

MR imaging evaluation of perianal fistula

Bujade Abhishek S¹, Kombade Balaji H^{2*}

¹PG,²Associate Professor, Department of Radio-diagnosis, Government Medical College, Latur, Maharashtra, INDIA.

Email: bhkombde@yahoo.com

Abstract

Background: Fistula in ano is an uncommon condition that has a tendency to recur despite seemingly appropriate surgery. The purpose of preoperative MR imaging of perianal fistula is to diagnose and classify the perianal fistula and to benefit the surgeons. Preoperative MR fistulography can help to prevent the recurrence. In this article we study the role of MRI to diagnose and classify the perianal fistula and to evaluate the additional clinical value of preoperative MR imaging and its benefit to surgeon. **Material and Methods:** this prospective study contained 70 patients with perianal discharge referred to department of Radiodiagnosis of government medical college, Latur. The study was conducted between January 2018 to Dec 2018. MR Imaging is performed using 1.5 T magnet MRI system (GE signa 1.5T). MRI was performed with multiplanar T1 weighted, T2 weighted and fat suppressed T2 weighted sequences. **Result:** Out of total 70 studied patients, 23 (32.8%) cases showed grade 1 (simple linear intersphincteric fistula), 10 (14.3%) cases showed grade 2 (intersphincteric with abscess or secondary tract), 4 (5.7%) cases showed grade 3 (transsphincteric), 21 (30%) cases showed grade 4 (transsphincteric with abscess or secondary tract in ischioanal or ischioanal fossa) and 02 (2.9%) cases showed grade 5 (supralelevator and translevator). 10 patients only had perianal sinuses. **Conclusion:** MRI is a useful for successful management of perianal fistula by correct assessment of the extent of disease and relationship to sphincter complex. It helps in identification of secondary tracts and abscesses resulting in highest possible diagnostic accuracy aiming to reduce complications and recurrences.

Keywords: perianal fistula, intersphincteric, transsphincteric, fistulography

*Address for Correspondence:

Dr. Kombade Balaji H, Department of Radio-diagnosis, Government Medical College, Latur, Maharashtra, INDIA.

Email: bhkombde@yahoo.com

Received Date: 09/11/2019 Revised Date: 15/12/2019 Accepted Date: 03/01/2020

DOI: <https://doi.org/10.26611/10131313>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
11 January 2020

INTRODUCTION

A fistula is defined as an abnormal connection between two structures or organs or between an organ and the surface of the body. In the case of perianal fistula, it is a connection between the anal canal and the skin of the perineum. Perianal fistulization is an uncommon process, with a prevalence of 0.01%, although it causes significant morbidity. It predominantly affects young males, with a male-to-female ratio of 2:1. The most common presenting symptom is discharge (65% of cases), but local pain due to inflammation is also common. However, fistulas may

be completely asymptomatic.^{1,2} Magnetic resonance (MR) imaging has been shown to demonstrate accurately the anatomy of the perianal region, the anal sphincter mechanism, the relationship of fistulas to the pelvic diaphragm (levator plate) and the ischioanal fossae.³ In particular, magnetic resonance (MR) imaging findings have been shown to influence surgery and markedly diminish the chance of recurrence; thus, pre-operative imaging will become increasingly routine in the future.^{4,5} A classification of anal fistulas is presented by Parks *et al.*⁶, which is the result of an analysis of 400 cases treated over the past 15 years, based on the pathogenesis of the disease and the normal muscular anatomy of the pelvic floor. Four main types were found but numerous variations of each occur.⁶ Although imaging techniques played a limited role in evaluation of perianal fistulas in the past, it is now increasingly recognized that imaging techniques, especially magnetic resonance (MR) imaging, may play a crucial role. MR imaging 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

How to cite this article: Bujade Abhishek S, Kombade Balaji H. MR imaging evaluation of perianal fistula. *MedPulse – International Journal of Radiology*. January 2020; 13(1): 11-14. <http://www.medpulse.in/Radio%20Diagnosis/>

allowing surgeons to choose the best surgical treatment, significantly reducing recurrence of the disease or possible secondary effects of surgery, such as fecal incontinence^{7,8}.

