



Analyzing Two Surgical Approaches for Sacrocoxygeal Pilonidal Illness: Individual Firsthand Encounter

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Original Article

Abstract

Background: Sacro-oxygenic pilonidal sinus (SCPS) is a chronic pathology of surgical spring. Many surgical techniques have been labeled for its treatment, there are two large surgical methods: the open and the closed techniques.

Objective: to evaluate and compare the surgical outcomes of two procedures, namely marsupialization (open) and Karydakis (closed), both done by the same surgeon. **Materials and Method:** A retrospective cohort study was conducted on patients who underwent elective surgery for pilonidal cysts between January 2017 and January 2021, utilising these two methods.

Results: A total of 71 patients were included. There were 30 patients who underwent marsupialization and 41 patients who underwent Karydakis procedure. All individuals are now receiving medical treatment in a hospital setting. All patients were released from the hospital the day following their surgical procedure. There were no patients who needed to be readmitted to the hospital or have further surgical procedures. The statistical study identifies the advantages of the Karydakis procedure in terms of complications, postoperative pain, pain when sitting, inability to work, and healing time.

Conclusions: In this study we concluded that surgery with Karydakis technique has advantages in relation to marsupialization, considering it as the first option for the simple SCPS.

Keywords: pilonidal cyst; marsupialization; Karydakis.

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1. INTRODUCTION

Sacro-oxygenic pilonidal sinus (SCPS) it is a chronic acquired pathology, recurrent, which mostly affects young men causing a significant amount of absenteeism at work and student (1,2). In 1833 Herbert Mayo described this condition as a hair contained in a sinus, and later Hodges in 1880, suggests for the first time the term pilonidal disease thinking about a congenital condition, a word derived from Latin pilus (hair) and nidus (nest) (3). The incidence in Iraq it is unknown. It affects men more than women with a ratio of 2-3:1 (4). The clinical manifestations of SCPD are varied and multiple risk factors have been described for its development (5,6). The purpose of the treatment is to cure the disease-give as quickly as possible with low morbidity, early return to work, with minimal disruption cosmetic of the area and with low recurrence. For this multiple surgical techniques have been described, existing 2 main groups: the open techniques and the closed (7). One of the open techniques is marsupialization described by Buie in 1938. In this the pilonidal sac is removed without completely resecting it and the edge of the skin sutured to the edge of the wall of the sac (8).

One of the outstanding closed techniques it is the one described by Karydakos who proposes as pathogenesis of the Sacro-oxygenic pilonidal disease the confluence of three factors involved: the invader (hair), the motor (buttock) that pushes the invader and the vulnerability of the skin of the intergluteal sulcus. With this he presents his technique of asymmetrical resection which completely dries the cyst with a semi-lateral elliptical excision, mobilizing his medial side which sutures him to the other side and transfixes the sacro-oxygenic fascia (9, 10).

2. PATIENTS and METHODS

A retrospective cohort study was conducted, analyzing patients operated on electively with diagnosis of pilonidal cyst. The diagnosis is performed on the basis of the clinical and imaging study (ultrasound soft parts of the sacro-oxygenic region with findings compatible with pilonidal cyst). Elective patients who underwent surgery in the form consecutive from January 2017 to January 2021 by the researchers. All patients who were excluded were they presented with pilonidal abscess. Out of a total of 83 selected patients, 4 were dismissed for being abscessed at the time of the surgery and 8 for inability to be contacted for its control, ultimately remaining for this we studied a total of 71 patients. SCPD was defined simple to all cyst without fistulous path at the moment from the surgery. 2 surgical techniques were used in this

period, one open (marsupialization) and one closed (Karydakis). The selected technique to be used was a discretion of the surgeon, as it was incorporated gradually the technique of Karydakis in his arsenal therapeutic. Therefore, in the first 3 years it was used marsupialization mainly for cysts fistulized and Karydakis for the simple, expanding the indications of the Karydakis technique to the fistulized in the last two years. Surgical technique All patients were operated on in position of a Sevillian razor, with her buttocks separated with fabrics. They received prophylaxis with antibiotics intravenous in the intraoperative with cefazolin 1 or 2 g depending on your weight or clindamycin 600 mg in the allergic patients.

