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Resective Treatment with Primary Closure Using a Dufourmentel Flap in Sacrococcygeal Pilonidal Disease

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ABSTRACT

Introduction: *The sacrococcygeal pilonidal disease (SPD) is a frequent condition described for the first time in May, 1833. Its course is benign (only 0.1% becomes malignant giving rise to a squamous cell carcinoma). Recurrence is variable according to different series and the type of surgical procedures and the associated morbidity is high. A number of surgical techniques are described for its resolution.*

Objective: *To describe the use and results of the Dufourmentel flap for the treatment of complicated or uncomplicated SPD.*

Material and methods: *Three consecutive patients (2 males) with recurrent exacerbated episodes of chronic SPD, who underwent resection and primary closure with a Dufourmentel flap during January 2019 at the Coloproctology Division, Hospital Interzonal General de Agudos San Roque de Gonnet are presented. All of them had previously undergone different medical and surgical treatments.*

Results: *All the lesions were large and located in the midline. The flap preparation was straightforward. The postoperative course was uneventful and all patients healed without dehiscence or suppuration of the flap within 12 postoperative days. There were no recurrences with a maximum follow-up of 9 months.*

Conclusion: *The Dufourmentel flap was a valuable alternative for the treatment of large recurrent sacrococcygeal cysts. Due to its easy preparation and good results, it should be within the options of the general surgeon and the coloproctologist for the treatment of pilonidal disease.*

Keywords: *Pilonidal disease; Dufourmentel flap; Technique*

INTRODUCTION

Sacrococcygeal pilonidal disease (SPD) is an acute or chronic condition that usually affects the sacrococcygeal region in young adults. It is a common condition (26/100000), with a male/female ratio of 2.2:1[1], first described in May, 1833.[2] Its course is benign and only 0.1% undergo transformation to squamous cell carcinoma.[3]

Often overlooked, it takes on value when we analyze the data regarding morbidity, both from the course of the disease and its postoperative period. There exists a wide and varied range of techniques for its treatment, all of them with highly variable rates of recurrence, ranging from 1 to 28.5%.[4]

The therapeutic possibilities include non-resective (unroofing, marsupialization or Buie's operation) and resective operations without or with the repair of the defect with a flap. The paradigm seems to be resective surgery since it would offer the complete cure of the disease. The disadvantage is that many times the closure of the defect is under tension, leading to failure and healing by second intention. As an alternative, non-resective options have emerged with the intention of improving the wound closure and shortening the postoperative period.

When so many and varied procedures are mentioned, it gives us the guideline that none of them meets the requirements to become the gold standard for treatment.

All this range of procedures has been used and modified in pursuit of common objectives such as:

1. shorten the healing time with a decrease in complications,
2. shorten the hospital stay,
3. shorten the time to return to normal activities and
4. achieve the lowest recurrence rate.

When recurrence data are analyzed, multiple factors or variables are involved, i.e. the type of procedures, the place where them were performed, and the experience of the treating surgical team, among others.[5]

The objective of this publication is to present a series of cases treated with a resective procedure with primary closure of the defect using a flap. We used the so-called Dufourmentel flap, which we consider a valid alternative for the treatment of uncomplicated or complicated SPD.

MATERIAL AND METHODS

Three consecutive patients (2 males) with recurrent exacerbated episodes of chronic SPD, who underwent resec-

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tion and primary closure with a Dufourmentel flap during January 2019 at the Coloproctology Division, Hospital Interzonal General de Agudos San Roque de Gonnet are presented. All of them had previously undergone different medical and surgical treatments.

Description of the technique

The technique begins with the demarcation of the resection rhombus and the future flaps. The rhombus is delimited with A-B-C-D vertices, as shown in Fig. It should cover the cystic lesion (main sinus) and possible fistulas, passing through sectors of skin without inflammatory involvement. The flaps are demarcated as follows:

5. The imaginary line (AC) that divides the resection rhombus into 2 equilateral triangles with dotted lines is prolonged.
6. The DC line or side of the rhombus is prolonged, also with a dotted line.
7. The bisector of the angle formed by these 2 extensions is drawn.
8. These long lines will be the length of the original lines of the rhombus.

Fig. 2 shows the initial demarcation of the rotation flaps. Finally, the external side of the flap is demarcated by drawing a perpendicular line to the AC prolongation (perpendicular to the dotted line), the EF line, as shown in Fig. 3. This is followed by the rhomboid resection of the cyst along with all visible lesions. The resection should be deepened to the presacral aponeurosis.

