Original Research Article

MR Imaging in perianal fistulas

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Abstract

Background: The study aimed to assess the accuracy of Magnetic resonance imaging (MRI) in clinically diagnosed perianal fistulas **Method**: During one year period,120 patients who were clinically diagnosed to have perianal fistula were taken up for MRI study. The following were assessed: type of fistula, grading of fistulas according to St. James's University Hospital MRI based classification system (five grades) and position of internal opening. MRI findings were correlated with surgical findings. **Result**: All examinations were successfully performed. Out of 120 patients 90 patients (75%) were male and 30 patients (25%) were female. The most common type of fistula was inter sphincteric seen in 70 patients (58.34%), followed by trans-sphincteric in 40 patients (33.33 %). Extra sphincteric type of fistula was seen in 10 patients (8.33%). According to St James's University Hospital classification, we found Grade 1 perianal fistulas were the most common type which was found in 65 patients (54.1%), followed by Grade 2 in 25 patients (20.8%). Grade 3 and Grade 4 fistulas were 12 patients (10%) each. Grade 5 fistulas were least common seen in 6 patients (5.1%) only. We found the external opening of perianal fistula was little more common on left side of the midline ,67 (55.8%) as compared to 44 (36.7%) on right side.5(4.2%) cases had external opening in the midline and 4 (3.3%)cases had multiple openings. There was significant correlation between the MRI and surgical findings. **Conclusion**: MRI is a accurate non-invasive diagnostic modality for assessment of perianal fistulas and helps in avoiding recurrence by giving correct extent of disease for surgical planning.
Key words: Magnetic resonance imaging, Perianal fistula, inter sphincteric, transphincteric

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INTRODUCTION

Perianal fistula is defined as a tract lined by granulation tissue which may have external opening, internal opening or both external and internal openings.[1] Perianal fistulas are thought to arise from infection in small intersphincteric anal glands with abscess representing the acute manifestation and fistula, a chronic condition.[2] Aim of management of perianal fistula is to relieve the patient symptoms with low recurrence rates. A precise and detailed preoperative assessment of the anatomy of the fistula track, including the presence of any ramifications or abscess formation ,is vital for successful surgical outcome.[3] Conventional fistulogram has two main disadvantages : First ,the primary track and it's extensions do not fill with contrast if they are plugged with pus or debris and second the sphincter muscle anatomy is not imaged.[4] Transrectal ultrasound better depicts fistulas and their relation to the anal sphincter muscles. The operator dependence ,limited field of view and absence of a coronal plane of imaging are it's disadvantages.[4] CT Fistulography is limited by the fact that attenuation values of the fistula tract, the areas of fibrosis and sphincter muscles are similar to each other.[4]However MRI has emerged as gold standard for imaging of perianal fistulas because of good soft tissue resolution.[5] Depending on the location and course, type of perianal fistula was evaluated according to the St. Jame's University Hospital MRI classification system[3] which correlates Parks surgical classification[6] to anatomical MRI findings.

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St. Jame's University Hospital MRI classification.[3]

Grade 1: Simple linear inter-sphincteric fistula.

Grade 2: Inter-sphincteric fistula with an abscess or secondary track.

Grade 3: Trans-sphincteric fistula.

Grade 4: Trans-sphincteric fistula with an abscess or secondary tract within the ischioanal or ischorectal fossa.

Grade 5: Translevator and supralevator disease.

Parks classification of ano-rectal fistula[6]

Inter-sphincteric: Confined to inter-sphincteric plane, does not cross external sphincter or levator muscles.

Trans-sphincteric: Track passes radially through external sphincter.

Supra-sphincteric: Track passes upward within inter-sphincteric plane over puborectalis muscles and descends through levator muscles to the ischorectal fossa.

Extra-sphincteric: Course is completely outside external sphincter.

The assessment of perianal fistula prior to surgery should include the state of internal and external openings, fistula course, the side branches and if any fistulous abscess.[7]

METHODS

Totally ,120 Patients who were diagnosed clinically to have perianal fistula, attending the tertiary care centre in rural area of Kerala, were referred for MR evaluation. Magnetic Resonance imaging (MRI) was done with a 1.5 T unit with according to standard parameters and MR protocol for perianal fistula using phase array body coil. There was no special preparation. Gadolinium enhanced images were also used. Patients were assessed for each of the following findings: type of the fistula, location of the internal opening, presence or absence of fistulous tracks or sinus track, abscesses. MRI findings were then correlated with the operative findings. Surgical findings were accepted as gold standard.

RESULTS

All patients examination were successfully performed without failure. Out of 120 patients (age ranging from 20 to 69 years) 90 patients (75%) were male and 30 patients (25%) were female. The most common type of fistula was intersphincteric 70 (58.34%), followed by trans sphincteric 40 (33.33 %). Extra sphincteric type of fistula were 10 (8.33%). According to St James's University Hospital classification, we found Grade 1 perianal fistulas 65 (54.1%), Grade 2, 25 (20.8%). Grade 3 and Grade 4 fistulas were 12 (10%) each. Grade 5 fistulas were least common seen in 6 (5.1%) only. We found the external opening of perianal fistula was little more common on left side of the midline ,67 (55.8%) as compared to 44 (36.7%) on right side. 5(4.2%) cases had external opening in the midline and 4 (3.3%) cases had multiple openings. There was significant correlation between the MRI and surgical findings.

Table 1: Classification of perianal fistula according to parks

Intersphincteric	*Transphencteric*	*Extrasphincteric*	*Suprasphincteric*
70 (58.34%)	40 (33.33 %)	10 (8.33%)	0

Table 2: *Classification of perianal fistula according to ST Jame's University hospital criteria*

Grade 1	*Grade 2*	*Grade 3*	*Grade 4*	*Grade 5*
65 (54.1%)	25 (20.8%)	12 (10%)	12 (10%)	6 (5.1%)

Table 3: *External opening of perianal fistula on MR*

Right of midline	*Left of midline*	*Midline anterior/posterior*	*Both side (multiple opening*
44 (36.7%)	67(55.8%)	5(4.2%)	4 (3.3%)

DISCUSSION

Perianal fistulas occur in approximately 10 out of 10,000 people.[8] *They usually occurs in adult men with maximum incidence between the third and fifth decades.*[4,9] *In our study, the mean age of participants was 41years (*age ranging from 20 to 69 years). Before the advent of MRI, several other imaging techniques were used for the evaluation of perianal fistulous disease. Now a days MRI is increasingly gaining importance for the evaluation of perianal fistals. MRI imaging of perianal fistulas relies on the inherent high soft tissue contrast resolution and the multiplaner display of anatomy by this modality. Lunniss *et al* .reported a concordance rate of 86-88% between MRI and Surgical findings.[10] The results of our study indicate that MRI is highly accurate for determining the type and extent of perianal fistals. On MRI T1-weighted (T1W) images give an excellent anatomic overview of the sphincter complex, levator plane and ischiorectal fossa. Fistulous tracks, inflammation and abscesses appears as areas of low to intermediate signal intensity on T1W imaging. T2-Weighted (T2W) images provide good contrast between the high signal intensity fluid in the track and the low signal fibrous wall of the fistula. Chronic fistulous tracks or scars appear hypointense on both T1W and T2W images. Abscesses appear hyperintense on T2W

due to pus or fluid in centre. Gadolinium-enhanced T1W images differentiate a fluid filled track from an area of inflammation.[11] In our department, we have successfully doing MR fistulography for evaluation of patients with perianal Fistula. We believe that our findings support its value in accurate diagnosis and markedly decreasing the incidence of recurrence and allowing side effects such as fecal incontinence to be avoided.

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