Marsupialization:

A stylet is used to cannulate the central pit to pull the cyst and in case of being fistulized manage to cannulate the entire fistulous path. The opening of the entire cyst is performed on this stylet, it is made curettage with teaspoon of the cavity by removing all the granulatory material and foreign body. With electrobisturí the wall is released of the skin cyst and subcutaneous cellular to be able to lifting (bringing the lateral wall of the cyst to a level cutaneous) the wall of the cyst (without drying it out). It is sectioned the skin edge adhered and proceed to fix the wall of the cyst at the edge of the skin with dots of vicryl 2-0 discontinued.

Karydakis technique:

The side is selected towards which the scar will be tilted, including hole fistulous if it presents it and the cyst itself. The boundaries are marked away from the midline, proximal (at 2.0 cm) and the distal (at 2.5 cm to 3 cm) for seek to separate the scar from the anus, by drawing a asymmetrical ellipse. The resection is performed with a scalpel cold up to sacral fascia. In the bloody zone it is done a 5-minute hemostatic pause with compresses imbibed in physiological saline with adrenaline (1:250 cc). Then point hemostasis is performed with electro-scalpel. Medial cell phone flap is carved subcutaneous at 1 cm depth and 2 cm laterally. Vicryl 2-0 points flap is tackled discontinuous making a capitulation point towards the sacral fascia before knotting and then a second vicryl 2-0 flat between flap free edge medial and the lateral edge of the wound in 2 planes. The use of drainage is of selective use. The skin is facing with 2-0 ethylon dots (discontinuous Donatti type or intradermal).

Analysis of variables

Demographic data were obtained from the file clinic: sex, age, concomitant pathologies, smoking, body mass index (BMI), reason of consultation, time of evolution and type of cyst (simple cyst defined as the pathless cyst fistulous). Data from the operating protocol were collected: type of surgery, anesthesia, operating time, drainage use and hospitalization time. In the patients operated with Karydakis technique anatomopathological data from the biopsy were retrieved: dimensions of the cyst (length, width). Time data were collected from the clinical data sheet of postoperative follow-up. The complications were defined as any adverse effect or situation not expected in the normal course of scarring and the need for readmissions or reoperations. The time of incapacity was determined work, time to be able to sit and walk no pain. For the evaluation of pain, the visual analog scale (VAS) 24, at the time of discharge and at the first postoperative check-up (7 to 10 days postoperative). Follow-up time was defined as the time between the surgery and the last contact with the patient, either personally or by phone. The inability to work was defined as the time it took the patient from his surgery to his return to his studies or his job. Healing time variable was evaluated (in days). In marsupialization was defined as the epithelialization complete of the wound and in the Karydakis as the time of the removal of stitches or healing complete in case of dehiscence of the suture. The presence of suppuration or secretion, maintained by more than 3 months after surgery, it was defined as a healing delay. The presence of secretion at any time after healing of the wound was considered to be a recurrence (in the clinical evaluation or by asking directly by telephone). For the satisfaction evaluation of the surgery, patients were monitored clinically and/or via by phone, through a survey. This consists of 3 questions regarding conformity, aesthetics, and final result of the surgery, offering an answer dichotomous (yes or no) and a scoring scale from 1 to 7. For the data analysis, statistics were performed descriptive and analytical. The qualitative variables were expressed in percentages, and the test was used of χ^2 or Fisher's exact as appropriate for his analysis. For the quantitative variables, we used the Shapiro Wilk test to define the distribution of the variables studied. In the parametric variables the average and the standard deviation were used to express the results, in addition to the t-test of Student for statistical analysis. For variables of non-parametric distribution the median and the interquartile range to express the results and the Mann-Whitney U test for statistical

analysis. A logistic regression analysis was also used. uni and multivariate to evaluate the association of variables. A p-value was considered significant less than 0.05.