After complete resection, the CE and EF lines are incised also up to the aponeurosis, making the flaps of the rotation flap.

The transposition of the flap is carried out by joining point 1C with A, and point 2E with B, pivoting the rotation flap on point D, as shown in Fig. 4. Fixation of the flaps with underlying cellular tissue to the sacral aponeurosis is done with interrupted resorbable sutures (polyglactin 910). Homeostasis is performed extensively with monopolar electrocautery, 3-0 nylon can be used for the skin suture. In no case of the series was a drainage placed.

Cephalosporin was administered during anesthetic induction and the oral indication was only maintained for 5 days in the suppurative case. The operation was performed under regional anesthesia and immediate postoperative ambulation was indicated.

Follow-up

During the follow-up patients were evaluated for complications (using the Dindo-Clavien scale)[6], paying special attention to wound healing, hypoesthesia (permanent or transitory) and recurrences. The clinical control was performed in an outpatient clinic every 7 days during the first month and then once a month to complete a 9-month postoperative period.

CASE REPORT

Case 1

Forty-three-year-old female who consulted for a 4 years history of SPD. She had multiple treatments with antibiotics and 3 surgical drainages in the last 3 years. Resection and primary closure using a Dufourmentel flap was performed and she was discharged 8 hours after the procedure. The patient resumed her job activities on the 5th postoperative day (POD), and stitches were removed on 12th POD. In the 30-day control she had a complete wound closure (Figs. 5, 6 ,7).

Case 2

Male patient, 25 years old, who attended outpatient consultation with a suppurative SPD of 20 days of evolution, partially responding to ciprofloxacin. History of intermittent, repeated episodes, for approximately 8 years. Resection and primary closure was performed with a Dufourmentel flap. Discharge at 1st POD. He resumes job activities on the 7th POD. Stitches are removed on the 10th POD. At 30-day control wound is completely healed. (Figs. 8, 9, 10, 11, 12).

Case 3

Male patient, 25 years old, who consulted for a 10x7 cm SPD in suppurative stage, with 5-6 years of evolution. Ciprofloxacin 500 mg bid is indicated for 10 days prior to surgery, due to the infection. Resection and primary closure was performed with a Dufourmentel flap. Good postoperative outcome. Discharge on the 2nd POD. Stitches are removed 12 days after surgery. He returned to his job activity at the 15th POD (Figs. 13, 14, 15, 16).

DISCUSSION

SPD is a frequent entity that for unknown reasons has increased its incidence continuously during the last 50 years, especially in young European and North American men. In a German military cohort, for example, the number of affected patients increased from 29/10000 in 2000 to 48/100000 in 2012. In Germany, the total number of surgeries for SPD exceeded the number of interventions for inguinal hernias in the range of Age of 20-40 years.[7]

The description of techniques, procedures and their variations is innumerable, from the opening of the sinus at one end to the use of lasers at the other. All these procedures are performed in search of common therapeutic goals, such as achieving a quick, simple, inexpensive and com-

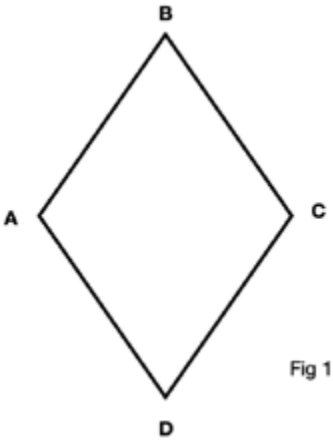

Fig 1. *Rombo de resección* ABCD

Figure 1: Resection rhombus A-B-C-D.

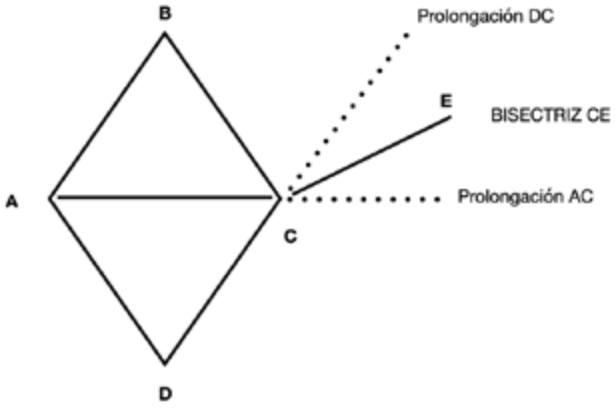

Figure 2: Initial demarcation of the rotation flaps.

