

Prospective Study

Laying open (deroofing) and curettage under local anesthesia for pilonidal disease: An outpatient procedure

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Data sharing statement: Technical appendix, statistical code, and dataset available from the corresponding author at drargpankaj@yahoo.com. No consent was not obtained but the presented data are anonymized and risk of identification is low.

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Abstract

AIM: To test the efficacy of lay open (deroofing, not excision) with curettage under local anesthesia (LOCULA) for pilonidal sinus as an outpatient procedure.

METHODS: LOCULA procedure was done for all types of pilonidal disease. The primary outcome measure was cure rate. The secondary outcome measures were hospital stay, operating time, return to work, healing time and complication rate.

RESULTS: Thirty-three (M/F-30/3, mean age-23.4 ± 5.8 years) consecutive patients were operated and followed for 24 mo (6-46 mo). Eleven were pilonidal abscess and 22 were chronic pilonidal disease. Six had recurrent disease. Operating time and the hospital stay was 22.3 ± 5.6 min and 63.8 ± 22.3 min respectively. The patients could resume normal work in 4.3 ± 3.2 d and the healing time was 42.9 ± 8.1 d. Thirty (93.8%)

patients had complete resolution of the disease and two (6.2%) had a recurrence. Both the recurrences happened in patients who had complete healing but ignored the prescribed recommendations. One out of these got cured after getting operated again with the same procedure. Thus the overall success rate of this procedure was 96.9%.

CONCLUSION: Lay open (deroofing) with curettage procedure under local anesthesia is an effective procedure to treat both simple and complicated pilonidal sinus and abscess. It is a simple procedure, has a high cure rate (up to 97%), doesn't require admission and is associated with minimal morbidity and scarring. Considering the distinct advantages, this procedure has the potential to become the first line procedure for treating pilonidal disease.

Key words: Pilonidal; Lay open; Deroofing; Curettage; Sinus

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Core tip: This study demonstrates that lay open with curettage under local anesthesia is a simple procedure to treat simple and complicated pilonidal disease. It is quite effective with high cure rate and can be done as an outpatient procedure. Apart from this, this procedure has distinct advantages - can be learnt easily, less time to operate, almost pain free, back to work faster, minimum incision, simple dressings after operation, small scar, minimal change in body shape, economically better and easy to repeat after a recurrence. This procedure can potentially become the frontline operation for all types of pilonidal disease.

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INTRODUCTION

"Pilonidal sinus" as a term was first used in the year 1880^[1]. Though Mayo described this disease in detail in 1833, its optimal treatment is debated even today^[2]. Several procedures have been described for pilonidal disease. Acute abscess is treated by incision and drainage^[3]. Chronic disease is usually treated by wide excision. After excising, the wound may be left open so that it heals with granulation tissue^[4], or the wound may be closed on the operating table. The latter may be a midline closure^[5] or usage of a flap - Z-plasty^[6], Karydakias flap^[7], Bascom flap^[8] and Limberg flap^[9]. The principle behind these extensive procedures had been to remove all the diseased portion and to close the wound

away from the midline^[10,11]. However, these excisional procedures lead to extensive incisions, removal of large amount of skin, big wounds and hence increase morbidity. In spite of increased morbidity, the recurrence rate also didn't necessarily come down after these extensive procedures^[12-14].

Laying open of pilonidal sinus and curettage of tract under local anesthesia (LOCULA) procedure is a simple procedure to manage pilonidal sinus^[15,16]. Though this procedure has been described in the past yet no study has determined the feasibility and efficacy of this procedure done under local anesthesia as an office procedure.

We performed a prospective study between 2011 and 2014 to analyze the benefits and drawbacks of this procedure in all types of pilonidal disease - acute (abscess), chronic simple and complicated (recurrent, multiple tracts, etc.).

MATERIALS AND METHODS

Study population

In the period between January 2011 and July 2014, all the consecutive patients of pilonidal sinus (simple as well as complicated) were prospectively included in the study. The inclusion criteria were: Patients with chronic simple pilonidal sinus, patients having recurring disease and pilonidal disease having an associated abscess. All patients gave consent in writing in the language they understood. The hospital ethics committee approved the study protocol. All the operations were performed by a single surgeon (Garg P).

Surgical procedure

No preoperative preparation was done. All the procedures were done on an outpatient basis under local anesthesia and no hospital admission was done. No patient required general or spinal anesthesia. During operation, the patient was placed in a prone position. An adhesive tape was used to separate the buttocks so that proper exposure of the diseased area could be obtained. The solution of Povidine iodine was used to disinfect the operative area.