3. RESULTS

A total of 71 patients were analyzed who met the inclusion criteria. The demographic data and their statistical analysis are summarized in (**Table 1**). The main reason for consultation was the increase of sacro-oxygenic region volume in 59% of the patients, alone or associated with pain and discharge. Other reason for consultation was the antecedent of abscess drained sacro-oxygenic in 14 patients (20%), and the rest consulted for pain in the sacro-oxygenic region, only or associated with secretion. Of the total, 30 patients (42.3%) were treated with marsupialization (group M) and 41 (57.7%) were treated with Karydakakis technique (group K). All the operated patients were hospitalized, spinal anesthesia was used in 95.8% and the rest under general anesthesia. Only one patient from group K was left with drainage and 100% of the patients were discharged the day after surgery. The number of surgeries and techniques used in each year of the study are detailed in (**Figure 1**). 100% of the histopathological reports of the group K, the findings were consistent with cyst pilonidal. The size of the surgical parts of the Group K was on average 6.7 ± 1.4 cm in length by $3.1 \text{ cm} \pm 0.7$ cm wide. The postoperative results obtained in each one of the surgical techniques are summarized in the (**Table 2**). The postoperative pain at the first check-up was higher in group M (median 2 vs 0 in group K). In group K, 92.7% of the patients had an Visual Analogue Scale (VAS) ≤ 2 compared to group M where the 73.3% of the patients had an VAS ≤ 2 . The time to walk and sit without pain was lower in the K group, although this difference does not it has achieved statistical significance. The highest rate of complications occurred in the group M, as a consequence of the dehiscence of the operative wound in 24 patients (80%), being in 91.7% of them a partial dehiscence (of the 20% up to 70% of the wound) and only in 2 patients (8.3%) total. In group K, 2 patients (5.1%) had bruises from the operative wound, without needing no additional procedures. No patients required rehospitalization or additional surgeries. To evaluate the factors that are associated with a higher rate of complications an analysis was performed univariate where the type of cyst (fistulized), type of surgery (marsupialization) and operative time lower were associated with a higher rate of complications (**Table 3**). However, in multivariate analysis only statistical significance was maintained by the type of surgery as an

independent factor in complications (OR: 103.6, 95% CI: 8.1-1334.6; $p < 0.001$). Labor incapacity and healing time were higher in group M. He stressed that 66.7% of Group M required more than 21 days of rest compared to 31.3% of the K group ($p = 0.007$). Although the type of cyst (fistulized), shorter operating time, presence of complications and time to walk without pain were associated with a work rest greater than 21 days in the univariate analysis (**Table 4**); in the multivariate analysis only the type of cyst (fistulized) (OR: 7.14, 95% CI: 1.3-38.0; $p = 0.021$) and the time to walk without pain (OR: 1.1, 95% CI: 1-1.23; $p = 0.034$) maintained the statistical significance. The median healing time was longer in group M. Only 9.8% of group K delayed more than 21 days to heal, compared to the 100% of Group M. The evaluation of the surgery by the patient revealed that for the final result only 1 patient was not satisfied and it was the patient who relapsed in group M. In the evaluation by notes on the different items there were no significant differences, but it did highlight a trend to a lower on the aesthetic aspect of the scar in the group K, with a score ≤ 5 points in 34.1% of patients, compared to 23.3% of the M group.

Table 1. Demographic data according to type of surgery

Variables		Marsupilaization (n=30)	Karydakis (n=41)	P value
Sex	Female	6 (20.0%)	19 (46.4%)	0.020
	Male	24 (80.0%)	22 (53.6%)	
Age (years) , mean (range) ,		22.5 (18-29)	22 (17-25)	0.600
BMI (mean \pm SD)		26.8 \pm 4.7	27.8 \pm 4.1	0.500
Comorbidity		6 (20.0%)	6 (14.6)	0.600
Smoking		16(53%)	16 (39%)	0.200
Type of cyst (fistulized)		27 (90.0%)	17 (41.5%)	<0.001
Evolution time (months), median (range)		10 (4-12)	10.5 (3.5-42)	0.700
Previous surgeries		12 (40.0%)	23 (56.1%)	0.200
Recurrent cysts		5 (16.0%)	3 (7.3%)	0.200

