ANATOMY AND CLASSIFICATIONS OF ANAL FISTULA

BY

WALEED THABET

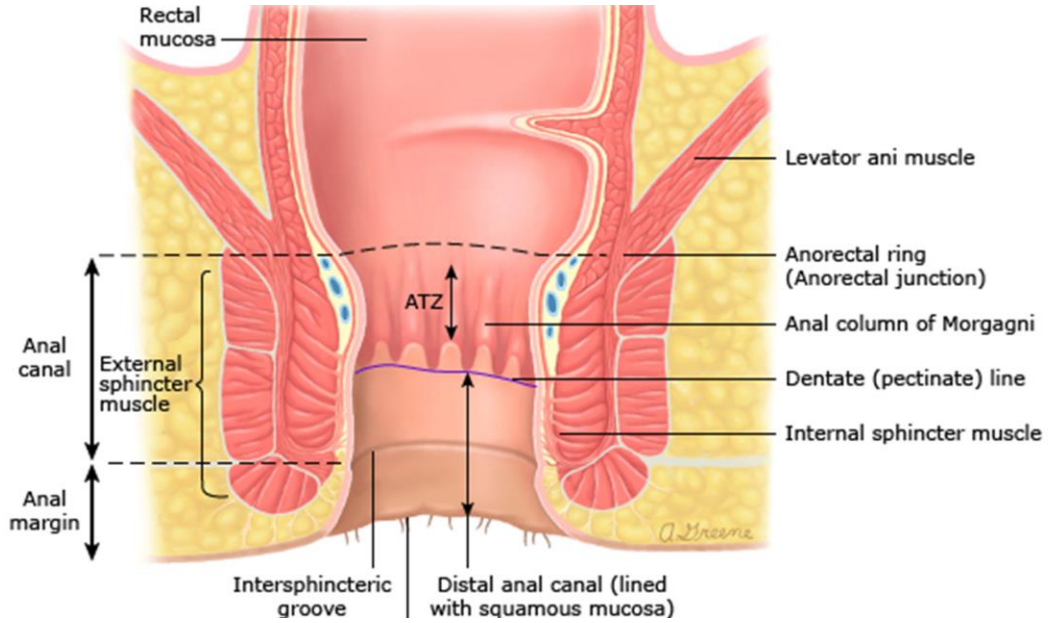
PROFESSOR OF COLORECTAL SURGERY

MANSOURA UNIVERSITY

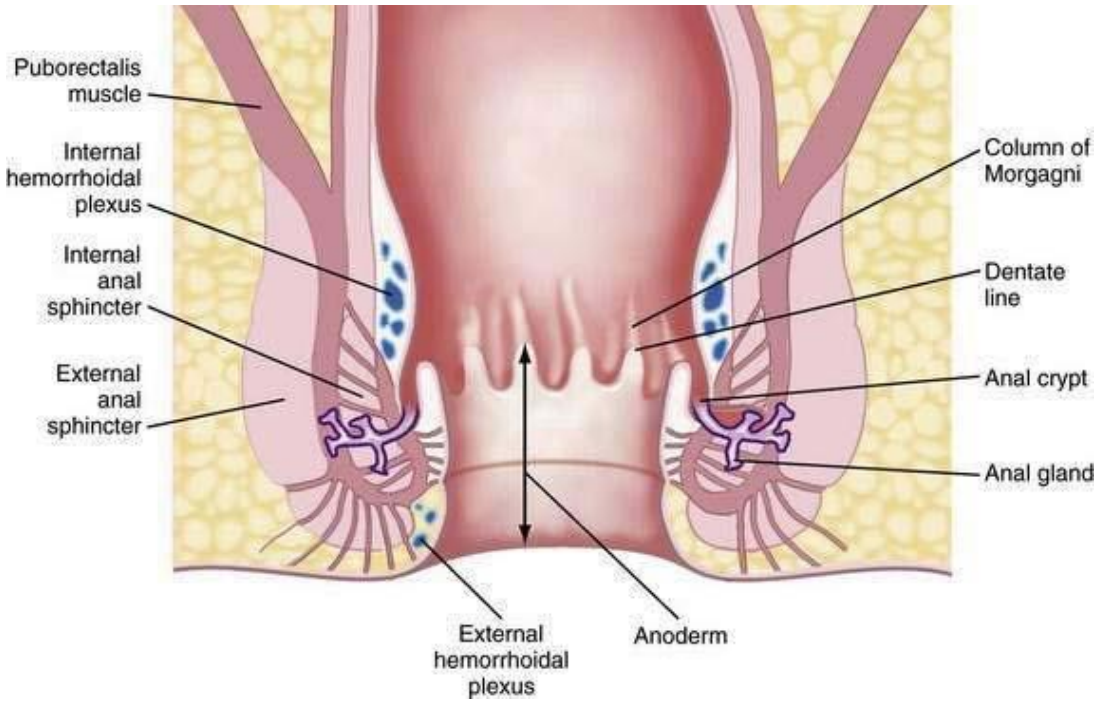
EGYPT

ANATOMY OF ANAL CANAL

Surgical anal canal begins at the anorectal junction and terminates at the anal verge. Measures 2-4 cm in length. Anatomic anal canal extends from dentate (pectinate) line to the anal verge.



The lining of the anal canal proximal to the dentate line is thrown into pleats or columns ,the columns of Morgagni. At the lower end of each column, and between each column is a small pocket, or anal crypt. These crypts connect to anal glands. Anal glands begin at the crypt and extend outward.

