



Original Article

Comparison of Efficacy of Conventional Sitz Bath and Sitz Bath Fountain Tub

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ABSTRACT

Background: Anorectal diseases are common and associated with significant pain and hygiene challenges. Sitz baths are routinely used as conservative and postoperative adjuncts, but conventional methods have practical limitations. Automated sitz bath fountain tubs offer continuous warm water flow and improved usability. This study compared the efficacy of conventional sitz baths and sitz bath fountain tubs in patients with anorectal disorders.

Materials and Methods: This hospital-based cross-sectional observational study included 104 patients (18–80 years) with anorectal diseases, allocated into Group C (conventional sitz bath) and Group F (sitz bath fountain tub). Outcomes assessed included postoperative pain, recovery time, infection, ease of use, hygiene, and patient compliance. Statistical analysis was performed using appropriate parametric and non-parametric tests, with $p < 0.05$ considered significant.

Results: Postoperative pain scores were comparable between Group C (4.92 ± 1.19) and Group F (5.27 ± 0.99) ($p = 0.10$), as was recovery time (3.87 ± 1.25 vs. 3.81 ± 1.13 days; $p = 0.80$). Postoperative infection was observed in 6 patients in Group F and none in Group C ($p = 0.0092$). Patient compliance was higher in Group F, with good compliance in 51 patients compared to 42 in Group C ($p < 0.01$). Ease of use was rated as good by 51 patients in Group F and 40 in Group C ($p < 0.01$). Good perianal hygiene was observed in all patients in Group F compared to 35 patients in Group C ($p < 0.01$).

Conclusion: Both sitz bath modalities provide comparable pain relief and recovery outcomes. The sitz bath fountain tub offers superior compliance, ease of use, and hygiene, supporting its role as a patient-friendly alternative to conventional sitz baths. The higher infection rate observed in the fountain tub group appears related to greater surgical complexity rather than the bathing technique itself.

Keywords: Anorectal Disorders, Sitz Bath, Sitz Bath Fountain Tub, Postoperative Care, Perianal Hygiene.

INTRODUCTION

Anorectal diseases account for a substantial proportion of general surgical practice and are frequently associated with significant pain, morbidity, and reduced quality of life. Common conditions such as hemorrhoids, anal fissures, fistula-in-ano, perianal abscesses, and postoperative perineal wounds pose ongoing challenges in clinical management. Despite advances in surgical techniques, effective control of pain, maintenance of hygiene, and promotion of wound healing in the anorectal region remain difficult due to its anatomical characteristics, high bacterial burden, and repeated mechanical stress during defecation. Consequently, optimal local care remains an essential component of both conservative and postoperative treatment strategies [1].

Among conservative and adjunctive therapies, the sitz bath has long been used as a simple, non-pharmacological intervention in the management of anorectal disorders. The procedure involves immersion of the perineal region in warm water and is believed to relieve pain, reduce sphincter spasm, improve local blood flow, and maintain perineal hygiene. These effects contribute to symptom relief, including reduction of pain, burning, and irritation, while facilitating tissue healing through improved perfusion [2].

The use of sitz baths dates back to the mid-nineteenth century and has evolved into a routine medical practice for the management of perineal disorders and postoperative wound care [3]. In contemporary practice, sitz baths continue to be recommended for conditions such as hemorrhoids, anal fissures, and perianal inflammation, and as an adjunct following anorectal procedures including hemorrhoidectomy, fistulectomy, fissurectomy, and lateral internal sphincterotomy. The proposed mechanisms include thermal vasodilation, smooth muscle relaxation, reduction of sphincter spasm, and enhanced local tissue perfusion, which together contribute to symptom control and healing [4].

Despite their widespread acceptance, conventional sitz baths present several practical limitations. The need for manual preparation, maintenance of a seated or squatting posture, difficulty in maintaining constant water temperature, and the requirement for cleaning the basin may reduce convenience and patient compliance, particularly in elderly, postoperative, or mobility-limited individuals [5]. In addition, the use of static water raises concerns regarding hygiene, especially in the postoperative period when perineal wounds are susceptible to infection [6].

Advances in personal hygiene technology have led to the development of automated alternatives such as the sitz bath fountain tub. This device provides a continuous flow of warm water to the perianal region while allowing the patient to remain comfortably seated on a western commode. Controlled temperature, continuous circulation, and ease of use may enhance patient comfort and compliance. The absence of water stagnation may also improve hygiene, while sustained thermal exposure may support pain relief and tissue healing [7][8].

Although sitz baths are routinely prescribed, direct clinical comparisons between conventional sitz baths and automated systems such as fountain tubs are limited, particularly with respect to patient-centered outcomes. The present study was therefore undertaken to compare the efficacy of conventional sitz baths and sitz bath fountain tubs in patients with anorectal disorders, focusing on postoperative pain, recovery, infection rates, ease of use, hygiene, and patient compliance.

MATERIALS AND METHODS

Study Design: This was a hospital-based cross-sectional observational study conducted to compare the efficacy of conventional sitz bath and sitz bath fountain tub in patients with anorectal diseases.

Study Area: The study was carried out in the Department of General Surgery at Santosh Medical College and Hospital, Ghaziabad, Uttar Pradesh.

Study Population: The study population comprised patients with anorectal diseases presenting to the outpatient and inpatient services of the Department of General Surgery.

Inclusion Criteria:

- Patients aged 18–80 years.
- Patients diagnosed with anorectal diseases requiring sitz bath therapy.
- Patients without significant comorbidities.
- Patients willing to provide written informed consent.

Exclusion Criteria:

- Patients younger than 18 years or older than 80 years.
- Patients with colorectal carcinoma.
- Immunocompromised patients.
- Patients unwilling to provide consent.

Sample Size: A total of **104 patients** meeting the inclusion criteria were enrolled in the study.

Sampling Methodology: A purposive sampling technique was employed, where all eligible patients meeting the inclusion criteria during the study period were enrolled.

Data Collection and Procedure:

- Written informed consent was obtained from all participants prior to enrollment.
- A detailed history and clinical examination were performed, and relevant laboratory investigations were conducted if infection was suspected.

- Variables recorded included age, sex, clinical features, laboratory findings, type of procedure, and postoperative outcomes.
- Participants were randomly assigned to either the Conventional Sitz Bath Group or the Sitz Bath Fountain Tub Group.
- In the Conventional Sitz Bath Group, participants performed sitz baths using a shallow basin or bathtub filled with warm water.
- In the Sitz Bath Fountain Tub Group, participants used a sitz bath fountain tub filled with warm water according to the manufacturer's instructions.
- For both groups, the frequency and duration of sitz baths were standardized. Participants were trained on the correct procedure, and adherence was monitored throughout the study.
- Pain and other postoperative outcomes were assessed using the VAS and other predefined clinical parameters.

Data Analysis:

- Data were entered and compiled using Microsoft Excel and analyzed using Stata MP-17 software.
- Continuous variables were expressed as mean \pm standard deviation, while categorical variables were expressed as frequencies and percentages.
- Student's t-test was used to compare continuous variables and Chi-square test was used to compare categorical variables, with p-values <0.05 considered statistically significant.
- Data normalization techniques, including logarithmic and square root transformations, were applied where appropriate to reduce skewness and approximate normal distributions.

Ethical Considerations:

- Ethical approval was obtained from the Institutional Ethics Committee of Santosh Medical College and Hospital prior to commencement of the study.
- The study adhered to the principles of the Declaration of Helsinki.
- Written informed consent was obtained from all participants.
- Patient confidentiality was strictly maintained, and all collected data were anonymised.

RESULTS

The mean age in Group C (Conventional tub) was 42.81 ± 16.13 years, while in Group F (Sitz bath fountain tub) it was 37.83 ± 13.24 years ($p = 0.088$). The mean BMI was 24.99 ± 2.26 kg/m² in Group C and 24.30 ± 2.89 kg/m² in Group F ($p = 0.17$). In Group C, 36 participants were male and 16 were female, whereas in Group F, 40 were male and 12 were female. The difference was not statistically significant (Chi-square = 1.73, $p = 0.18$).

In Group C, 41 participants presented with anal bleeding, 5 with constipation, 5 with discharge per rectum, 14 with mass per rectum, 1 with fever, and 0 with incontinence. In Group F, 22 participants presented with anal bleeding, 6 with constipation, 25 with discharge per rectum, 14 with mass per rectum, 1 with fever, and 0 with incontinence.

The distribution of surgical procedures differed significantly between the two study groups, with conservative management and lateral internal sphincterotomy being more frequent in Group C, while fistulectomy, fissurectomy, stapled hemorrhoidectomy, LIFT, and MIPH were more commonly performed in Group F (Table 1).

Postoperative pain scores and recovery time were comparable between the two groups, with no statistically significant difference observed for either parameter (Table 2).

Postoperative outcomes showed significant differences between the groups. Postoperative infection was observed only in Group F. Patient compliance, ease of usage, and perianal hygiene were significantly better in Group F compared to Group C (Table 3).

