

Use of Primary Closure on Tension-Free Midline for Treatment of Sacrococcygeal Pilonidal Disease: Experience and Results

Santiago de la Fuente¹, Jhimi Terceros², Daniela Castillo³ and Luis Carlos Ferrari^{4*}

¹2nd Year Resident General Surgery, Sanatoria Aconcagua and Santo Tomás Private City of Córdoba, Argentina

²3rd Year Resident General Surgery, Sanatoria Aconcagua and Santo Tomás Private City of Córdoba, Argentina

³4th Year Resident General Surgery, Sanatoria Aconcagua and Santo Tomás Private City of Córdoba, Argentina

⁴Head of the Aconcagua and Santo Tomás Private Sanatorium Coloproctology Section of the City of Córdoba, Argentina

***Corresponding Author:** Luis Carlos Ferrari, Head of the Aconcagua and Santo Tomás Private Sanatorium Coloproctology Section of the City of Córdoba, Argentina.

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Abstract

Background: Currently the surgical treatment for Sacrococcygeal pilonidal disease (SPD) is based on a wide resection of the lesion with or without its primary closure. Performing the latter over the primary midline suturing is simple and widely known, though with elevated dehiscence and relapsing infection. Primary closure far from the midline, as proposed by Karydakakis or by the use of grafts like the Limberg technique, show better results. Although, when the primary closure is performed tension-free over the midline, results can be equivalent to those reached by these techniques, therefore it should be considered.

Aim: Prospectively assess the tension-free primary closure technique over the midline and their results in the treatment for SPD.

Design: Prospective observational study.

Method: 49 consecutive patients underwent SPD surgery between 01.10.2010 and 30.11.2019 by the same surgeon, where a tension-free primary closure was performed.

Results: 49 consecutive patients underwent surgery; mean age was 20,9 years old (between 14 and 37 years old) from which 69,38% (34 of 49) were men. Post-operative complications included, 1 patient showed bleeding (2,04%); 16 patients partial opening of the primary closure (32,65%). Relapse occurred in 2 patients (4,08%) with 95,91% healing (47/49). Only 1 patient presented infection in the surgical wound (2,04%). Hospital stay was 1 day in all of the cases. Immediate post-operative intervention was not necessary. Healing time was 31,06 days (19 minimum/ 52 maximum). Pathological anatomy revealed non-malignant pilonidal cyst in all of the cases, with lesion-free resection in the margins. All patients expressed full conformity with the procedure.

Conclusion: The tension-free primary closure technique is a simple procedure, with brief hospital stay and with a low recurrence index or complications, reason why it should be considered when choosing a surgical technique in order to solve this pathology.

Keywords: Pilonidal Disease; Tension Free Closure

Introduction

Sacrococcygeal pilonidal disease (PSD) is a frequent chronic disease, with an estimated incidence of 26: 100,000 inhabitants [1,2]. It was first described by Hebert Mayo in 1833 and named “pilonidal sinus” or “nest of hairs” by Richard Manning Hodges in 1880 [3]. Although during the 19th century some authors proposed a congenital origin [4], at present it is considered an acquired entity [4-6]. Three factors participate in its pathophysiology: a) loose hair b) the force generated by its insertion c) the vulnerability of the skin where it is inserted [5-7]. In this case, the entry of loose hair occurs through a macerated, vulnerable skin, at the level of the “natal fossa” being favored by the “suction” or “traction” effect generated by the powerful gluteal muscles, in particularly when sitting, standing and walking [5,6,8]. This force thus exerted, would also produce a progressive “widening” of the hair follicles that reside in the depth of the natal fossa, favoring the entry of microorganisms present there, generating together with the “invasive” hair, at the level of the subcutaneous cellular tissue (TCS), a chronic low-grade infection, and a “foreign body” inflammatory reaction [8].

Today, the surgical treatment of this pathology in its chronic phase is based on wide resection of the lesion with or without primary closure of the same [10]. Primary closure over the midline is a simple technique, widely used, but associated with high rates of infection and recurrence [10-13]. Those techniques that promote primary closure outside the midline, such as the technique described by Karidakis [5,6,14-16] or, using flaps for closure such as the Limberg technique, would have better results [11-13,17]. However, most studies that compare primary closure on the midline with these techniques do not practice or describe a tension-free closure [2].

