



## Diagnosis of Fistula in ANO: Mri Fistulogra0m Vs X-Ray Fistulogram Compared To Intraoperative Findings

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### Abstract

**Background:** In this study, the accuracy of MRI fistulogram and X-ray fistulogram to diagnose fistula in ano have been assessed in comparison with intraoperative findings

**Aims:** The purpose of the study is to compare the accuracy of X-ray fistulogram and MRI fistulogram with intra operative findings.

**Materials and Methods:** The study was carried out by subjecting patients to both X-ray fistulogram and MRI fistulogram. Reporting was done by different interpreters for both the modalities. The findings were compared with the intraoperative findings and analysed statistically.

**Results:** The sensitivity and specificity of MRI in detecting other findings was nearly 100%. Sensitivity and specificity of X-ray fistulogram for fistula in ano was relatively lower.

**Conclusion:** MRI fistulogram was diagnostically superior to X-ray fistulogram in diagnosing and classifying fistula in ano and its associated complications

**Keywords:** Fistula in ano, peri anal fistulas, MRI fistulogram, X-ray fistulogram

### Introduction

Abnormal communication between two organs or two structures or between an organ and external surface is fistula. Fistula – in ano is an abnormal communication between skin of perineum and the anal canal.

Surgery is definitive for management, however in most cases there is significant post surgical recurrence. One of the important aim of surgery is to preserve the integrity of external sphincter to maintain fecal continence.<sup>10, 13, 14</sup>

X ray fistulography is traditional radiological investigation done for diagnosis of fistula in ano. The sphincter complex is not clearly visualized and its

position have to be inferred. Hence it is most unreliable investigation.<sup>5</sup>

MRI fistulogram provides good soft tissue differentiation for accurate assessment of fistulous tracts and associated complications. The anatomical relationship between the anal sphincters and the fistulae can be described which helps to choose a proper surgical approach to prevent recurrence and preserve the function of anal sphincter.<sup>4</sup>

MRI helps in accurate assessment of primary and secondary tracts, and their associated complications like abscesses.<sup>6</sup> Hence MRI is useful in planning surgical strategy.

The anorectal fistulas can be classified into inter sphincteric, trans sphincteric, extra sphincteric or supra sphincteric types.

### Objectives of the study:

1. To assess the role of X ray Fistulogram and MRI Fistulogram in preoperative evaluation of fistula in ano and its associated complications.
2. To compare accuracy of diagnosing secondary tracts and other complications by X-ray Fistulogram and MRI Fistulogram.

### Materials and Methods:

A prospective observational study was done at Meenakshi medical College and Research Institute, Kanchipuram, Tamil Nadu on 54 patients referred to department of Radio diagnosis with clinical diagnosis of fistula in ano.

The study was carried out by subjecting patients to both X-ray fistulogram and MRI fistulogram. Reporting was done by different interpreters for both the modalities. The findings were compared with the intraoperative findings and analysed statistically. MRI findings were used for classification of patients according to St. James University Hospital Classification.

**Machine Used:** SIEMENS – LUMINOUS SELECT – fluoroscopy with Tazograf as contrast and 1.5 Tesla Magnetom Essenza (Siemens), with a body phased array coil.

### Statistical Methods

Prospective observational study. Specificity, sensitivity, positive predictive value and negative predictive value have been calculated for X-ray fistulogram and MR fistulogram by using a 2 by 2 table.

### Results:

**Table No. 1:** Xray fistulogram gave positive fistulas in 27 patients and sinuses in 27 patients. Four patients were not operated (two patients with fistula and two patients with sinus as finding in X ray fistulogram), hence excluded from study. Two patients were falsely diagnosed as fistulas which turned out to have sinuses in surgery. Sensitivity and specificity of x ray fistulogram was calculated as 53.4% and 71.4% respectively.<sup>3</sup>

**Table No. 2:** MRI fistulogram gave positive fistulas in 46 patients and sinuses in 8 patients. Four patients were not operated (three patients with fistula and one patient with sinus as finding in MRI fistulogram), hence excluded from study. One patient was falsely diagnosed as fistula which turned out to have sinus in surgery. Sensitivity and specificity of MRI fistulogram was calculated as 95.5% and 83.3% respectively.

### Representative cases:

#### CASE 1: Intersphincteric fistula in ano:

X- ray fistulogram (a)PA view and (b) oblique view, of a patient with external opening at 7 o' clock position shows contrast spill into anal canal. No associated complications noted.

T2-weighted FS axial (c) and coronal (d) showing intersphincteric fistula in ano with,external opening at 7 o'clock position in right buttock and internal opening at 11 o' clock position in anal canal

#### CASE 2: Suprasphincteric fistula :

X- ray fistulogram (a)PA view and (b) oblique view, of a patient with external opening at 7 o' clock position shows contrast spill into anal canal. No associated complications noted.T2weighted fat suppression axial (c) and coronal(d) :Suprasphinteric fistula in right buttock with external opening at 7 o' clock position and internal opening at 6 o' clock position

### Discussion

The intraoperative findings of 50 patients were compared with the findings of X-ray fistulogram and MRI fistulogram.

The gender distribution in our study showed male predominance with 30 males (67%) and 15 females (33%). Most affected age group was fourth decade with 16 patients (36%).

Majority of patients 43 (79.7%) were found to have only single external opening. The external openings were most commonly located in 4 o'clock to 6 o'clock position and least commonly seen from 10 o'clock to 12 o'clock position.

