Recurrent sacrococcygeal pilonidal disease: the efficacy of minimal subcutaneous excision of the sinus and unroofing of pseudocystic cavity

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Patients undergoing surgery for recurrent pilonidal disease are at high risk of developing re-recurrence. The present prospective analysis was performed to evaluate the outcome for recurrent pilonidal disease treatment with a technique that provides a minimal subcutaneous excision of fistula and of the skin above the cyst, with secondary healing of wounds.
METHODS: *48 consecutive patients with previous surgical excision and recurrent pilonidal disease underwent surgery from January 2009 to December 2016, under local anaesthesia. The age of the patients (42 males and 6 females) at the time of our observation was 28.5 ± 10.2 years, the BMI of 26.3 ± 6.8. The average number of interventions prior to our was 2.02 ± 1.14.*
RESULTS: *The mean operative time was 18.2 ± 5.5 minutes. All patients were discharged 2 to 4 hours after surgery, with an average healing time of 22.8 ± 15.3 days. We recorded, in the follow-up period, only 4 relapses (8.32%), all retreated with the same surgical procedure and brought to complete healing. The results of the cosmetic questionnaire, which assessed patient satisfaction and contentment, showed that 96% of patients were completely satisfied and all patients recommended surgery to others. Kaplan-Meier analysis showed that in 7 years of follow-up, 85% of patients healed without recurrence.*
CONCLUSIONS: *Our simple procedure appears to be safe and easily reproducible, allowing a high surgical success in the treatment of recurrent pilonidal disease.*

KEY EORDS: Excision, Healing, Recurrent sacrococcygeal pilonidal disease

Background

The Sacrococcygeal Pilonidal Sinus (SPS) was described for the first time in 1847 by Anderson, but only in 1880 the term, derived from the Latin words *pilus* et *nidus* (nest of hair), was proposed by Hodges. SPS indicates an acute or chronic inflammatory process usually localized in sacrococcygeal region and characterized by a pseudocystic cavity, containing foreign body, granulation tissue, hairs, debris, pus and one or more pits, or tracts connecting cavity with skin. Different surgical procedures have been described for the treatment of SPS. Comparison between costs, hospital stays, time healing, timing of return to normal activities, post-operative pain, cosmetic outcome and recurrence rates can assess effectiveness of various procedures. The only major concern is the recurrence of the SPS (RSPS), as soon as the primary healing is complete [1].
There is no agreement about the management of the recurrences nowadays. Operational procedures include no invasive treatments such as the crystallized phenol 2 or

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laser epilation [3-5], minimal invasive and very invasive interventions like wide excisions and healing by secondary intention with reconstruction of the leakage using tissue flaps [7-9]. The aim of this study is to analyze prospectively the outcome for RSPS treatment with a technique that provides a minimal subcutaneous excision of sinus and unroofing of pseudocystic cavity, with secondary healing of wounds followed by frequent washing of the natal cleft.

Materials and Methods

Patients

This study is a monocentric analysis including 48 consecutive patients with recurrent RSPS observed at the General Surgery Unit of the Department of Surgical, Oncological and Stomatology Science of Palermo University from January 2009 to December 2016. All patients underwent to minimal subcutaneous excision of tracts and unroofing pseudocystic cavity with secondary healing of wounds, followed frequent washing of the residual cavity. Patients with abscesses, abnormal blood clotting, diabetes, chronic renal failure, cancer, and HIV-positive were excluded from the analysis. Only patients over the age of 18 were included in the study. The SPS was not considered recurrent if previously treated by abscess drainage, phenol application or limited treatments as sinusectomy or sinusotomy [1].

Operative Procedure

Patients were placed in prone position; intergluteal cleft was shaved, separated with tapes and cleaned with iodinated antiseptic solution. All procedures were carried out under local anaesthesia using Carbocaine 2% with Epinephrine. No antibiotic prophylaxis was performed. All the orifices were probed and in some cases methylene blue was injected inside the holes. A limited incision around the orifices and a subcutaneous excision of tracts until the cavity were performed. The skin over the cavity was excised allowing removal of sinus and easy and complete excision of granuloma, hair and debris. All tracts were put in communication between themselves and were packed with iodoform gauze.

Postoperative care

All patients were discharged with a prescription of analgesic therapy. All patients were medicated as outpatient after 24 hours; the complete removal of packing occurred 4-5 days after and all wounds healed for secondary intention. Post-operative dressing was performed on the third postoperative day and after every week until complete healing. Further visits were performed at patient's request. The patients were instructed to shower the wound with soap and water at least twice a day and to cover it with gauze, until wound healing. After healing, we recommended patients to perform at least once a day a careful washing of sacrococcygeal region. Treatment's success was defined as anatomic healing with complete skin riepithelialization and symptomatic relief. We considered unhealed wound if incomplete epithelialization continued nine weeks after procedure. Patients were considered to have a recurrent disease if, after a complete re-epithelialization, they reported symptoms of local pain, discharge and intermittent swelling.