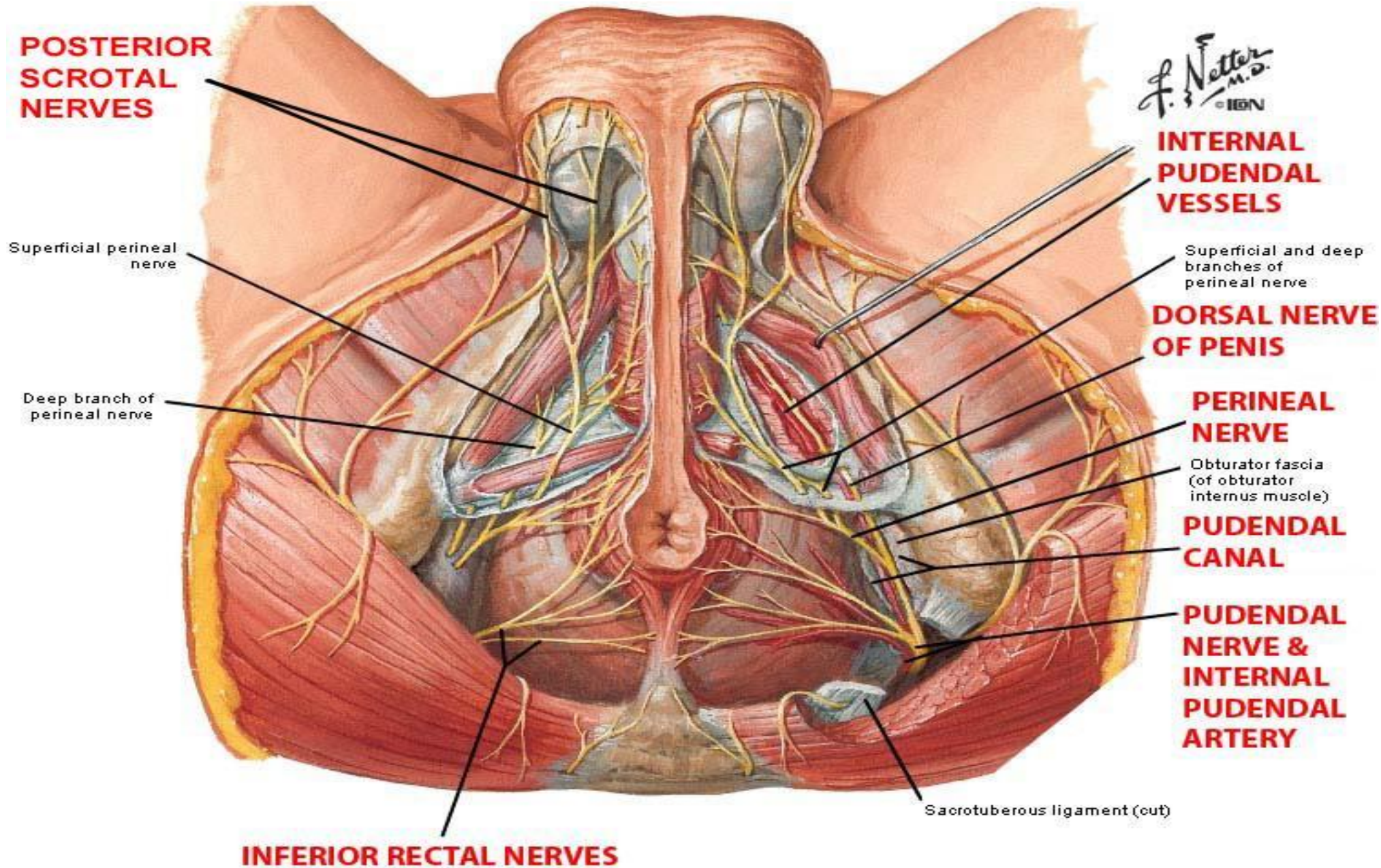


External Sphincter:

- It is a striated muscle.
- Under voluntary control
- Supplied by pudendal nerve.
- Has 3 segments Deep, Superficial, subcutaneous.
- Its deep segment is continuous with the puborectalis muscle and forms the anorectal ring, which is palpable upon digital rectal examination.
- Tonically contracted at rest

Internal Sphincter:

- It’s a smooth muscle.
- Under autonomic control
- It is an extension of the involuntary circular smooth muscle of the rectum.
- Totally contracted at rest but relaxes as a consequence of reflex activity, predominantly during defecation.


POSTERIOR SCROTAL NERVES
Superficial perineal nerve
Deep branch of perineal nerve
INFERIOR RECTAL NERVES
F. Netter M.D.
©IBN
INTERNAL PUDENDAL VESSELS
Superficial and deep branches of perineal nerve
DORSAL NERVE OF PENIS
PERINEAL NERVE
Obturator fascia (of obturator internus muscle)
PUDENDAL CANAL
PUDENDAL NERVE & INTERNAL PUDENDAL ARTERY
Sacrotuberous ligament (cut)

Anal fistula is a common disease that has been troubling mankind for the last few centuries. Despite several advancements in this field, gold-standard treatment of anal fistula still eludes us and if not treated properly will result in one of two terrible complications, **recurrence** or **incontinence.**

What is Fistula-in-ano?

A fistula in ano or anal fistula, is a chronic abnormal communication, usually lined to some degree by granulation tissue, which runs outwards from the anorectal lumen (internal opening) usually to an external opening on the skin of perineum or buttocks.

How many theories could explain the Pathogenesis ?

1-Cryptoglandular:

Abscess results from obstruction of an anal gland and the fistula is due to chronic infection and epithelialization of the abscess drainage tract

2-Crohn's disease:

Penetrating inflammation rather than infection of a perianal gland.

How could we Classify anorectal abscesses?

Anorectal abscesses are defined by the anatomic space in which they develop :

