

ORIGINAL RESEARCH

To compare the outcomes of perianal surgery wound healing when utilizing a silver colloidal solution spray versus a povidone iodine sitz-bath

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Received: 12 March, 2023

Accepted: 18 April, 2023

ABSTRACT

Aim: To compare the outcomes of perianal surgery wound healing when utilizing a silver colloidal solution spray versus a povidone iodine sitz-bath.

Materials and Methods: A prospective study was conducted in the department of surgery, involving 100 patients who underwent perianal surgery and had an ASA classification of I or II. A total of 100 participants were subjected to random assignment, with half of them being allocated to Group A, where they received a silver colloidal solution spray, and the other half being assigned to Group B, where they underwent a sitz bath twice daily in conjunction with povidone iodine. The assessment of weekly pain score and patient satisfaction score was conducted using visual analogue scales.

Results: The overall outcome of the patients in group A and group B was categorized as "excellent" or "good" in 70% and 80% of cases, "adequate" in 24% and 16% of cases, and "poor" in 6% and 4% of cases, respectively.

Conclusion: Based on our findings, it can be inferred that the utilization of povidone-iodine in conjunction with sitz bath exhibits potential efficacy in the prevention of surgical site infection, when compared to the application of silver colloidal solution spray.

Keywords: Perianal surgery, wound healing, silver colloidal solution spray povidone iodine sitz-bath

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INTRODUCTION

The perineal wound that arises as a consequence of an abdominoperineal resection (APR) has long been recognized as a challenging issue. Miles initially proposed a treatment approach for the perineal incision that involved allowing it to heal through secondary intention, leading to the development of a persistent chronic wound over an extended period of time. The contemporary application of chemotherapy and postoperative radiation necessitates a more dependable perineal closure technique in order to facilitate expedited postoperative care. Nevertheless, despite the implementation of primary closure, there is still a notable occurrence of both wound infection (11-16%) and delayed wound healing [1]. The sensation experienced from anal ulcers is highly distressing and consistently exceeds the expected level of discomfort associated with the actual physical damage. The severity of the condition may lead

patients to abstain from defecation for extended periods of time until it becomes unavoidable. This phenomenon results in the solidification of fecal matter, subsequently causing the anoderm to undergo tearing during the process of defecation, thereby establishing a self-perpetuating cycle. The fissures can be categorized as either Acute or Superficial and Chronic fissure in ano. The conservative treatment of superficial fissures has been acknowledged for a considerable period of time. One potential approach for a therapeutic sitz bath involves the utilization of warm water, either with or without the inclusion of boric powder, povidone iodine solution, or potassium permanganate. The aforementioned treatment provides relief from pain and induces relaxation of the internal sphincter for a temporary duration [2]. Postoperative infection frequently necessitates the need for subsequent surgical procedures and extended hospital stays, potentially compromising the overall

success of the surgical intervention. Besides implementing sterile procedures and ensuring patient warming, the administration of prophylactic antibiotics has demonstrated efficacy in reducing the incidence of surgical site infections. Notwithstanding the prevalent utilization of prophylactic antibiotics, surgical site infection persists and poses significant harm to patients. Various wound irrigation solutions, such as soaps, antibiotics, and antiseptics, have been employed in order to mitigate the occurrence of surgical site infection [3,4]. The utilization of povidone-iodine, an antiseptic solution, for wound irrigation has been suggested as a potential method for mitigating infection. However, the effectiveness and associated risks of this approach remain uncertain. Povidone-iodine, also known as Beta-dine, is a solution with antiseptic properties. It is composed of polyvinyl pyrrolidone, water, iodide, and 1% available iodine. This solution exhibits bactericidal efficacy against a wide range of pathogens [5,6]. While there is a substantial body of literature available on the utilization of this substance as a topical antibacterial agent in surgical procedures, its potential as a prophylactic irrigation solution to prevent surgical site infections has received comparatively less attention in research. The historical utilization of silver for therapeutic purposes or as a preventive measure against infection can be traced back to at least 4000 BCE. The medical applications have been extensively documented in the literature during the 17th and 18th centuries. The antimicrobial efficacy of silver has been extensively documented. During the 19th century, silver nitrate was applied externally for the purpose of treating burns, ulcerations, and infected wounds. However, its utilization diminished following World War II and the introduction of antibiotics. Nevertheless, in 1968, Fox reintroduced its application in the form of silver sulfadiazine. The objective of this study is to evaluate and compare the outcomes of perianal surgical wounds when treated with a silver colloidal solution spray versus a povidone iodine sitz-bath.

MATERIALS AND METHODS

A prospective study was conducted in the department of surgery, involving 100 patients who underwent perianal surgery and had an ASA classification of I or II. Patients who were critically ill or had underlying

conditions such as bone osteomyelitis or malignancy were excluded from the study. Prior to the initiation of treatment, the size of the wound was measured in all patients.

Methodology: A total of 100 participants were subjected to random assignment, with half of them being allocated to Group A, where they received a silver colloidal solution spray, and the other half being assigned to Group B, where they underwent a sitz bath twice daily in conjunction with povidone iodine. The assessment of weekly pain score and patient satisfaction score was conducted using visual analogue scales. All patients were monitored in accordance with the standard post-application treatment protocol. The duration of healing and the subsequent period of follow-up were observed. A comprehensive follow-up was conducted on all patients to monitor and document any adverse events that may have occurred. The study found a significant correlation between patient satisfaction and several postoperative complications, including fistula recurrence, difficulty in retaining gas, soiling of undergarments, and unintentional bowel movements.

