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Original Articles

Comparative Evaluation of MR Fistulogram and X-ray Fistulography Versus Intra-operative Findings in the Assessment of Fistula in Ano

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Abstract

Objective: To Compare and Evaluate MR Fistulogram and X-ray Fistulography Versus Intra-operative Findings of Fistula in Ano. ***Design:*** Prospective observational study. ***Subjects/Patients:*** 56. ***Methods:*** A prospective observational study was conducted on 56 patients with clinically diagnosed fistula in ano at a tertiary care hospital. All patients underwent both MR fistulogram and X-ray fistulography prior to surgical intervention. The imaging findings were compared intraoperatively for accuracy in detecting primary and secondary tracts, and statistical significance was analyzed. ***Results:*** MR fistulogram demonstrated a high concordance rate (86.78%) with intraoperative findings, accurately identifying 49 tracts. In comparison, X-ray fistulography detected 45 tracts. ***Conclusion:*** MR fistulogram proves to be a superior diagnostic tool for evaluating fistula in ano compared to X-ray fistulography, providing greater anatomical detail, better detection of multiple tracts, and higher correlation with intraoperative findings.

Keywords: ***Fistula in Ano, MR Fistulogram, X-ray Fistulography, Perianal Fistula, Intraoperative Findings, Anorectal Surgery.***

Introduction

Fistula in Ano is a benign but recurrent surgical problem primarily resulting from infection of the anal glands. It commonly affects individuals between the third and fifth decades of life, with a higher prevalence in males. Accurate preoperative evaluation is essential to reduce recurrence rates and preserve anal continence, especially given the complexity of fistulous pathways and potential for multiple tracts.

Traditional X-ray fistulography has been widely used; however, it suffers from limitations including inadequate soft tissue contrast and poor delineation of sphincter anatomy. MR imaging offers superior soft-tissue resolution, multiplanar imaging, and accurate identification of primary and secondary tracts, making it an excellent modality for complex fistula mapping.

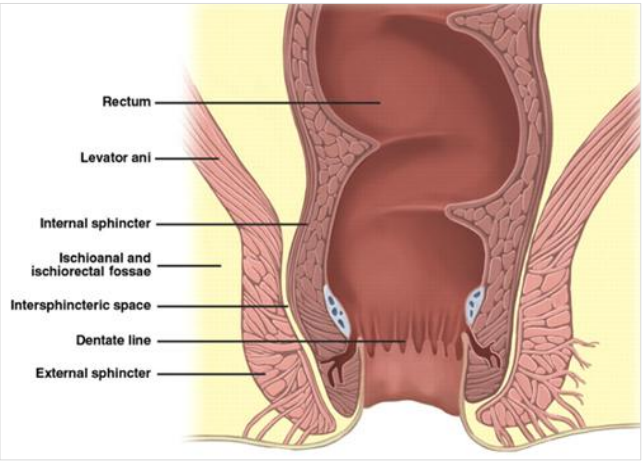

Figure 1: Anatomy of Anal Canal

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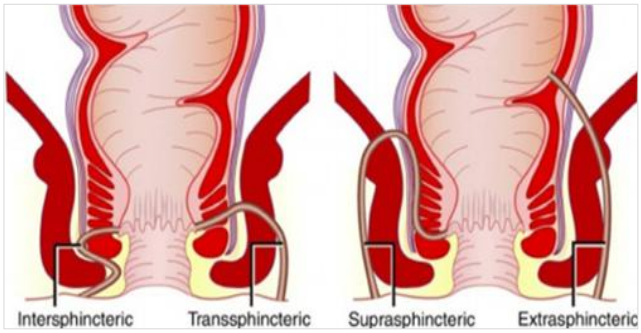

Figure 2: Parks Classification

Methods

Study Design: Prospective observational study.

Study Population: 56 adult patients clinically diagnosed with perianal fistula.

Exclusion Criteria: Previous anorectal surgery, rectal malignancy, immunocompromised status.

Investigations: MR fistulogram using a 1.5 Tesla MRI scanner with gadolinium contrast, and X-ray fistulography using a water-soluble contrast agent.

Reference Standard: Intraoperative findings during fistulotomy or abscess drainage.

Statistical Analysis: Sensitivity, specificity, and chi-square tests were employed, with $p<0.05$ considered significant.

Results

Demographics

- Gender Distribution: 43 males (76.79%) and 13 females (23.21%).
- Age Range: 18 to 65 years, with a mean age of 39.5 ± 10.9 years.

Types of Fistula

- Intersphincteric: 45 patients (74%)
- Trans-sphincteric: 20 patients (34%)

Diagnostic Accuracy:

- MR Fistulogram: Detected 49 tracts, correlating with surgery in 86.78% of cases.
- X-ray Fistulography: Detected 45 tracts, with a significant miss rate for intersphincteric tracts.

Table 1: Age-group-wise Distribution

Age Group	Frequency	Percentage
<=25	3	5.36
26-35	25	44.64
36-45	11	19.64
45-55	13	23.21
>55	4	7.14
Total	56	100

Table 2: Gender-wise Distribution

Gender	Frequency	Percentage
Male	43	76.79
Female	13	23.21
Total	56	100

Discussion

The study confirms the superior diagnostic performance of MR fistulogram in identifying fistula tracts and associated abscesses compared to X-ray fistulography. MR imaging was particularly effective in complex, intersphincteric, and trans-sphincteric fistula. The multiplanar capabilities, high soft tissue contrast, and superior anatomic detail provided by MRI accounted for this advantage.

Similar findings were reported by Lunniss et al. and Beets-Tan et al. In our study, MR imaging better detected secondary tracts and abscesses, essential for complete surgical excision and minimizing recurrence.

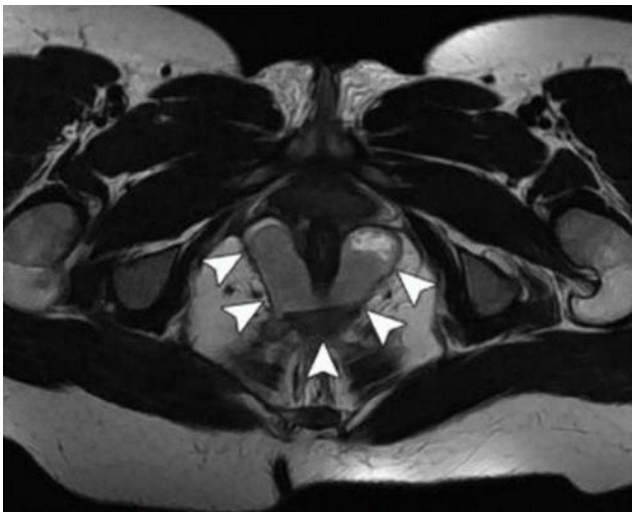

Figure 3: MR Fistulogram showing Horseshoe Abscess

Conclusion

MR fistulogram is a reliable, non-invasive, and highly accurate imaging modality for preoperative assessment of fistula in ano, outperforming X-ray fistulography in sensitivity, anatomical delineation, and detection of secondary tracts. Routine use of MR imaging is recommended, especially for complex or recurrent fistulas, aiding in precise surgical planning and reducing postoperative complications.

Declarations

Conflict of Interest

None

Funding Statement

None

Ethical Clearance

IEC MEDICAL COLLEGE, Baroda.

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