



ROLE OF MRI IN EVALUATION OF GRADE IV PERIANAL FISTULA (ACCORDING TO SAINT JAMES'S UNIVERSITY HOSPITAL CLASSIFICATION)

Radio-Diagnosis

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ABSTRACT

Introduction- Fistula-in-ano can be defined as a hollow tract or cavity which is lined by granulation tissue. It is crucial to properly assess these fistula-in-ano because surgical intervention must be aimed at not only eradication of fistulous tract thereby eradication of source of infection but also at the maintenance of continence which depends on integrity of anal-sphincter complex. MR fistulography has the distinct advantage of not only depicting the fistulous tract but also in demonstrating the extent of transmural inflammatory process secondary tracts/ramifications and abscesses. The aim of the study is to evaluate role of MRI in appropriate diagnosis of Grade IV perianal fistulae – Complicated transsphincteric fistulae (Saint James's University Hospital Classification) with its post operative correlation. **Methodology-** Around 19 patients who were diagnosed with grade IV perianal fistula (according to Saint James classification) on MR fistulogram in the Department of Radiology were included in the study and followed up with their post operative data. **Results And Discussion -** A male preponderance reported in our study, correlating well with studies by others like Kakani SS et al., Daabis N et al. and Abbas et al. Purulent perianal discharge was common presenting complaints. Most common location for internal opening was posterior position which was also seen in a study by Choudhary J, Kaushal L, Rajput P. Out of the total 19 patients, extrasphincteric abscess/collection was more commonly found in the patients. Majority of the patients had secondary tracts and ramifications. In this study accuracy for correct localization of internal opening was (93.33%), identification of ramifications/secondary tracts was (92.85 %) and abscesses/collection was (90 %) as compared to operative findings which correlated well with studies by Singh K et al., Daabis et al. and Madireddy et al. **Conclusion-** MRI is a useful modality for diagnosis and successful management of grade IV perianal fistula. MRI helps in detailed assessment of the number & extent of the fistulous tracts and their relationship to anal sphincter complex, including ramifications, thereby reducing the recurrence & complications and improving the prognosis.

KEYWORDS

Perianal fistula; MR fistulogram; Abscess; Internal opening.

INTRODUCTION

Fistula-in-ano can be defined as a hollow tract or cavity which is lined by granulation tissue. One end of this fistula opens in the anal canal whereas the other end is located in perianal area. The opening in anal canal is called primary/internal opening whereas perianal opening is called secondary/external opening. There can be single or multiple secondary openings extending from same primary opening located in anal canal. These fistulae usually arise following perianal abscess. Fistula-in-ano has a tendency for chronicity and can significantly affect the quality of life. It is crucial to properly assess them because surgical intervention must be aimed at not only eradication of fistulous tract thereby eradication of source of infection but also maintenance of continence which depends on maintenance of anal-sphincter complex. Thus, pre-operative assessment of fistula-in-ano is one of the crucial components of management. Advanced imaging technique such as MR imaging has become crucial in identifying infected fistulous tracts and abscess that would have been impossible or at least difficult to assess by other conventional imaging methods. MR imaging can be very helpful in knowing the involvement of tissue surrounding fistulous tract. MR fistulography has the distinct advantage of not only depicting the fistulous tract but also it can demonstrate the extent of transmural inflammatory process secondary tracts/ramifications and abscesses. It also can precisely show the relationship between the fistulous tract and sphincter muscles. Moreover, it can very well image a fistulous tract which is filled with pus and debris.

The two most common classification system used are the St James university hospital classification and the Park's classification. The St James university hospital classification is used for MRI classification of fistulas. In this classification, the presence of secondary tract or ramifications and perianal abscesses is also taken into consideration. The Park's classification is based on coronal imaging and used to classify fistulas surgically.

Classification

Classification of the fistulas was done according to the St James's University Hospital classification.

1. Grade 0: Reference to normal appearing anal canal.
2. Grade 1: Represents a simple linear intersphincteric fistula.

3. Grade 2: Represents an intersphincteric Fistula with a secondary tract or abscess. No violation of External sphincter.
4. Grade 3: Fistula refers to transsphincteric Fistula with violation of external sphincter.
5. Grade 4: More complicated transsphincteric Fistula with a secondary tract or abscess in the ischiorectal fossa.
6. Grade 5: Supralelevator or translevator disease.

Aims and objectives

The aim of the study was to evaluate role of MRI in appropriate diagnosis of Grade IV perianal fistulae – Complicated transsphincteric fistulae (According to Saint James' Classification) with its post operative correlation.

Objectives:

1. To study the various MRI morphological findings of Grade IV perianal fistulae.
2. To correlate its MRI findings with surgical findings.

Methodology

Around 19 patients who were diagnosed with grade IV perianal fistula (according to Saint James classification) on MR fistulogram in the Department of Radiology were included in the study and followed up with their post operative data.

