

Can the recurrence rate of open pilonidal sinus surgery be reduced by preventing premature epithelialization?

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Abstract

Background and objective: Many surgical options are known to treat chronic pilonidal sinus disease; the procedure that has the least recurrence rate is the open method. This study aimed to evaluate the effect of adding one step in management, on the recurrence rate of the same procedure.

Methods: This is a prospective study, started at 1st Feb. 2018; the last data collection was at 31 Jan. 2020. Thirt-eight patients included in the study, all were suffering from chronic sacrococcygeal pilonidal sinus disease. Sinus excision and lying open the wound to heal by secondary intention is the procedure that is adopted. At time of follow up, frequent separation of wound edges and breaking of any premature bridging of skin at the excision site, were adopted, local anesthesia was needed in 7 patients.

Results: The recurrence rate for lying open the wound to heal by secondary intention is significantly reduced from (8-21%) to (2.63%) by adding one step in management during the follow up period, this step involved the frequent separation of wound edges and breaking of any premature bridging of skin even if local anesthesia is needed.

Conclusion: Preventing premature bridging of wound skin after surgical excision of pilonidal sinus can significantly reduce the recurrence rate of the procedure.

Keywords: Pilonidal disease; Sacrococcygeal; Risk factors; Recurrent pilonidal sinus.

Introduction

Sacrococcygeal pilonidal sinus disease (PNS) is one of the common disease, its aetiology has been matter of debate¹. In 1833, Herbert Mayo mentioned a hair-containing sinus, but until 1880 that Hodge put the term “pilonidal” (Latin: pilus = hair and nidus = nest)². It was also given the name “jeep disease”³. Other sites for PNS like the interdigital, axillary, umbilical, perianal regions have been reported⁴. PNS rarely develops before puberty and after the age of 40. The male to female ratio is variable, it is around 3-4 to 1, probably due to more hirsute nature of male gender^{1,5}. The peak onset is at 19 years of age for women and 22 years for men⁶⁻⁸. For long time there were two theories for PNS development, the congenital and the acquired ones, by time the acquired one is becoming more acceptable, among the reasons to this is

being seen in folds between the fingers of hair dressers and shepherds which can be due to hair insertion⁹⁻¹¹. Rootless, sharp, short hair fragments with cut ends were found within pilonidal sinus tracts, they invade more easily than longer hairs¹². Mostly, the sinus is single, at midline of natal cleft but could become multiple with lateral openings¹³. Presentations of PNS are either asymptomatic pits, that do not require treatment, or acute abscesses which needs drainage with or without curettage or chronic discharging sinuses¹³. For chronic sinuses, the choice for particular surgical approach is affected by the surgeon’s familiarity with the procedure, recurrence rate and healing time¹³, the best known choices are: conservative, track opening, excision & open drainage, excision and primary closure¹³, also local phenol^{2, 14} or Fibrin

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glue can be effective⁵⁻¹⁴, but none is universally acceptable⁴⁻¹³. The ideal treatment should be simple, with least pain, rapid returned to work, and least complications¹⁶. Leaving the wound open after excision was our choice, it ensures good drainage and minimizes wound infections¹⁴. Its disadvantages are the inconvenience to the patient, needs frequent dressing changes, and needs close observation of the wound. The average time for wound healing is approximately 6 weeks; some wounds may take 4-6 months to heal¹⁴. The recurrence rate (RR) for different approaches are variable, in one study, the RR of open method during an average follow-up of 18 months is (12%) which is better than that obtained following the closed method (23%) and phenol injections (26.5%)⁵. In general, the

RR for open method is in the range of 8-21%¹⁷⁻⁸, this relatively reduced RR is believed to be due to the broad-based, and hairless scar produced by secondary intention, which prevents friction of buttocks together, and hair penetration⁵. The known postoperative care includes daily cleaning of the open wound in the shower or with a sitz bath, and hair shaving of the surrounding area². Premature skin bridging and epithelialization is known to attribute to sinus recurrence¹⁴, but no enough suggestions are available how to prevent this effectively. The aim of this study is to evaluate the effect of adding one step to the open method procedure in preventing premature skin bridging in terms of recurrence rate and healing time.

