

Original Research Article

Incidence of fistula-in-ano after drainage of perianal abscess: a retrospective comparison of drainage alone versus drainage with primary fistula treatment

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Received: 20 May 2026

Revised: 16 June 2026

Accepted: 18 July 2026

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ABSTRACT

Background: Perianal abscess is a common anorectal surgical emergency, most often resulting from cryptoglandular infection. While incision and drainage (I&D) is the standard treatment, persistence of the underlying septic focus may lead to recurrent abscess or fistula-in-ano. The benefit of performing fistulotomy or fistulectomy at the time of abscess drainage remains debated because of concerns regarding sphincter injury and functional outcomes.

Methods: This retrospective comparative study included adult patients who underwent surgery for perianal or ischiorectal abscess between June 2018 and April 2023 at Sagar Hospital and Shanthi Hospital and Research Centre, Bengaluru. Patients were treated with either I&D alone (Group A) or I&D with concomitant fistulotomy/fistulectomy (Group B). Outcomes were assessed after a minimum follow-up of one year using a structured telephonic questionnaire and review of available clinical records.

Results: Of 136 patients treated during the study period, 15 were lost to follow-up. The final analysis included 121 patients: 49 in Group A and 72 in Group B. Abscess recurrence occurred in 20.4% of Group A patients compared with 4.2% in Group B ($p=0.0065$; RR 4.9, 95% CI 1.4–17.0). Fistula-in-ano developed in 6.1% and 2.7% of patients, respectively, with no statistically significant difference ($p=0.394$; RR 2.2, 95% CI 0.4–12.5).

Conclusions: Concomitant fistulotomy or fistulectomy at the time of abscess drainage was associated with significantly lower abscess recurrence. A selective approach to definitive fistula treatment during the index procedure may be beneficial in carefully selected patients with identifiable fistulous pathology.

Keywords: Fistula-in-ano, Fistulectomy, Fistulotomy, Incision and drainage, Perianal abscess

INTRODUCTION

Perianal abscess is a common anorectal emergency that most often arises from infection of the anal glands according to the cryptoglandular theory. Obstruction and infection of these glands may result in suppuration within the intersphincteric plane with subsequent extension into adjacent spaces, producing a spectrum of anorectal abscesses.¹ Perianal abscess and fistula-in-ano are considered different manifestations of the same disease process. While I&D effectively addresses the acute infective component, persistence of the infected anal

gland or epithelialized tract may result in fistula formation.

Several studies have reported fistula-in-ano following simple abscess drainage in a significant proportion of patients, with incidence rates ranging from 26% to 50%.²⁻⁴ Oliver et al demonstrated that approximately one-third of patients developed a fistula during follow-up after incision and drainage of perianal abscess.² Similarly, Hasan et al reported fistula formation in nearly 30% of cases managed with drainage alone, highlighting the limitation of this approach in preventing chronic disease.³

To reduce the incidence of fistula-in-ano, some authors have advocated performing a primary fistulotomy or fistulectomy at the time of abscess drainage, provided a fistulous tract or internal opening can be clearly identified. Breen et al reported a significantly lower incidence of postoperative fistula in patients undergoing incision and drainage combined with fistulotomy compared to drainage alone, without a corresponding increase in postoperative incontinence.⁴

However, the role of definitive fistula surgery during the acute phase of perianal abscess remains controversial due to concerns regarding sphincter injury, incontinence and difficulty in identifying the fistulous tract in the presence of active infection. Hence, further comparative studies are required to determine the optimal management strategy.

The objective of the present study was to assess the incidence of fistula-in-ano following perianal abscess treated by incision and drainage alone versus incision and drainage combined with fistulectomy or fistulotomy.

METHODS

Study design and setting

This retrospective comparative study was conducted in the Department of General Surgery at Sagar Hospital and Shanthi Hospital and Research Centre, Bengaluru. The study period extended from June 2018 to April 2023.

Study population

Adult patients older than 18 years who underwent surgery for perianal abscess or ischiorectal abscess and had a minimum follow-up duration of one year were eligible for inclusion. Patients were excluded if they had a history of previous fistula-in-ano or perianal surgery, tuberculosis, inflammatory bowel disease, prior pelvic radiation, anorectal or pelvic malignancy, refusal to participate or loss to follow-up.

Treatment groups

Patients were categorized into two groups according to the index procedure performed. Group A included patients who underwent incision and drainage alone. Group B included patients who underwent incision and drainage with concomitant fistulotomy or fistulectomy. The decision to perform concomitant fistulotomy or fistulectomy was made intraoperatively by the operating surgeon when a fistulous tract or internal opening could be confidently identified and when definitive treatment was considered safe.