In the Coloproctology Sector of two Private Sanatoriums in the City of Córdoba, as of October 2010, we agreed to treat EPSC in its chronic phase by means of a wide resection of the lesion followed by primary closure on the tension-free midline. The technique used, the results and the experience gained with this procedure are presented below.

Materials and Methods

A prospective observational study was designed in two Private Sanatorium Institutions in Córdoba that included all patients with SPD undergoing surgical treatment by resection and primary closure on the tension-free midline, by the same surgeon, since October 1, 2010 as of November 30, 2019. A data collection sheet was used for this purpose, where it was recorded: age, sex, technique used, presence of postoperative complications such as: bleeding, opening or dehiscence, infection or recurrence, defining the latter as the reappearance of suppuration through a skin hole generated after complete healing of the initial postoperative wound; the sanatorial stay, since all the patients were hospitalized because they did not have an outpatient protocol from the beginning of the series, which has recently been incorporated. Postoperative controls were collected, which were carried out every 15 days until complete wound healing and complete wound healing and lasting up to 6 months due to the possibility of recurrence; the average healing time as well as the pathological anatomy. Through a simple question asked during the postoperative controls on whether or not he was satisfied with the procedure performed, the level of satisfaction of the patients who underwent this procedure was recorded.

The patients were admitted the same day as the surgery, fasting for at least 8 hours, without colonic preparation or evacuating enemas. Shaving of the sacrococcygeal area was carried out before entering the operating room, and the prophylactic antibiotic was carried out with one gram of intravenous Cephalothin (EV) one hour before surgery. In those patients who were allergic to Penicillin, prophylaxis was carried out with Ciprofloxacin 400 milligrams (mg) EV. In all cases, the patients were operated under spinal anesthesia.

Surgical technique

Patient in prone position, with a “pad” placed under the pubis and with the buttocks separated by strips of adhesive fabric on both sides. Skin antisepsis with 10% Iodopovidone, placement of surgical drapes. Methylene blue is introduced through the “main pore” in order to delimit the extent of the lesion (Figure 1). The surgical field is covered with a sterile adhesive “film” and an ellipsoid incision is made, resecting the entire lesion (Figure 2) to the plane of the retrosacral fascia without involving it (Figure 3). Then, after strict control of hemostasis, 2 - 2.5 centimeters (cm) of TCS is released laterally throughout the wound and about 0.5 - 1.5 cm deep from the skin in order to release tension the closure (Figure 4). After changing the gloves on the entire surgical team and requesting that the adhesive holding strips be released at the level of the buttocks, the space is closed in three successive planes with separate points of polyglactin “0” (Figure 5) the deepest plane, without involving the underlying fascia, Polyglactin “2 0” the intermediate (Figure 6) and Polyglactin “3 0” the most superficial (Figure 7). The skin is then closed with mononylon “3 0” also at separate points (Figure 8). We do not leave drainage. The wound is covered with rolled gauze and dressings. The patients were discharged the next day after tolerating a diet with “ambulatory rest” for at least 20 days, ketorolac 20 mg orally (PO) every 6 hours - 5 days -, ciprofloxacin 500 mg PO every 12 hours - 5 days - and daily dressings with medicinal alcohol and wound coverage. Postoperative control was established weekly.



Figure 1: Introduction of methylene blue.

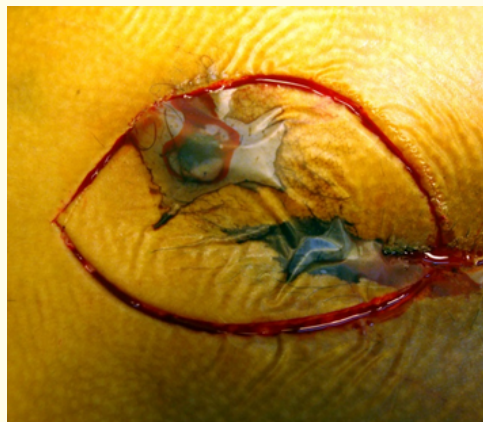


Figure 2: Skin “ellipsoid” incision.

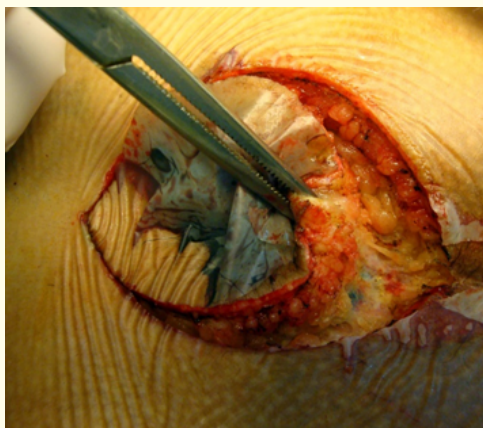


Figure 3: Wide resection to the retrosacral fascia.