Patients and methods

This is a prospective study, started at 1st Feb. 2018; the last data collection was at 31st Jan. 2020. The number of patients included in the study was 38, they were all suffering from chronic PNS at the sacrococcygeal region. The study protocol was approved by the scientific committee of College of Medicine/Hawler Medical University, No. 12 on Dec 20- 2018. The surgical approach that is used is the open one that is excision of the sinus tract and inflamed tissues deep to the deep fascia, then keeping the wound open to heal by secondary intention. Local anesthetic infiltration was used in 34 patients as an outpatient surgery while general anesthesia was used for 4 others. Before the operation, the patient's weight and length are recorded, also a note was registered about the patient's clothes regarding tightness at the hip and buttocks area, and classified as, normal, tight and very tight. In prone position, a pillow or two under the pelvis, local anesthetic infiltration around the proposed incision in an elliptical manner with 1% lidocaine is performed, then excision is performed

through an elliptical skin incision around the sinus carrying area, extending deep in the soft tissues to the level of the deep fascia, putting in mind the possibility of sinus branching in any direction, after meticulous hemostasis, the wound is packed with a sterile dressing keeping a layer of antibiotic impregnated gauze dressing, in touch with the wound cut surfaces. Follow up schedule, included dressing changes at the clinic during the next two days, then twice weekly for 2 weeks, after that once weekly till complete healing. After that a phone contact is done every 2 months. After the first week, wound packing is omitted, only superficial gauze cover is provided. Instructions for patients included, daily washing, wound wash with hand shower whenever possible, in addition to shaving of the surrounding area down to the anal verge and laterally at least for 5cm¹⁸. Wound care must continue at least 3 months after the wound is healed. In the clinic, the wound is examined, washed with normal saline, any hair or debris are removed, wound edges are separated to prevent any

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degree of premature healing and pockets formation, these pockets are source of recurrences. When premature skin healing occurred, our approach is to separate the edges surgically under local anesthetic infiltration, using sub dermal infiltration of 1% lidocaine, no skin closure is allowed unless the wound is fully filled to the level of dermis with healthy granulation tissue. This approach needs a continuous follow up and full patient cooperation in

Results

Among the total (n = 38), there were 22 males (57.89 %) and 16 females (42.11%) with male to female ratio of 1.37:1, Table (1). Their age distribution ranged between

following instructions and appointments. The Statistical Package for the Social Sciences (version 23) was used for data entry and analysis; categorized variables had been presented as frequencies and percentage. A p value ≤ 0.05 is considered statically significant Exclusion criteria: Patients presented with abscess formation and those patients who treated conservatively were excluded.

16 and 35 years with mean average of 19 years for females and 22.5 years for males, Table (1).

Table (1): Demographic characteristics of the participants

Variables	No.	(%)
Gender		
Male	22	(57.89)
Female	16	(42.11)
Total	38	(100.00)
Age groups		
$\leq 16-20$ years	16	(42.11)
21- 25 years	18	(47.37)
26 – 35years	4	(10.53)
Total	38	(100.00)

The mean BMI was 27.2, ranged between 23.4 and 32. The majority (n=31), (81.58%) were within overweight group, with a p value of <0.001 , Table (2).

Regarding tightness of clothes; there were 27 patients (71%) wearing tight and very tight trousers and pants with a p- value of <0.009 Table (2).

Table (2): Classification of participants according to their BMI & State of clothes tightness

BMI	No.	(%)	p- value
Normal (18.5-24.9)	5	(13.16%)	
Overweight (25-29.9)	31	(81.58%)	<0.001
Obese (30-34.9)	2	(5.26%)	
Total	38	(100.00)	
Clothes tightness			
Normal	11	(29.00)	
Tight	19	(50.00)	
Very tight	8	(21.00)	<0.009
Total	38	(100.00)	

Five patients were having two or more sinus openings, but most of the patients (n=33), (86.9%) were showing a single sinus opening with a p value of <0.001 ,

Table (3). In one occasion the sinus was already recurrent, belongs to an immigrant patient. Local Anesthesia was used in 34 patients (89.5 %), with a p <0.001 . the

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remaining 4 (10.5%) patients received General Anesthesia, Table (3).