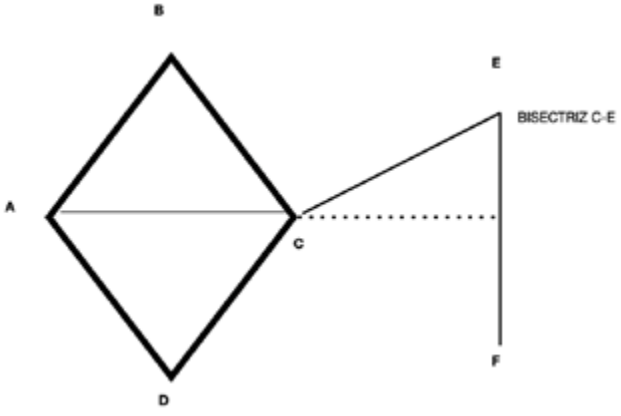

Figure 3: Final configuration of the flap.

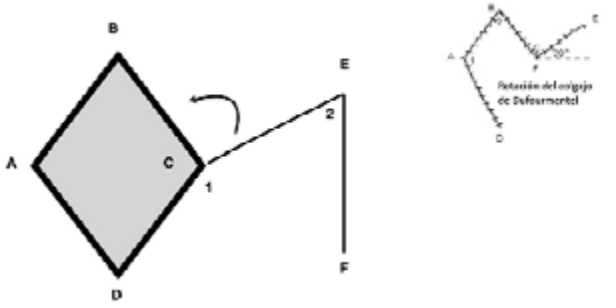

Figure 4: Flap transposition.

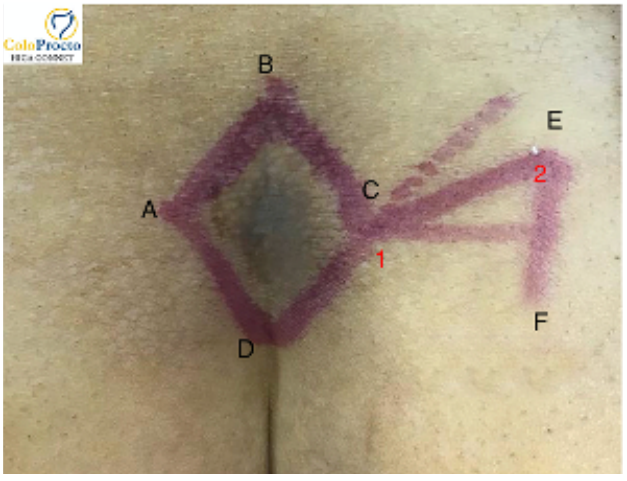

Figure 5: Case 1.

Figure 6: Case 1.

plete procedure (removal of all breasts and fistulas) that allows a short hospital stay, a quick return to normal activity, a low rate of complications and the lowest possible recurrence rate. It is in this search for the "gold standard" that the literature generates contradictory data, perhaps due to the heterogeneity of the follow-up and in this sense we must be critical of our report, since it presents a brief follow-up of the patient to make decisions or infer results on recurrences. In one of the few published meta-analyzes, Stauffer et al., in 2018[8] present data at 12 months and show that the lowest recurrence rates (0.3%) are provided by the Limberg and Dufourmentel flaps. These figures are also maintained at 24 months (1.6%).

The problem attributed to the classic Limberg flap is the relatively poor wound healing, particularly at the lower end near the anal canal, where severe wound maceration and dehiscence can be observed due to flap rotation and

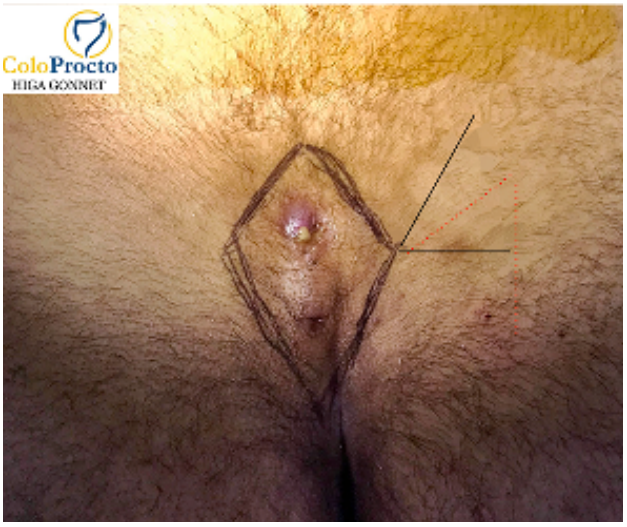

Figure 7: Case 1.