Table 1: Distribution of Surgical Procedures in Group C (Conventional Sitz Bath) and Group F (Sitz Bath Fountain Tub). LIS: Lateral Internal Sphincterotomy, LIFT: Ligation of Intersphincteric Fistula Tract, MIPH: Minimally Invasive Procedure for Hemorrhoids.

| Surgical Procedure | Group C (n = 52) | Group F (n = 52) | Chi-square value | p value |
|-------------------------|------------------|------------------|------------------|---------|
| Conservative management | 21 | 4 | 125.321 | <0.01** |
| Fistulectomy | 2 | 15 | | |
| Fissurectomy | 1 | 5 | | |
| Hemorrhoidectomy | 2 | 7 | | |
| LIS | 14 | 5 | | |
| LIFT | 0 | 2 | | |
| Lord's dilatation | 2 | 0 | | |
| Open hemorrhoidectomy | 7 | 2 | | |

| | | | | |
|--------------------------|---|---|--|--|
| Stapled hemorrhoidectomy | 3 | 9 | | |
| MIPH | 0 | 3 | | |

Table 2: Postoperative Pain Scores and Recovery Time of Group C (Conventional tub) and Group F (Sitz bath fountain tub).

| Parameter | Group C | Group F | p value |
|---------------|-------------|-------------|---------|
| VAS scores | 4.92 ± 1.19 | 5.27 ± 0.99 | 0.10 |
| Recovery time | 3.87 ± 1.25 | 3.81 ± 1.13 | 0.80 |

Table 3: Comparison of Postoperative Outcomes Between Group C (Conventional Sitz Bath) and Group F (Sitz Bath Fountain Tub).

| Parameter | Category | Group C (n = 52) | Group F (n = 52) | Chi-square value | p value |
|-------------------------|----------|------------------|------------------|------------------|----------|
| Postoperative infection | Present | 0 | 6 | 6.783 | 0.0092** |
| | Absent | 52 | 46 | | |
| Patient compliance | Good | 42 | 51 | 815.143 | <0.01** |
| | Moderate | 3 | 1 | | |
| | Poor | 7 | 0 | | |
| Ease of usage | Good | 40 | 51 | 815.111 | <0.01** |
| | Moderate | 3 | 1 | | |
| | Poor | 9 | 0 | | |
| Perianal hygiene | Good | 35 | 52 | 25.257 | <0.01** |
| | Moderate | 10 | 0 | | |
| | Poor | 7 | 0 | | |

DISCUSSION

The present hospital-based observational study compared the efficacy of a conventional sitz bath and a sitz bath fountain tub in patients with anorectal diseases, focusing on postoperative pain, recovery, infection rates, compliance, ease of usage, and perianal hygiene. The findings demonstrate that while postoperative pain scores and recovery time were comparable between the two groups, significant differences were observed in postoperative infection rates, patient compliance, ease of usage, and perianal hygiene, favoring the sitz bath fountain tub.

The baseline demographic characteristics of the study population showed no statistically significant differences between the two groups with respect to age, body mass index, or gender distribution, indicating adequate comparability and minimizing demographic confounding. The mean age and BMI were similar across both groups, and a male predominance was observed in both, with no significant difference in gender distribution. These findings are consistent with Hsu et al. (2009) [5], who reported comparable age, sex, and BMI distribution between intervention arms in their randomized trial comparing warm water spray and conventional sitz bath therapy following hemorrhoidectomy. Similar demographic comparability was also reported by Garhwal et al. (2023) [9] and Du et al. (2024) [10], supporting the internal validity of the present comparison by ensuring that outcome differences were primarily related to the intervention rather than baseline population differences.

The pattern of presenting complaints differed between the two groups. Anal bleeding was the most common presenting symptom overall but was more frequently reported in the conventional sitz bath group, whereas discharge per rectum was notably higher in the sitz bath fountain tub group. Constipation, mass per rectum, and fever were observed at similar frequencies across both groups, and incontinence was absent. The higher proportion of discharge per rectum in the fountain tub group suggests a greater representation of fistulous and advanced anorectal pathology in this cohort, which aligns with the observed surgical profile. Similar symptom distributions emphasizing bleeding and pain have been reported by Kumar and Singh (2019) [11] and Wani et al. (2024) [12], although discharge per rectum was less frequent in those studies due to their narrower focus on anal fissure populations. The inclusion of a broader spectrum of anorectal diseases in the present study explains these differences and highlights the heterogeneity of symptom presentation encountered in routine surgical practice.