Table (3): Patients distribution according to the number of PNS opening & Type of Anesthesia

Variables	No.	(%)	p- value
One sinus opening	33	(86.9)	<0.001
Two sinus opening	4	(10.5)	
Three sinus opening	1	(2.6)	
Total	38	(100.0)	
Type of Anesthesia			
Local Anesthesia	34	(89.50)	<0.001
General Anesthesia	4	(10.50)	
Total	38	(100.00)	

Those patients (n=7) (18.42%) with premature bridging of the wound are managed by bridge breaking under local anesthetic infiltration. Complete healing time was variable ranged from 3 to 12 weeks with mean average of 6 weeks.

Table 4: Number, percentage & significance of recurrences

Variables	No.	(%)	p- value
Postoperative recurrence	1	(2.63)	<0.001
No recurrence	37	(97.37)	
Total	38	(100.00)	

Regarding recurrence rate; the median 12 months follow up gave (2.63%), recurrence rate, Table (4). One patient (2.63 %) who is known to have recurrent sinus, presented with another recurrence 13 weeks post operation.

Discussion

Among the total (n = 38), there were 22 males (57.89 %) and 16 females (42.11%) with male to female ratio of 1.37:1, Table (1), this ratio is significantly different from others results (4:1) and (3:1)^{1, 5}. Their age distribution ranged between 16 and 35 years with mean average of 19 years for females and 22.5 years for males Table (1), which are comparable with reference numbers i.e. (19 years for females & 22 years for males)⁶. Regarding the BMI of the participants, 31 patients, (81.58%) were categorized within overweight group and this is strongly significant (p <0.001) Table (2). only two patients were classified as obese (BMI for obesity = 30-34.9). The role of obesity as a risk factor is not settled yet due to the diversity of reports^{18, 21}. In our study there is an association between PNS and overweight. Regarding tightness of their clothes; most of the participants (n= 27) (71%) were wearing tight and very

tight trousers and pants, with a p value <0.009 Table (2), this is highly significant and tight clothes needs to be added as a risk factor for PNS. Little available data regarding the significance of tight clothes as a risk factor for PNS²³⁻⁴. Tight underwear & trousers can obstruct the way to the falling sharp ended hairs¹² from the head and trap them at the natal cleft; with repeated friction they can penetrate the skin. Local Anesthesia was preferred by 34 patients (89.5 %), with p <0.001. The remaining 4 (10.5%) patients requested General Anesthesia, Table (3). From these data it is obvious that local anesthesia is the preferable one by most patients our aim during follow up time is to keep the wound clean². We went farther in this line, through preventing early skin covering until the wound bed is fully prepared, for this purpose, premature bridging is reopened again under local anesthetic

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infiltration. This step was needed in 7, (18.42%) patients. This step decreased the median recurrence rate of open method for PNS to (2.63 %), with a p value of <0.001 which is highly significant result Table (4). The recorded recurrence rates for open method varied according to many factors but in general it is in the range of 8-21%¹⁶⁻⁷. In comparison, the RR in this study (2.63%) is lower than the reference one (8-21%). The only recurrence developed a 27

Conclusions

Premature bridging of wound skin through simple separation or using local anesthesia after surgical excision of pilonidal sinus can significantly reduce its recurrence rate but needs close follow up and patient's

Conflicts of interest

There were no conflicts of interest.

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years old male immigrant with low socioeconomic state, hairy, untidy and having difficulty in following the instructions, he had a history of surgery for same sinus one year ago. Complete healing time in this study was variable ranged from 3 to 12 weeks with mean average of 6 weeks, and this is compatible with the previously recorded average healing time that is approximately 2 months¹⁴

cooperation. Overweight and tight clothes have a real significant association with this disease and must be considered in its prevention.

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