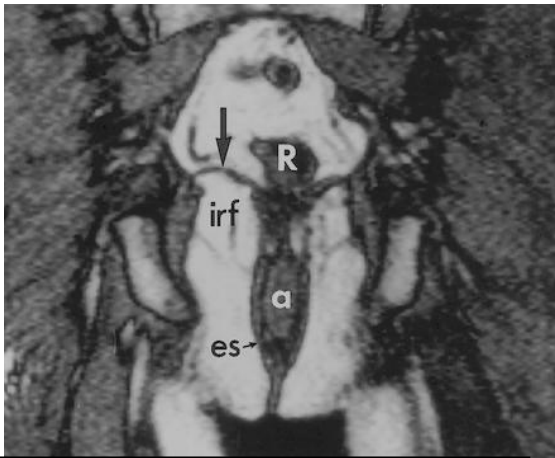


## MR Imaging Classification of Perianal Fistulas

Until recently, imaging had a limited role in the preoperative assessment of perianal fistulas. Magnetic resonance (MR) imaging has been shown to demonstrate accurately the anatomy of the perianal region. In addition to showing the anal sphincter mechanism, MR imaging clearly shows the relationship of fistulas to the pelvic diaphragm (levator plate) and the ischioanal fossae. This relationship has important implications for surgical management and outcome and has been classified into five MR imaging–based grades. If the ischioanal and ischioanal fossae are unaffected, disease is likely confined to the sphincter complex (simple intersphincteric fistulization, grade 1 or 2), and outcome following simple surgical management is favorable. Involvement of the ischioanal or ischioanal fossa by a fistulous track or abscess indicates complex disease related to trans-sphincteric or suprasphincteric disease (grade 3 or 4). Correspondingly more complex surgery may be required that may threaten continence or may require colostomy to allow healing. If the track traverses the levator plate, a translevator fistula (grade 5) is present, and a source of pelvic sepsis should be sought.

### MR Imaging of Perianal Fistulas:

#### Normal MR Anatomy:



**Figure 1a.** Normal perianal anatomy. Coronal T1-weighted (a) and axial T2-weighted (b) MR images show the normal anatomy of the perianal region. a = anal canal, es = external sphincter, iaf = ischioanal fossa, irf = ischioanal fossa, R = rectum, straight arrow in a = the levator plate.



**Figure 1b.** Normal perianal anatomy. Coronal T1-weighted (a) and axial T2-weighted (b) MR images show the normal anatomy of the perianal region. a = anal canal, es = external sphincter, iaf = ischioanal fossa, irf = ischioanal fossa, R = rectum, straight arrow in a = the levator plate

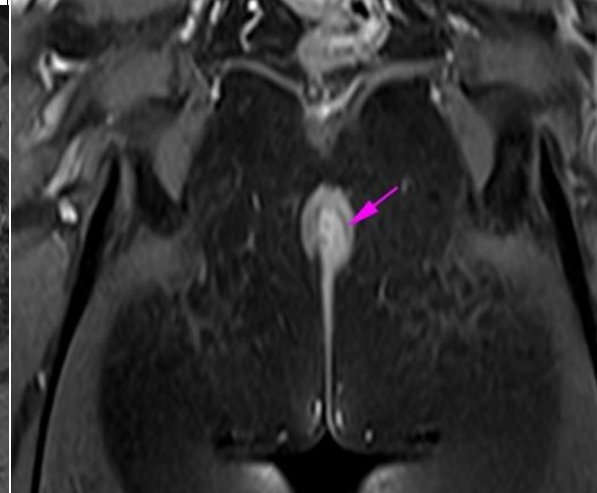
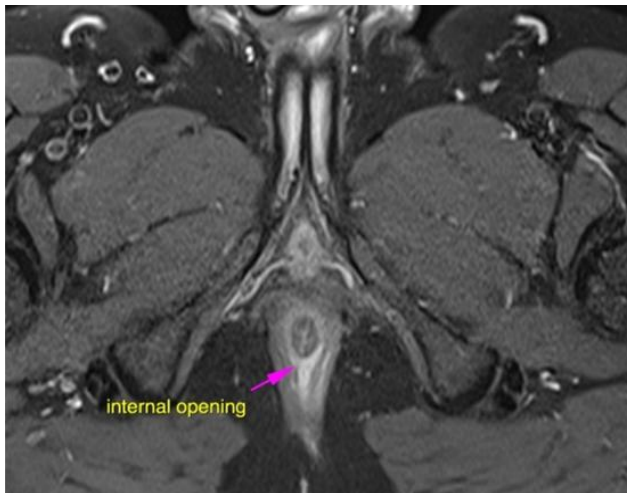
**Grade 1: Simple Linear Intersphincteric Fistula.**—In a simple linear intersphincteric fistula, the fistulous track extends from the skin of the perineum or natal cleft to the anal canal, and the ischioanal and ischioanal fossae are clear. There is no ramification of the track within the sphincter complex. The enhancing track is seen in the plane between the sphincters and is entirely confined by the external sphincter. Fistulous tracks arising behind the transverse anal line, which are by far 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.