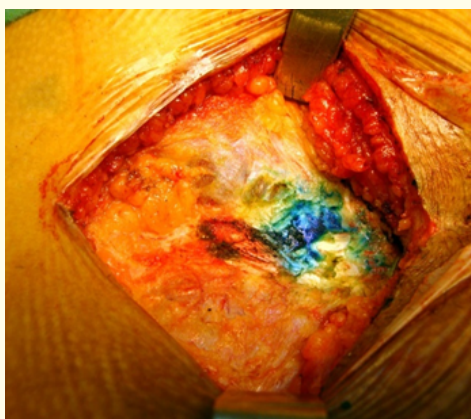


Figure 4: Edge release at 2 - 2.5 cm from the wound.

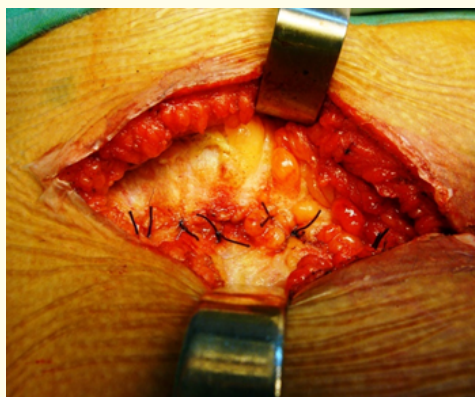


Figure 5: Close up of the deep plane with "0" polyglactin points.

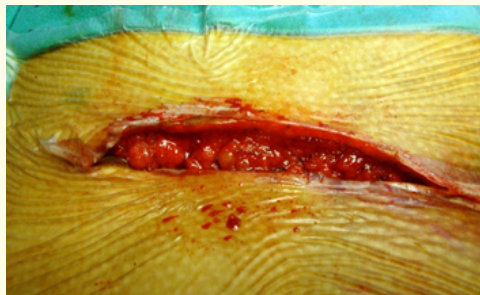


Figure 6: Closure of the intermediate plane with “2 0” polyglactin points.

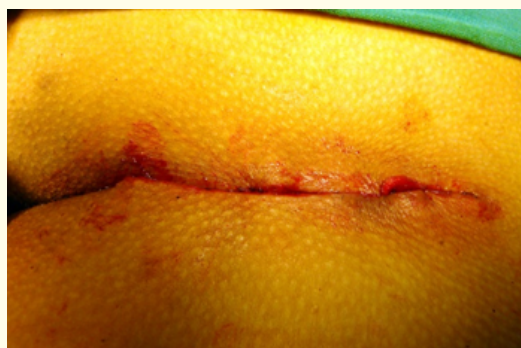


Figure 7: Close up of the surface plane with “3 0” polyglactin points.



Figure 8: Leather closure with “3 0” mononylon stitches.

Results

Between 01.10.2010 and 30.11.2019 - 110 months - 49 patients were consecutively operated on by the same surgeon, who underwent a wide resection of the lesion and a primary closure on the midline free of voltage and represent the sample to be analyzed.

The average age was 20.9 years (between 14 and 37 years), of which 69.38% (34 of 49) were men. Regarding postoperative complications, bleeding was evident in one patient (2.04%); and he gave in with a compression bandage; the partial opening of the primary closure in 16 (32.65%) - with a clear predominance of the caudal end -. Said partial dehiscences healed conveniently spontaneously. Recurrence was found in two (4.08%) cases with a cure rate of 95.91% (47/49). The two patients who presented recurrence underwent surgery recently, they are progressing well, both underwent identical closure but were not included in this casuistry. One patient presented a surgical wound infection (2.04%) which was resolved on an outpatient basis with drainage and administration of antibiotics VO - Lincomycin 500 every 8 hours for seven days. The sanatorial stay was one day in all cases. There was no need to reoperate any patient in the immediate postoperative period. The average healing time was 31.06 days (minimum 19/maximum 52); This last variable was prolonged in those patients who showed partial opening of the wound. The pathological anatomy reported a pilonidal cyst, without malignancy and with lesion-free resection margins in all cases. Likewise, all patients, even those two where the pathology recurred, expressed their agreement with the procedure performed.

