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Role of MR Fistulogram in Assessment of Anorectal Fistulas –Single Institution Prospective Study

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Abstract

Anorectal fistulas are granulation tissue-lined hollow tracts or cavities that affect the perineum and terminal section of the gastrointestinal tract.

Anal crypts along the dentate line of the anal canal house the anal glands. Around the anal canal are the internal and external sphincters. Fistulas are caused by anal gland blockage. The sphincter of the anorectal fistulas can be inter, trans, extra, or supra sphincteric.

For the detection and treatment of anorectal fistulas, a thorough grasp of anorectal anatomy is required. In the evaluation process before to surgery, magnetic resonance imaging is crucial.

MRI is useful in determining how the sphincter muscles and the fistulous tract interact. Furthermore, transmural inflammation, secondary tracts/ramifications, and abscesses that cannot be identified using traditional fistulography can be demonstrably shown on MR imaging.

Keywords: Intersphincteric, Trans sphincteric, Extra sphincteric, Anorectal fistulas, MR Fistulogram

Introduction

Perianal fistula is an abnormal connection between the epithelialized surface of the anal canal and the skin.

- Primary causes (Idiopathic) – 90% of perianal fistulas cryptogenic glandular theory

Infection of anal glands present in the deep layers of internal splincter.Obstruction of drainage of infected anal gland causes Perianal abscesses. Rupture of abscess and draining into various planesexternally forms a fistulous tract

- Secondary causes – 10% of perianal fistulas includes Crohn's disease, Diverticulitis, Pelvic infection, Tuberculosis, Trauma, Anorectal cancer &Radiation therapy

Epidemology

- Males are affected more than females.
- Age group: Adults – 20-60 years
- Intersphincteric fistulas are commonest followed by Trans sphincterицfistulas then followed by Extra sphincteric fistulas
- Unilateral mostly

Aims and objectives

This is a hospital based prospective study conducted from November 2021 to October 2022. Around 50 patients, who were diagnosed to have perianal fistula clinically and referred for MR Fistulogram to the Department of Radiology, ASRAM Medical College Hospital, Eluru were included in the study. Patients have undergone MR Fistulogram using 1.5- Tesla. Gadolinium was used as contrast material.

Materials & methods

The following were assessed: type of fistula based on Parks classification, position of internal opening, grading of fistula by St. James's University Hospital MRI Classification and the accuracy of MRI findings were correlated with surgical findings

Park's classification of perianal fistulas

Classification

1. Intersphincteric - In it the fistulous tract lies in the intersphincteric space but does not traverse the external anal sphincter.

2. Transsphincteric - In this the fistulous tract traverses the external anal sphincter and then traverses through the ischioanal/ischiorectal fossa to open subcutaneously.

3. Suprasphincteric – Here, the fistulous tract traverses above in the intersphincteric space above the puborectalis muscle and then descends through the iliococcygeus muscle into the ischiorectal fossa

4. Extrasphincteric - Here the fistulous tact traverses through the ischiorectal fossa, the levator anti sphincter complex and opens into the rectum in the supra levator region, that is, above the anal sphincter

St. James' university hospital classification of perianal fistulas

Grade1: Simple linear Intersphincteric fistula.

Grade 2: Intersphincteric fistula with Intersphincteric abscess or secondary fistulous tract.

Grade 3: Transsphincteric fistula.

Grade 4: Transsphincteric fistula with abscess or secondary tract within the Ischioanal or Ischiorectal fossa.

Grade 5: Supralevator and Translevator disease

Source of data

Patients referred from OPD of surgery department

Selection criteria

Inclusion criteria

Patients diagnosed to have perianal fistula clinically

Exclusion criteria

Not willing to give consent to be a part of study.

Patients with claustrophobia, contraindications for performing MRI and recurrent anorectal fistulas are excluded from the study

Protocol

- A marker is kept at the site of discharge.
- Axial oblique and coronal oblique images orthogonal and parallel to the anal canal
- Axial T1, Axial T2, Axial T2 Fat Sat, Coronal STIR, Post contrast Fat Sat Axial, Coronal and Sagittal sequences. (3D T1 post contrast like eThrive sequence)
- Coronal T2 can be acquired if required
- DW Imaging optional

MR appearance of perianal fistulas

- T1WI - Isointense/ Hypointense, hyperintense if tract contain blood
- T2 and STIR - Hyperintense on Show peripheral enhancement on contrast administration.
- Common shapes – curvilinear / horseshoe
- Abscess – peripheral enhancement / restriction on DWI.
- Contrast – There is peripheral enhancement of tract due to inflammatory process

Results

This study comprised a total of 50 patients who had been clinically confirmed to have a perianal fistula. Majority of the patients were male i.e. 33 and 17 patients were female, with the male to female ratio 2:1. The commonest age group was 30-50years for both males and females.

Based on parks classification the intersphincteric form of fistula was the most common accounting for 25(50%) cases, followed by the transsphincteric type 20(40%) & 5patients (10%) had supra/extrasphincteric fistulas. In terms of the location of the openings, the operational results and the study were matching. On a contrast study, there all were enhanced. All patients had contrast enhancement during the study, which aided to show the extent of fistula, secondary tracts & abscesses if present. Thus, it can be stated that a contrast examination is absolutely essential to evaluate the difficulties caused by perianal fistulas.