SD: standard deviation

Values presented as n (%) except the mentioned

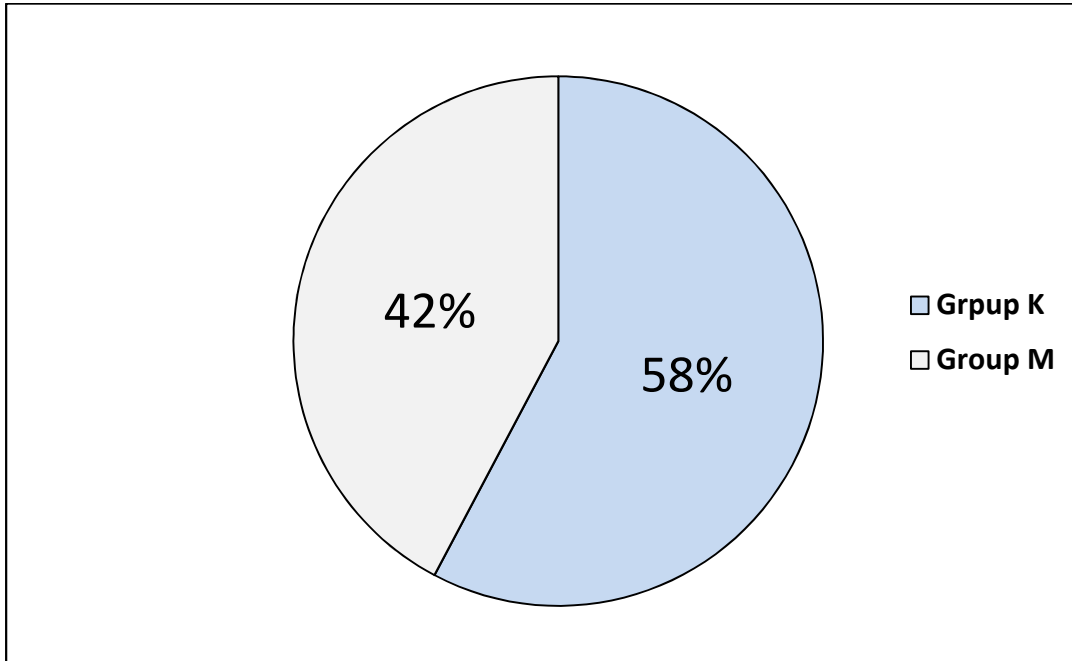


Figure 1. Distribution of patients according to type of surgery.

Table 2. Summary results, according to type of surgery

Variables	Marsupilaization (n=30)	Karydakis (n=41)	P value
Operating time (min), mean \pm SD	24.3 \pm 7.3	32.8 \pm 5.9	< 0.001
Complications , n (%)	25 (83.3%)	2 (5.1%)	< 0.001
VAS to discharge	0 (0-2)	0 (0-2)	0.78
VAS to the 1st control	2 (0-3)	0 (0-2)	0.027
Walking without pain (days)	15 (7-30)	10 (7-15)	0.070
Sitting without pain (days)	20 (15-30)	14 (10-27)	0.06
Incapacity for work (days)	21 (17-28)	14 (10-27)	0.003
Healing time (days)	48 (16-20)	18 (16-20)	< 0.001
Follow-up (months)	40 (28-48)	20.6 (12-31)	< 0.001
Recurrence n (%)	1 (3%)	0 (0%)	0.874

SD: standard deviation

All values presented as median and (range) except the mentioned

Table 3. Factors influencing complications, univariate analysis

Variable	OR	CI 95%	P. value
Cyst time	6.3	1.8 – 21.5	0.003
Type of surgery	92.5	16.6 - 514.8	< 0.001
Operating time	0.87	0.81 – 0.94	0.001

CI : confidence interval

Table 4. Factors influencing work disability, univariate analysis

Variable	OR	CI 95%	P.value
Type of surgery	4.4	1.5-13.2	0.007
Cyst time	8.9	2.2-35.7	0.002
Operating time	0.9	0.8-0.99	0.03
Complications	3.3	1.1-9.99	0.03
Walking without pain	1.12	1.03-1.2	0.004

4. DISCUSSION

The incidence of Sacro-oxygenic pilonidal disease (SCPD) in the USA is estimated at 26 per 100,000 inhabitants, with a clear predominance of men (2-3:1) (11) a figure that in this series it reaches 2:1. The age of presentation of the disease in most of the work is in the second decade of life (12), which is reaffirmed in this and other studies. The body mass index (BMI) of the total group it averaged 27.3 ± 4.4 kg/m². 39% were overweight, 20% obesity and highlights that 33% had a normal BMI. These values are very similar to those found in other studies and reinforce that obesity is becoming less and less relevant in pathophysiology of the disease (12-14). The presence of a greater number of patients with fistulized cysts (90%) in the group of M is explained by the surgeon's personal bias, which he initially preferred to do marsupialization to the fistulized cysts and Karydakis at simple cysts. As the technique was incorporated and consolidated of Karydakis was progressively used in cysts fistulized. This explains the greater realization of Karydakis in the last years of the studio in decline of marsupialization. Patients with cyst were operated on in both groups relapsed pilonidals, most of them subjected to a resection with primary closure in the middle line and marsupialization. There is a lot of

variability in the percentage of recurrent cysts in national studies and international, without demonstrating the impact of this variable in the results (15-17).

