



## MRI in Assessment of Perianal Fistula

### KEYWORDS

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### INTRODUCTION :

Perianal fistulae commonly occur due to the infection of the anal gland at the dentate line. Other causes include Crohn's disease, pelvic infections, malignancy, irradiation. Perianal fistulae are uncommon but important lower GI pathology which requires thorough preoperative diagnostic evaluation for complete surgical management. Previously clinical examination with gloved finger of an experienced surgeon used to be main part in presurgical assessment. With the advent of MRI and wide spread availability of MRI it has become investigation of choice for evaluation of the perianal fistulae.

### MRI the modality of choice for perianal fistulae:

It is non invasive, has high spatial resolution providing relation with external, internal sphincters and levator ani muscles and follow up studies can be performed. The procedure is not invasive and painful like conventional fistulogram, per rectal examination or anal endosonography. MRI is used for categorizing high risk fistulae like anterior fistulae in females, supralelevator fistulae, recurrent fistulae and fistula with ramifications multiple tracts and horse shoe abscesses. Many observers in many prospective and retrospective studies have proposed that it has more sensitivity and specificity. In a study of 56 patients with anal fistulas who underwent high-spatial-resolution MR imaging demonstrated that MR imaging provides important additional information about secondary extensions and recurrent fistulas, particularly in patients with Crohn disease. In a prospective study of 42 patients with suspected anal fistulas (4), the results of digital rectal examination, dynamic contrast-enhanced MR imaging, and surgical exploration were compared. MR imaging had a sensitivity of 97% and specificity of 100% for detection of fistulas(5).

Conventional fistulogram performed by injecting contrast into the external opening. It includes difficulty in the determining the relation to the sphincters and levator ani, non opacification of the accessory tracts. Anal endosonography can demonstrate the internal sphincter but will not clearly demonstrate external sphincters. Contrast CT fistulogram does not differentiate the soft tissue attenuation structures the sphincters, levator ani and tracts.

Ours is a retrospective and prospective study of 26 patients of perianal fistulae in our institution. All of them are classified into intersphincteric/ transsphincteric, presence or absence of secondary tracts / abscesses according to St James classification which is described subsequently. Type V fistula with supralelevator extension is a rare variety among all.

### MRI PROTOCOL FOR FISTULOGRAM

T1 spin echo sequences delineates the rectal musculature, levator ani and ischio-rectal and ischioanal fossae with

fat clearly. T2 weighted image and STIR demonstrates pathologies like fistulous tracts, abscesses, fluid collections as hyperintense signal changes over the hypointense musculature and isointense fat more clearly. Post contrast T1 MRI delineates active fistulae and abscess with contrast enhancement of the walls and central low signal changes suggesting pus.

### CLASSIFICATION OF PERIANAL FISTULA

Previous classifications of Park(3) and Morris *et al* (2) are surgical. Goodsall's also described a rule stating cutaneous opening anterior to the transverse anal line are associated with direct radial fistulous tracks into the anal canal & whereas openings posterior to the line have tracks that enter the canal in the midline posteriorly.

### ST JAMES UNIVERSITY HOSPITAL CLASSIFICATION OF THE PERIANAL FISTULAE ON MRI according to the study done by Malley et al,

#### Grade 1: Simple Linear Intersphincteric Fistula.

In a simple linear intersphincteric fistula, the fistulous track extends from the skin of the perineum or natal cleft to the anal canal, and the ischio-rectal and ischioanal fossae are clear. There is no ramification of the track within the sphincter complex and is entirely confined by the external sphincter. Fistulous tracks arising behind the transverse anal line, the most common type, enter the anal canal in the midline posteriorly.

#### Grade 2: Intersphincteric Fistula with Abscess or Secondary Track.

Intersphincteric fistulas with an abscess or secondary track are also bounded by the external sphincter. Secondary fistulous tracks may be of the horseshoe type, crossing the midline or they may ramify in the ipsilateral intersphincteric plane. Even when there is abscess formation, this process is confined within the sphincter complex regardless of imaging plane or sequence.

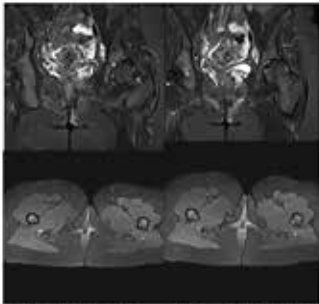
#### Grade 3: Trans-sphincteric Fistula.

