-sacral fascia, safe, with low recurrent rate- short hospital stay. No postoperative discomfort or food restriction and early ambulation and return to work. This study was done up on 20 young male troops "soldiers" patients with mean age 25 years admitted to surgical department, Kobry El-Kobba Military Medical Campus, from January 2016 to December 2018, treated by suturing skin edge to pre sacral fascia, and study the effect of operation on patient convenience, infection, recurrence, bleeding postoperative, healing time, hospital stay and histopathological examination of specimens.

Keywords: Egypt, Patients, Pilonidal Sinus, Pre-Sacral Fascia.

Introduction

Pilonidal sinus affected intergluteal region and is diagnosed by the finding of a characteristic epithelial tract. The sinus situated in the skin of the natal cleft, a short distance behind the anus and generally containing hair. During the Second World War, young soldiers were admitted and treated in the arm hospitals with this disease called jeep driver disease (Buie, 1944). Most pilonidal sinuses resolve with treatment by the age of 40 year irrespective the method of the treatment. This encourages surgeons to believe that their method of treatment is adequate and that there is no compelling need to change (Allen-Mersh,1990). The first record of surgical cure of a pilonidal cyst was made by Anderson in 1847, who described incision and removal of hair from the cavity. Hodges introduced the name pilonidal sinus disease in 1880 one hundred year later the correct surgical treatment is still undecided (Rainsbury and Southam, 1982).

The treatment of pilonidal sinus is frequently unsatisfactory and no procedure satisfies all requirements for the ideal treatment of pilonidal sinus, should provide a high chance of cure with a low recurrence rate, should

avoid a long hospital admission, general anesthetic while involving minimal in convenience and time off work for patients (Allen-Mersh, 1990).

Incidence: Pilonidal disease affected young adults after puberty but more females undergo treatment and so ratio of patients treated closer-roughly 4:1 (Buie and Curtiss, 1952).

The onset of pilonidal disease coincides with puberty and that de-novo pilonidal disease is rare after age of 40 years (Clothier and Hagwood, 1984). This observation compatible with association with sex hormones which are known to affected pilosebaceous gland. This may explain the earlier onset of condition in women since puberty occurs earlier in females than in male (Allen-Mersh, 1990). Caucasians have highest incidence than Africans and Asians as Caucasian have average curvature and kinking modulation cuticular scale count (Rook and Dawber, 1982) and from different daily rates of hair growth between races (Allen-Mersh, 1990).

The incidence was also affected by factors that are not related to hair characteristics increase in sweaty activity associated with buttock friction. Particularly jeep and lorry driving and reduced opportunity for person-

al hygiene produced an epidemic pilonidal disease association between incidence and obesity has also been observed among American college student (Allen-Mersh, 1990).

Pathology: A midline epithelial pit through which the hair enters is lined by epithelium except in rare cases of long-standing, recurrence where the epithelial lining can extend further along the track (Allen-Mersh, 1990). The secondary tracts which connects the deep part of the primary tract or “abscess cavity” to the sinus opening lying to one or other side of the midline, has the appearance of any ordinary fistulous track when lead open. The skin does not enter it and often granulations project at the opening (Fig.1).

Pilonidal sinus is a particular form of foreign body granuloma, hair found within the track in roughly two-thirds of male cases and one- thirds of cases in women, fig. 2 and hair fragment surrounded by foreign-body giant cell are frequently seen within the granulation tissue. The majority of the track and hair- containing cavity is lined with granulation tissue (Notaras, 1970). Risk of malignant change, very rarely squamous carcinoma can

arise in a pilonidal sinus usually of long the standing, basal cell carcinoma and adenocarcinoma involving pilonidal sinus have also occasionally been reported. The incidence of any neoplasms if far too small for pilonidal sinus was considered as carrying a significant malignant potential (Allen-Mersh, 1990).

Pathogenesis: There are two conflicting theories of pathogenesis of pilonidal sinus, surgical resection indicted to achieve a cure: Acquired theory: Pilonidal sinus originates within a natal cleft hair follicle which becomes distended with keratin. The distended follicle becomes inflamed and the resulting folliculitis produces oedema which occludes the follicle opening. The obstructed follicle expands and follicular contents are pushed towards fat by pressure of pus accumulating in a closed follicle. They are also pulled toward fat by vacuum. The bottom of the follicle blow-out releasing infected contents into fat, an acute pilonidal abscess in fat results. The acute abscess is drained, forms chronic abscess cavity. As oedema subsides the mouth reopens, the follicular remnants now opens at both ends (Fig. 3) (Helmy, 1989).