AIMS AND OBJECTIVES:

1. To study various types and grades of all clinically suspected perianal fistula cases.
2. To study MRI findings in all clinically suspected perianal fistula cases.

METHODS

We studied 70 patients referred to Department of Radio diagnosis at government medical college, Latur.

Methodology:

We studied MRI images of 40 patients with different types of perianal fistulas. MR imaging were performed on

1.5-T magnet MR system (GE Signa MRI). Imaging was performed with multiplanar T1-weighted, T2-weighted and T2 fat suppressed(STIR) sequences.

RESULTS

Total 70 patients with perianal discharge referred for MR imaging of perianal fistula were included in study. 59 were males and 11 were females (M:F = 5:1) 23 (32.8%) cases showed grade 1 (simple linear intersphincteric fistula), 10(14.3%) cases showed grade 2 (intersphincteric with abscess or secondary tract), 04 (5.7%) cases showed grade 3 (transsphincteric), 21 (30%) cases showed grade 4 (transsphincteric with abscess or secondary tract in ischiorectal or ischioanal fossa) and 02(2.9%) cases showed grade 5 (supralelevator and translevator).

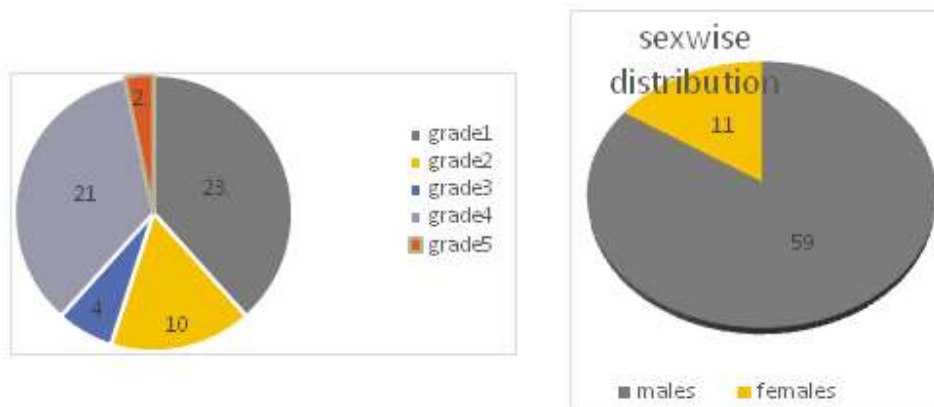


Figure 1: distribution of MR imaging result of perianal fistula Figure 2: Sexwise Distribution of perianal discharge cases

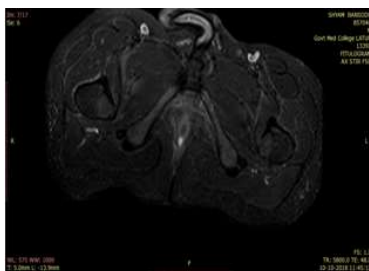


Figure 3: axial T2 STIR image of grade 1 fistula

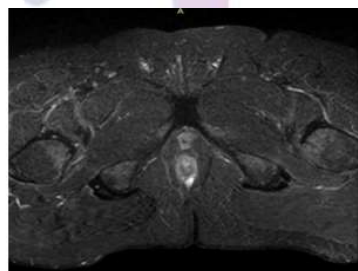


Figure 4: axial T2 STIR image of grade 2 fistula

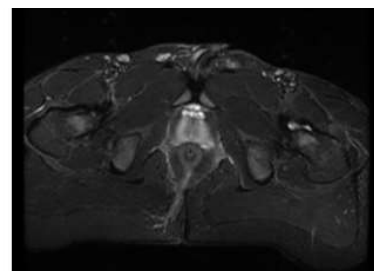


Figure 5: Axial T2 STIR image of grade 3 fistula

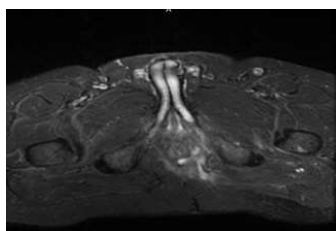


Figure 6: axial T2 STIR images of grade 4 fistula

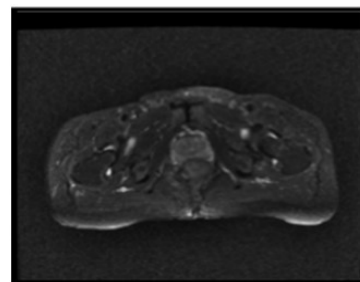
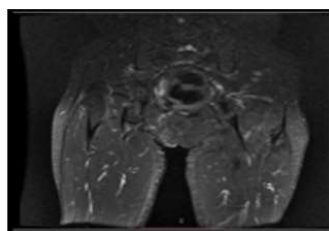


Figure 7: axial and coronal STIR images of grade 5 fistula

DISCUSSION

Perianal fistulas are usually simple and mostly due to non-specific cryptoglandular inflammation but may also be due to specific secondary causes.⁹ Magnetic resonance imaging (MRI) gives a detailed insight into the anatomy of the anal sphincter, especially when high spatial resolution imaging is performed.^{10,11} Conventional fistulography has two major drawbacks: (a) the difficulty of assessing secondary extensions owing to lack of proper filling with contrast material and (b) inability to visualize the anal sphincters and hence determines their relationship to the fistula¹². In particular, MR imaging has emerged as the technique of choice for preoperative evaluation of perianal fistulas to improve patient outcome. The importance of MR imaging in this context lies in its ability to demonstrate hidden areas of sepsis and secondary extensions, both of which contribute to the high rate of recurrence after surgery. Furthermore, MR imaging can be used to define the anatomic relationships of the fistula to predict the likelihood of postoperative fecal incontinence^{13,14}. MRI imaging of perianal fistulae relies on the inherent high soft tissue contrast resolution and the multi-planar display of anatomy by MRI modality^{12,15}.

Classification of the perianal fistulae:

The Classification of the perianal fistulae primarily based on surgical anatomy defined by using Parks *et al.*¹⁶ Morris *et al.*¹⁷ subsequently classified on the basis of radiologic anatomy on pelvic MRI, that's called the St. James' University Hospital classification.

Parks Classification:

On the basis of surgical findings from 400 patients referred to the St Mark's Hospital surgery department in London, England, Parks *et al.*¹⁶ described perianal fistulas in the coronal plane according to the course of the fistula and its relationships to the internal and external sphincters. Fistulas were classified into four groups: Intersphincteric, transsphincteric, fParks classification, the external sphincter is used as the keystone.¹⁶

St James' University Hospital Classification:

Grade 1: Simple linear intersphincteric fistula.

Grade 2: Intersphincteric fistula with inter-sphincteric abscess

Grade 3: Simple Transsphincteric fistula

Grade 4: Transsphincteric fistula with abscess or secondary tract in the ischioanal or ischiorectal fossa.

Grade 5: Supralelevator and extrasphincteric fistula.

Grade 5 fistulas characterized by different types of complex tracts via their extension above the sphincters. The most appropriate protocol used at our institution for evaluation of perianal fistulas consists of the following sequences: T1 weighted FSE, T2weighted FSE and T2 weighted fat suppressed (STIR). Characteristic MR

imaging findings are obtained for perianal fistulas and abscesses with the different sequences of the protocol. Fistulous tracks, inflammation, and abscesses appear as areas of low to intermediate signal intensity on T1 weighted imaging. Active fistulous tracks and extensions have high signal intensity on T2-weighted images, while the sphincters have low signal intensity. Chronic fistulous tracks or scars appear hypointense on both T1- and T2-weighted images. Abscesses appear hyperintense on T2-weighted images due to the presence of pus and fluid in the centre.¹⁸

Fat-suppressed T2-weighted sequences such as short inversion time inversion-recovery (STIR) or frequency-selective fat-saturated T2-weighted FSE may be used to increase the conspicuity of fluid-containing tracks or abscesses.¹⁹ MR imaging is the optimal technique to distinguish complex from simple perianal fistulas.²⁰

CONCLUSIONS

MRI is very beneficial in a diagnosis and treatment of perianal fistula because it's like a roadmap to illustrate accurately the anatomy of the perianal region. MRI is a useful for successful management of perianal fistula by correct assessment of the extent of disease and relationship to sphincter complex. Based on my study Perianal fistula is seen common in males than females. The most com-mon type is Grade I fistula (32.8%) followed by Grade IV (30%) and Grade II (14.3%) fistulas. Grade III(5.7%) and Grade V(2.9%) were least common. The overdue presentation with Grade IV fistula in our study population highlights the social taboos precluding the people from seeking well timed clinical help and thereby signifies developing due clinical awareness.