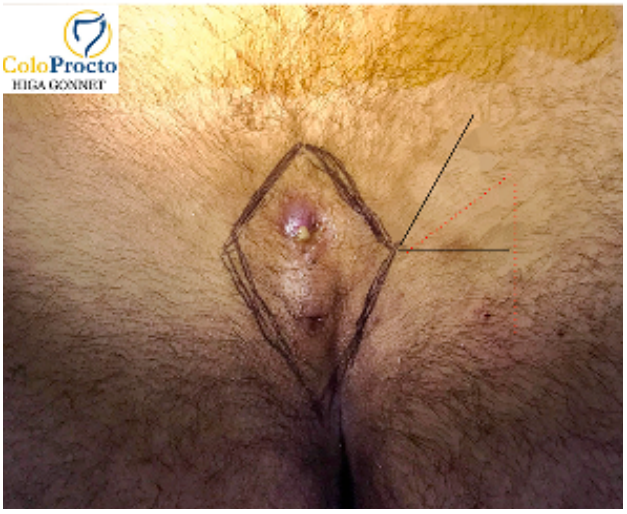

Figure 8: Case 2.

tension of the wound suture.[9] For this reason, alternatives have been sought while maintaining the same concept and this is how the modification of Dufourmentel arose. The latter has the advantage of a wider base, with a smaller area of rotation (Fig. 5).[10]

Ishii et al in 2017[11] presented a series of cases with a 4-year follow-up, without flap necrosis and only one dehiscence. None had hypoesthesia or recurrences.

Lieto et al.,[12] in 310 patients treated with the Dufourmentel flap, had a low recurrence rate (97.6% of patients without recurrences) at 16 years.

The data on relapses are generally very varied and most of the studies, due to the type of design, do not show the postoperative care that the patients received (Harris protocol) or if they were shaved or had hair removal of the affected area, and if so, what type of hair removal.[13,14] Postoperative laser hair removal seems to improve the results of recurrence and protocols are being developed for its implementation.[15]

Figure 9: Case 2.

Figure 10: Case 2.

Figure 11: Case 2.

Figure 12: Case 2.

Figure 13: Case 3.

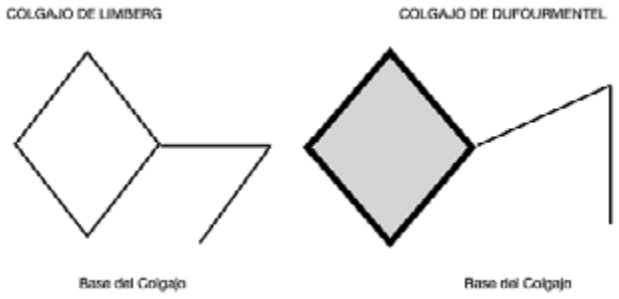

Gráfico 5: Comparación entre la base del colgajo de Limberg y la del Dufourmentel
Un estudio de Lieto, quien presenta 310 pacientes con EPS tratada mediante colgajo de Dufourmentel, muestra una baja tasa de recurrencia (97,6% de los pacientes sin recurrencias) a 16 años.[12]

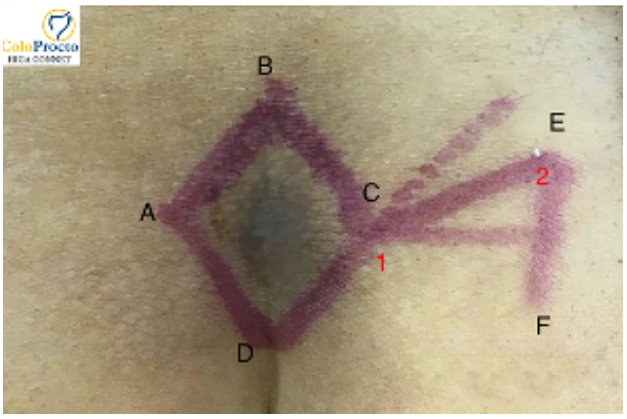

Figure 14: Case 3.

Figure 15: Case 3.

Figure 16: Case 3.