Data collection and follow-up

After a minimum follow-up period of one year, patients were contacted by structured telephonic interview using a predesigned questionnaire with standardized response

options. These responses were collated with available operative details and clinical records. Data were initially entered into Google Forms and then transferred for analysis.

Outcomes

The primary outcome was recurrence of perianal abscess during follow-up. The secondary outcome was fistula-in-ano detected during follow-up. Additional descriptive variables included sex distribution, abscess type and intraoperative identification of an internal opening.

Statistical analysis

Data were analysed using Statistical Package for the Social Sciences (SPSS) software. Categorical variables were expressed as frequencies and percentages. Comparisons between Group A and Group B were performed using the Chi-square test or Fisher's exact test, as appropriate. Relative risks with 95% confidence intervals were calculated. A p value less than 0.05 was considered statistically significant.

Ethical considerations

As this observational study involved a retrospective analysis of existing clinical data and follow-up information, with no additional patient intervention and with all patient identifiers anonymized, formal approval from the institutional ethics committee was not required.

RESULTS

A total of 136 patients underwent surgical management for perianal and ischiorectal abscesses, of whom 15 were lost to follow-up. A total of 121 patients were included in the analysis, comprising 90 males (74.4%) and 31 females (25.6%). Of these, 49 patients who underwent incision and drainage alone were categorized as Group A, while 72 patients who underwent incision and drainage with concomitant fistulectomy or fistulotomy were categorized as Group B. The mean age of the study population was 38.5 ± 10.6 years, with comparable ages between Group A (39.2 ± 11.1 years) and Group B (38.1 ± 10.4 years) ($p=0.578$).

Perianal abscess was the most common clinical presentation, occurring in 91 patients (75.2%), followed by ischiorectal abscess in 29 patients (24.0%). A combined perianal and ischiorectal abscess was observed in 1 patient (0.8%). The distribution of abscess types was comparable between the two groups ($p=0.950$). Comorbid conditions included diabetes mellitus in 41 patients (33.9%), hypertension in 26 patients (21.5%), bronchial asthma in 5 patients (4.1%) and ischemic heart disease in 3 patients (2.5%), with no significant differences between the groups (Table 1). An identifiable internal opening was noted intra-operatively in 57 of 91 patients (62.6%) with perianal abscess and in 15 of 29 patients (51.7%)

with ischiorectal abscess. The patient with combined perianal and ischiorectal abscess did not demonstrate an internal opening at surgery. Perianal abscess recurrence was observed in 13 patients (10.7%) overall. Recurrence was significantly higher in Group A, occurring in 10 of 49 patients (20.4%), compared to 3 of 72 patients (4.2%) in Group B. This difference was statistically significant (Fisher's exact test, $p=0.0065$), with a relative risk of 4.9

(95% CI 1.4-17.0) for recurrence in Group A compared with Group B (Table 2). Fistula-in-ano during follow-up was documented in 5 of 121 patients (4.1%). The rate was 6.1% (3/49) in Group A and 2.7% (2/72) in Group B. This difference was not statistically significant ($p=0.394$) and the relative risk was 2.2 (95% CI 0.4-12.5). No postoperative complications were reported in either group (Table 3).

Table 1: Demographic and clinical characteristic features of study population.

Characteristics	Group A	Group B	Total	P value
Age (in years) mean$\pm$SD	39.2 $\pm$ 11.1	38.1 $\pm$ 10.4	38.5 $\pm$ 10.6	0.578
Sex				
Male	36 (73.5%)	54 (75.0%)	90 (74.4%)	0.854
Female	13 (26.5%)	18 (25.0%)	31 (25.6%)	
Diagnosis				
Perianal abscess	37 (75.5%)	54 (75.0%)	91 (75.2%)	0.950
Ischiorectal abscess	12 (24.5%)	17 (23.6%)	29 (24.0%)	
Combined	0 (0.0%)	1 (1.4%)	1 (0.8%)	
Comorbidities				
Hypertension	11 (22.4%)	15 (20.8%)	26 (21.5%)	0.832
Diabetes Mellitus	16 (32.7%)	25 (34.7%)	41 (33.9%)	0.815
Bronchial asthma	3 (6.1%)	2 (2.8%)	5 (4.1%)	0.394
Ischemic heart disease	2 (4.1%)	1 (1.4%)	3 (2.5%)	0.565

Table 2: Distribution of patients and perianal abscess recurrence.