REFERENCES

1. Sainio P. Fistula-in-ano in a defined population: incidence and epidemiological aspects. *Ann Chir Gynaecol* 1984;73(4):219–224.
2. Practice parameters for treatment of fistula-in-ano: supporting documentation. The Standards Practice Task Force. The American Society of Colon and Rectal Surgeons. *Dis Colon Rec-tum* 1996;39(12): 1363–1372.
3. Charles P. Heise, Perry J. Pickhardt, MR Imaging Evaluation of Perianal Fistulas: Spectrum of Imaging Features *Radiographics* January-February 2012;32:(1) 194–197.
4. Morris J, Spencer J, Ambrose N. MR imaging classification of perianal fistulas and its implications for patient management. *Radiographics* 2000;20:623–37.
5. Terra M, Beets-Tan R, Hulst V, Dijkgraaf M, Bossuyt P, Dobben A, *et al.* Anal sphincter de-fects in patients with fecal incontinence: endoanal versus external phased-array MR imaging. *Radiology* 2005;236:886–95.
6. Parks A, Gordon P, Hardcastle J. A classification of fistula-inano. *Br J Surg* 1976;63:1–12.

7. Beckingham IJ, Spencer JA, Ward J, Dyke GW, Adams C, Ambrose NS. Prospective evaluation of dynamic contrast enhanced magnetic resonance imaging in the evaluation of fistula in ano. *Br J Surg* 1996;83(10):1396–1398.
8. Buchanan G, Halligan S, Williams A, *et al.* Effect of MRI on clinical outcome of recurrent fistula-in-ano. *Lancet* 2002;360(9346):1661–1662.
9. Toyonaga T, Matsushima M, Tanaka Y. Microbiological analysis and endoanal ultrasonography for diagnosis of anal fistula in acute anorectal sepsis. *Int J Colorectal Dis* 2007;22:209–13.
10. Joyce M, Veniero J, Pokala R. Magnetic resonance imaging in the management of anal fistula and anorectal sepsis. *Clin Colon Rectal Surg* 2008;21(3):213–9.
11. Mazroa JA, Elmogy SA, Elgendy MM. Value of contrast enhanced spoiled gradient (SPGR) MR and MIP MR imaging in diagnosis of peri-anal fistula. *Egypt J Radiol Nucl Med* 2012;43(2):119–28.
12. Halligan S, Stoker J. Imaging of fistula in ano. *Radiology* 2006;239:18–33.
13. Seow-Choen, Phillips RK. Insights gained from the management of problematical anal fistulae at St.Mark's Hospital, 1984-88. *Br J Surg*. 1991;78(5):539-41.
14. Kuijpers HC, Schulpen T. Fistulography for fistula-in-ano: is it useful? *Dis Colon Rectum*. 1985;28(2):103-4.
15. Siddiqui M, Ashrafian H, Tozer P, Daulatzai N, Burling D, Hart A, *et al.* A diagnostic accuracy meta-analysis of endoanal ultrasound and MRI for perianal fistula assessment. *Dis Colon Rectum* 2012;55(5):576–85.
16. Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. *Br J Surg* 1976; 63:1–12.
17. Morris J, Spencer JA, Ambrose NS (2000) MR imaging classification of perianal fistulas and its implications for patient management. *Radiographics* 20: 623-635.
18. Spencer JA, Ward J, Beckingham IJ, Adams C, Ambrose NS. Dynamic contrast-enhanced MR imaging of perianal fistulas. *AJR Am J Roentgenol*. 1996;167(3):735-41.
19. Halligan S, Bartram CI. MR imaging of fistula in ano: are endoanal coils the gold standard? *AJR Am J Roentgenol*. 1998;171(2):407-12.
20. Sahni VA, Ahmad R, Burling D. Which method is best for imaging of perianal fistula? *Abdom Imaging*. 2008;33(1):26-30.

Source of Support: None Declared
Conflict of Interest: None Declared