Statistical analysis: The statistical analysis was conducted using the SPSS (Statistical Package for the Social Sciences) version 25.0. The Pearson correlation test was employed to ascertain the correlation between two continuous variables. The criterion for significance was established as having P values below 0.05, employing a two-tailed test.

RESULTS

The findings of our study indicate that there were no statistically significant disparities observed in terms of age, gender distribution, and the quantity of excised haemorrhoid piles between the two groups. There was no statistically significant difference observed in the average postoperative pain score between the groups ($P = 0.36$). The group that used povidone iodine sitz baths reported a higher satisfaction score compared to the group that used a silver colloidal solution spray. However, this difference did not reach a statistically significant level, as shown in Table 1. The overall outcome of the patients in group A and group B was categorized as "excellent" or "good" in 70% and 80% of cases, "adequate" in 24% and 16% of cases, and "poor" in 6% and 4% of cases, respectively (see Table 2).

Table 1: Basic parameter of groups

	Group A (N=50)		Group B (N=50)		P value
Gender					0.36
Male	32	64	31	62	
Female	18	36	19	38	
Age (yrs)	49.25±4.59		51.66±5.61		0.19
Co-morbidity					0.21
No	35	70	34	68	
Yes	15	30	16	32	
Satisfaction rating scale					0.02

Satisfaction	23	46	24	48	
Dissatisfaction	27	54	26	52	
Post operative pain	7.01±1.22		6.03±1.06		0.36

Table 2: Outcome in between groups

Outcome	Group A (N=50)		Group B (N=50)		P value
Excellent or good	35	70	40	80	>0.05
Adequate	12	24	8	16	
Poor	3	6	2	4	

DISCUSSION

A Sitz or hip bath refers to a therapeutic or hygienic practice involving immersion in warm water. The individual assumes a seated position within the bathing apparatus, wherein a solution of saline or medication is administered, enveloping solely the pelvic region, including the hips and buttocks. The practice of sitz bath is a longstanding European tradition that involves immersing solely the pelvic and abdominal regions in water, while leaving the upper body, arms, legs, and feet outside of the water. The temperature of the water in the tubs can vary, ranging from warm to cold. Additionally, it is possible to utilize one or two tubs for this purpose [8]. The utilization of a warm Sitz bath represents a straightforward and highly efficacious approach to mitigating pain and reducing discomfort that arises from a distressing ailment affecting the pelvic region. Louis Kuhne introduced the concept in the late 19th and early 20th centuries through his detoxification bathing techniques, which encompassed the friction Sitz bath [9]. The effectiveness of Sitz bath should not be underestimated in its ability to alleviate pain, enhance healing, and improve comfort. The utilization of this substance has also been linked to the reduction of inflammation. According to the study conducted by Pravin J Gupta (2010), there were no statistically significant variations observed in terms of age, gender distribution, and the number of excised haemorrhoid piles between the two groups. There was no statistically significant difference observed in the average postoperative pain scores between the groups ($P = 0.36$). Similarly, there were no significant differences observed in analgesic needs between the group that underwent sitz bath and the group that did not undergo sitz bath ($P = 0.22$). The sitz bath group exhibited a higher satisfaction score in comparison to the control group, although this difference did not attain statistical significance. The researchers reached the conclusion that sitz bath does not provide pain relief, promote wound healing, or reduce the need for analgesics. Consequently, there is insufficient evidence to support the recommendation of sitz bath during the post-haemorrhoidectomy period. The study found that the satisfaction score was comparatively higher in the group that used povidone iodine in sitz baths, as opposed to the group that used silver colloidal solution spray. However, it is important to note that this difference did not reach a statistically significant level in our study. In a study conducted by

J. García-Aguilar et al [11], it was observed that patients who experienced fistula recurrence reported a significantly higher rate of dissatisfaction (61 percent) compared to patients with anal incontinence (24 percent). However, the proportion of dissatisfaction attributable to incontinence (84 percent) was found to be greater than that attributed to fistula recurrence (33 percent). There was no statistically significant correlation found between patient satisfaction and variables such as age, gender, history of previous fistula surgery, type of fistula, surgical procedure, time since surgery, or operating surgeon. The overall outcome of the patients in group A and group B was categorized as "excellent" or "good" in 70% and 80% of cases, "adequate" in 24% and 16% of cases, and "poor" in 6% and 4% of cases, respectively (see Table 2). The patient should be provided with comprehensive information regarding the various treatment options, including details about their efficacy, potential complications, and the possibility of reversibility. Subsequently, the surgeon must carefully evaluate the individual patient's circumstances to determine the most suitable treatment approach, ensuring both effectiveness and safety. Finally, the surgeon should present the patient with their expert recommendation based on a thorough assessment.

CONCLUSION

Based on our findings, it can be inferred that the utilization of povidone-iodine in conjunction with sitz bath exhibits potential efficacy in the prevention of surgical site infection, when compared to the application of silver colloidal solution spray. Further research, particularly double-blind randomized controlled trials (RCTs), should be undertaken to ascertain the optimal approach for povidone-iodine irrigation and to identify the specific risks associated with its utilization.

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