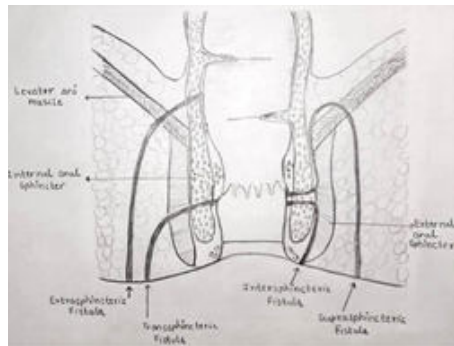
	<div>ORIGINAL RESEARCH PAPER</div> <div>A COMPREHENSIVE RETROSPECTIVE STUDY ON THE ROLE OF VARIOUS MANAGEMENT MODALITIES FOR FISTULA IN ANO WITH AN ANALYSIS ON FOLLOW UP OUTCOMES</div>	<div>Surgery</div> <div>KEY WORDS:</div>
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Dr M. K. Tripathy	Faculty Department Of General Surgery, Hitech Medical College And Hospital,Bhubaneswar
Dr Somdeep Pattanaik	PG Resident Department Of General Surgery, Hitech Medical College And Hospital,Bhubaneswar
Dr Priyanka Tripathy	PG Resident Department Of General Surgery, Hitech Medical College And Hospital,Bhubaneswar
Dr Laxmikant Sahoo*	PG Resident Department Of General Surgery, Hitech Medical College And Hospital,Bhubaneswar *Corresponding Author

ABSTRACT	<p><b>Background:</b> Fistula-in-ano is an abnormal connection between the anal canal and perineal skin. It is a common cause of proctological surgery, impacting anorectal function and quality of life. Management principles include closing the internal opening, draining infection, and eradicating the fistulous tract while preserving sphincter function. This study compares perioperative complications, hospital stay, and outcomes of various treatments (fistulotomy, fistulectomy, setons, LIFT procedure, etc.) for fistula-in-ano. Preoperative radio-imaging evaluations provide valuable insights into fistula anatomy, guiding treatment planning. <b>Aim Of The Study:</b> The study aims to evaluate and compare various parameters in patients with Fistula-in-ano. These parameters include patient demographics, radiologic features and characteristics of the fistulous tract such as site, size, and location. Additionally, preoperative hematologic parameters and postoperative outcomes, including incontinence, pain, wound healing, etc. will be analyzed after various surgeries, such as fistulectomy, fistulotomy, LIFT, etc. The study will also investigate treatment strategies for postoperative complications, the impact of comorbidities on fistula recurrence, and the histopathological features of excised fistulous tracts. <b>Material And Methods:</b> The study was conducted at the Department of General Surgery, Hi-Tech Medical College and Hospital, Bhubaneswar, from January 1, 2023, to June 30, 2024. This retrospective descriptive analysis included 138 patients admitted for fistula-in-ano treatment, selected from a total of 163 patients based on inclusion and exclusion criteria. Inclusion criteria consisted of patients with fistula-in-ano, those consenting to surgical management, and both genders with various comorbidities. Exclusion criteria included high-lying fistulas, complex fistulas with additional anal pathologies, OPD treatments, outside patients, and patients with recurrent fistula-in-ano or loss of follow-up. <b>Results:</b> The study's results showed a male predominance (68%) with most patients aged 30-40 years (42%). MRI pelvis with contrast was the primary radiological investigation (93%). Intersphincteric fistulas were most common (57%), followed by transsphincteric fistulas (23%). Hematological abnormalities, such as deranged LFT and RFT, impacted surgical outcomes. Fistulectomy (52%) and fistulotomy (32%) were the most common procedures. Postoperative complications included perianal pain (47%) and temporary fecal incontinence (3%). Conservative management and comorbidities like T2DM (42%) and anemia (7%) were noted. Histopathological examination revealed non-specific inflammation (87%) and tubercular origin (5%). Wound healing by secondary intention occurred in 87% of cases.</p>
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<p><b>INTRODUCTION:</b></p> <p>Fistula-in-ano is an abnormal and potentially debilitating communication between the rectum or anal canal and the perineal skin through a complex tract. It is one of the most prevalent and distressing causes of proctological surgery, and can have a profound impact on patients' anorectal function, quality of life, and overall well-being. The condition can lead to chronic pain, discomfort, and fecal incontinence, significantly affecting patients' daily activities and social interactions.</p>	<p>The main principles of management of anal fistula are multifaceted and involve the careful closure of the internal opening of the fistula tract, effective drainage of infection or necrotic tissue, and thorough eradication of the fistulous tract with meticulous preservation of sphincter function. Achieving these objectives requires a comprehensive understanding of the fistula's anatomy and a tailored treatment approach.</p> <p>The primary objectives of this study were to conduct a comprehensive comparison of the various aspects of fistula-in-ano treatment, including perioperative complications, mean hospital stay, and postoperative outcomes. The study aimed to evaluate the efficacy and safety of various treatment modalities, such as fistulotomy, fistulectomy, setons, LIFT procedure, and other surgical interventions.</p> <p>Preoperative evaluation of fistula-in-ano using advanced radio-imaging techniques, such as MRI and CT scans, provides a valuable and handy insight into the fistula's anatomy. This information enables healthcare providers to plan the most appropriate treatment strategy, taking into account the individual patient's needs and circumstances. By leveraging these imaging modalities, clinicians can optimize treatment outcomes, reduce complications, and improve patient satisfaction.</p>
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The present study aims to provide a comprehensive evaluation and comparison of various parameters related to Fistula-in-ano patients. The primary objectives of this study are to assess and compare the following parameters:

- The demographics of all patients studied, including age and sex in order to identify potential trends and patterns.
- A comparison of the various radiologic features present in Fistula-in-ano patients, including the presence of abscesses, fistulous tracts, and other associated abnormalities.
- A detailed analysis of the site, size, location, and other parameters of the Fistulous tract, including its relationship with surrounding anatomical structures.
- A comparison of the various hematologic parameters recorded preoperatively before fistula surgeries, including complete blood counts, electrolyte levels, and other relevant laboratory tests.
- A comparison of the aforementioned features with individuals following various surgeries like fistulectomy, fistulotomy, LIFT, Mucosal advancement flap, setons, and other surgical interventions, in order to evaluate the effectiveness of each treatment modality.
- The parameters that would be postoperatively studied in the patients, including incontinence, perianal pain, cord-like sensation, and other relevant symptoms, in order to assess the impact of surgery on patient outcomes.
- Various treatment strategies adopted to overcome the complications following fistula-in-ano surgeries, including medical management, surgical interventions, and other therapeutic approaches.
- An analysis of the effect of various co-morbidities on the recurrence of fistula, including diabetes, hypertension, and other relevant medical conditions.
- An analysis of the histopathological examination of the excised fistulous tract, including the presence of inflammatory cells, fibrosis, and other relevant histological features.
- An analysis of wound healing during follow-up visits, including the assessment of wound closure, tissue regeneration, and other relevant parameters

## MATERIAL AND METHODS:

The present study was conducted at the Department of General Surgery, Hi-Tech Medical College and Hospital, Bhubaneswar, a renowned tertiary care center. The study period spanned from 1st January 2023 to 30th June 2024, during which a total of 163 patients were admitted under the author for fistula-in-ano treatment.

A retrospective descriptive analysis was employed as the study design, which involved a thorough review of the medical records of patients who underwent treatment for fistula-in-ano during the specified study period. The sample size consisted of around 138 patients who were carefully selected for the study based on the predefined inclusion and exclusion criteria.

## The Inclusion Criteria For The Study Were As Follows:

- All patients admitted under the author for fistula-in-ano management were considered eligible for the study.
- Patients who provided informed consent for surgical management of their condition were included in the study.
- Both male and female patients, as well as those with various co-morbidities, were included in the study to ensure a diverse and representative sample.

## On The Other Hand, The Exclusion Criteria For The Study Were:

- Patients with high-lying fistulas that required staging procedures were excluded from the study due to the complexity of their condition.
- Complex fistulas with additional anal pathologies, such as fissures, hemorrhoids, rectal cancer, perianal abscesses,

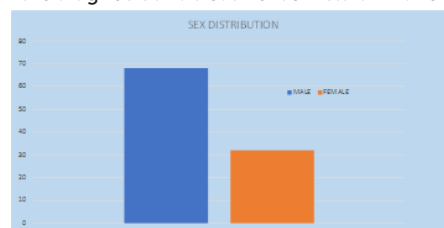
and other conditions, were excluded from the study to avoid confounding variables.

- Patients who received treatment for fistula-in-ano on an outpatient basis, as well as those who were treated outside the hospital, were excluded from the study.
- Patients who experienced recurrent fistula-in-ano and those who were lost to follow-up after undergoing surgery were also excluded from the study to ensure the accuracy and reliability of the results.

