KARYDAKIS FLAP PROCEDURE VERSUS MODIFIED ROTATION FLAP, IN THE TREATMENT OF COMPLEX SACROCOCCYGEAL PILONIDAL DISEASE

Hatem Mohammed.,Ashraf Ismail,Osama Gharib,Hany Mohamed.
General Surgery department Zagazig university

ABSTRACT

Background: Controversy still exists about the best surgical technique for treatment of Pilonidal sinus disease. The aim of this study is to find the preferred option for management of Pilonidal sinus disease. Regarding recurrence rate and post operative complications.

Methods:

A total of 84 patients of chronic Pilonidal sinus disease were randomised to undergo Karydakis procedure (n= 40) the mean age was 29 ± 7.2 years (32 men) or modified rotation procedure (n=44). the mean age was 28 ± 6.6 years (34men) .The demographic data,postoperative results complications and recurrence were documented for comparison of the results. Patients from both the groups were recalled after 12 months to assess recurrence.

Results: The operative time (minute) for group(K) was49.8 ± 1.3 versus 42.7 ± 5.3 in group (R) , also there was no significant difference between both groups as regard hospital stay, pain score, period off work, and healing period . Postoperative scar was an ugly and poor patients satisfaction in group(R) versus group (K), follow-up showed that ,there was no significant difference between both groups as regard incidence of complications and recurrence.Patients in group (K) were satisfied about their cosmetic appearance more than group(R) .

Conclusion: Karydakis procedure more preferred method in treatment of sacrococcygeal Pilonidal disease than the rotational flap method.

Keywords: Natal cleft, Closed Excision, Complication

INTRODUCTION

Many different approaches have been put for management of pilonidal diseases from a conservation treatment to an extensive surgical excision[1]. But none proved successful in eliminating the complications related to a certain procedure, like delayed wound healing, infection and the rate of recurrence. Radical excision is one of such procedures, where in the sinus tracts are excised along with the surrounding tissue up to the fascia covering the sacrum. The debate, however, revolves around the mode or manner of reconstruction of the large wound left behind after the procedure. It is often left alone to heal by granulation, which takes a long time and needs regular dressing and meticulous wound care. Excision with primary closure obviates a large wound but in the process, the chances of wound infection; wound dehiscence and recurrence are very high[2]. Techniques involving closure by Z-plasty, rhomboid or myocutaneous advancement flaps require long operative time and hospital stay and are fraught with complications like loss of the graft or flap[3,4] .

Lord and Miller described a 'closed' technique that included the removal of the midline sinuses and lateral tracts[5]. It is simple to perform and the complication and recurrence rates are within the acceptable limits. While wide excision and closure with modified rotation flap removes the pathology and deals with the etiological factors by strengthening and leveling the natal cleft [6] .

In this study, we compared recurrence rate and post operative complications in management of Pilonidal disease via two methods, which were applied randomly on 84 patients. The first method used was excision of Pilonidal sinus and closure by advancement flap (a Karydakis procedure) versus wide excision and closure with modified rotation flap. To assess which is the preferable method[7].

PATIENTS AND METHODS

This study conducted in surgery department at Zagazig university hospital during the period from October 2009 until March 2011; eighty four patients who were treated for recurrent or complex Pilonidal disease were included in the study .Informed consent was obtained from all patients included in the study which

was approved by the local ethics committee. Demographic and clinical data of patients are shown in table (1).

All patients were subjected to full history taking, clinical examination, and laboratory test. Randomization achieved through a computer-generated schedule and the results sealed into envelopes. The envelopes were drown and opened by a nurse in the operating room .

The patients then randomized into two groups: group(K) 40 patients underwent Karydakis procedure and group(R) 44 patients underwent simple fasciocutanous flap. All patients operated on under general anesthesia and were placed in prone Jack-knife position with two adhesive straps in each glutted region to pull them laterally to allow better visualization of the natal cleft.