It pierces through both layers of the sphincter complex and then arcs down to the skin through the ischio-rectal and ischioanal fossae & may disrupt the normal fat of the ischio-rectal and ischioanal fossae with secondary edema and hyperemia. These fistulas are distinguished by the site of the enteric entry point in the middle third of the anal canal (i.e., dentate line), as seen on coronal images. Because these fistulas disrupt the integrity of the sphincter mechanism, their tracks must be excised by dividing both layers of the sphincter, thus risking fecal incontinence.

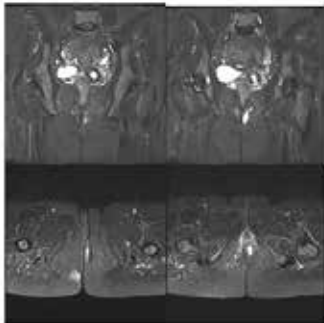
#### Grade 4: Trans-sphincteric Fistula with Abscess or Secondary Track within the Ischio-rectal Fossa.

A trans-sphincteric fistula with an abscess may manifest

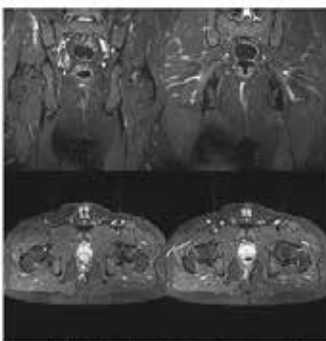
as an expansion along the primary track or as a structure distorting or filling the ischiorectal fossa. The key anatomical discriminator of a grade 4 fistula is the track crossing the external sphincter. The track or its associated abscess clearly involves the ischiorectal or ischioanal fossa. In some cases, the track assumes a "dumbbell" configuration spanning the external sphincter.



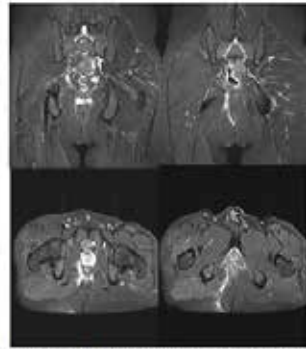
Linear hyperintense intersphincteric fistulous tract at 10 o'clock position in the left perianal soft tissue with internal opening into the anus. No abscess formation—Type I perianal fistula according to St James' University Hospital MRI classification.



Fistulous tract extending from the right perianal region with external opening at 7 o'clock in the right gluteal region, crossing the midline and extending into the left perianal region and opening into the anus posteriorly near the midline with a collection/abscess just proximal to its internal opening—Type II perianal fistula according to St James' University Hospital MRI classification.



Thick linear hyperintense track is extending from the cutaneous surface of the right gluteal cleft extending vertically postero-superiorly in the posterior perianal soft tissues and then angulating anteriorly just above the inferior border of pubic symphysis to cross through the superior aspect of external sphincter and across the internal sphincter with internal opening at 5-7 o'clock—Type III perianal fistula according to St James' University Hospital MRI classification.



Complex transsphincteric fistula extending from right paramedian anal cleft up to 9 o'clock rectal wall margin showing diffuse contrast enhancement with multiple tracts forming abscess along the levator on the right side up to prostate margins & horseshoe abscess across the posterior perirectal margins into the left ischiorectal & ischiorectal region.

#### COMPLICATIONS:

- Ischiorectal and ischioanal abscesses.
- Translevator extension if undiagnosed with antegrade extension into the pelvis.
- Recurrence.
- Communication with urinary tract or another loop of bowel.

#### RECURRENCE DUE TO INCOMPLETE EXCISION

Pelvic MRI is a noninvasive modality for assessing perianal fistulae and early diagnosis of the clinically undetectable disease. Prerequisites for the assessment include knowledge of the normal pelvic anatomy and their appearances in different sequences of MRI. Proper evaluation is important for planning surgery and avoiding recurrence. MRI is an investigation of choice for recurrent perianal fistulae as it gives complete details about its extent, accessory tracts, abscesses.

#### RESULTS :

Among the 26 cases, type III fistulae are more common and present in 12 patients. Type IV and type I fistulae account for 6 each. Type II fistulae in 2 patients. Possible explanations are increased incidence of diabetes with more aggressive disease progression and late presentation. 8 of 12 complex transsphincteric fistulae are predominantly on the right side. 4 of 6 type IV and type I fistulae are predominantly on the right side. Fistulae are found with equal incidence in male and female. Fistulae are more common above the age of 35 years, comprising of 18 patients.

#### CONCLUSION:

Type III and IV fistulae are more common in India. This can be due to presentation at a later stage. Age of occurrence is usually more than 35 years. Associated factors like diabetes/immunocompromised status may contribute to early progression of disease process. Type V is very rare and it is mostly associated with inflammatory bowel disease.

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