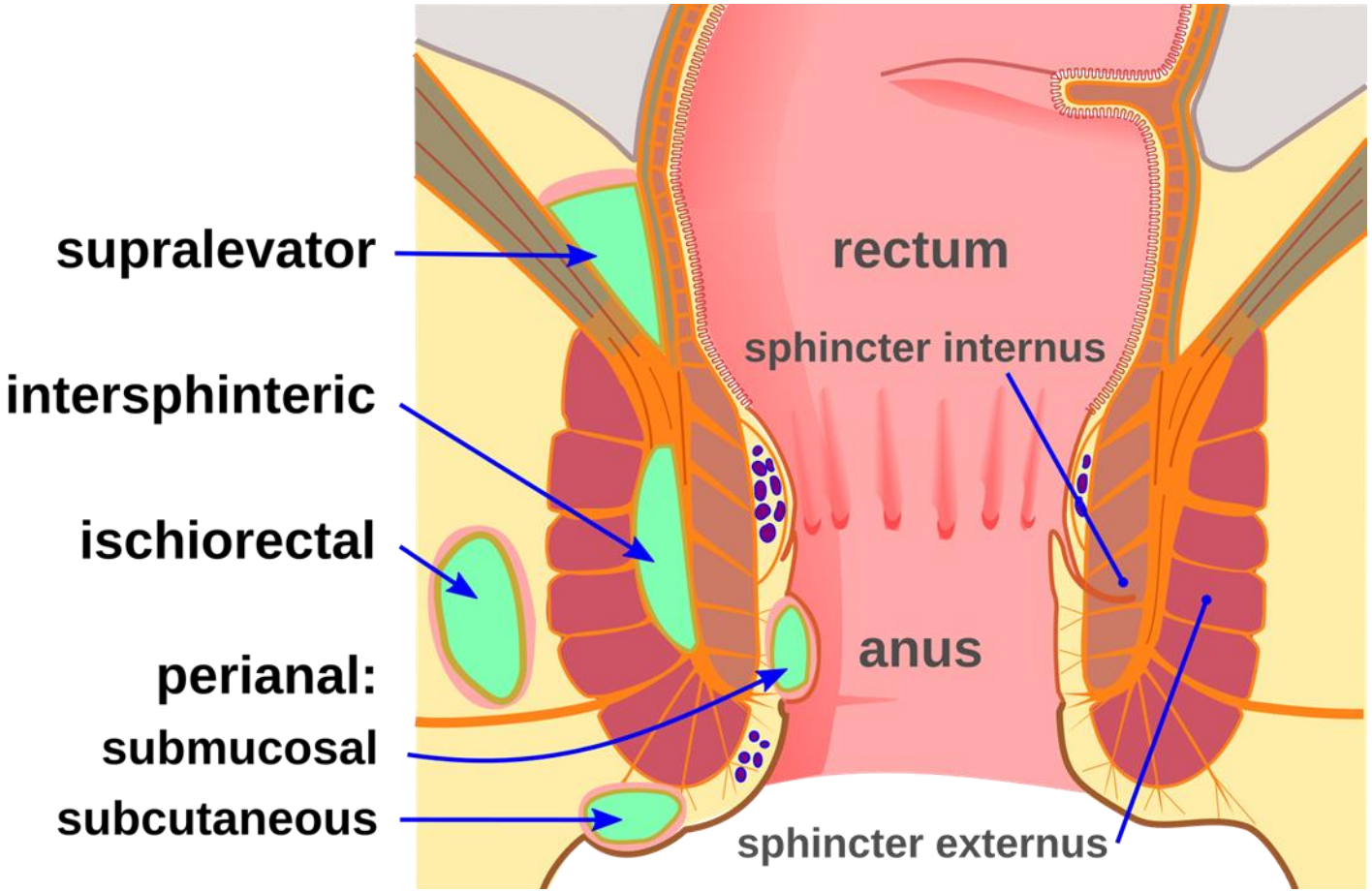
-perianal

-ischiorectal spaces

-Intersphincteric

- supralevator

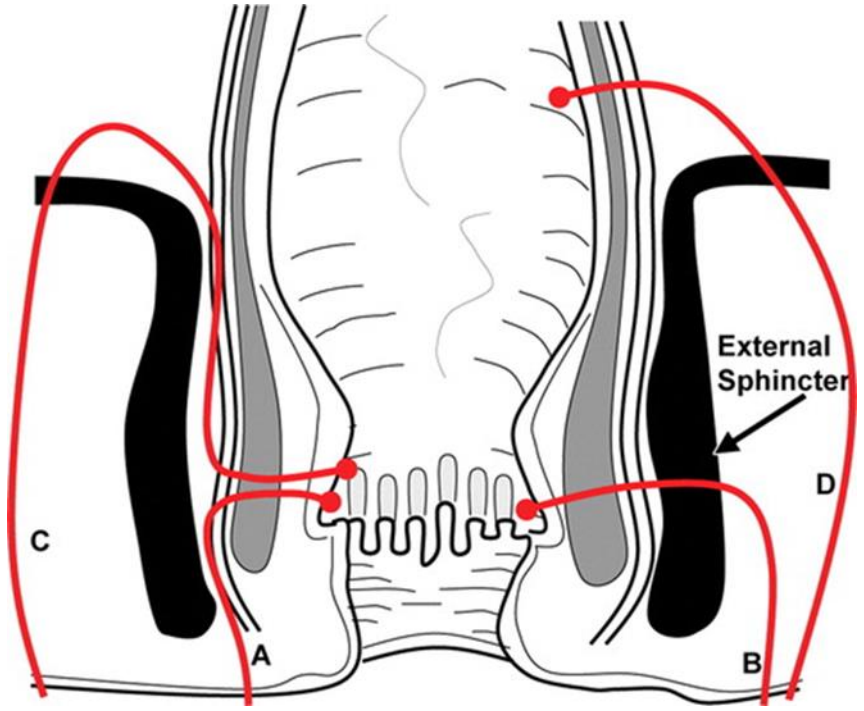
Classification of anorectal abscesses



Parks Classification

A fistula-in-ano is classified in terms of its relationship to the anal sphincter muscles.

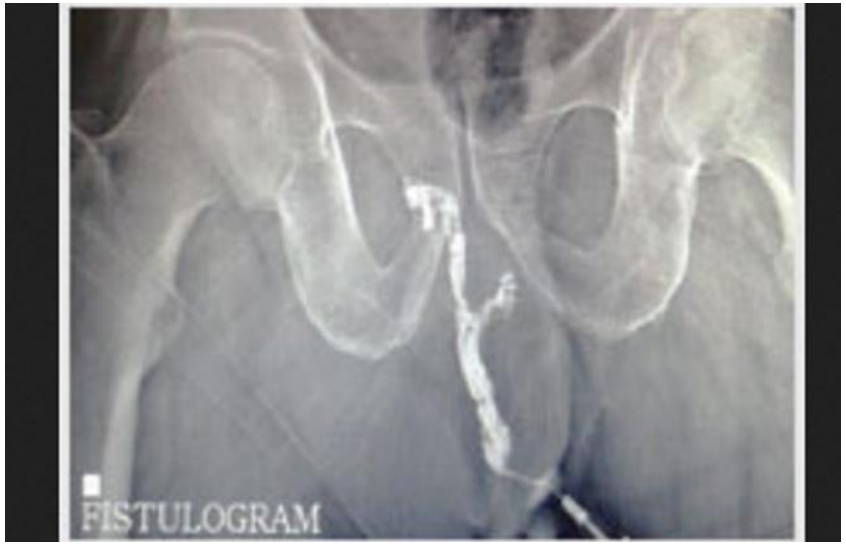
Parks described perianal fistulas in the coronal plane according to the course of the fistula and its relationships to the internal and external sphincters.



Fistulography

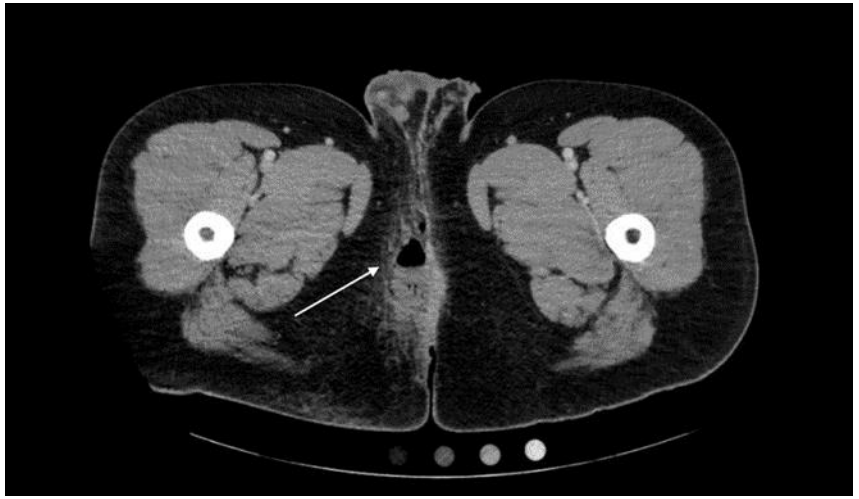
Fistulography has two major drawbacks:
(a) The difficulty of assessing secondary extensions owing to lack of proper filling with contrast material.

(b) Inability to visualize the anal sphincters and hence determine their relationship to the fistula.