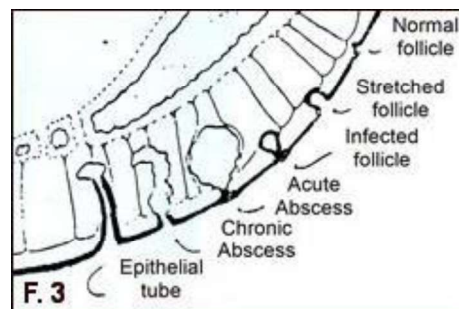


Fig. 3: Microscopic section revealed evidence of multiple stages of pilonidal disease (Helmy, 1989).

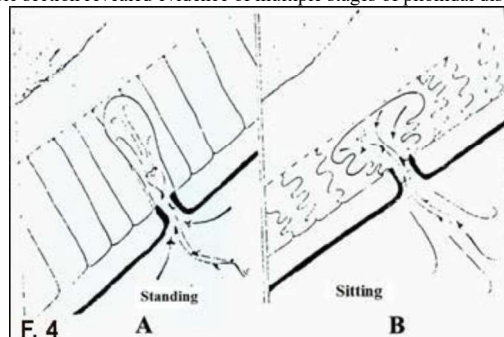


Fig. 4 A& B: Suction is created when patient standing and sitting (Helmy, 1989).

Movement of the buttocks exerts a suction i.e when the patient sitting, gluteal tissues were

pushed against the sacrum, air blows out of the cavity as the patient stand, gravity pulls

the gluteal tissue away from the sacrum a vacuum is created and air is sucked into the cavity passing through the follicular remnant (Fig. 4 A & B). (Helmy, 1989).

Movement of the buttocks exerts a cigarette rolling effect which encourages loose natal cleft hair and debris to enter track whenever the patient stands or sits who hair is propelled tip first into the tube. The barbs on the hair shaft prevent it from being expelled in a reverse direction, hair and skin debris stimulate a foreign body reaction (Allen-Mersh, 1990). The direction of this abscess and subsequent secondary track is cephalad in about 93% of patient (Notaras, 1970).

B- Congenital: The vestige of congenital tracks has been detected but they are lined by cuboidal epithelium, unlike pilonidal sinus tracks which are lined by granulation tissue (Patey, 1970). Congenital tracks are usually situated more cranially over the sacrum than pilonidal sinus, do not contain hair and can often be shown to be communicated with spinal canal (Goligher, 1980).

Clinical picture: From history there is pain, discharge and previous infection, from physical examination there is dimple, sinus and induration representing the track and abscess cavity. Pilonidal sinus is formed when granulation lined pilonidal cavity drains via a sinus track which opens away from the midline as an area of proud granulation on to the skin. During an interval between episodes of inflammation the diagnosis can be confirmed by identifying the epithelialized follicle opening within the natal cleft 4-8cm cephalad from the anus. The sinus track then runs cephalad this midline opening in roughly 93% of cases and can usually be palpated as an area of induration deep to sacral skin (Notaras, 1970). There may be more than one epithelialized opening within the natal cleft but the laterally situated granulation-lined opening was single in case that have not previously undergone surgery (Kober *et al*, 2018). Pain 84% of patient and discharge 78% of patient are the two most frequent symptoms of pilonidal sinus, while fever,

chills and bleeding are rare symptoms fluctuate with recurrent bouts of infection but rarely subside completely between bouts (Allen-Mersh 1990).

Treatment of pilonidal sinus: There were multiple operation and opinions but none of them guaranteed a permanent cure "Bullet in Alexandria Faculty of Medicine, 1988". Among these lines of treatment are: 1- Closed technique, 2- Laying opened the track, 3- Marsupialization of pilonidal sinus, 4- Wide and deep excision to sacrum, 5- Excision and primary closure, & 6- Excision and closure by plastic procedure which include: a- Z-plasty, b- Skin flaps, & c- Skin graft

Material and Methods

The study included 20 male patients suffering from chronic form of pilonidal disease "pilonidal sinus" with pain, discharge and some-times bleeding and elongated area of induration representing the track's and abscess cavity.