The main limitation of our study is the short follow-up of our patients to assess recurrences, although they did not occur until 9 months. However, it is noteworthy that we effectively demonstrated that with this technique it is possible to achieve a short hospital stay and a rapid return to normal activities regardless of the involvement of physical effort, without associated local complications such as permanent hypoesthesia or necrosis of the flap.

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The only downside to this procedure is the cosmetic result, which may not be attractive. However, considering the location of the disease, first intention wound healing, and early return to full activity, cosmetic factors are not relevant and the benefits outweigh an unfavorable cosmetic outcome.[16]

CONCLUSION

The Dufourmentel flap represents a viable alternative to complicated or uncomplicated SPD, with large cysts inside or outside the midline.

Due to the easy preparation of the flap and good results, it should be within the options of the general surgeon and the coloproctologist for the treatment of SPD, since it offers the possibility of performing the complete resection of the cyst-fistula complex with primary closure without tension, and achieve a short hospital stay and a quicker return to normal activity, without complications.

REFERENCIAS

1. 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.
2. Mayo OH. Observations on injuries and diseases of the rectum. London: Burgess and Hill; 1833. p. 45-6.
3. Parpoudi SN, Kyziridis DS, Patridas DCh, Makrantonakis AN, Iosifidis P, Mantzoros IG, et al. Is histological examination necessary when excising a pilonidal cyst?. Am J Case Rep 2015;16:164-68.
4. Larsson JC, Dieguez Aliaga F, Granero L, Cornet M. Tratamiento de la enfermedad pilonidal crónica. Comparación de 3 técnicas quirúrgicas. Rev Argent Coloproct 2014;25:64-70.
5. Doll D, Orlik A, Maier K, Kauf P, Schmid M, Diekmann M, et al. Impact of geography and surgical approach on recurrence in global pilonidal sinus disease. Sci Rep 2019;9:15111. doi: 10.1038/s41598-019-51159-z.
6. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. Ann Surg 2004;240:205-13.
7. Luedi MM, Kauf P, Evers T, Sievert H, Doll D. Impact of spinal versus general anesthesia on postoperative pain and long term recurrence after surgery for pilonidal disease. J Clin Anesth 2016;33:236-42.
8. Stauffer VK, Luedi MM, Kauf P, Schmid M, Diekmann M, Wieferich K, et al. Common surgical procedures in pilonidal sinus disease: A meta-analysis, merged data analysis, and comprehensive study on recurrence. Sci Rep 2018;8:3058.
9. Kaya B, Eris C, Atalay S, Bat O, Bulut NE, Mantoglu B, et al. Modified Limberg transposition flap in the treatment of pilonidal sinus disease. Tech Coloproctol 2012;16:55-9.
10. Sebastian M, Sroczyński M, Rudnicki J. The Dufourmentel modification of the Limberg flap: Does it fit all? Adv Clin Exp Med 2017;26:63-7.
11. Ishii N, Shimizu Y, Oji T, & Kishi K, Modified Dufourmentel flap with superior pedicle: a useful technique for sacrococcygeal pilonidal sinus. J Plast Surg Hand Surg 2017;51:453-57.
12. 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.
13. Petersen S, Wietelmann K, Evers T, Hüser N, Matevossian E, Doll D. Long-term effects of postoperative razor epilation in pilonidal sinus disease. Dis Colon Rectum 2009;52:131-34.
14. Harris C, Sibbald RG, Mufti A, Somayaji R. Pilonidal sinus disease: 10 steps to optimize care. Adv Skin Wound Care 2016;29:469-78.
15. Minneci PC, Halleran DR, Lawrence AE, Fischer BA, Cooper JN, Deans KJ. Laser hair depilation for the prevention of disease recurrence in adolescents and young adults with pilonidal disease: study protocol for a randomized controlled trial. Trials 2018;19:599.
16. El-Khadrawy O, Hashish M, Ismail K, Shalaby H. Outcome of the rhomboid flap for recurrent pilonidal disease. World J Surg 2009;33:1064-68.

COMMENT

Refreshing presentation of clinical cases of sacrococcygeal pilonidal disease with large cysts, resolved with resection and Dufourmentel flap. The authors show, in detail and with good images, this rare surgical technique that has been shown to have good results.

Although the number of cases is small and the clinical follow-up time is relatively short, this article provides a detailed description of the procedure, accompanied by a brief bibliographic review that helps to keep it in mind as a therapeutic alternative in these cases.

As they well describe, there is no "Gold Standard" technique, but rather the surgical treatment of this pathology must be personalized taking into account the particularities of both the injury and the patient. Congratulations to the authors.

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