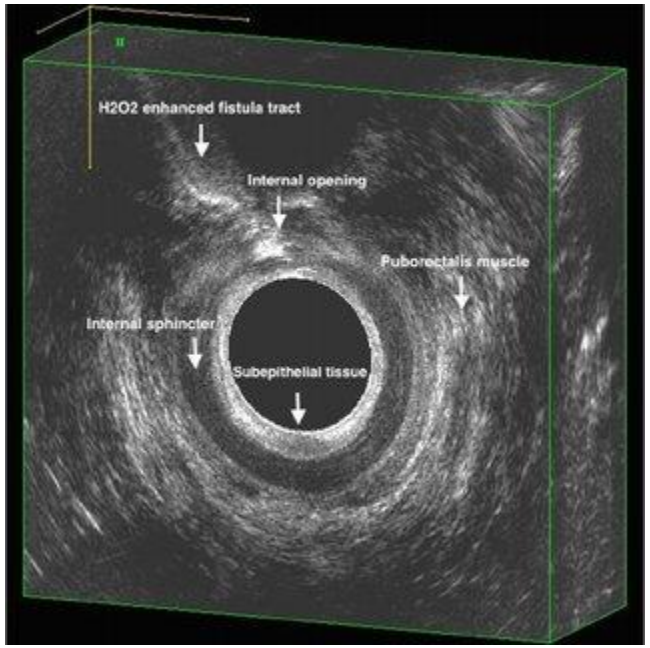
Computed tomography (CT)

Computed tomography (CT) with rectal and intravenous contrast material while useful for evaluation of perirectal inflammatory disease and suspected perirectal abscesses, CT usually fails to define subtle fistulas and abscesses owing to poor resolution of soft tissue.



EAUS

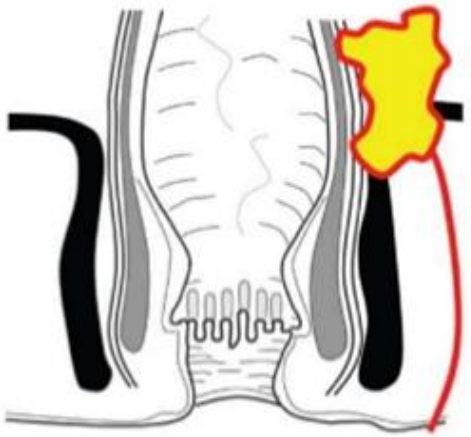
Studies anal fistula relationship to the anal sphincters with accurate identification of the **internal** opening.



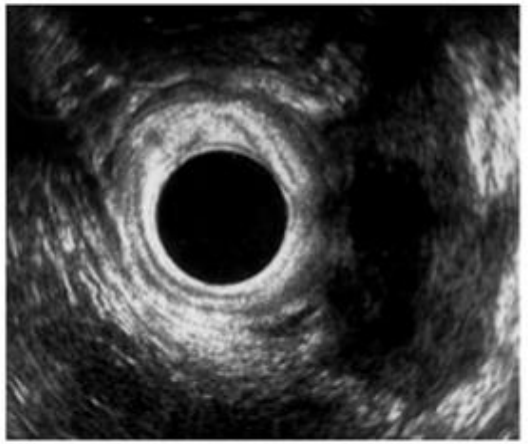
However, the limited field of view is a considerable inconvenience with this approach, precluding use of endosonography to assess suprasphincteric, and extrasphincteric tracks or secondary extensions.

Supralevator abscess

Diaphragmatic representation[1]



Axial ERUS[2]