All the MRI scans were performed on GE 3T MRI machine in our institute. Brief history was obtained and any contraindication to MRI was assessed. Consent was taken from patients before the procedure. Various MRI protocols were applied and scan images were analysed subsequently

Design: Hospital based observational study.

MRI protocol

1. T1 -Axial.
2. T2 -Axial, coronal and sagittal.
3. T2-STIR -Axial, coronal and sagittal.

RESULTS

A total of 19 patients who were diagnosed on MRI as Grade IV perianal fistula were included in this study.

MRI scans were interpreted in the light of following key features:

- 1. Site of primary fistulous tract.
- 2. Secondary tracts / ramifications.
- 3. Intraspincteric and extraspincteric Abscess / collection
- 4. Site of internal opening.

Out of total 19 patients, there were 16 (84.3%) males and 3 (15.7%) were females with a M:F ratio of 1:0.18 (Figure 1). The most common affected age group was found to be 41-50 years. Out of 19 studied cases 7 patients belonged to the age group of 41-50 years (Table 1). The mean age of patients was found to be 41.84 +/- 3.65 years. The analysis of patients on the basis of presenting complaint showed that majority of the patients had a presenting complaint of purulent perianal discharge which was seen in 14 (73.6%) patients followed by swelling and perineal discharge which was seen in 2 (10.5%) cases (Figure 2). Other complaints included 2 patients with only swelling in perineal region and 1 patient with sanguinous perianal discharge. Among the 19 patients, in 15 (78.94%) patients,, the cause of fistula in ano could not be established. 2 (10.52%) patients had infective etiology whereas history of recurrent perianal fistula formation was seen in 1 patient. The fistulae were classified on the basis of Saint James' classification. All patients had grade IV transphincteric fistulas. The accuracy of the sequences in detection of perianal fistulas was found to be 94.73 % with T2FS(STIR) images, 89.5 % with T2W images and 84.2 % with T1W images.

In this study, we found that the most common location for internal opening was 5 to 7 o clock in 15 patients (78.94 %), followed by 8 to 10 o clock position in 3 patients (15.78 %), 2 to 4 o clock position in 1 patient (5.26 %) (Table 2). Out of the total 19 patients, intraspincteric abscess or collection was found in 2 patients, that is, (10.52 %) of the patients (Table 3) & extraspincteric abscess or collection was found in 11 patients (57.89 %), whereas 2 patients (10.52 %) had both intersphincteric and extraspincteric abscesses/collections. In 4 patients (21.05 %), no abscess cavity/collection was localized. Secondary tract or ramifications were found in total 16 patients (84.21%) (Table 4) (Figure 6a, 6b & 6c). No secondary tract or ramification was there in 3 patients (15.78%). 3 Patients (15.78%) had fistulous tracts crossing the midline. 3 Patients (15.78%) with multiple tracts were there in our study with either separate internal openings, separate external openings or 2 different non communicating tracts. Amongst these 3 patients, 1 patient had Y shaped fistulous openings (Figure 4) with 3 external openings and 1 internal opening, another patient had a separate fibrosed tract seen form the main fistulous tract and the third patient had 3 internal openings. 15 patients underwent surgery in our institute. MRI was accurate in diagnosis of the tract with position of internal opening and any abscess cavity or secondary tract in 14 patients. Therefore, the diagnostic accuracy of MRI was found to be 93.33 %.

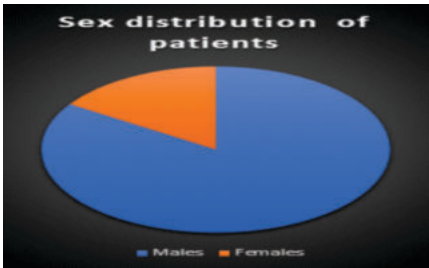


Fig. 1: Sex distribution.

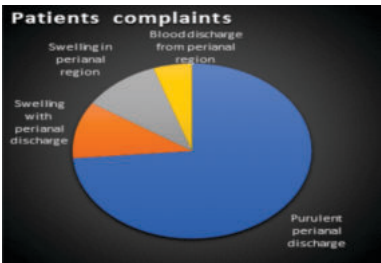


Fig. 2: Distribution of primary complaints of patients.

Table 1.

Age distribution of patients	Number of patients
0 to 10 years	1
4	International Journal of Scientific Research

10 to 20 years	0
20 to 30 years	3
30 to 40 years	2
40 to 50 years	7
50 to 60 years	4
Over 60 years	2

Table 2.

Location of internal openings of fistula	Number of patients
5 to 7 O' clock position	15
8 to 10 O' clock position	3
2 to 4 O' clock position	1
11 to 1 O' clock position	0

Table 3.

Abscess/collection location	Number of patients
Intersphincteric	2
Extraphincteric	11
Both intraspincteric and extrapshincteric	2
No abscess cavity seen	4

Table 4.