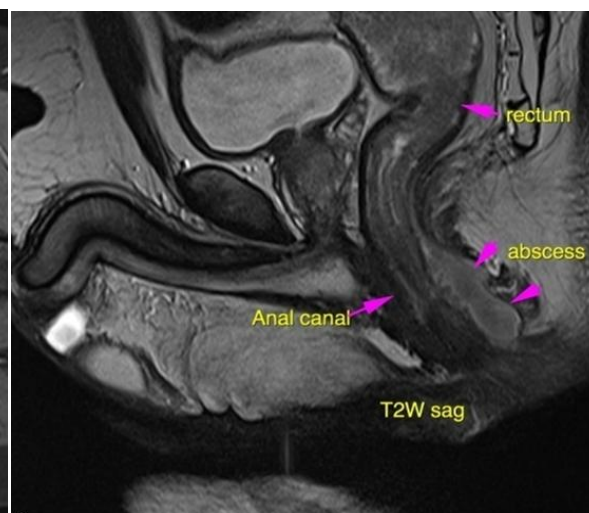
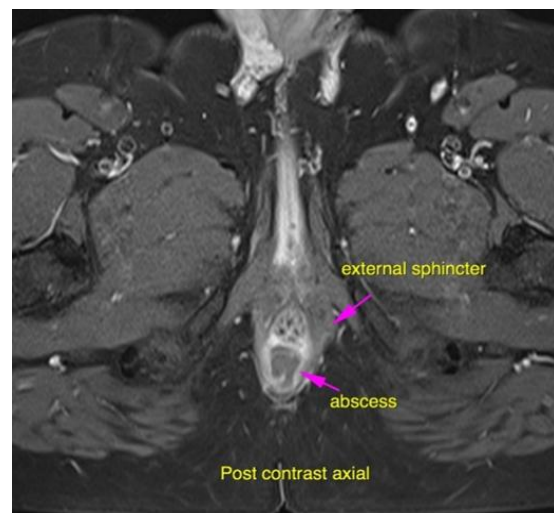
**Grade 3: Trans-sphincteric Fistula.**—Instead of tracking down the intersphincteric plane to the skin, the trans-sphincteric fistula pierces through both layers of the sphincter complex and then arcs down to the skin through the ischioanal and ischioanal fossae. Thus, a trans-sphincteric fistula may disrupt the normal fat of the ischioanal and ischioanal fossae with secondary edema and hyperemia.

**Grade 4: Trans-sphincteric Fistula with Abscess or Secondary Track within the Ischiorectal Fossa.**— A trans-sphincteric fistula can be complicated by sepsis in the ischiorectal or ischioanal fossa. Such an abscess may manifest as an expansion along the primary track or as a structure distorting or filling the ischiorectal fossa. Axial and coronal contrast-enhanced MR imaging clearly depicts a trans-sphincteric abscess, which characteristically has a central focus of low-signal-intensity pus. As with grade 3 lesions, the key anatomic 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.

**Grade 5: Supralelevator and Translevator Disease.**—In rare cases, perianal fistulous disease extends above the insertion of the levator ani muscle. Suprasphincteric fistulas extend upward in the intersphincteric plane and over the top of the levator ani to pierce downward through the ischiorectal fossa. Extrasphincteric fistulas reflect extension of primary pelvic disease down through the levator plate. These fistulas pose problems for management because further assessment is needed to detect pelvic sepsis. Coronal contrast-enhanced MR imaging elegantly demonstrates breaches of the levator plate, which is clearly shown in this plane. In some translevator fistulas, horseshoe ramifications to the contralateral side may occur.



Grade 1 perianal fistula. Post contrast axial and coronal MR image shows a posterior midline intersphincteric fistula.(pink arrows)

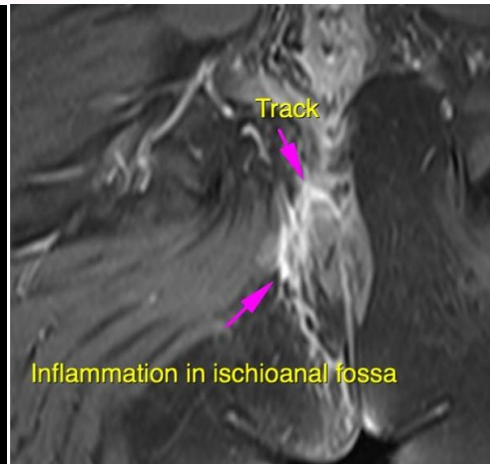
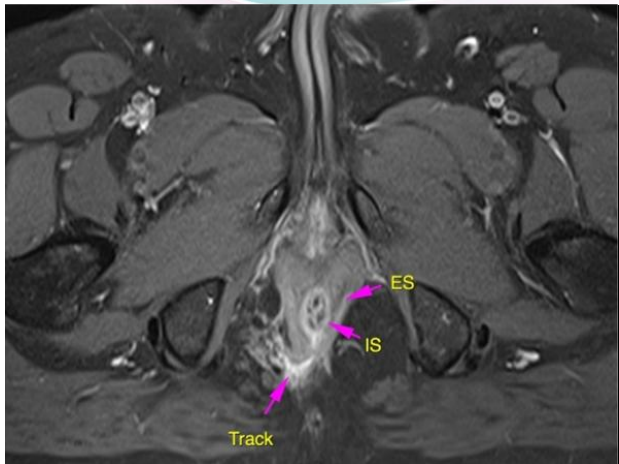