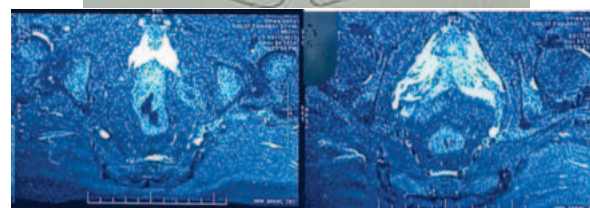
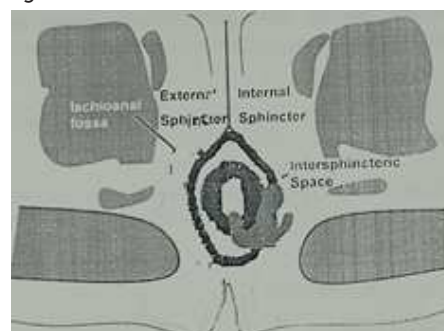
## RESULTS:

### The Study Yielded The Following Results:

1. Out of the total 138 patients, 94 were male (68%), and 44 were female (32%). The most commonly affected age group was 30 to 40 years, with 58 patients (42%) falling within this range, followed closely by the 40-50 years age group, which accounted for 36 patients (26%). This demographic distribution highlights the importance of considering age as a factor in the diagnosis and treatment of fistula-in-ano.

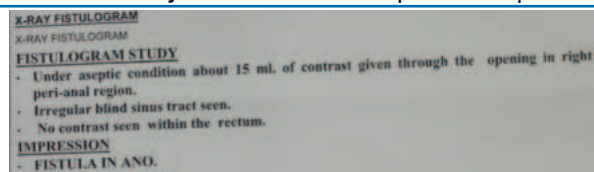


2. Radiological investigations played a crucial role in the diagnosis and management of fistula-in-ano. The most commonly performed radiological investigation was MRI pelvis with contrast, which was conducted in 128 patients (93%), followed by X-ray fistulogram, which was performed in 52 patients (38%). Endorectal ultrasound was also done in 4 cases. These imaging modalities enabled clinicians to accurately diagnose and characterize the fistula, thereby informing treatment decisions.

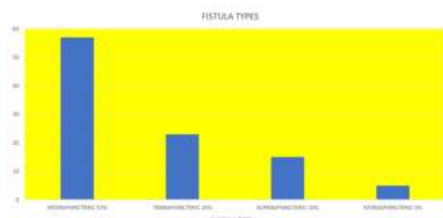


Mri Fistulogram Showing Transphincteric Fistula

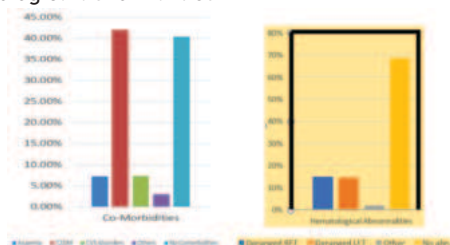




3. According to Parks classification, the most common type of fistula was intersphincteric, which accounted for 79 patients (57%), followed by transsphincteric fistulas, which affected 32 patients (23%). The size of the fistulous tract ranged from 7mm to 53mm, as determined by MRI findings. This variability in fistula size and type underscores the need for individualized treatment approaches.



4. Hematological abnormalities were noted in a subset of patients, which impacted surgical outcomes. Specifically, 21 patients (15%) exhibited deranged liver function tests (LFT), while 10 patients (14.5%) had deranged renal function tests (RFT). These findings highlight the importance of preoperative laboratory testing to identify potential hematological abnormalities.



5. Various comorbidities were present among the study population, including type 2 diabetes mellitus (T2DM), which affected 58 patients (42%), and anemia, which was diagnosed in 10 patients (7%). These comorbidities were taken into account when developing treatment plans and managing postoperative care like strict glycemic control, correction of anemia, etc.

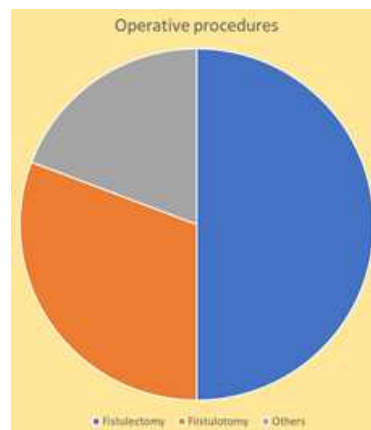
6. Postoperative complications were assessed, and the most common complaint among patients was perianal pain, which affected 65 patients (47%). Temporary fecal incontinence was a rare complication, observed in only 4 cases (3%). These findings emphasize the need for effective postoperative pain management and bowel care strategies.

7. Conservative management strategies were employed postoperatively to promote wound healing and prevent complications. Sitz baths were prescribed for 127 patients (92%), while local anesthetic with antibiotic application was used in 120 patients (87%). Laxatives were also administered to 86 patients (62%) to prevent constipation and promote bowel regularity.