Table 1

Gender	No of patients	Percentage
Male	33	66%
Female	17	34%

Graph 1

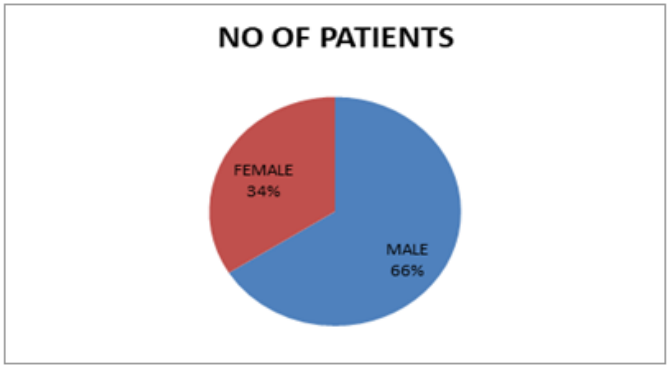


Table 2

Age in yrs	No of patients	Percentage
<30	2	4%
31-40	18	36%
41-50	20	40%
51-60	7	14%
>60	3	6%

Graph 2

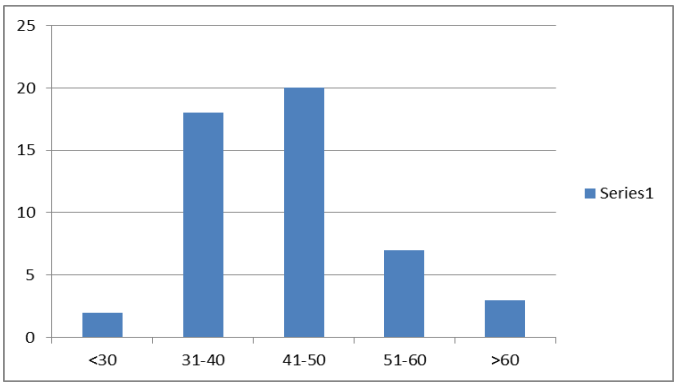


Table 3

Parks classification Types	No of patients	%
Inter sphincteric	25	50%
Trans sphincteric	20	40%
Supra/Extra sphincteric	5	10%

Graph 3

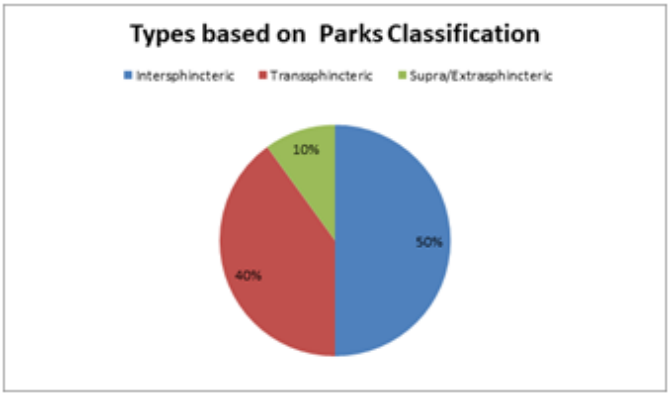


Table 4

St James grading	No of patients	Percentage
I	22	44%
II	3	6%
III	9	18%
IV	11	22%
V	5	10%

Graph 4

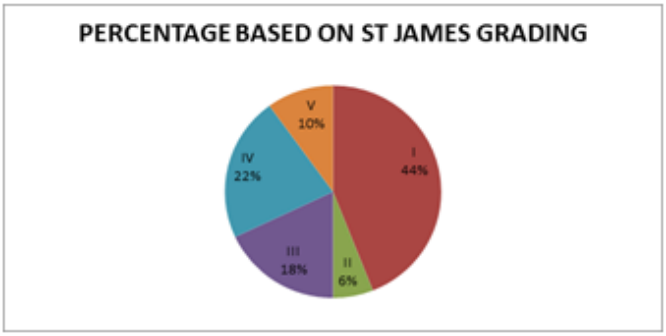
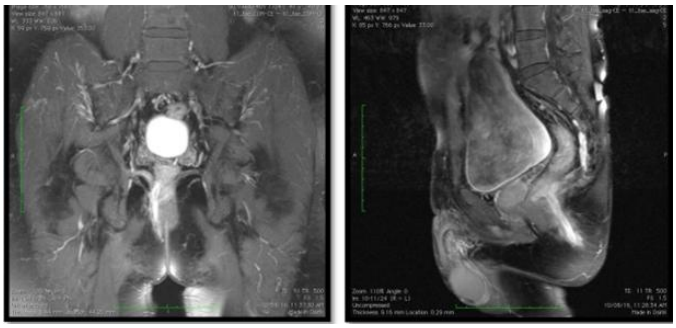


Figure 1: Simple intersphincteric fistula.

Figure 2



Conclusion

MR Fistulogram is a fantastic technique for evaluating perianal fistulas. In addition to helping with fistula diagnosis, it can also clearly show the presence of secondary tracts/ramifications, and abscesses. It also aids in precisely finding the fistulous tract but can also demonstrate the interaction between the fistulous tract and sphincter muscles.

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