A significant difference was observed in the distribution of surgical procedures between the two groups. Conservative management and lateral internal sphincterotomy were more common in the conventional sitz bath group, whereas fistulectomy, fissurectomy, stapled hemorrhoidectomy, LIFT, and MIPH were more frequently performed in the sitz bath fountain tub group. This suggests that patients in the fountain tub group generally underwent more complex and invasive procedures, particularly those associated with fistulous disease and advanced hemorrhoids. A similar relationship between disease severity and intervention choice has been described by Rathore (2019) [13], although that study was limited to anal fissures and conservative modalities. The broader surgical spectrum in the present study provides a more comprehensive assessment of sitz bath utility across varying levels of surgical complexity.

Despite this disparity in surgical complexity, postoperative pain scores measured using the visual analogue scale and recovery time were comparable between the two groups. These findings suggest that the sitz bath fountain tub was able to achieve pain control and recovery outcomes similar to the conventional method, even in patients undergoing more invasive procedures. Comparable pain outcomes have been reported by Hsu et al. (2009) [5] and Kwon et al. (2025) [14], who found no significant differences in postoperative pain between traditional sitz baths and alternative water-based cleansing methods following hemorrhoidectomy. Similarly, Randhawa et al. (2018) [15] reported no significant differences in pain or recovery time between hot sitz baths and slow cold jet cleansing, reinforcing the observation that different water-based perineal care modalities offer comparable analgesic benefits.

Postoperative infection rates differed significantly between the groups, with infections observed only in the sitz bath fountain tub group. However, this finding must be interpreted in the context of surgical complexity and disease profile. The higher prevalence of fistulectomy and advanced procedures in the fountain tub group inherently increases the risk of postoperative infection, as fistulous disease is associated with chronic sepsis and contaminated surgical fields. Garhwal et al. (2023) [9] and Kwon et al. (2025) [14] reported low and comparable infection rates across water-based interventions when surgical procedures were matched, suggesting that the cleansing modality itself does not independently increase infection risk. The absence of infection in the conventional sitz bath group in the present study likely reflects the higher proportion of conservative and less invasive procedures rather than superior antimicrobial efficacy of the conventional method.

Marked differences were observed in patient compliance, ease of usage, and perianal hygiene, all of which were significantly better in the sitz bath fountain tub group. High compliance and ease of use are critical determinants of effective postoperative care, particularly in anorectal surgery where regular perineal cleansing is essential. The fountain tub group demonstrated near-universal good compliance and ease of use, whereas a substantial proportion of patients in the conventional group reported moderate to poor experiences. These findings closely mirror the observations of Hsu et al. (2009) [5] and Randhawa et al. (2018) [15], who reported greater convenience and patient satisfaction with spray or jet-based cleansing methods compared to traditional sitz baths, despite similar clinical outcomes.

Perianal hygiene outcomes were significantly superior in the sitz bath fountain tub group, with all patients achieving good hygiene. Conventional sitz baths rely on passive soaking, which may limit effective cleansing of the complex perianal anatomy. In contrast, the dynamic water flow provided by the fountain tub likely facilitates more thorough removal of debris and secretions, contributing to improved hygiene. Hsu et al. (2009) [5] reported comparable hygiene scores between conventional and spray methods, but the categorical assessment used in the present study may have allowed clearer differentiation. The improved hygiene observed aligns with the concept that active irrigation can enhance mechanical cleansing, particularly after procedures associated with discharge.

Overall, the findings of this study demonstrate that while both conventional sitz baths and sitz bath fountain tubs provide comparable postoperative pain relief and recovery, the fountain tub offers significant advantages in terms of patient compliance, ease of usage, and perianal hygiene. The higher infection rate observed in the fountain tub group appears to be influenced by greater surgical complexity rather than the bathing modality itself. These results support the use of sitz bath fountain tubs as an effective and patient-friendly alternative to conventional sitz baths in the postoperative management of anorectal diseases, particularly in patients undergoing more complex surgical interventions.

CONCLUSION

This study demonstrates that both conventional sitz baths and sitz bath fountain tubs provide comparable postoperative pain relief and recovery in patients with anorectal disorders; however, the sitz bath fountain tub offers clear advantages in terms of patient compliance, ease of use, and perianal hygiene. The higher incidence of postoperative infection observed in the fountain tub group appears to be related to greater surgical complexity rather than the bathing modality itself. Interpretation of these findings is limited by the non-randomized, single-centre design, unequal procedural distribution, short-term outcome assessment, and reliance on subjective measures. Future multicentre randomized controlled trials with procedure-specific and long-term outcome evaluation, along with cost-effectiveness analyses, are warranted to better define the role of sitz bath fountain tubs in routine anorectal care.

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