



Role of MR Fistulogram in Evaluating Anorectal Fistula and Its Surgical Correlation

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Date of Submission: 01-02-2025

Date of Acceptance: 10-02-2025

Aims and Objectives

- To assess the effectiveness of MR fistulography in the preoperative evaluation of anorectal fistulas.
- To determine the location of fistulous tracts, internal openings, and their relation to the anal sphincter complex.
- To identify secondary tracts and complications such as horseshoe tracts and abscesses and classify the fistulas using the St. James University Hospital Classification.
- To compare MRI findings with surgical outcomes.

- Patients of any age and gender suspected of having an anorectal fistula and referred for MRI.

Exclusion Criteria

- Patients unwilling to provide consent.
- Patients with metallic implants, pacemakers, or aneurysm clips.
- Patients with claustrophobia.

Study Duration

August 1, 2023 – July 31, 2024

Sample Size

64 patients

I. INTRODUCTION AND BACKGROUND

An anal fistula is an abnormal tract connecting the anal canal to the skin, usually resulting from infection or inflammation.

Etiology

- Obstruction of anal glands (Cryptoglandular theory)
- Crohn's disease/Inflammatory Bowel Disease (IBD)
- Tuberculosis
- Post-radiation effects
- Anal carcinoma
- Postoperative complications

Materials and Methods

Study Center

Hi-Tech Medical College & Hospital, Bhubaneswar

Study Design

Prospective study

Methodology

Patients presenting with clinical symptoms suggestive of anorectal fistula were referred for MR fistulography. Eligible participants were selected based on inclusion and exclusion criteria.

Imaging Procedure

- MRI was performed using a 1.5 Tesla GE Signa MRI scanner with body coil.
- Sequences included oblique axial & coronal T1W NFSE, T2W NFSE, and T2W FSE.
- Additional sequences: Coronal and axial STIR, contrast-enhanced T1W FSE.
- Gadolinium contrast (0.1 mmol/kg) was administered at 1 ml/sec.

Perianal Anatomy

The perianal region forms the terminal part of the lower gastrointestinal tract and connects the rectum to the anus. It is situated below the pelvic diaphragm in the anal triangle, bordered by the right and left ischioanal fossae.

- Length: 4 cm
- Segments: Upper and lower, divided by the pectinate line.

Sphincter Anatomy & MRI Technique

MRI provides a detailed anatomical view of the anal sphincter complex, levator ani muscles, and ischioanal fossa.

MRI Findings in Anorectal Fistulas

- T1-weighted images offer a clear view of the sphincter complex and surrounding muscles.

Inclusion Criteria



- T2-weighted images help distinguish hyperintense fluid-filled fistulous tracts from hypointense fibrous walls.
- Active fistulous tracts and abscesses appear hyperintense, while sphincters show hypointensity in T2-weighted sequences.
- Post-contrast T1-weighted images highlight fistulous tracts with intense enhancement.

St. James University Hospital Classification of Fistulas

1. Grade I: Simple linear intersphincteric fistula
2. Grade II: Intersphincteric fistula with abscess or secondary tract
3. Grade III: Transsphincteric fistula
4. Grade IV: Transsphincteric fistula with abscess or secondary tract
5. Grade V: Supralevator and translevator fistula

Age Distribution

Age Group (Years)	No. of Patients	Percentage (%)
< 30	10	15.6
31 - 40	20	31.3
41 - 50	18	28.1
51 - 60	10	15.6
> 60	6	9.4

Gender Distribution

Gender	No. of Patients	Percentage (%)
Male	40	62.5
Female	24	37.5

Fistula Openings

Type of Opening	No. of Patients	Percentage (%)
Single Internal Opening	50	78.1
Multiple Internal Openings	10	15.6
Other Types	4	6.3
Single External Opening	56	87.5
Multiple External Openings	8	12.5



Fistula Classification (St. James Grading)

Grade	No. of Patients	Percentage (%)
I	22	34.4
II	12	18.8
III	18	28.1
IV	8	12.5
V	4	6.3

MRI-Surgical Correlation

Grade	Sensitivity (%)	Specificity (%)
I	82	100
II	100	100
III	100	100
IV	100	100
V	96.42	100

Key Findings:

- Among 64 patients, 40 were male and 24 were female.
- The most frequent fistula type was Grade I (34.4%), followed by Grade III (28.1%).
- Single external openings were observed in 56 patients, while 8 had multiple openings.
- Internal openings were predominantly single (50 patients).
- Secondary tracts were detected in 20 patients, while abscess formation was noted in 14 cases.
- Surgical findings correlated with MRI results in 98-99% of cases.

II. CONCLUSION

Anorectal fistulas, though relatively rare, can become chronic and recurrent, often leading to complications such as abscesses and secondary tracts. Accurate identification and classification of fistulas are crucial for optimizing surgical outcomes and reducing recurrence rates.

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