They underwent surgical treatment by surgical excision of pilonidal pit, sinus track and part of skin including fistula opening – undermined skin and suturing skin to pre-sacral fascia. These patients presented in Kobry-El-Kobba Military Campus from January 2016 to December 2018, their age varied between 20 years old and 40 years with the mean age 25 years.

All patients were subjected to liver function test, renal function, complete blood picture, P.T.T (prothrombin time) or INR, random blood sugar, chest X-ray, and ECG. All excision tissue "sinus track, abscess cavity and pite" and covered skin ellipse was examined by histopathological examination. All patients were asked about any occupation, family history of pilonidal sinuses and presence or absence of pilonidal pits in the intergluteal region since birth or early life.

All patients were chosen to be free from diseases which may interfere with healing such as diabetes, heart failure corticosteroid dependent. Also recurrent pilonidal excluded.

Operative technique: Under a general ane-

sthesia or spinal anesthesia. The patients in prone position with the sacrococcygeal region elevated by pillow or angulation of the table "Jack-knife position". Two strips of adhesive tap were anchored symmetrically about 10 cm from the midline at the level of the sinus and pulled down and fastened beneath the table. The skin was prepared by painting with skin antiseptic and toweling was then applied (Fig. 5).

The incision was deepened at oblique angles to the skin through healthy fat to reach the fascia covering the sacrum and coccyx (Fig. 6). The incision was an elliptical one so placed that it includes all sinus opening and if a secondary sinus lied unusually far laterally the incision was extended to incorporate it either as a special offshoot or as an enlargement of the whole ellipse (Fig. 7).

The traction was then applied to the isolated ellipse of skin and fat, it was separated from the fascia by scissor dissection, commence the anal and proceeding cranial (Fig. 8). The bleeding point was encountered close to the bone and most easily dealt with by diathermy coagulation and washing the wound with saline followed by haemostasis and washing the wound again. The true pilonidal sinuses invariably lied superficial to the coccyx and sacrum so that it was never necessary to remove any part of the bone in order to excise them. The resulting wound was of considerable size and has steep shelving edges. It may be dealt with by suturing skin to pre-sacral fascia by interrupted suture on either side leaving a 5mm midline gap was left to heal by granulation tissue and the broader scar resulting from secondary healing (Figs. 9 & 10).

Postoperative: The wound was washed by saline and dry dressing were applied and keeping the gluteal region close to each other by plaster strap (Figs. 11 & 12), and the patient was nursed on his back to exercise a gentle compression on the wound-close observation for the wound by the surgeon himself is essential. The wound was dressed as needed by dry dressing after cleaning it by sa-

line and without use of any local chemical. All patients were given antibiotic before operation, intraoperation and postoperative up to 5 days inform of cephalosporin and metronidazole.

The suture was removed after 7-10 days postoperative, the gap between skin edge be cleaned and no excessive granulation tissue allowing the scar covered by epithelium from skin edge (Fig. 13). The specimen removed which including ellipse of skin, sinus track, the examined histopathologically revealed inflamed granulation tissue with sinus track formation and no malignancy (Fig. 14). Operation outcome regarded ages, convenience, infection, recurrence, bleeding postoperative, healing time, hospital stay and pathological examination.

Pathological diagnosis: Pilonidal sinus excision, features of inflamed granulation tissue with sinus track formation, but no malignancy (Mohammad, R, Abdel Kader, A, 2018).

Results

The following study "excision of pilonidal sinus and its track and suturing skin edge to pre-sacral fascia" included 20 patients "male only" admitted to Kobry-El-Kobba Military Campus during the period of 2016-2018. All patients were military, their age varied between 20 years old and 40 years with the man age 25 years, the operation not done on patient with recurrent pilonidal sinus. All patients were satisfied with the esthetic results of the wound and the ease of both movement and wound care postoperative with no pain and discomfort.

This operation convenient to all patients, especially jeep drivers have a long sitting occupation. All patients were satisfied with the results of the operation, especially those who suffered a long time of pilonidal sinus discharge and pain, due to the following postoperative conditions. There were minor sepsis occurring along raw area between skin edges and infection was cleared by antibiotic. After complete healing and follow up one and have year, no recurrence was noticed and no scar at site of operative was found.