Pain was the most common presenting complaint, in 34 (62.9%) patients followed by discharge in 19 (35.1%) patients. Pain and discharge were together

complained by 7(12.9%) patients. 8 (14.8%) patients had no significant complaints.

X ray fistulogram gave positive fistulas in 27 patients and sinuses in 27 patients. Four patients were not operated (two patients with fistula and two patients with sinus as finding in X ray fistulogram, hence excluded from study. Two patients were falsely diagnosed as fistulas which turned out to have sinuses in surgery. Sensitivity and specificity of X ray fistulogram was calculated as 53.4% and 71.4% respectively.<sup>3</sup>

MRI fistulogram gave positive fistulas in 46 patients and sinuses in 8 patients. Four patients were not operated (three patients with fistula and one patients with sinus as finding in MRI fistulogram), hence excluded from study. One patient was falsely diagnosed as fistula which turned out to have sinus in surgery. Sensitivity and specificity of MRI fistulogram was calculated as 95.5% and 83.3% respectively.<sup>14</sup>

In this study out of 12 patients in whom secondary tracks were found intraoperatively, only in 5 (41.6%) patients secondary track was detected by X-ray fistulogram. MRI detected 12 (100%) patients with secondary tracks. MRI was found to be 100% accurate in detecting abscess in all the patients in whom abscess was detected intraoperatively and simple abscess was most frequently found abscess.<sup>6</sup> MRI fistulogram detected fistula in ano in 46 patients which were classified into five grades based on SJUHC. Grade 1 type of fistulas were detected in maximum number of patients, 18(35.18%). Least common was grade 1 with only one case (3.72%)<sup>27, 60</sup>

### Summary

In our study, it has been concluded that the MRI fistulogram provides considerably accurate diagnosis than X-ray fistulogram. The MRI findings were found to be consistent with intraoperative findings.<sup>11</sup>

X-ray fistulogram is an invasive procedure and can be uncomfortable for patients especially in patients who have pain and surrounding inflammation. X-ray fistulogram provides poor soft tissue differentiation. It is not possible to assess the sphincters and classify fistulas. Many false negative cases were reported as the tracts were blocked by debris and granulation tissue.

### Conclusion

MRI fistulogram was diagnostically superior to X-ray fistulogram in diagnosing fistula in ano and its associated complications. It is possible to classify fistula in ano based on SJUHC.

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**Table No. 1: Comparison Of X-Ray Fistulogram Findings With Intraoperative Findings**

PRIMARY TRACK	FISTULA	SINUS
X- RAY FISTULOGRAM	25	25
INTRAOPERATIVE FINDINGS	45	5

**Table No. 2: Comparison Of MRI Fistulogram Findings With Intraoperative Findings**

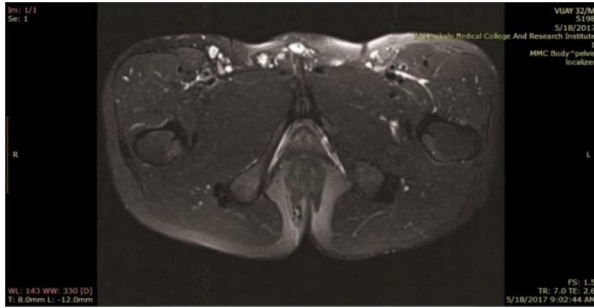
PRIMARY TRACK	FISTULA	SINUS
MRI FISTULOGRAM	43	7
INTRAOPERATIVE FINDINGS	45	5

**Representative Cases**

**CASE 1: Intersphincteric fistula in ano**







(c)

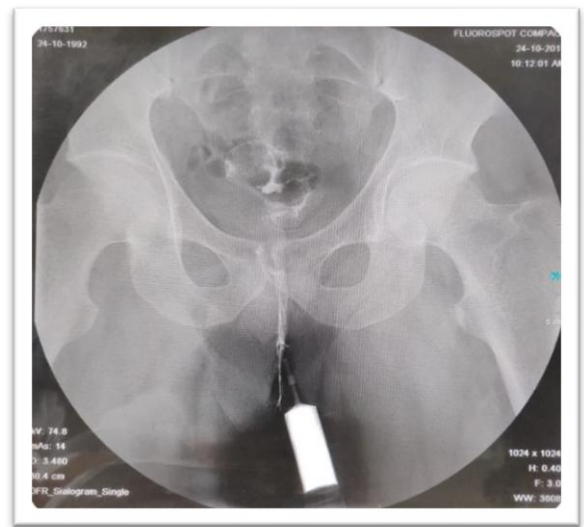


(d)

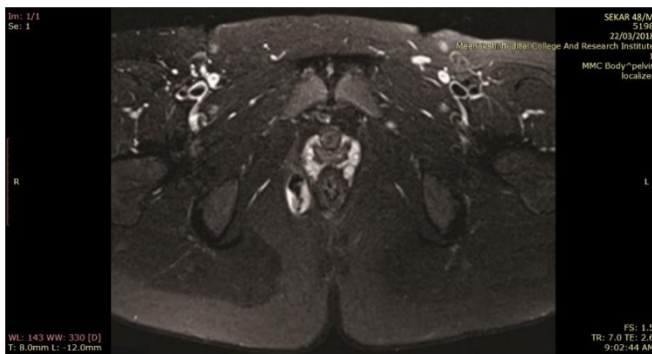
### CASE 2: Suprasphincteric fistula



(a)



(b)



(c)



(d)