Post-operative pain was evaluated using Visual Analog Scale range score from 0 (no pain) to 10 (worst imaginable pain) in the first, third and seventh post-operative day. After healing all patients were monitored yearly. The aesthetic result was evaluated by patients at one year after surgery as excellent, good and poor. During the follow-up period, the patients were asked to answer a questionnaire evaluating patient satisfaction and happiness with a scale ranging from 0 (not satisfied) to 12 (greatly satisfied). In additions, patients who were "completely satisfied" and who would "absolutely recommend the operative technique to other patients" were recorded[11].

Statistical Analysis

Continuous data were expressed as means ± standard deviations; categorical variables were given as percentage. Kaplan-Meier estimates were used to detect the recurrence rates.

Results

Demographic and preoperative data of 48 patients are reported in Tables I and II just one surgery and 28 experienced two or more interventions. The average number of previous surgeries was 2.02 ± 1.14. The mean operation time was 18.2 ± 5.5 minutes. All procedures were performed under local anesthesia and all patients were discharged from the hospital the same day of the operation, 2-4 hours after surgery. In 30 patients were found hairs in the cavity; early complication (infection,

Table I - *Demographic data (data are mean ± standard deviation or numbers)*

Total number of patients	**48**
Age (years)	28.5 ± 10.2
Gender	42 M, 6 F
BMI (kg/m^2)	26.3 ± 6.8
Smoking	20
Family history	38

TABLE II - *Preoperative data*

Duration disease (months)	30 ± 12.8
Duration operation-recurrence (months)	6 ± 10
Number of tracts (range)	2.2 + 1.4 (1-5)
No previous procedure	68
Type of previous procedure	
Wide excision with midline closure	42
Wide excision and head II intention	12
Flap reconstruction	6
Marsupialization	8

TABLE III - *Number previous procedure in 48 patients*

Nr of previous procedure	Patients Nr	%	Nr of procedure
1	20	41.7	20
2	15	31.2	30
3	7	14.5	21
4	4	8.4	16
5	2	4.2	10
Total	48	100	97

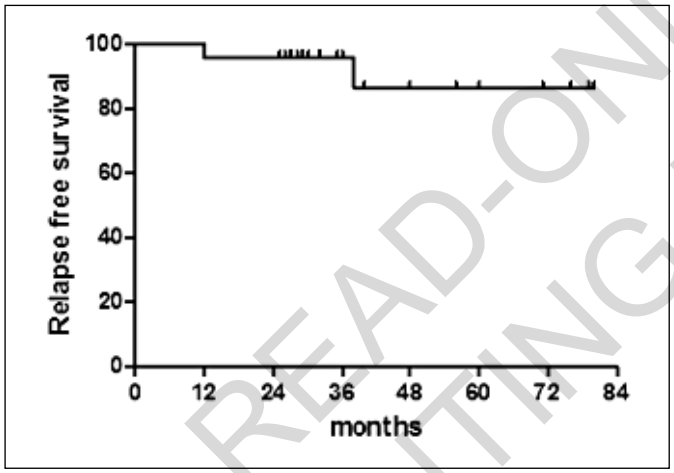

Fig. 1: Kaplan Meyer curve of recurrence after surgery (at 7 yrs 85% of patients are recurrent free).

hemorrhage) were not observed, and no patient was readmitted to hospital. The mean score of postoperative pain was 3.2 ± 1.5 on the first day, 2.5 ± 0.8 on the third day and 1.2 ± 0.8 on the seventh day. Only 30% of patients required analgesics. The mean time to return to daily activities was 3.1 ± 2.2 days. All the wounds healed with complete re-epithelialization. The mean healing time was 22.8 ± 15.3 days. Average time of follow-up was 4.3 ± 1.1 years (range 2-9 years). All patients reported to observe the suggested hygienic rules. Only four recurrences (8.32%) were detected 12 - 36 months after our surgical procedure; 1 patient had already undergone single surgery, two to three and finally one to four surgeries. They were treated another time with subcutaneous excision of tract and unroofing of pseudocystic cavity with definitive healing. The cosmetic result, evaluated by patients, was judged as excellent by 36 patients and good in the remaining 12 cases. The results of the questionnaire, evaluating patient satisfaction and happiness, showed that 46 (96%) of patients were completely satisfied with a score of 9.6 ± 2.8 and all patients recommended surgical operation to other. The Kaplan-Meier analysis showed that in 7 years, 85% of patients heal without recurrence (Fig. 1).