A prophylactic antibiotic in the form of a third generation cephalosporin is given one hour before the operation. The duration of operation, postoperative pain, length of hospital stay, duration of incapacity for work ,postoperative complications (infection, flap oedema, wound dehiscence) and postoperative recurrence were recorded .

Table (1):- Demographic and clinical data of patients .

Demographic and clinical data of patients	Karydakis procedure(k)	Modified rotational flap(R)	P value
Sex :Males: Female	32 : 8	34 : 10	0. 4230
Age (years)	33 ± 7.2	30 ± 6.6	0. 2896
Reccurent cases	25	24	0. 5542
Primary cases(branched)	15	20	0. 6836
Symptoms			
Discharge	12	11	0.8244
Pain(VAS)score	11	10	
Bleeding	10	9	
Itching	4	16	
Follow up	23.2 ± 7.65	21.6 ± 8.32	0. 5241

Procedure

In Karydakis procedure (group K), methylene blue was injected to delineate all diseased tissues and side tracks extensions, the sinus was excised with a simple biconvex 'elliptical' incision only just crossing the midline to excise the sinus. It was based 1-2 cm from the midline with excision down to the sacrum. A thick flap was then created by undercutting the midline side of the wound. This flap was advanced across the midline to meet the other side of the wound with two layers of 2/0 polyglactin sutures to the fat around a drain tube. The wound was then closed with 3/0 polypropylene skin sutures (Fig.1,2,3&4). Then to evaluate patient satisfaction with the treatment modality, visual analogue scale (VAS) was used from 0 (no pain) to 10 (worst pain imaginable) on the first postoperative day. Duration of incapacity for work defined as the time from the date of surgery to the date on which the patient returned to normal activities including employment and leisure activities. Infection considered as leakage of purulent secretion

through the surgical wound and not only peri-incisional hyperemia.

The modified rotational procedure (group R) was an eccentric elliptical excision of the all diseased tissue down to the fascia covering the sacrum, after methylene blue injection to delineate all diseased tissues. Care must be taken to handle tissues as gently as possible, with meticulous homeostasis. In group (R) simple rotation flap was marked over the skin on the gluteus muscle fascia .The flap is then rotated and advanced and sutured subcutaneously with 2/0 polyglactin beginning from its lower edge. The stitches should be with tension free to avoid cutting during shearing movement. The skin is sutured with vertical mattress stitch of 3/0 polypropylene. The flap donor area is sutured primarily with the same material in similar fashion (Fig. 5-9). Closed suction drain was placed and removed after seven to ten days.

Patients discharged when clinically free after the operation, Removal of the drain 7 – 10 days after operation. All patients advised to visit outpatient clinic every week for one month and then every 3 months for at least 12 months during the follow-up period. Stitches were removed 12 days post-operative.

All patients recommended to walk freely but not to exercise until removal of stitches.

Statistical analysis: The statistical analysis of data done by using excel program and SPSS program statistical package for social science version 10. the data done in form of mean ± SD for quantitative data, frequency and proportion for qualitative data. The analysis of the data was done to test statistical significant difference between groups. For quantitative data student t-test was used to compare between two groups. Chi square test was used for qualitative data.

RESULTS

This study was conducted on 84 patients with complex sacrococcygeal Pilonidal disease 49 cases were recurrent and 35 patients were primary extensive Pilonidal sinuses. They were divided into two groups and underwent operations either Karydakis or rotation flap .

There was no significant difference between both groups regarding age, sex, type of previous surgery, preoperative symptoms, and period of follow up. Intermitted discharge and pain were the most common symptoms.

Follow up (weeks) was 23.2 ± 7.65 for group (K)and 21.6 ± 8.32 for group(R) Table 2.

Operative data showed that the operative time (minute)for group(K) was 49.8 ± 1.3 that was significantly more than that for group (R) 42.7 ± 5.3. However, there was no significant difference between both groups as regard hospital stay, pain score, period off work, and healing period Table 2.

Postoperative follow-up showed that there was a significant difference between both groups as regard cosmetic effect and patients satisfaction .