Secondary tracts/ramifications	Number of patients
Present	16
Absent	2

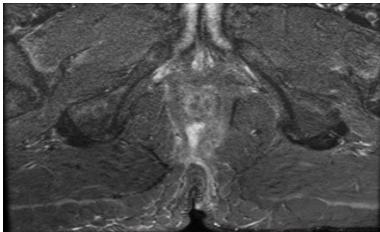


Fig 3. Axial T2-STIR: Patient having 2 external openings seen joining to form 1 tract.

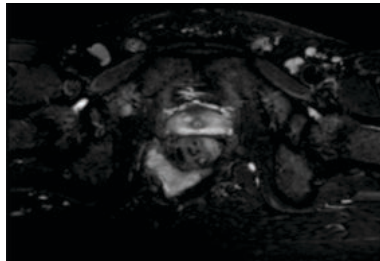


Fig 4. Axial T2-STIR: Patient having Y shaped fistula with right and left limbs.

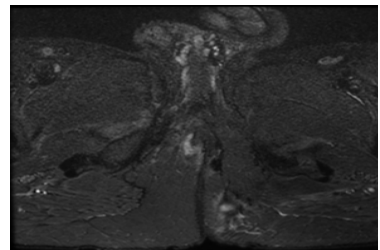


Fig 5. Axial T2-STIR: Patient having 2 non communicating tracts with separate external openings.

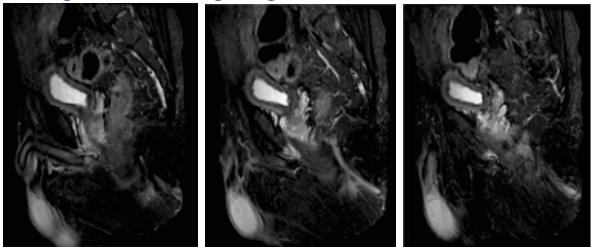


Fig 6.a, b & c : Sagittal T2-STIR: Patient having collection and secondary ramifications.

DISCUSSION

A total of 19 patients having perianal fistula were included in this study. Out of total 19 patients, there was a male preponderance reported in our study. Kakani SS et al. conducted a retrospective observational study to evaluate role of MRI in diagnosis and grading of perianal fistulae. There was an overwhelming majority of male patients (76.66 %) seen in the study. Similar male preponderance was also reported by other authors like Daabis N et al. and Abbas et al. According to Read and Abcarian, perianal fistula usually affects men, in their fourth decade. Men are affected 2 to 4 time more commonly; the reason is thought to be partially due to the higher abundance of anal glands [3].

In our study, mean age of patients was found to be 41.84 +/- 3.65 years. Sainio conducted a study of 458 patients to determine incidence and epidemiology of anal fistula during a 10-year period. The authors found that at the time of diagnosis the mean age of the patients was 38.3 years. The mean age of affected cases in this study was similar to our study. In our study, purulent perianal discharge (73.6%) was common presenting complaints. Other complaints included swelling and perineal discharge, swelling in perianal region and bloody discharge from perianal region. In our study, we found that the most common location for internal opening was 5 to 7 o'clock position i.e. posteriorly, followed by 8 to 10 o'clock position – right laterally. In a study by Choudhary J, Kaushal L, Rajput P, majority of the patients (68 %) of the patients showed internal opening to be present posteriorly, which was also seen in our study. Out of the total 19 patients, extrasphincteric abscess/collection was more common than intrasphincteric abscess/collection. 84.21% of patients in our study had Secondary tract or ramifications with 15.78% of patients showing no secondary tract or ramification. 15.78% of patients had fistulous tracts crossing the midline and multiple tracts. Missed extensions at surgery are usually the cause of recurrence and adequate surgery is warranted in more extensive disease [3]. As per our study, 11 of the 19 patients had a history of atleast one prior surgery and recurrence of perianal discharge. This could be due to the fact that most of these patients were improperly diagnosed to have perianal abscesses or no proper preoperative MRI evaluation was performed. Amongst 15 operated patients, MRI was accurate in diagnosis of the primary tract, position of internal opening, abscess cavity and secondary tract in 14 patients with a diagnostic accuracy of 93.33 %.

A similar study conducted by Singh K et al. Amongst the total of 50 patients, pre-operative findings confirmed perianal fistulae in 45 patients. High sensitivity was also discerned in identification of secondary tract (93.75%), correct localization of internal opening (95.83%) and for correctly detecting the horse-shoeing (87.50%). Similarity was seen in our sensitivity for correct localization of internal opening was (93.33%), identification of ramifications/secondary tracts was (92.85 %) and abscesses/collection was (90 %) as compared to operative findings. Similar diagnostic accuracy was also reported by the authors such as Daabis et al. and Madireddy et al.

CONCLUSION

MRI is a useful modality for diagnosis and successful management of grade IV perianal fistula. MRI helps in detailed assessment of the number & extent of the fistulous tracts and their relationship to anal sphincter complex, including ramifications, thereby reducing the recurrence & complications and improving the prognosis.

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