Discussion

This study shows that in patients with recurrent RSPS the minimal subcutaneous excision of sinus and unroofing pseudocystic cavity with secondary intention healing is highly effective (low recurrence rate) and could be done on outpatient basis. Moreover, patients refer mild post-operative pain, excellent aesthetic outcomes and they reach a high level of satisfaction such that they recommend the procedure to other patients. The incidence of relapse during a median follow-up of 4.3 + 1.1 years was 8.3%; however Kaplan-Meier analysis of 7 years showed that 85% of patients heal without relapse. There is controversy regarding the best surgical approach, since different techniques have been described for the management of recurrent SPS. Surgical options range from minimally invasive treatments to flap reconstructions. Comparison between costs, hospital stays, time healing, timing of return to normal activities, post-operative pain, cosmetic outcome and recurrence rates can assess effectiveness of various procedures. Aygen et al [2] in 36 patients with RSPS using crystallized phenol reports definitive healing in all patients in a median of 48 days; incidence of recurrence during a median follow-up of 54.4 +/- 5.2 months was of 13.9%, but it was reduced until 8.3% after retreatment. Girgin et al [12] reported that the addition of laser epilation at crystallized phenol can improve the effectiveness of the management compared to treatment with only crystallized phenol.

In the last years limited excision of fistula tract with mild excision and curettage of the cavity is a technique that has received considerable attention.

Akinci et al[13] in 24 patients affects by RSPS with multiple fistulas reported a limited and separated elliptical excisions of pits and sinus with primary closure under local anesthesia, reporting three early complications (12.48%) and one recurrence (4.16%) with a mean follow-up of 2.8 years and all patients were discharged after 1 day. Milone et al [14] achieved a complete healing in four patients with RSPS) using video-assisted ablation of fistula tract and positioning of plug. The use of flaps to cover the skin defect after excision of the sinus is a treatment for recurrences practiced by several authors [9,15-18].

There are many kinds of reconstruction flap techniques to cover the large excision that require extensive operation time, tissue mobilization including deep muscle, a long hospital stay (4-6 days) and the use of general anesthesia; the unsatisfactory cosmetic result and the possible paresthesia also lead to a worse quality of life. These procedures, furthermore, are burdened by postoperative complications such dehiscence, hematoma, sieroma and necrosis of the flap in a rate even higher than 20-30%. Nevertheless, these are associated with a low rate of recurrences (2-10%). Iesalnieks et al [15] reported in this regard how wound dehiscence rate after Karydakis flap was high during the first years (43% during the first 23 procedures), suggesting that surgeons have to overcome a significant learning curve.

Conclusions

The procedure adopted by our surgical unit, consisting in a minimal subcutaneous excision of sinus and unroofing pseudocystic cavity with secondary wound healing, it is easy to perform and requires a short operating time and the limited excision also allows a quick recovery and return to work.
Relapses after our treatment have occurred in patients who had previously undergone more than two interventions. This event should be relate to increased aggressiveness of the disease.
The limitations of this study involve the subjective nature of assessment methods such as the satisfaction questionnaire and the evaluation of aesthetic result, which may influence results when the technique is reproduced in a different cohort of patients.

Riassunto

I pazienti sottoposti a intervento chirurgico per malattia pilonidale sono ad alto rischio di sviluppare una recidiva. La nostra analisi prospettica è stata eseguita per valutare l'esito del trattamento della malattia pilonidale recidiva, mediante escissione sottocutanea minima del tramite fistoloso e della cute sopra la cisti, con Recurrent pilonidal disease guarigione per seconda intenzione.
48 pazienti consecutivi con precedente asportazione chirurgica di malattia pilonidale e attuale recidiva, sono stati sottoposti a chirurgia da gennaio 2009 a dicembre 2016, in anestesia locale. L'età dei pazienti (42 maschi e 6 femmine) al momento della nostra osservazione era di 28.5 ± 10.2 anni, il BMI di 26.3 ± 6.8. Il numero medio di interventi precedenti al nostro era di 2.02 ± 1.14.
Risultati: Il tempo medio operatorio è stato di 18.2 ± 5.5 minuti. Tutti i pazienti sono stati dimessi da 2 a 4 ore dopo l'intervento chirurgico, con un tempo medi di guarigione di 22.8 ± 15.3 giorni. Abbiamo registrato, nel periodo di follow up, solo 4 recidive (8.32%), tutte ritrattate con la medesima procedura operatoria e portate a guarigione completa. I risultati del questionario cosmetico, che ha valutato la soddisfazione e la contentezza del paziente, hanno mostrato che il 96% dei pazienti era completamente soddisfatto e tutti i pazienti raccomandavano l'intervento chirurgico ad altri. L'analisi di Kaplan-Meier ha dimostrato che in 7 anni di follow-up l'85% dei pazienti è andato incontro a guarigione in assenza di recidiva.
Conclusioni: La nostra semplice procedura appare sicura e facilmente riproducibile, consentendo un elevato successo chirurgico nel trattamento della malattia pilonidale recidiva.