Meanwhile recurrence occurs only in one case in both groups Table 2.

Table (2) :- Postoperative results

Post operative data	Karydakis procedure (k)	Modified rotational flap(R)	P value
Mean hospital stay (d) (range)	1.3 (1–6)	1-4(1–8)	0.4332
Mean operative time	49.8 ± 1.3	42.7 ± 5.3	0.3322
Mean time to complete healing (d) (range)	12 .9 (6–18)	14 .9 (6–22)	0.5093
Mean Time off work(d) (range)	11.9 (12–22)	15.2(12–24)	0.9093
Wound infection (%)	1%	3%	0.7012
Wound breakdown (%)	2%	3%	0.٣0.12
Recurrence (%)	2.5 %	2.2%	0.7692
Pain VAS score	2.6 ± 1.7	2.3 ± 1.4	0.8016
Patients satisfaction	34:40	23:44	0.0122

Karydakis flap operatve steps

Fig (1) Exision of Pilonidal sinus

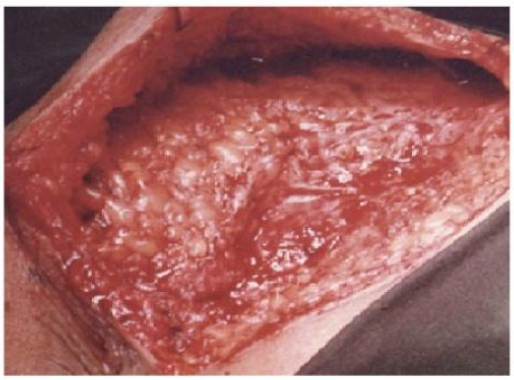

Fig (2) Creation of the flaps in Karydakis flap

Fig (3) The defect after closure

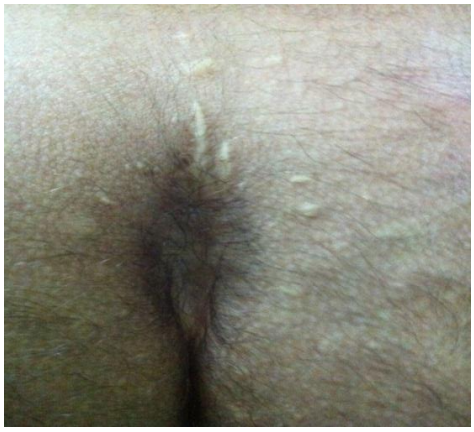

Fig (4) Post operative scar

Rotational flap operative steps

Fig (5) Exision of the sinus

Fig (6) Creation of the flap

(fig 7 ,A&B) Rotation of the flap

Fig (8) Closure of the wound

Fig (9) Healed flap (post-op. scar)

DISCUSSION

The goal for treatment of Pilonidal disease is, excising and healing with a low rate of recurrence. Also to minimizing patient inconvenience and morbidity after the surgical procedure. So avoiding long stay in hospital with loss of work days. Primary closure of the wound is a simple technique but it has a high recurrence rate due to continuing natal cleft. Some authors stated that excision and primary closure with a catheter at the bottom of the wound and the use of antiseptic saline flushing are essential for primary intention healing and the avoidance of recurrences after 5 to 15 years follow up in 243 cases with chronic sinus irrespective of lifting the natal cleft[20]. The Z-plasty procedure has been described by Monro and Mac Dermott [8] in 1965. The disadvantage of this procedure is mainly the

recurrence due to presence of part of the wound in the midline. Also flap tip necrosis has been occurred.

The W-plasty technique has been described by Roth and Moorman in 1977[9] part of the wound is still in the midline and recurrence rate is high (8%). In the way to decrease the incidence of recurrence many procedures had been developed to avoid the midline sutures like"D" excision which is a surgical technique of elliptical incision and primary wound closure. The overall success rate is 80% .[10,11]

In 2002, Petersen et al. evaluated 74 publications, including 10090 patients and showed lower recurrence rate with off-midline flap closure compared with midline closure[12]. The review concluded that off midline closure is the best choice if the sinus is to be excised and sutured and is associated with short hospital stay and the lowest recurrence rate.