The minimal bleeding post-operative was found in two patients and managed by compression and coagulant up to 2 days and no blood transfusion needed to these patients. After 10 days postoperative healing occurred but raw areas healed by scar tissue deviated of hair follicle after 3 weeks postoperative i.e. complete healing occurring after 3 weeks. The duration of healing varied between 10 to 21 days with a mean 14 days. The duration of hospital stay varied between 2 to 5 days with a mean 3 days. Inflamed granulation tissue with sinus track formation was the diagnostic result of histopathology examination of all patients and no malignancy was found.

Discussion

Planning of a good treatment needs to understand the source and stages of pilonidal disease, midline pit are a common finding in a pilonidal sinus. They represent the stretched follicles. The pilonidal cavities are explored through lateral incision the pilonidal abscess cavity leads the exploring instrument to the underside of such a pit which has blown out. From adjacent pits a pasty white material can be expressed. These findings implicate midline pits and their contents as a possible source of disease by microscopic examination of the removed pits variation in size between normal and large distended follicles were found with some large pits holding in their centers a single hair.

There are some observations that might assist the follicular theory such as the highest incidence of the disease is among teenagers who suffer post pubertal hormonal imbalance which in turn affects the skin appendages and may cause acne vulgaris in the face. Moreover, the disease is common among people with deep natal cleft "intergluteal region" and hairy subjects as well, even in people with non-hairy gluteal region, the cavity of the pilonidal abscess sometimes contain hair that fall down from their scalp settling in the natal cleft. Many authors mentioned that simple incision and drainage of the abscess is sometimes a curative procedure for pilonidal

sinus Jensen and Harling in 1988 reported 60% cure rates by this procedure only. They also correlated the rate, cured and recurrence to the number of pits.

Simple excision with preservation of natal cleft by suturing the skin edges to presacral fascia leaving a gap between skin edges to heal by granulation tissue and the broader scar resulting from secondary healing which reduces local hair growth, and the broader scar resulting from secondary healing flattens the natal cleft to reduce buttock friction. Pilonidal sinus of the sacrococcygeal area is a common problem especially among army troops. The treatment of pilonidal sinus was frequently unsatisfactory and no procedure satisfies all requirements for the ideal treatment of pilonidal sinus, should provide a high chance of cure with a low recurrence rate, should avoid a long hospital admission, and time off work for the patient. Most pilonidal sinuses resolve with treatment by the 40 year age irrespective of the treatment method this encouraged surgeons to believe that their methods of treatment was adequate and without compelling need to change (Varnalidis *et al*, 2014).

Conclusion

Operation "suturing skin, edge to presacral fascia" proved good for both primary pilonidal sinus and recurrent one.

Recommendations

1- Close observation of wound by surgeon himself is essential. 2- Wound dressing by surgeon himself is essential for cleaning without use any chemical, day after day. 3- Due to short hospital stay, low "no recurrence" recurrent rate, ease of both movement & wound care, and good esthetic wound results.

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Explanation of figures

Fig. 1: Secondary track showed granulation project from it in cephalic position to primary on- midline pit for hair enters from our patient.

Fig. 2: Open the track showed hair and granuloma found within track from patients

Fig. 5: Pron position skin painting by antiseptic, toweling applied.

Fig. 6: Oblique angle skin incision through healthy fat up to pre sacral fascia.

Fig. 7: Offshoot to incorporate a secondary sinus.

Fig. 8: Sinus track and isolated ellips of skin separated from pre-sacral fascia by scissor dissection.

Fig. 9: Suturing skin edge to pre-sacral fascia by interrupted suture.

Fig. 10: 5mm midline gap healed by granulation tissues.

Fig. 11: Clean wound by saline and dressing by dry dressing.

Fig. 12: Ten days after removal suture showed a gap between skin edge, showed healthy granulation tissue.

Fig. 13: Gross pathology: irregular fibro-fatty tissue piece measuring 11×3cm covered with skin ellipse (*Ragaei Mohammady and Abdallah-AbdEl Kader, 2018*).

Fig. 14: Microscopic description: serial sections examination from three received samples of fibro-fatty tissue revealed congested fibrosis tissue heavily infiltrated by mixed inflammatory cells mainly polymorphs and macrophages. No evidence of atypical or malignancy (*Ragaei Mohammady and Abdallah-AbdEl Kader, 2018*)