References

1. Doll D, Krueger CM, Schrank S, Dettmann H, Petersen S, Duesel W: *Timeline of recurrence after primary and secondary pilonidal sinus surgery.* Dis Colon Rectum, 2007; 50:1928-934.

2. Aygen E, Arslan K, Dogru O, Basbug M, Camci C: *Crystallized phenol in nonoperative treatment of previously operated, recurrent pilonidal disease*. Dis Colon Rectum, 2010; 53:932-35.

3. Landa N, Aller O, Landa-Gundin N, Torrontegui J, Azpiazu JL*: Successful treatment of recurrent pilonidal sinus with laser epilation.* Dermatol Surg, 2005; 31:726-68.

4. Khan MA, Javed AA, Govindan KS, Rafiq S, Thomas K, Baker L, Kenealy J: *Control of hair growth using long-pulsed alexandrite laser is an efficient and cost effective therapy for patients suffering from recurrent pilonidal disease*. Lasers Med Sci, 2016; 31:857-62.

5. Dragoni F, Moretti S, Cannarozzo G, Campolmi P: *Treatment of recurrent pilonidal cysts with nd-YAG laser: report of our experien*ce. J Dermatolog Treat, 2018; 29:65-67.

6. Demir U, Yazici P, Bostanci O, Kaya C, Isil RG, T Mihmanli M: *Less is more: "incision and curettage" as an optimal procedure for recurrent pilonidal disease*. Ann Ital Chir, 2015; 86:575-57.

7. Öz B, Akcan A, Emek E, Akyüz M, Sözüer E, Akyldız H, Aydın H: *A comparison of surgical outcome of fasciocutaneous V-Y advancement flap and Limberg transposition flap for recurrent sacrococcygeal pilonidal sinus disease.* Asian J Surg, 2017; 40:197-202.

8. Bali İ, Aziret M, Sözen S, Emir S, Erdem H, Çetinkünar S, İrkörücü O*: Effectiveness of Limberg and Karydakis flap in recurrent pilonidal sinus disease*. Clinics (Sao Paulo), 2015; 70:350-55.

9. Koca YS, Yıldız I, Ugur M, Barut I: *The V-Y flap technique in complicated and recurrent pilonidal sinus disease*. Ann Ital Chir, 2018; 89:66-69.

10. Zinicola R, Cracco N, Serventi A, Martina S, Milone M, Sallustio P, Bondurri A, Giani I, Figus A, Zorcolo L: *Pilonidal sinus: are we missing something?* Colorectal Dis, 2014; 16:929-30.

11. Kement M, Oncel M, Kurt N, Kaptanoglu L: *Sinus excision for the treatment of limited chronic pilonidal disease: Result after a medium-term follow-up*. Dis Colon Rectum, 2006; 49:1758-762.

12. Girgin M, Kanat BH, Ayten R, Cetinkaya Z, Kanat Z, Bozdağ A, Turkoglu A, IlhanYS: *Minimally invasive treatment of pilonidal*

disease: Crystallized phenol and laser depilation. Int Surg, 2012; 97:288-92.

13. Akinci OF, Coskun A, Ozgonul A, Terzi A: *Surgical treatment of complicated pilonidal disease: Limited separate elliptical excision with primary closure*. Colorectal Dis, 2006; 8:704-709.

14. Milone M, Bianco P, Musella M, Milone F: *A technical modification of video-assisted ablation for recurrent pilonidal sinus*. Colorectal Dis, 2014; 16:404-06.

15. Iesalnieks I, Deimel S, Schlitt H: *Karydakis flap for recurrent pilonidal disease.* World J Surg, 2013; 37:1115-120.

16. El-Khadrawy O, Hashish M, Ismail K, Shalaby H: *Outcome of the rhomboid flap for recurrent pilonidal disease.* World J Surg, 2009; 33:1064-1068.

17. Tan AM, Ahmad Z, Loh CY, Gardiner S, Mathur B: *A useful alternative surgical technique to reconstructing large defects following excision of recurrent pilonidal sinus disease in the intergluteal region: an operative approach for the transverse lumbar artery perforator flap.* Int Wound J, 2018; 15:534-37.

18. Lieto E, Castellano P, Pinto M, Zamboli A, Pignatelli C, Galizia G: *Dufourmentel rhomboid flap in the radical treatment of primary and recurrent sacrococcygeal pilonidal disease*. Dis Colon Rectum, 2010; 53:1061-68.