Discussion

SPD is a well-known chronic entity, which mainly affects young men [2,18]. To this day, his treatment is controversial. Different surgical and non-surgical procedures have been proposed for its resolution. Among the "non" surgical aspects, we could mention systematic shaving, the application of phenol or silver nitrate, cryosurgery or electro-cautery of the cavity [18,19]. Within the surgical procedures themselves, there are different techniques: resection without closure and second healing, resection with marsupialization - partial closure - resection and primary closure on the midline, resection and primary closure outside the midline or by using flaps [18-20]. Even some authors such as Soll., *et al.* have proposed minimal procedures - sinusectomy - for its definitive treatment [21].

However, there is consensus that the "ideal" surgery should be: 1) simple to carry out, 2) with a minimum hospital or sanatorial stay, 3) with a low rate of recurrence and complications, 4) associated with minimal pain, 5) with a prompt return to work and 6) with acceptable cosmetic results [2,8-11,19,22]. Primary closure on the midline is one of the most used procedures; it is simple to do and is accompanied by minimal pain and a short hospital stay [2,8,10]. However, for authors such as Bannura [8], closure far from the midline, "flattening" the natal fossa as described by Karydakakis [5,6], is essential in reducing the rate of recurrence and infection compared to primary closure on middle line. Likewise, the meta-analyzes by Petersen., *et al.*, Brasel., *et al.* and Horwood., *et al.* [11-13] maintain that primary closure on the midline has a higher infection rate, greater partial or total wound dehiscence and, above all, higher recurrence rate when compared with closure away from the midline or with flaps.

But these authors do not consider a primary closure on the tension-free midline, as we propose here. Some authors, such as Muzi., *et al.* Developed a prospective randomized study where they compared the primary closure on a tension-free midline with closure using a Limberg flap. At work, they practiced primary closure on the midline without tension in two planes, alternately taking superficial points

and deep points and placing a collagen sponge impregnated with gentamicin, avoiding the use of drains, and their results were comparable to the use of the flap. Limberg-style [2]. We consider the use of this sponge to be at least ingenious but in our opinion it makes the procedure very expensive; On the other hand, we do not use drains since we consider that their use could contribute to delaying discharge from the hospital and the appearance of infections. In fact, we only had one patient with a surgical site infection (2.04%). Youseff, *et al.* also in a prospective randomized study comparing tension-free midline primary closure with Limberg-style flap closure, demonstrated even superior results with tension-free primary closure; After releasing the incision 3 cm laterally, they performed a closure in two planes at separate points with absorbable material, involving the retrosacral fascia in the deepest plane [10], which we do not do. Our closure is similar only that we do it in three planes. Okus, *et al.* in their prospective randomized study compared the primary closure on the midline without tension, after releasing 2 - 3 cm laterally and closing in two planes - leaving a drain - with the closure using the Limberg flap and obtained similar results to the de Muzi, *et al.* [2,18]; Cevinc, *et al.* comparing tension-free primary closure on the midline with a technique similar to Okus, closure according to the Karidakis technique, and closure with a Limberg flap, also found that primary closure on the midline had better results than the other two closure modalities [2,3]. But in these last two studies, hospitalization time was prolonged until the drain could be removed, which did not happen until it had a discharge of less than 20 cm in 24 hours (1.85 days and 3 days respectively). In contrast to this, all of our patients were discharged the other day after surgery.

The high rate of partial wound opening (32.65%) was negative in our series without being accompanied by infection of the surgical site; However, said opening never exceeded the three skin sutures and always involved the caudal end. Clearly in these patients the healing time was prolonged but they healed spontaneously. All the patients expressed their agreement with the procedure performed, even the two patients where the pathology recurred. Our recurrence rate (4.08%) is comparable with other series [2,10,18,23].

The specimens sent to pathological anatomy in all cases resulted in lesion-free margins, which highlights the usefulness of the use of methylene blue immediately before starting surgery in order to "delimit" the lesion well [20-22]. We did not have any patient with squamous cell carcinoma associated with a pilonidal cyst. It is a rare entity - some authors speak of an incidence of less than 1% - but when it occurs it is associated with a poor prognosis compared to other neoplasms of the same nature [24,25].

Conclusion

Primary closure on the tension-free midline for the treatment of EPSC was a simple procedure, with a short sanatorial stay and a low rate of recurrence and complications, so in our opinion it would be quite close to an ideal surgery to resolve this pathology.

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