

Pilonidal sinus in pediatric age: primary vs. secondary closure

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ABSTRACT

Introduction. Pilonidal sinus (PS) is a highly frequent condition in teenagers. There is no consensus on which type of closure should be carried out following surgical removal. Our objective is to compare primary closure (PC) results with secondary closure (SC) or deferred closure results.

Materials and methods. Patients undergoing surgery for PS between 2013 and 2018 were studied and classified according to the type of closure. Presence of infection at removal, recurrence rate, pre- and postoperative antibiotic treatment, number of previous drainages, and sinus size were analyzed.

Results. Of the 57 patients (29 of whom women), 29 were treated using PC and 28 using SC. Mean age was 14±1 years in the PC group, and 16±1 years in the SC group. PC patients presented a postoperative partial dehiscence rate of 26%. No statistically significant differences were found between groups regarding the presence of infection at surgery, recurrence rate, postoperative antibiotic treatment, number of previous drainages, and sinus size ($p>0.05$). The SC group required more postoperative dressings [4 (0-6) vs. 8 (2-11) ($p<0.01$)] and longer time to healing [60 days (9-240) vs. 98 days (30-450) ($p<0.01$)].

Conclusions. 1 out of 4 PS patients with PC presents postoperative partial dehiscence. However, PC involves fewer subsequent dressings and shorter healing times as compared to SC.

KEY WORDS: Pilonidal sinus; Primary closure.

SINUS PILONIDAL EN EDAD PEDIÁTRICA. CIERRE PRIMARIO VERSUS CIERRE POR SEGUNDA INTENCIÓN

RESUMEN

Introducción. El sinus pilonidal (SP) es muy frecuente en adolescentes. Tras la escisión quirúrgica no existe consenso sobre qué tipo de cierre es el más idóneo. Nuestro objetivo es comparar

resultados del cierre primario (CP) frente al cierre por segunda intención o diferido (CD).

Material y métodos. Estudiamos los pacientes intervenidos de SP desde 2013-2018, clasificándolos según el tipo de cierre. Se analizaron la presencia de infección en el momento de la escisión, la tasa de recidiva, el tratamiento antibiótico pre/postoperatorio, el número de drenajes previos y el tamaño del sinus.

Resultados. De los 57 pacientes (29 mujeres), 29 fueron tratados mediante CP y 28 con CD. Su edad media fue de 14 años ± 1a en el grupo CP y 16 años ± 1a en el CD. Los pacientes con CP presentaron una tasa de dehiscencia parcial postoperatoria del 26%. No encontramos diferencias significativas en la presencia de infección en el momento de la intervención, en la tasa de recidiva entre ambos grupos, el tratamiento antibiótico postoperatorio, el número de drenajes previos o el tamaño del sinus ($p>0,05$). El grupo de CD requirió mayor número de curas postoperatorias [4 (0-6) vs. 8 (2-11) ($p<0,01$)] y mayor tiempo hasta la curación [60 días (9-240) vs. 98 días (30-450) ($p<0,01$)].

Conclusiones. Uno de cada 4 pacientes con cierre primario de SP presenta dehiscencia parcial postoperatoria. A pesar de ello las curas posteriores y el tiempo de curación son inferiores comparados con el cierre por segunda intención.

PALABRAS CLAVE: Sinus pilonidal; Cierre primario.

INTRODUCTION

Pilonidal sinus is a sacrococcygeal region condition with an incidence in teenagers as high as 26 out of 100,000^(1,2). Although its etiology is currently under discussion, hair invagination in the skin as a result of chronic friction in the intergluteal region is the most widely accepted theory⁽²⁾.

Typically, treatment has been surgical, but there is no gold standard technique in the literature regarding closure techniques. According to the meta-analyses carried out by Brasel et al.⁽³⁾ and McCallum et al.⁽⁴⁾, with more than 1,500 cases each, primary surgical wound closure techniques have not demonstrated to be superior to secondary closure techniques. The reason lies in the fact that, even though

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they reduce healing and reintegration to normal living times, they are associated with higher recurrence rates.

The objective of this study was to compare short-term and long-term results between primary closure and secondary closure of the surgical wound following PS surgery in our population.

METHODS

Descriptive, retrospective study of PS patients undergoing surgery in our hospital between 2013 and 2018. The study population included patients aged 13-20 years old from the pediatric surgery department and the adult general surgery department.

Patients were classified into two groups according to the closure technique used: primary closure (PC) patients operated on by pediatric surgeons, and secondary (SC) or deferred closure patients operated on by adult surgeons.

During postoperative preparation, all patients were placed in a prone position, and the sacrococcygeal region was shaved, washed, and disinfected using povidone-iodine.

During surgery, the median line of the tissue covering the sacrum was radically removed, reaching all PS fistulous orifices, and leaving an elliptical wound.

In the pediatric surgery department, primary wound closure was performed with interrupted sutures, including the subcutaneous cell tissue and the fascia sacra, and with a subcuticular suture in the skin.

In the group of patients from the adult general surgery department, the wound borders were not approximated, leaving the exposed surgical bed packed with hemostatic gauzes and a compression bandage.

Patients from both groups were discharged on the day of the procedure, with indications of rigorous hygiene, dry dressings, relative rest, and no antibiotic treatment, until the first control at the external consultations on postoperative day 7. All patients were advised to use definitive laser depilation following wound healing.

The following variables were assessed:

- Number of previous drainages: calculated according to the number of visits to the emergency department for pilonidal abscess drainage prior to surgery.
- Sinus size in centimeters: data from the anatomical pathology report, drafted based on the intra-operative sample following surgery.
- Postoperative infection: occurrence of purulent exudate drained by the wound, regardless of culture confirmation.
- Postoperative antibiotic treatment: 7- to 10-day cycle of oral amoxicillin-clavulanic acid.
- Recurrence rate: emergence of serous-sanguineous material through a new fistulous orifice, at any time during evolution, following wound healing.

Table 1.

Variables	PC	SC	P value
AGE (mean)	14	16	0.5
Previous drainage	6	17	0.02
Sinus size (mean in cm)	9.6	8.9	0.67
Postoperative infection	4	1	0.19
Postoperative antibiotics	4	1	0.19
Recurrence	7	2	0.07
N° of postoperative dressings	4	8	0.01
Time to healing (days)	60	98	0.04

- Dehiscence: only in the primary closure group, defined as a partial or full wound opening in the first postoperative month.
- Number of postoperative dressings and follow-up time to healing: calculated according to the number of external consultation visits.

In the statistical analysis, the association between qualitative variables was assessed using the chi-squared test or Fisher's exact test. For qualitative and quantitative data comparison purposes, Mann-Whitney's U test was used. Associations were considered as statistically significant with p-values under 0.05. Data were analyzed using the SAS 9.3 statistical software.

RESULTS

Of the 57 patients undergoing surgery, 28 (50%) were women and 29 (50%) were men, with a mean age of 14 ± 1 years in the PC group, and 16 ± 1 years in the SC group.

In 29 out of 57 patients, primary closure (PC) was carried out following sinus removal; 7 patients (26%) had postoperative partial dehiscence. In this group, 6 patients (26%) required preoperative drainage, with a mean sinus size of 9.66 ± 7.85 cm. Postoperative antibiotic treatment was indicated in 4 patients (14%). In 7 patients (26%), sinus recurrence was observed following wound healing. During consultation follow-up, the median number of postoperative dressings was 4 (0-6), and median time to healing was 60 days (9-240).

In 28 out of 57 patients, secondary closure (SC) was carried out following sinus removal, leaving the surgical bed open. In 17 patients (73.9%), preoperative drainage owing to pre-removal infection was performed. Mean sinus size was 8.98 ± 4.15 cm, with postoperative antibiotic treatment being necessary in 1 case (3.6%). In this group, 2 patients (7.5%) had postoperative recurrence. During follow-up, the median number of visits was 8 (2-11), and median time to healing was 98 days (30-450).

The comparative analysis between PC and SC is featured in Table 1.