The sinus opening was probed gently to gauge the direction and length of the tract (Figure 1). The local anesthetic agent (2% Lignocaine with Adrenaline 0.005%) was infiltrated around the opening and along the tract/tracts (Figure 1). The anesthetic agent was kept ready in case the tracts were found to be longer than expected or any side tract was encountered. The tracts were identified with the help of mosquito (small artery) forceps and were laid open (Figure 1). If there were more than one tracts, then all the tracts were opened at the same time. All the hairs and debris were removed from the tracts (Figure 1) and all the granulation tissue was removed by rubbing the sinus cavity with a dry gauze or with a curette. The skin edges were trimmed. The wound was checked thoroughly for any extensions or side/downward branches. The



Figure 1 Lay open plus curettage under local anesthesia procedure for pilonidal disease. A: Preoperative photo without preparation; B: Preoperative photo after preparation; C: Infiltration of local anesthesia; D: Laying open after inserting an artery forceps in the sinus; E: Hairs and debris removed from the sinus; F: Immediate post-operative; G: One week postoperative; H: Three weeks post-operative; I: Completely healed wound - 6 wk postoperative.

lateral wall and the base of the sinus were left intact and no marsupialization was done. The bleeding points were electrocauterized and haemostasis achieved. The wound was packed tightly with a povidone iodine soaked gauze.

The patient walked off to the recovery room and kept under observation for an hour. After this, the dressing was checked for any active bleeding and the patient was sent back home with instructions to resume daily routine. However, he/she was instructed to avoid strenuous work. Oral antibiotic (Cefixime 200 mg twice a day) and analgesic (Aciclofenac 500 mg) were prescribed twice a day for five days.

Follow-up

All the patients were examined in the out-patient office on the next day of operation. The dressing was taken off, the wound gently rubbed with a dry gauze and then

lightly packed with a povidine iodine soaked gauze. The process was explained to the relative and the latter was made to do the same under our supervision. After this, the patient's relative was instructed to clean the operated area at home (once or twice a day) and the patient was encouraged to resume his normal work as soon as possible. The patient was followed up on weekly basis till the wound healed completely.

After the wound healed completely, the patient was instructed to keep three centimeters area all around the wound free of hair till he/she reached the age of thirty years. He/she was also advised to put powder in the intergluteal cleft for the same period (India is a hot and humid country and increased sweating and moistness in the intergluteal region was reported by all our patients. We suspected this to be one of the contributing reasons). The patient was told to report back in case of any swelling, pain or pus discharge from the operated

Table 1 Demographic data and characteristics of the patients

Parameter	n = 33
Age	23.4 ± 5.8 yr
Sex (M/F)	30/3
Anesthesia	Local anesthesia
Inclusion criteria	Chronic, recurrent, abscess
Exclusion criteria	Refused consent
Recurrent	6 (18.2%)
Abscess	11 (33%)

M/F: Male/female.

Table 2 Results about the recurrences of the patients

Parameter	n = 33
Operating time	22.3 ± 5.6 min
Hospital stay	63.8 ± 22.3 min
Resume normal work	4.3 ± 3.2 d
Healing time	42.9 ± 8.1 d
Recurrence	6.2%
Complications	3.1%

area.

RESULTS

The various characteristics of the patients are summarized in Table 1. Thirty three consecutive patients were prospectively recruited over a three and a half years period. The patients had a 24 mo of median (range: 6-46 mo) follow-up. One patient was lost to follow up. The age of the patients ranged from 16 to 39 years (mean: 23.4 ± 5.8) and the sex ratio-M/F - 30/3. Eleven were pilonidal abscess and 22 were chronic pilonidal disease. Six had recurrent disease. The operating time was 22.3 ± 5.6 min and the hospital stay after the operation was 63.8 ± 22.3 min. The patients were able to resume their normal work in 4.3 ± 3.2 d and the healing time was 42.9 ± 8.1 d. Thirty (93.8%) patients had complete resolution of the disease and two (6.2%) had a recurrence (Table 2). Both the recurrences happened in the patients who didn't adhere to the prescribed recommendations after the complete healing. One patient with a recurrence was operated again with the same procedure and he got cured. The second patient was lost to follow up. Thus the overall cure rate was 96.9%. One patient had a bleeding episode six days after the operation. She was managed conservatively in the outpatient clinic and the wound got healed subsequently.