Sitz Bath

8. The most commonly performed surgical procedure was fistulectomy, which was conducted in 72 patients (52%), followed by fistulotomy, which was performed in 44 patients (32%). Other procedures like ERAF (Endorectal Advancement Flap), Laser application, LIFT (Ligation of Intersphincteric Fistula Tract, etc. done in very minor percentage of patients (16%). The choice of surgical procedure depended on various factors, including the size and location of the fistula, as well as the patient's overall health status.



9. Histopathological examination of the fistulous tract was conducted, and the results showed non-specific inflammation in 120 patients (87%), followed by tubercular origin in 7 patients (5%). These findings highlight the importance of histopathological examination in determining the underlying cause of the fistula.

10. Wound healing was assessed postoperatively, and the results showed that 120 patients (87%) exhibited wound healing by secondary intention. In a small subset of patients (n=6, 4%), collagen powder dressing was used to promote wound healing. These findings emphasize the importance of effective wound care strategies in promoting postoperative recovery.

## CONCLUSION:

This study, although limited to a small group of fistula-in-ano cases with a moderate follow-up period, provides valuable insights into the overall management of fistula-in-ano. Notably, the study underscores the importance of various treatment modalities, highlighting the need for a comprehensive approach to managing this complex condition. The findings of this study are largely consistent with previously available literature, reinforcing the validity of the results.

Interestingly, the study reveals that MRI pelvis with contrast was the most commonly used investigation modality, deviating from the conventional line of investigation, which typically involves X-ray fistulogram. However, the MRI reports provided an accurate understanding of the underlying pathology, enabling healthcare providers to develop appropriate management strategies. This finding suggests that MRI pelvis with contrast may be a valuable diagnostic tool in the evaluation of fistula-in-ano.

In our clinical setup, fistulectomy emerged as the most commonly performed surgical procedure, yielding highly satisfactory outcomes in patients. This finding highlights the importance of surgical intervention in the management of fistula-in-ano. However, the study also reveals that various comorbidities, such as diabetes, anemia, and hypoproteinemia, can significantly delay the healing process, prolong hospital stays, and increase the risk of complications. Therefore, addressing these underlying comorbidities is crucial for achieving a holistic management approach.

The histopathological examination reports obtained postoperatively showed that nonspecific inflammation was the most common causative pathogenesis. This finding is consistent with previous studies, which have also identified inflammation as a key factor in the development of fistula-in-ano.

Encouragingly, the study found that complete wound healing was observed in the majority of cases during long-term follow-up visits. This finding suggests that with appropriate management and follow-up care, patients with fistula-in-ano can achieve favorable outcomes and improved quality of life.

## REFERENCES

1. Long-term outcome of anal fistula – A retrospective study Christos Andreu 1\*, Jasmin Zeindler 1, Daniel oertli 3 & Heidi Mistelis
2. The treatment of anal fistula: second ACPGBI Position Statement– 2018 G. Williams\*, A. Williams†, P. Tozer‡, R. Phillips‡, A. Ahmad\$, D. Jayne¶ and C. Maxwell-Armstrong\*
3. endorectal flap advancement with fistulectomy for high fistula
4. fistula pathogenesis
5. Surgery for fistula-in-ano in a specialist colorectal unit: a critical appraisal Pier Paolo Sileril, Federica Cadeddu 1\*, Stefano D'Ugo 1, Luanna Franceschilli 1, Giovanna Del Vecchio Blanco 3, Elisabetta De Luca 1, Emma Calabrese 3, Sara Mara Capperucci 1, Valeria Fiaschetti 2, Giovanni Milioto 1 and Achille Lucio Guaspari
6. Simple fistula-in-ano: is it all simple? A systematic review F. Lital 1 □ A. Parello 1 □ L. Ferri 1 □ N. O. Torrecilla 2 □ A. A. Marra 1 □ R. Orefice 1 □ V. De Simone 1 □ P. Campennil □ M. Goglia 1 □ C. Ratto 1,3
7. Ayurvedic Management of Fistula in Ano: A Systematic Review Protocol Pratap KM Shankar 1, GN Sree Deepthi 2, KS Rohit 3, GK Swamy 4
8. Surgical management outcome in Fistula-in-ano: A cross-sectional study in Ethiopia Gosa Bejiga a a,\*, Abebe Adilo b, Endris Genemo b
9. Recent Advances in the Understanding and Management of Anal Fistula from India Vipul D. Yagnik 1 □ Sandeep Kumar 2 □ Anshul Thakur 3 □ Kaushik Bhattacharya 4 □ Sushil Dawka 5 □ Pankaj Garg 3
10. Optimum management for complex anal fistula: A network meta-analysis of randomized controlled trials Warsinggih a a,\*, Citra Aryanti a, Muhammad Faruk b Division of Digestive, Department of Surgery, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia b Department of Surgery, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia