Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

COMPARISON OF CRYSTALLIZED PHENOL APPLICATION AND THE KARYDAKIS FLAP TECHNIQUE IN THE TREATMENT OF SACROCOCCYGEAL LOCALIZED PILONIDAL SINUS DISEASE

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ABSTRACT

BACKGROUND: Pilonidal Sinus Disease (PSD) is a chronic condition characterized by inflammation in the sacrococcygeal region, most commonly affecting young adults. The prevalence of PSD is estimated at about 6 cases per 100,000 individuals, with a higher incidence observed in males, who are 3 to 4 times more likely to develop the condition compared to females.

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This study aimed to compare the rates of wound complications between two treatments: Crystallized Phenol Application and the Karydakis Flap Technique, in the management of sacrococcygeal PSD.

METHODS: This Randomized Controlled Trail study included a total of 80 patients, randomly divided into two groups. Group A received Crystallized Phenol Application, while Group B underwent the Karydakis Flap Technique. Demographic information such as age, gender, weight, height, BMI, and duration of the disease were collected. Post-operative wound complications, including dehiscence and infection, were monitored. Statistical analysis was conducted using t-tests for continuous data and Chi-square tests **for categorical variables to identify any significant differences between the two groups.**

RESULTS: The analysis revealed no significant differences between the two groups regarding age ($p = 0.63$), gender ($p = 0.42$), weight ($p = 0.40$), height ($p = 0.36$), BMI ($p = 0.22$), or duration of the disease ($p = 0.50$). Wound complications were observed in 5 patients from Group A and 3 patients from Group B, with no statistically significant difference between the groups ($p = 0.56$).

CONCLUSION: Both the Crystallized Phenol Application and the Karydakis Flap Technique yielded comparable results in terms of wound complications and other patient-related factors. Larger studies are recommended to confirm these findings**.**

KEYWORDS: Crystallized Phenol Application, Karydakis Flap Technique, Sacrococcygeal Pilonidal Sinus Disease, Wound Complications, Wound Dehiscence, Infection, Treatment Outcomes.

INTRODUCTION:

Pilonidal Sinus Disease (PSD) is a long-lasting inflammatory condition that primarily affects the sacrococcygeal area, commonly in younger individuals. (1) It is more frequent in males, with several contributing factors such as obesity, inadequate hygiene, prolonged periods of sitting, and excessive body hair. Patients typically present with pain and swelling in the lower back area, particularly when sitting. While various treatment options exist, no single method has proven to be definitively superior. (2)

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Surgical interventions, including the Bascom procedure, primary closure, and flap-based techniques like the Karydakis Flap, are frequently employed. The Karydakis Flap technique is particularly noted for its low recurrence rates and faster recovery times. (3) In contrast, conservative treatments such as phenol application provide a less invasive option, offering the benefits of low recurrence and minimal post-operative care requirements.

This research aims to fill the existing gap in the literature by directly comparing Crystallized Phenol Application with the Karydakis Flap Technique, with an emphasis on wound complications. The study seeks to provide evidence that can assist clinicians in choosing the most appropriate treatment based on individual patient factors. (4)

By focusing specifically on wound complications, this study intends to clarify the relative benefits of these two common treatments for sacrococcygeally localized Pilonidal Sinus Disease. (5) Although both treatments are widely used, there remains a lack of comparative evidence regarding their outcomes in this regard, underscoring the need for further research. (6)

METHODOLOGY:

This research was conducted as a randomized controlled trial to compare the occurrence of wound complications between patients treated with Crystallized Phenol Application and those undergoing the Karydakis Flap Technique for sacrococcygeal pilonidal sinus disease. The study took place at Allama Iqbal Memorial Teaching Hospital, Sialkot, over six months, following the approval of the study protocol.

The required sample size was determined using the OpenEpi WHO sample size calculator. Previous studies showed that 8.11% of patients treated with the Karydakis flap and 4.81% of those treated with phenol experienced post-operative wound complications. Based on these data and with a study power of 80% and a 95% confidence interval (CI), the sample size calculation indicated 40 participants per group, totaling 80 patients.

Participants were selected through non-probability consecutive sampling. The inclusion criteria consisted of patients aged 18 to 60 years, of both genders, with a clinical diagnosis of pilonidal sinus disease. Exclusion criteria included patients who declined participation, pregnant or lactating

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women, individuals with a history of pelvic radiation, and those with uncontrolled diabetes (HbA1c $\geq$ 6.5%).

Prior to treatment, all participants received a detailed explanation of the procedures and provided written informed consent. A thorough evaluation was conducted to ensure eligibility. The 80 participants were then randomly divided into two groups: Group A received Crystallized Phenol Application, and Group B underwent the Karydakis Flap Technique.

Procedure Details

- **Crystallized Phenol Application (Group A):**

  The treatment area was sterilized, and local anesthesia was administered. The sinus tract was cleaned and curetted. To protect surrounding healthy tissue, antibiotic cream was applied. All debris and hair were removed from the sinus, and 5 grams of crystallized phenol were introduced into the sinus pouch using a Mosquito clamp. The procedure was completed with a sterile dressing.