DISCUSSION

In this study, LOCULA was done on an outpatient basis in 33 patients with 96.9% success rate. All types of pilonidal sinus patients, simple and complicated (recurrent, abscess and multiple tracts) were included in the study. This is perhaps the first study in the literature which demonstrated that this simple procedure was

highly effective (low recurrence rate) and could be done on outpatient basis without the need for hospital admission. This was possible because LOCULA could be done under local anesthesia. None of the patient required general or regional anesthesia. This makes it quite cost effective as well. The morbidity was minimal as the procedure was done under local anesthesia on an outpatient basis (all the patients left the hospital within one and a half hour after the procedure) and could resume their normal routine within a week (mean: 4.3 d). The recurrence happened in only two (6.2%) patients and one of them underwent the same procedure and got cured. The recurrence also happened in those patients who didn't follow the post-operative instructions (to regularly clean the area of hair). The only drawback seen in this procedure was slightly longer healing time (6 wk). But this delayed healing time did not interfere with the normal routine and resumption of work, hence didn't bother the patient much.

During the operation, no attempt was made to excise the sinus. Only laying open (deroofting) was done and some trimming of the lateral walls was done to prevent adhesions and ensure healing by secondary intention. This made the procedure simple, took less time, led to minimal bleeding and resulted in a small wound. The postoperative pain was very less and the wound care was not demanding.

Though lay open with curettage procedure had shown to be effective in the past^[15,16], yet it could not become the preferred procedure for treating pilonidal disease. One of the reasons could be that this procedure was perhaps confused with another procedure - drainage of acute abscess in pilonidal disease after simply incising it (without curetting the tracts and the cavity). The latter procedure was associated with a recurrence rate of up to 24%^[3,17-19]. However, when the cavity was curetted along with the drainage, the recurrence rate reduced significantly. In a large study (150 patients) with long follow-up (65 mo), Vahedian *et al*^[19] compared the success rate of only drainage procedure vs laying open with curettage and found that the cure rate in these procedures differed significantly (simple drainage group - 46%, curettage group - 90%). This is not difficult to understand because when the wound is thoroughly curetted, all the debris, hairs and granulation tissue are removed and any side branches/extensions are easily identified. The latter can then be laid opened and curetted.

To conclude, LOCULA is a simple procedure to treat simple and complicated pilonidal disease. It is quite effective with high cure rate and can be done as an outpatient procedure. Apart from this, this procedure has distinct advantages - can be learnt easily, less time to operate, almost pain free, back to work faster, minimum incision, simple dressings after operation, small scar, minimal change in body shape, economically better and easy to repeat after a recurrence. This procedure has full potential to become the gold standard operation for all types of pilonidal disease. The only slight drawback is slightly longer healing time but this aspect doesn't

much bother patients as they can carry out their normal chores during the dressing period.

COMMENTS

Background

Pilonidal sinus is a dreaded disease in which a tract (sinus) is formed in the lower back inside which there is a collection of hairs. This usually happens in sedentary, sweaty, slightly obese, hairy young males. This disease is characterized by regular pus formation and is notorious for recurrence after the operation.

Research frontiers

As of today, chronic disease is usually treated by wide excision. After excising, the wound may be left open so that it heals with granulation tissue, or the wound may be closed on the operating table. The latter may be a midline closure or usage of a flap - Z-plasty, Karydakias flap, Bascom flap and Limberg flap. However these extensive big operative procedures require administration of spinal or general anesthesia, hospital admission for 2-3 d and bed rest for 5-10 d. The resumption of normal work can take up to 4-6 wk. In spite of all this, the recurrence rate also is also 4%-10% after these extensive procedures.

Innovations and breakthroughs

This is the first study which demonstrates that a simple procedure (lay open with curettage) can treat simple and complicated pilonidal disease in an effective manner. This procedure can be done as an outpatient procedure without needing any hospital admission. Therefore, no hospital admission is required. Apart from this, this procedure has distinct advantages - can be learnt easily, less time to operate, almost pain free, back to work faster, minimum incision, simple dressings after operation, small scar, minimal change in body shape, economically better and easy to repeat after a recurrence.

Applications

As this simple procedure has so many distinct advantages over all other preferred procedures, this procedure can potentially become the frontline operation for all types of pilonidal disease.

Terminology

Pilonidal sinus - a tract or a sinus in the lower back in which a cluster of hairs go in leading to recurrent infection and pus formation. Excisional procedures - operations in which the sinus is removed by operation taking a big margin all around which results in a large wound.

Peer-review

This study presented a novel procedure to treat simple and complicated pilonidal disease. The data was full and accurate. And the authors present a study on a modified approach to the operative treatment of pilonidal sinus disease. It's an interesting and simple surgical procedure with good short-term results.