Group	Patients (%)	Recurrence (%)	P value
Group A (Incision and drainage)	49 (40.5)	10 (20.4)	0.0065
Group B (Incision and drainage+fistulectomy/fistulotomy)	72 (59.5)	3 (4.2)	
Total	121 (100)	13 (10.7)	

Table 3: Fistula-in-ano occurrence/recurrence.

Group	Patients (%)	Fistula-in-ano (%)	P value
Group A (Incision and drainage)	49 (40.5)	3 (6.1)	0.394
Group B (Incision and drainage+fistulectomy/fistulotomy)	72 (59.5)	2 (2.7)	
Total	121 (100)	5 (4.1)	

DISCUSSION

In the present study, authors observed a significantly lower incidence of perianal abscess recurrence in patients managed with incision and drainage combined with fistulectomy/fistulotomy (Group B: 4.2%) compared with those treated with incision and drainage alone (Group A: 20.4%, $p=0.0065$). Although the occurrence of fistula-in-ano was also lower in Group B (2.7% vs. 6.1%), this difference did not reach statistical significance ($p=0.394$). These findings support the growing body of evidence suggesting that simultaneous treatment of the underlying fistulous tract at the time of abscess drainage reduces disease recurrence. A prospective randomized trial by Schouten and van Vroonhoven demonstrated a markedly lower combined recurrence or persistence rate in patients undergoing primary fistulectomy at the time of abscess drainage (2.9%) compared with those treated with

drainage alone (40.6%, $p<0.0003$), highlighting the substantial long-term benefit of definitive fistula management.⁵ However, the authors also reported a higher incidence of transient anal functional disturbances in the fistulectomy group, underscoring the importance of careful patient selection.

Further support for combined treatment comes from the Cochrane systematic review by Malik et al which synthesized data from six randomized controlled trials involving 479 patients.⁶ The meta-analysis demonstrated a significant reduction in recurrent or persistent abscess or fistula requiring repeat surgery when fistula treatment was performed concurrently with abscess drainage (risk ratio 0.13; 95% CI 0.07–0.24), corresponding to an approximate 87% reduction in recurrence. These pooled results are concordant with the significantly lower recurrence rates observed in Group B in the study.

Similarly, Oliver et al in their randomized clinical trial, observed that the recurrence rate was strongly related to the surgical technique employed, with recurrence occurring in 29% of patients treated with incision and drainage alone, compared to only 5% in patients who underwent concomitant fistula tract treatment.² These findings closely parallel the results of the present study, where recurrence of perianal abscess was significantly higher in Group A (incision and drainage alone) compared to Group B (incision and drainage with fistulectomy/fistulotomy). Additional randomized trials have reinforced these findings. Tang et al showed that drainage combined with fistulotomy in patients with an identifiable internal opening resulted in significantly fewer recurrences and repeat procedures than drainage alone.⁷ Similarly, Ho et al reported improved outcomes with primary fistulotomy performed at the index procedure, further supporting definitive treatment in selected cases.⁸

Taken together, the findings of the present study are consistent with higher-level evidence favouring combined incision and drainage with fistulectomy or fistulotomy in appropriately selected patients. The lack of a statistically significant difference in fistula-in-ano recurrence may reflect the relatively low event rate and sample size. Larger, multicentre studies with standardized diagnostic criteria and longer follow-up are warranted to further clarify this outcome.

Limitations

This study is limited by its retrospective design, with inherent risks of selection bias and dependence on the accuracy of recorded data and patient-reported outcomes obtained through telephonic follow-up. The decision to perform concomitant fistulectomy or fistulotomy was individualized based on intraoperative findings and surgeon judgment, introducing potential treatment allocation bias. Furthermore, the relatively small sample size may have limited statistical power.

CONCLUSION

The present study demonstrates that incision and drainage combined with fistulectomy or fistulotomy was associated with significantly lower abscess recurrence when compared with incision and drainage alone. Although a lower incidence of fistula-in-ano was observed in the combined treatment group, this difference did not reach statistical significance. These findings

support a selective approach to definitive fistula management at the time of abscess drainage in patients with clearly identifiable fistulous tracts, while emphasizing the need for careful patient selection to minimize functional morbidity. Prospective, adequately powered studies are required to establish standardized treatment protocols.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Kumar MP, Ravishankar HR, Niranjan P. Incidence of fistula-in-ano after drainage of perianal abscess: a retrospective comparison of drainage alone versus drainage with primary fistula treatment. *Int Surg J* 2026;13:1386-9.