Grade 2 perianal fistula. Post contrast axial and T2W sagittal MR image show intersphincteric abscess, which is peripherally enhanced and contains a central focus of nonenhancing pus. The fistula was confined by the external sphincter and the ischiorectal fossa was unaffected.

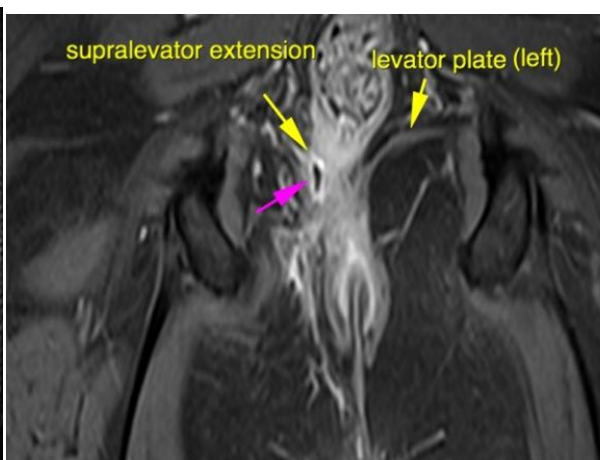
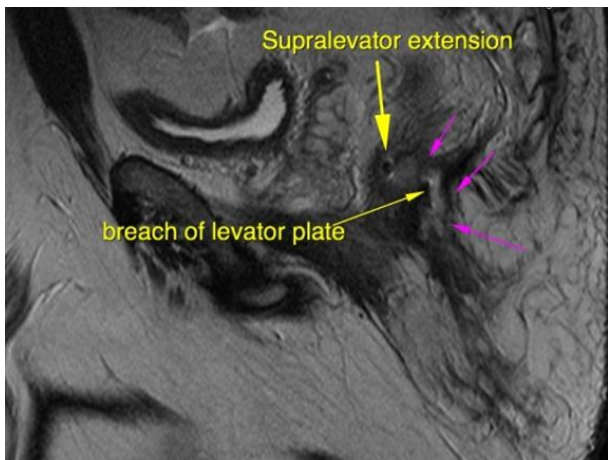
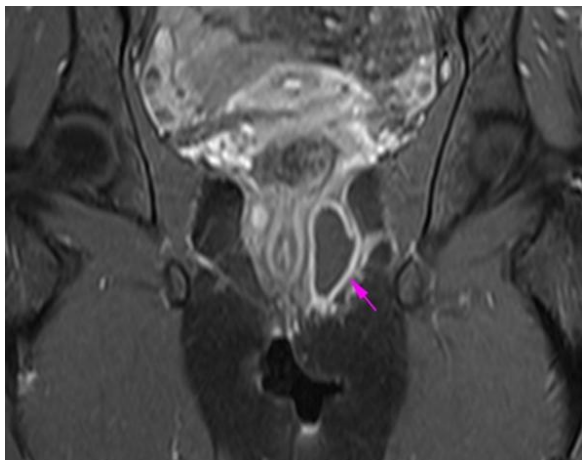


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Grade 3 perianal fistula. Post contrast axial and coronal MR images show a right trans-sphincteric fistula within the ischioanal fossa and piercing external sphincter. IS=internal sphincter, ES=external sphincter.



Grade 5 perianal fistula. T2W sagittal and post contrast coronal MR images show a right translevator fistula (pink arrows) with supralelevator extension.

**Message: MR imaging has had a major impact on the preoperative assessment of perianal fistulas and contrast enhanced MRI is the imaging modality of choice for perianal fistulas.**

Regards,

**Dr.Deepa S.Nadkarni / Dr.Shaikh M.Mazhar**

N.B: These cases are authentic and from the archives of Radiance Diagnostics. For any queries/suggestions/feedback write to us at [radiance@radiancediagnostics.in](mailto:radiance@radiancediagnostics.in) . Case of the month can also be accessed anytime online at **VIEW BOX** at [www.radiancediagnostics.in](http://www.radiancediagnostics.in)