REFERENCES

- Hodges RM. Pilonidal sinus. *Boston Med Surg J* 1880; **103**: 485-486 [DOI: 10.1056/NEJM188011181032101]
- Mayo O. Observations on injuries and diseases of the rectum. London: Burgess and Hill, 1833
- Jensen SL, Harling H. Prognosis after simple incision and

- drainage for a first-episode acute pilonidal abscess. *Br J Surg* 1988; **75**: 60-61 [PMID: 3337954 DOI: 10.1002/bjs.1800750122]
- Testini M, Piccinni G, Miniello S, Di Venere B, Lissidini G, Nicolardi V, Bonomo GM. Treatment of chronic pilonidal sinus with local anaesthesia: a randomized trial of closed compared with open technique. *Colorectal Dis* 2001; **3**: 427-430 [PMID: 12790943 DOI: 10.1046/j.1463-1318.2001.00278.x]
- Bissett IP, Isbister WH. The management of patients with pilonidal disease--a comparative study. *Aust N Z J Surg* 1987; **57**: 939-942 [PMID: 3439938 DOI: 10.1111/j.1445-2197.1987.tb01298.x]
- Monro RS, Mcdermott FT. The elimination of causal factors in pilonidal sinus treated by Z-Plasty. *Br J Surg* 1965; **52**: 177-181 [PMID: 14261120 DOI: 10.1002/bjs.1800520306]
- Karydakias GE. New approach to the problem of pilonidal sinus. *Lancet* 1973; **2**: 1414-1415 [PMID: 4128725 DOI: 10.1016/S0140-6736(73)92803-1]
- Bascom J, Bascom T. Utility of the cleft lift procedure in refractory pilonidal disease. *Am J Surg* 2007; **193**: 606-609; discussion 609 [PMID: 17434365 DOI: 10.1016/j.amjsurg.2007.01.008]
- Bozkurt MK, Tezel E. Management of pilonidal sinus with the Limberg flap. *Dis Colon Rectum* 1998; **41**: 775-777 [PMID: 9645748 DOI: 10.1007/BF02236268]
- McCallum I, King PM, Bruce J. Healing by primary versus secondary intention after surgical treatment for pilonidal sinus. *Cochrane Database Syst Rev* 2007; **(4)**: CD006213 [PMID: 17943897 DOI: 10.1002/14651858.cd006213.pub2]
- McCallum IJ, King PM, Bruce J. Healing by primary closure versus open healing after surgery for pilonidal sinus: systematic review and meta-analysis. *BMJ* 2008; **336**: 868-871 [PMID: 18390914 DOI: 10.1136/bmj.39517.808160.BE]
- Gencosmanoglu R, Inceoglu R. Modified lay-open (incision, curettage, partial lateral wall excision and marsupialization) versus total excision with primary closure in the treatment of chronic sacrococcygeal pilonidal sinus: a prospective, randomized clinical trial with a complete two-year follow-up. *Int J Colorectal Dis* 2005; **20**: 415-422 [PMID: 15714292 DOI: 10.1007/s00384-004-0710-5]
- Karakayali F, Karagulle E, Karabulut Z, Oksuz E, Moray G, Haberal M. Unroofing and marsupialization vs. rhomboid excision and Limberg flap in pilonidal disease: a prospective, randomized, clinical trial. *Dis Colon Rectum* 2009; **52**: 496-502 [PMID: 19333052 DOI: 10.1007/DCR.0b013e31819a3ec0]
- Lorant T, Ribbe I, Mahteme H, Gustafsson UM, Graf W. Sinus excision and primary closure versus laying open in pilonidal disease: a prospective randomized trial. *Dis Colon Rectum* 2011; **54**: 300-305 [PMID: 21304300 DOI: 10.1007/DCR.0b013e31820246bf]
- Kepeceki I, Demirkan A, Celasin H, Gecim IE. Unroofing and curettage for the treatment of acute and chronic pilonidal disease. *World J Surg* 2010; **34**: 153-157 [PMID: 19820992 DOI: 10.1007/s00268-009-0245-6]
- Al-Homoud SJ, Habib ZS, Abdul Jabbar AS, Isbister WH. Management of sacrococcygeal pilonidal disease. *Saudi Med J* 2001; **22**: 762-764 [PMID: 11590447]
- Matter I, Kunin J, Schein M, Eldar S. Total excision versus non-resectional methods in the treatment of acute and chronic pilonidal disease. *Br J Surg* 1995; **82**: 752-753 [PMID: 7627503 DOI: 10.1002/bjs.1800820612]
- Allen-Mersh TG. Pilonidal sinus: finding the right track for treatment. *Br J Surg* 1990; **77**: 123-132 [PMID: 2180534 DOI: 10.1002/bjs.1800770203]
- Vahedian J, Nabavizadeh F, Nakhaee N, Vahedian M, Sadeghpour A. Comparison between drainage and curettage in the treatment of acute pilonidal abscess. *Saudi Med J* 2005; **26**: 553-555 [PMID: 15900358]

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