- **Karydakis Flap Technique (Group B):**

  Patients received spinal anesthesia. An elliptical incision, ranging from 2 to 5 cm in length, was made approximately 2 cm lateral to the midline above the sinus. The cyst was carefully excised, ensuring no sinus extension remained. A subcutaneous advancement flap was created from the medial side of the incision. The subcutaneous tissue was sutured to the presacral fascia using 2/0 polyglactin (Vicryl), with the flap lateralized to the midline at the top. The skin was closed with 3-4/0 polypropylene sutures.

Post-Operative Monitoring and Data Analysis

Both groups were monitored for one week post-operatively for wound complications, including dehiscence and infection, as defined in the study protocol. Data were recorded on a standardized proforma. Statistical analysis was performed using SPSS version 20.0. The incidence of wound complications was expressed as percentages and compared using the Chi-square test, with $p \leq 0.05$ considered statistically significant. Quantitative variables, such as age, were reported as means with standard deviations. Data were stratified by age, gender, and BMI, and post-stratification t-tests were applied, with a significance level of $p \leq 0.05$.

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RESULTS:

The aim of this Randomized Controlled study was to compare the outcomes of Crystallized Phenol Application (Group A) and the Karydakis Flap Technique (Group B) for treating sacrococcygeal pilonidal sinus disease. The results showed no statistically significant differences between the two treatment methods in terms of demographic and clinical characteristics.

Both groups had similar age distributions, with no notable difference in the mean age ($p = 0.63$). The gender distribution was also similar across both groups ($p = 0.42$). Furthermore, there were no significant variations in average weight ($p = 0.40$), height ($p = 0.36$), BMI ($p = 0.22$), or disease duration ($p = 0.50$), indicating that the groups were comparable in these factors.

Regarding wound complications, 5 patients (12.5%) in Group A and 3 patients (7.5%) in Group B experienced complications. However, this difference was not statistically significant ($p = 0.56$). The data suggests that both treatment methods resulted in comparable outcomes with respect to demographic variables, disease-related factors, and wound complications.

Overall, the findings indicate that both Crystallized Phenol Application and the Karydakis Flap Technique are similarly effective in the management of sacrococcygeal pilonidal sinus disease, with no significant differences in patient outcomes. All p-values were greater than 0.05, reinforcing the conclusion that both approaches are equally effective in treating the condition.

Table 1: Demographic and Clinical Characteristics

Characteristic	Group A (Crystallized Phenol)	Group B (Karydakis Flap)	P-Value
Age (years)			**0.48**
18–30	10 (25%)	12 (30%)	
31–45	18 (45%)	16 (40%)	

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46–60	12 (30%)	12 (30%)	
Mean Age (years)	35 (SD = 8)	34 (SD = 7)	**0.63**
Gender			**0.42**
Male	25 (62.5%)	20 (50%)	
Female	15 (37.5%)	20 (50%)	
Weight (kg)	70 (SD = 10)	72 (SD = 12)	**0.40**
Height (cm)	170 (SD = 8)	172 (SD = 7)	**0.36**
BMI	24 (SD = 3)	25 (SD = 3.5)	**0.22**
Duration of Disease (months)	12 (SD = 4)	13 (SD = 4.5)	**0.50**

Table 2: Wound Complications (Wound Dehiscence/Infection)

Group	Complications (Yes)	No Complications (No)	P-Value
Group A	5 (12.5%)	35 (87.5%)	**0.56**
Group B	3 (7.5%)	37 (92.5%)	
Total	8 (10%)	72 (90%)	

DISCUSSION:

The purpose of this study was to compare the effectiveness of Crystallized Phenol Application (Group A) and the Karydakis Flap Technique (Group B) for treating sacrococcygeal pilonidal sinus disease. The results revealed no significant differences between the two groups in terms of demographic variables (age, gender, weight, height, BMI, disease duration) or wound complications. (7,8) Both groups exhibited similar distributions across these factors, suggesting that the study population was homogenous. The mean age in both groups was approximately 35 years, with no significant difference ($p = 0.63$), which aligns with previous research on pilonidal sinus disease treatments. (9)

In terms of wound complications, 5 patients (12.5%) in Group A and 3 patients (7.5%) in Group B experienced wound dehiscence or infection. However, the difference was not statistically

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significant (p = 0.56). These findings are consistent with earlier studies comparing Crystallized Phenol Application and surgical methods. For example, Gozukucuk et al. (10) found similar complication rates between the two treatment approaches, suggesting both methods are effective at minimizing post-operative complications. Similarly, Kumar et al. reported fewer complications with phenol application, although the difference was not statistically significant, which is in line with this study's results. (11)

Although recurrence rates were not evaluated in this study, existing literature suggests that surgical methods like the Karydakis Flap may offer long-term advantages. De Mello et al. found lower recurrence rates with the Karydakis Flap compared to phenol application, indicating the potential long-term benefits of surgery. Additionally, Ahmed et al. suggested that the Karydakis Flap is more suitable for complex cases, given its definitive surgical approach. (12)

On the other hand, phenol application is valued for its benefits, including shorter recovery times and reduced post-operative care needs. Zaman et al. noted that phenol application is especially beneficial for patients with small or less complex pilonidal sinuses, offering a minimally invasive treatment with low complication rates.

CONCLUSION:

No significant differences were observed between Crystallized Phenol Application and the Karydakis Flap Technique regarding wound complications, demographic factors, or disease-related characteristics. Both approaches seem to yield similar outcomes in the treatment of sacrococcygeally localized pilonidal sinus disease. Additional research with larger sample sizes may be necessary to validate these results.

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