The operative time was shorter in the marsupialization, which coincides with many previous international publications (13,19,-20). In this series, unlike the one proposed by Karydakiss, the drain was used in only one patient obese (BMI), at the beginning of the experience. Various studies suggest that the use of drainage reduces the formation of seromas (20,21), a complication that is not he presented in this series. The use of drainage should be evaluated patient by patient and according to the preference of the surgery (22,23). There are few articles that describe the size of surgical parts in the Karydakiss technique. This measurement could determine how far it is it is possible to use this technique. The sizes described they are close to 8 cm-9 cm long and 4 cm-5 cm of anchovy (22,24). Due to the characteristics of the technique, the the width of the resection is the one that most limits the realization of the flap. This could determine that if you planning a resection greater than 5 cm in width no it is convenient to perform the Karydakiss technique and may require other types of flaps to give better coverage to the defect or, make modifications to the technique, as described by Kitchen (15, 17,25). In this series, marsupialization had more complications than the Karydakiss. The most frequent is the dehiscence of the fixation of the cyst wall to the skin border. All of these complications were resolved with cures, resection of devitalized tissue and closure by second intention, procedures performed on an outpatient basis. The high rate of dehiscence of the marsupialization technique in this series differs radically from that published by other authors, which is probably due to the use of a different criterion to define the complication. On the other hand, there may be factors of the surgical technique used since some authors only bevel the cutaneous edge of cyst without release the wall from it, having less tension in this suture (18, 26-28). The pain measured by VAS at the first control was lower in group K and in both techniques was lower to other studies (16, 18, 22). In both groups there was no significant difference in the time to walk and sitting without pain, with a favorable tendency to group K. On the other hand, the healing time was lower in Group K, which is endorsed in multiple studies and meta-analysis (7,18,22). In sum, it is widely accepted that open techniques they require a longer healing time than the closed ones especially in comparison with the asymmetrical techniques. As a result of the above, the time of the return to work was

significantly higher in the marsupialization. If we dichotomize this variable, the time of incapacity for work was greater than 21 days in 66.7% of the M group versus 31.3% of the group K. These results suggest that the pain and complications of the wound are more relevant than the healing time in the return time labor, which is endorsed in the meta-analysis of Enríquez-Navascues³. Both techniques were successfully evaluated for all patients, which coincides with described by other authors (16,17,19, 22). However, there was a tendency to lower satisfaction in the aesthetic of the scar of the patients of the group Karydakis. This can be explained by the larger number of women in that group who usually manifest greater concern for the aesthetic outcome of a scar. This led to a change in the closing technique cutaneous using an intradermal plane. The only case of recurrence, presented at twenty months of follow-up in group M and was re-operated with the Karydakis technique. In the analysis of the recurrence of the SCPD it is accepted that the techniques open techniques have lower rates than closed ones (7) (when all of them are considered) and that the asymmetric techniques have fewer recurrences than the closed techniques in the middle line. Since the recurrence depends on the time of follow-up, the figures vary considerably among the various published works (17, 19,25). Currently, it is considered that the monitoring period the minimum acceptable age is 5 years 9, so the results of this series should be considered cautiously. This article has several limitations. It is a retrospective study, the patient number is low since it is a personal experience, the indication of the type of surgery was not randomized and the evaluation of the results are carried out by the same surgeon who performed the procedure.

5. CONCLUSIONS

In this article the surgery with Karydakis technique has advantages in relation to marsupialization. That is why I consider it as the first option for SCPD independent of the type of cyst and previous surgeries, allowing a rapid healing, low morbidity, rapid labor integrity, low recurrence and an easy to reproduce technique. The marsupialization technique is the best one reserved for cysts with long fistulous paths, far from the midline and that their eventual resection will mean a large bloody area to be covered. It is advisable to suggest a surgical management according to the severity of the disease. Some may be resolved in accordance with these two techniques presented and others will require the use of rotational flaps of greater complexity. All of this depends on the extension, severity of pilonidal disease and experience

from the surgeon. Randomized jobs are required randomized, higher volume of patients and longer follow-up time to be able to have conclusions of greater statistical weight.

Ethical Clearance:

Ethical issues were taken from the research ethics committee. Informed consent was obtained from each participant. Data collection was in accordance with the World Medical Association (WMA) declaration of Helsinki for the Ethical Principles for Medical Research Involving Human Subjects, 2013 and all information and privacy of participants were kept confidentially.

Conflict of interest: Authors declared none

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