In the current study two flaps procedure Karydakis flap procedure and modified rotation flap were compared in the treatment of recurrent and complex sacrococcygeal Pilonidal disease. George karydakis described his procedure that lead to flattening of the natal cleft and off midline closure with no part of the wound crossing [13,14] . In our study the Karydakis procedure showed high satisfaction and success rate after local tissue advancement but its success rate was less than other procedure especially in extensive and recurrent sinuses .

The modified rotation flap technique involves creation of a flap to achieve primary closure and to obliterate the deep natal cleft. We can control the flap donation size according to the excised defect size that appear to provide more efficient flattening of the natal cleft. Including the most inferior part that is inclined to invert toward the anal region.[15]

In the current study, operative time for group Karydakis procedure and modified rotation flap were 49.8 ± 1.3 minute and 42.7±5.3 with no significantly difference disagree the results that were achieved by Can et al,.[15] There was no significance difference between both groups as regard hospital stay, and time of work similar results were achieved by Ersoy et al,[16].

Parasthesia over the flap was reported with modified rotation flap in 16 patients and never occur with Karydakis procedure in the current study. This may be due to interference with the nerve supply of the flap, especially large ones. This was also reported by Lodhi et al, [17]who used rhomboid flap in 30 patients, with 9 complaining of numbness over the flap.

Recurrence showed no significant difference between both groups with only one case observed in each group, similar results were achieved by Can et al,[18,19] .

Karydakis [7] reported recurrence rate below 1% upon healing of the wound. Anyanwu etal[18] reported that there was no recurrence in 28 patients, who were followed up average for about three years with Karydakis procedure.

CONCLUSION

Our study was seeking to the preferred option for management of Pilonidal sinus disease, regarding recurrence rate and post operative complication.

Our study revealed that there is no significant difference in regarding to the recurrence rate or postoperative complications in both techniques .but the patients satisfaction and cosmetic appearance more better toward the Karydakis technique than modified rotation technique .

REFERENCES

1.Armstrong J. H. and Barcia P. J. Pilonidal sinus disease. The conservative approach. Arch Surg 1994; 129: 914 – 917.
2. Lee HC, Ho YH, Seow CF, et al. Pilonidal disease in Singapore: clinical features and management. Aust N Z J Surg 2000; 70: 196-198.
3. Zieger K. Complications after surgery for Pilonidal cyst. An introduction to a new debate on a "costly" disease. 1999; 161: 6056 – 6058.
4. Spivak H, Brooks VL, Nussbaum M and Friedman I. Treatment of chronic Pilonidal disease. Dis Colon Rectum 1996; 39: 1136 – 1139.
5. Lord PH and Millar DM. Pilonidal Sinus: a simple treatment. Br J Surg 1965; 52: 298 – 300.

