

ROLE OF MRI IN DIAGNOSIS OF PERIANAL FISTULA

ESSAY

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بسم الله الرحمن الرحيم

قالوا سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْحَكِيمُ

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List of Abbreviations

3-D	Three dimensions
AES	Anal endosonography
AIDS	Acquired immune deficiency syndrome
CD	Crohn's disease
CT	Computed tomography
EAS	External anal sphincter
EUA	Examination under anaesthesia
FID.....	Free induction decay
FLAIR... ..	Fluid-attenuated inversion recovery
FLASH-3D.....	Fast low-angle shot 3-dimensional
HIV	Human immune deficiency virus
HPV.....	Human papiloma virus
IAS	Internal anal sphincter
MRI	Magnetic resonance imaging
RF.....	Radio frequency
SNR.....	Signal-to-noise ratio
STIR.....	Short inversion time inversion recovery
TB	Tuberculosis
TE.....	Echo time
TI	Inversion time
TR.....	Repetition time

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Introduction

Perianal fistula is a common condition defined by an abnormal perianal track that connects two epithelialized surfaces, usually the anal canal to the perianal skin (**Williams, 2004**).

Perianal fistula commonly occurs in an otherwise healthy patient, typically middle-aged men. Most experts believe that it occurs as result of anal gland obstruction, secondary abscess formation and subsequent external decompression through one of several fairly predictable routes. The internal origin of the fistula usually begins from the middle of the anal canal at the dentate line (**Pemberton et al., 2000**).

A majority of anal fistulas have a single simple fistula track that is easily identified during surgery, and surgical treatment is generally successful. However, 5%–15% of anal fistula tracks have a more complicated course, with secondary extensions outside the anal sphincter. These so-called complex fistulas are often associated with recurrent fistulas and fistulas associated with underlying Crohn disease.

Failure in accurate assessment of the secondary extensions during surgery may be responsible for the high rate of recurrence.

Diagnostic studies that allow the acquisition of accurate preoperative information on the course of the primary track and its secondary extensions may improve the surgical treatment of these complex fistulas (**Phillips, 1998**).

Contrast material-enhanced fistulography is correct in only 16% of patients, and computed tomography usually

fails to depict subtle fistula tracks and abscesses because of the inherently low softtissue contrast resolution.

Anal and transrectal endosonographic studies show better resolution of fistulas and their relation to the anal sphincter muscles. The limited field of view, however, is a considerable disadvantage, and endosonography is reported to be no more accurate than examination under anesthesia.

In general, the imaging of perianal fistulas was disappointing until the introduction of magnetic resonance (MR) imaging (**Schwartz et al., 2001**).

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 ischiorectal 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 ischiorectal 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 ischiorectal 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 (**Morris et al., 2000**).

Furthermore, preoperative MRI frequently alters the surgical approach and, most important, MRI-guided surgery can significantly reduce postoperative recurrence in complex cases by 75%. For these reasons, MRI may become routine for assessment of complex or recurrent fistulas (**Spencer et al., 1998**).