



## DIAGNOSTIC ROLE OF MRI IN THE PRE-OPERATIVE EVALUATION OF PERIANAL FISTULA

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### ABSTRACT:

Background- Ano-rectal fistulas are chronic inflammations of perianal tissues with a connection between the skin of the perineum and the anal canal.

Methods- This prospective study was conducted in 35 patients during the period of one year and patients fulfilling inclusion and exclusion criteria was included in the study and was include data collection, data organization, presentation, data analysis and data interpretation.

Results- Out of 35 patients examined with MRI, classification of fistula was done according to St. James's University Hospital Classification of perianal fistula. 13 patients (37.14%) had Grade 1 fistula, 8 patients (11.14%) had Grade 2 fistula, 4 patients (11.4%) had Grade 3 fistula, 6 patients (17.14%) had Grade 4 fistula and 4 patients (11.4%) had Grade 5.

Conclusion-Magnetic Resonance Imaging (MRI) was highly accurate in assessment of surgically important parameters of perianal fistulae.

**Keywords-** Magnetic Resonance Imaging (MRI), Fistula, Perinatal

### INTRODUCTION:

Ano-rectal fistulas are chronic inflammations of perianal tissues with a connection between the skin of the perineum and the anal canal. Anal fistula affects roughly 10 persons in 100,000<sup>1</sup>. Men are three times more likely to be affected than women, due to the higher abundance of anal glands. The commonest age group is the 4th decade. The disease usually begins as an abscess and later on develops into a fistula in about 60% of the cases<sup>2</sup>. The perianal fistulas are thought to be the result of anal gland obstruction, with secondary abscess formation and external rupture decompression through one of several fairly predictable routes. The internal origin of

the fistula usually begins from the middle of the anal canal at the dentate line.<sup>3</sup>

In the case of perianal fistula, it is a connection between the anal canal and the perianal skin. Perianal fistula is an uncommon but important condition of the gastrointestinal tract that causes substantial morbidity. Perianal fistulas occurs predominantly in males<sup>4</sup>. The reason is thought to be partially due to the higher abundance of anal glands<sup>4</sup>. Infection of the anal glands and crypts are thought to be the cause of later fistula formation. The disease usually begins as an abscess and in chronic stages develops into a fistula in 60% of cases.<sup>5</sup>

**MATERIAL AND METHODS**

Study area – department of radiodiagnosis S.P. medical college and associate group of PBM hospitals BIKANER

Study population–This study was carried on patients referred to Dept. of Radio-diagnosis from OPD for MRI evaluation of perianal fistula.

Sample size and Study duration–This prospective study was conducted in 35 patients during the period of one year and patients fulfilling inclusion and exclusion criteria was included in the study and was include data collection, data organization, presentation, data analysis and data interpretation.

**Inclusion criteria:**

1. Patients referred from department of surgery having suspicion of fistula in ano for MRI.
2. Patients must give informed written consent.

**Exclusion criteria:**

Patients with

1. Cardiac pacemakers.
2. Metallic foreign body.
3. Implanted electrodes.
4. Metallic ear prosthesis.
5. Renal failure.
6. Claustrophobia.
7. Refusal for study.

**OBSERVATIONS**

**TABLE 1: MALE AND FEMALE PATIENTS IN EACH DECADE.**

Age (in years)	Sex	
	Male n(%)	Female n(%)
10-19	1 (2.8%)	0 (0%)
20-29	8 (22.8%)	0 (0%)

30-39	10 (28.5%)	2 (5.71%)
40-49	9 (25.7%)	0 (0%)
50-59	2 (5.7%)	0 (0%)
60-69	2 (5.7%)	0 (0%)
70-79	1 (2.8%)	0(0%)
Total	33 (94.29%)	2 (5.71%)

Out of 35 patients examined with MRI. There were 33 male patients and 2 female patients in our study. The male patients comprise of 94.29% and 5.71% female patients thus the male: female ratio was 24: 1.

**TABLE 2: PREVALENCE OF PERIANAL FISTULA ACCORDING TO ST. JAMES’S UNIVERSITY HOSPITAL CLASSIFICATION**

St. James’s University Hospital Type	Number of patients	Percentage
Grade 1	13	37.1%
Grade 2	8	22.8%
Grade 3	4	11.4%
Grade 4	6	17.1%
Grade 5	4	11.4%

**GRADE OF PERIANAL FISTULA:**

Out of 35 patients examined with MRI, classification of fistula was done according to St. James’s University Hospital Classification of perianal fistula. 13 patients (37.14%) had Grade 1 fistula, 8 patients (11.14%) had Grade 2 fistula, 4 patients (11.4%) had Grade 3 fistula, 6 patients (17.14%) had Grade 4 fistula and 4 patients (11.4%) had Grade 5.

**TABLE 3: RAMIFICATION AND ABSCESS FORMATION**

Secondary signs	Number of patients	Percentage
Ramification	6	17%
Abscess	5	14%
Both ramification and abscess	5	14%

Out of 35 patients examined with MRI, 6 patients (17%) had ramifications, 5 patients (14%) had evidence of abscess formation and 5 patients (14%) had both ramification and abscess formation.

**DISCUSSION**

Perianal fistulae constitute a heterogenic group of pathologies of the terminal part of the gastrointestinal tract and perineal area, jointly termed as anorectal malformations. They are thought to be a result of anal gland obstruction, with secondary abscess formation and external rupture of the abscess.

Perianal fistulae occur in approximately 10 out of 10,000 persons<sup>6</sup>. They usually occur in adult men with maximum incidence between third and fifth decades<sup>7</sup>. Their course and natural history are frequently atypical. The main role in pathophysiology of fistula formation is played by the location and the number of perianal glands specific for that region, as well as the direction in which the infection spreads along anatomical planes.

Fistulography, as the earliest X-rays method, cannot classify fistulae due to the inadequate visualization of anatomic structures, so that frequently it is unclear and difficult for the interpretation. In a retrospective review of fistulography images from 25 patients to ascertain the utility of contrast material enhanced fistulography, correct diagnoses were achieved in only 16% of the patients, demonstrating that this approach was inaccurate

and unreliable<sup>51</sup>. CT can identify the existence of fistulous passages, either through non-ionic water soluble contrast media being inserted per rectum or through the fistulous opening. However, it is not sufficient for a more detailed analysis of the whole complex of primary and numerous secondary branches in the fistulous system.

Although the application of multidetector CT fistulography with the option of isotropic voxels and multiplanar imaging can bridge the aforementioned issues, researchers do not show enough interest in this field<sup>7</sup>.

Conventional fistulography, ultrasonography and computed tomography have proved to be insufficient in correct assessment of the disease<sup>8</sup>.

Role of MRI in evaluation of perianal fistula was first studied by *Koelbel et al*<sup>9</sup> and was followed by many studies till date. MRI is the optimal technique for distinguishing complex from simple perianal fistulae. MRI allows identification of infected tracks and abscesses that would otherwise remain undetected. Furthermore, radiologists can provide detailed anatomic descriptions of the relationship between the fistula and the anal sphincter complex, thereby allowing surgeons to choose the best surgical treatment, significantly reducing recurrence of the disease or possible secondary effects of surgery, such as fecal incontinence. An optimal examination utilizes both endoluminal and external phased-array surface coils<sup>10</sup> However, imaging with an external coil alone also provides good results<sup>11,12,13</sup>

**CONCLUSION**

Magnetic Resonance Imaging (MRI) was highly accurate in assessment of surgically important parameters (primary tract and its grading, internal opening, divondary tract, abscess, horseshoeing) of perianal fistulae.

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