6. Stanley RM and Colin GT. Management of Pilonidal sinus by excision and primary closure. Surg Gyneco Obste 1972; 134: 448-450.
7- Karydakis GE. Easy and successful treatment of Pilonidal sinus after explanation of its causative process. Aust NZ J Surg 1992;62:385–9.
8-Monro SR and MacDermot FT. The elimination of causal factors in Pilonidal sinus treated by Z-plasty. Br J Surg 1965;52:177–81
9-Roth RF and Moorman WL. Treatment of Pilonidal sinus and cyst by conservative excision and W-plasty closure. Plast Reconst Surg 1977;60:412–15.
10-Mann CV and Springall R. 'D' excision for sacrococcygeal Pilonidal sinus disease. J R Soc Med 1987;80:292–5.
11- Kitchen PRB. Pilonidal sinus: experience with the Karydakis flap.Br J Surg 1996;83:1452–5.
12-Nessar G, Kayaalp C and Seven C. Elliptical rotation flap for Pilonidal sinus The American Journal of Surgery 187 (2004) 300–303
13. Mentes O, Bagci M, Bilgin T, et al. Limberg flap procedure for Pilonidal sinus disease: results of 353 patients. Langenbecks Arch Surg. 2008;393:85–9.
14. El-Khadrawy O, Hashish M, Ismail K and Shalaby H. Outcome of the rhomboid flap for recurrent Pilonidal disease.World J Surg. 2009;33:1064-8
15. Can MF, Sevinc MM, Hancerliogullari O, et al. Multicenter prospective randomized trial comparing modified Limberg flap transposition and Karydakis flap reconstruction in patients with sacrococcygeal Pilonidal disease. Am J Surg. 2010;200:318-27. Epub 2010.
16. Ersoy E, Devay AO, Aktimur R, et al. Comparison of the short-term results after Limberg and Karydakis procedures for Pilonidal disease: randomized prospective analysis of 100 patients. Colorectal Dis. 2009;11:705-10. Epub 2008.
17. Lodhi FB, Ijaz S and Shafio M. Pilonidal sinus: Use of Limberg flap in the treatment. Professional Med J. 2006;13:435–9
18. Anyanwu AC, Hossain S, Williams A and Montgomery AC. Karydakis operation for sacrococcygeal Pilonidal sinus disease: experience in a district general hospital. Ann R Coll Surg Engl. 1998;80:197-9.
19. Daphan C, Tekelioglu H and Sayilgan C. Limberg flap repair for Pilonidal sinus disease. Dis Colon Rectum 2004;47:233–237.
20. Urhan MK, Kucukel F, Topgul K, et al.Rhomboid excision Pilonidal sinus: Results of 102 cases. Dis Colon Rectum 2002;45(5):656-9.

مقارنة بين استخدام طريقة سديلة كراداكيس وطريقة السديلة الملفوفة المعدلة لعلاج حالات الناصور العصعصى المعقدة

لا يزال هناك جدل حول أفضل طريقة لعلاج حالات الناصور العصعصى وذلك لانتشار حالاتة وكثرة رجوع الناصور بعد استئصاله .وتتعدد طرق استئصال الناصور العصعصى من عمليات متحفظة بسيطة الى عمليات استئصال متوسعة ولا توجد طريقة اثبتت فاعليتها الكاملة كى تصبح الطريقة المثلى المستخدمة.

والهدف من هذه الدراسة هو البحث عن طريقة مفضلة لعلاج حالات الناصور العصعصى المعقدة وذلك عن طريق متابعة نسبة ارتجاع الناصور و مضاعفات ما بعد الجراحة.

وقد تم عمل استئصال للناصور فى (٨٤) حالة تعانى من ناصور عصعصى مرتجع او معقد و متشعب وقد تم تقسيم المرضى الى مجموعتين وتم اختيار المرضى بطريقة عشوائية .المجموعة الاولى وتم استخدام طريقة سديلة كراداكيس لهم وكان عددهم (٤٠) مريضا وكان متوسط اعمارهم 7.2±33 منهم ٣٢ ذكر .والمجموعة الثانية وتم فيها استخدام السديلة الملفوفة المعدلة لعلاج حالات الناصور العصعصى المعقدة وكان عدد المرضى ٤٤ مريضا متوسط اعمارهم6.6± 30 منهم 34 ذكر.

وقد تم حصر واحصاء للنتائج ومتابعة المضاعفات ونسبة الارتجاع خلال فترة متابعة لمدة ١٢ شهر.

وقد اظهرت النتائج ان متوسط وقت العملية للمجموعة الاولى 1.3 ± 49,8 دقيقة فى مقابل 3.5± 42.7 للمجموعة الثانية .

ولا يوجد فرق مهم بين المجموعتين فى مضاعفات مابعد العملية او نسبة الارتجاع لكن بالنسبة للشكل الجمالى ورضا المريض من العملية يعطى افضلية لعملية كريداكس.