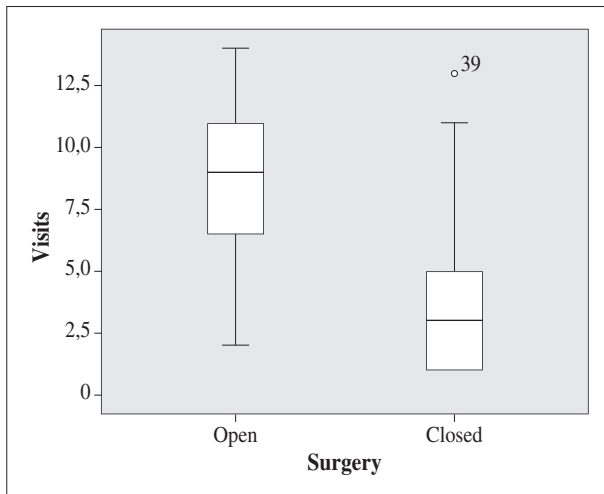


Figure 1.

No statistically significant differences were found regarding postoperative infection, sinus size, need for antibiotic treatment in the context of postoperative infection, and recurrence rate ($p>0.05$).

Statistically significant differences were found regarding the need for previous drainage, which was higher in the SC group. In addition, this group required a higher number of postoperative dressings [4(0-6) vs. 8 (2-11) ($p<0.01$)] and longer time to healing [60 days (9-240) vs. 98 days (30-450) ($p<0.01$)] (Fig. 1).

DISCUSSION

This study evaluates the long-term results of primary closure as compared to secondary closure following pilonidal sinus removal.

As already stated, the main controversy in PS treatment lies in the surgical closure technique used following removal⁽⁵⁾. The “ideal” therapy would be a rapid healing allowing patients to regain normal activity as soon as possible, with minimum pain and a low risk of complications such as infection, dehiscence, and recurrence⁽⁶⁾. In this respect, treatment principles require the eradication of the sinus tract, the complete healing of the skin, and the prevention of recurrences.

This study gathered patients from two surgical departments with two different closure techniques for this pathology. The two groups were compared to one another in order to find the most suitable treatment for pediatric patients.

On the one hand, medical treatment is based on depilation^(7,8), phenol infiltration of the fistulous tract⁽⁹⁾, fibrin glue⁽¹⁰⁾, laser treatments⁽¹¹⁾, and radiofrequency ablation⁽¹²⁾. Even though these techniques are not used that frequently in our healthcare facility, they have demonstrated to be

effective in monotherapy, or as a complement to surgical procedure with PS patients⁽¹³⁾.

On the other hand, from the surgical point of view discussed in this article, once the whole PS has been resected, the defect can be left open for granulation healing, or closed using primary suture or some flap suture. Marsupialization is also feasible. Recently, endoscopic recurrent pilonidal sinus treatment (EPSiT) has also demonstrated to be effective⁽¹⁴⁾.

As previously mentioned, the literature published in this respect is extensive. However, nowadays there is no gold standard technique for PS treatment. Closed resection techniques have not demonstrated to be superior to open resection techniques, since they reduce healing and reintegration to normal living times, but they are associated with higher recurrence rates^(2,3).

In our series, no statistically significant differences were found between groups regarding recurrence rate. Neither technique demonstrated a clear benefit over the other in terms of sinus size, postoperative infection, and preoperative antibiotic treatment. However, there was a statistically significant higher number of previous drainages in the SC group, probably because pilonidal abscess drainage in the emergency department is a more frequent technique in the adult surgery department.

Regarding SC patients, wide resection and open wound healing remove the dehiscence variable in the postoperative period as compared to primary closure. In our series, a dehiscence rate of 26% was described for the PC group, which may be a sign of longer time to healing. However, more consultation visits and longer time to healing were noted in the SC group. This result is all the more important as it has an impact on patients’ quality of life in terms of school absenteeism and inability to practice sport, and also because it involves higher costs for the healthcare system.

Obviously, this study has certain limitations, such as its retrospective nature, the small sample size, and the fact that the surgeons in charge of surgical treatment were not the same. However, we believe that the sample, which combines homogeneous patients from two different departments, is representative and provides with a real vision of PS treatment within the same healthcare facility.

Finally, even though wide resection and open wound healing may be the technique of choice for many surgeons owing to the low recurrence rates published, recurrence was not higher in the PC group in our 57-patient series. With the information available up until now and in light of our results, it can be concluded that, even though PC has a dehiscence rate of one out of four patients, time to healing is shorter.

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