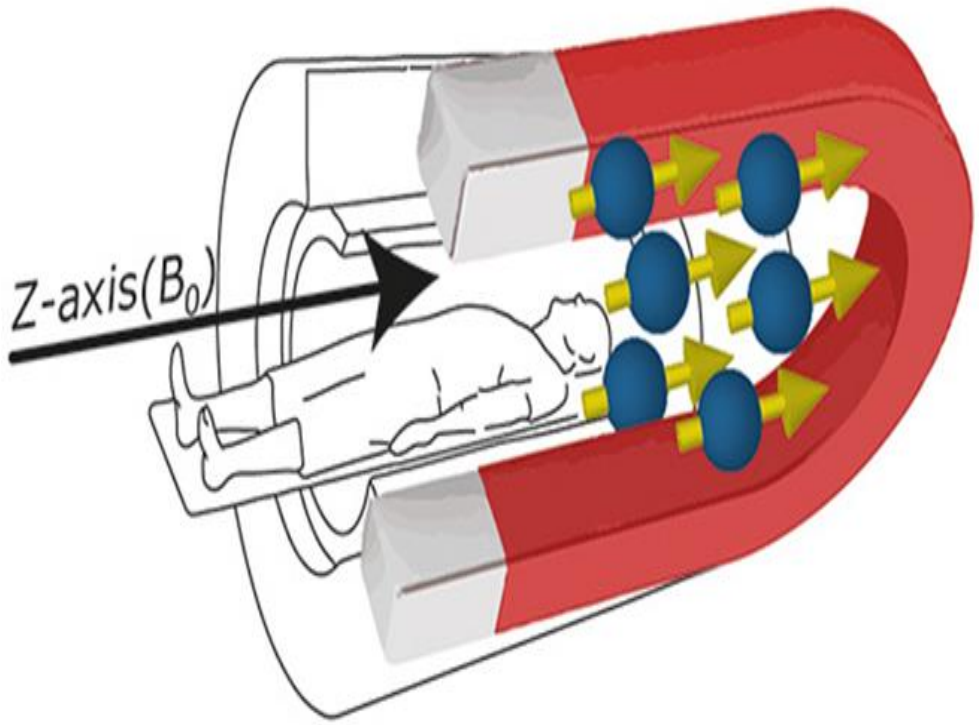


Left supralevator abscess with left translevator fistula

(1) de Miguel Criado J et al. RadioGraphics 2012; 32:175–194
(2) Navarro A, Pando JA, and Ramírez JM. Atlas of anal endosonography, 2010.

MR FISTULOGRAM

MR imaging allows precise definition of the fistulous track and identification of secondary fistulas or abscesses that would otherwise remain undetected.



MRI gives detailed anatomic descriptions of the relationship between the fistula and the anal sphincter complex, significantly reducing recurrence of the disease and avoids fecal incontinence.

St James's University Hospital Classification

MR imaging–based classification was proposed to relate the Parks surgical classification to anatomic MR imaging findings in the axial and coronal planes.

The classification considers the primary fistulous track as well as secondary extensions and abscesses in evaluating and classifying fistulas.

St James's University Hospital Classification

The classification grades fistulas into five groups:

grade 1, simple linear intersphincteric fistula;

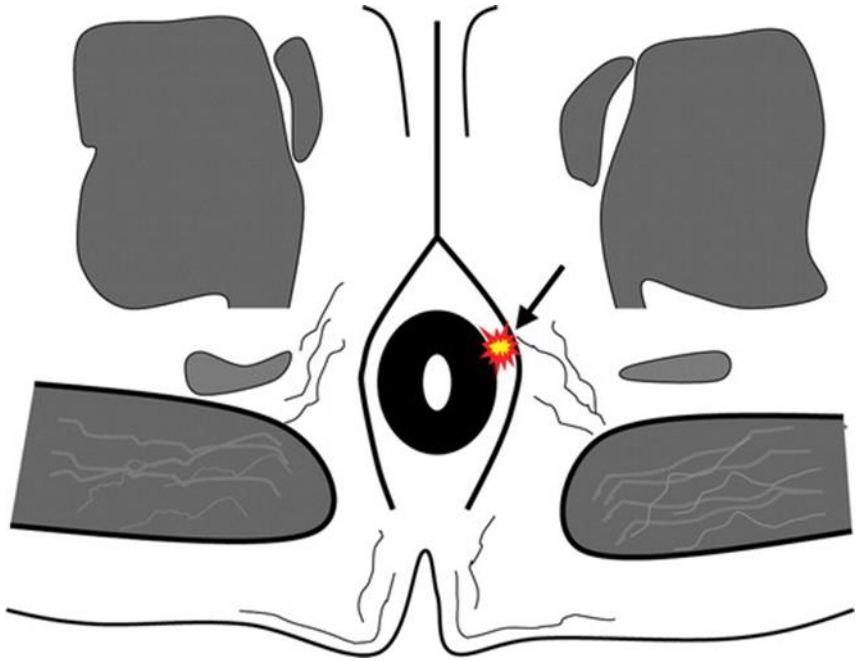
grade 2, intersphincteric with abscess or secondary track;

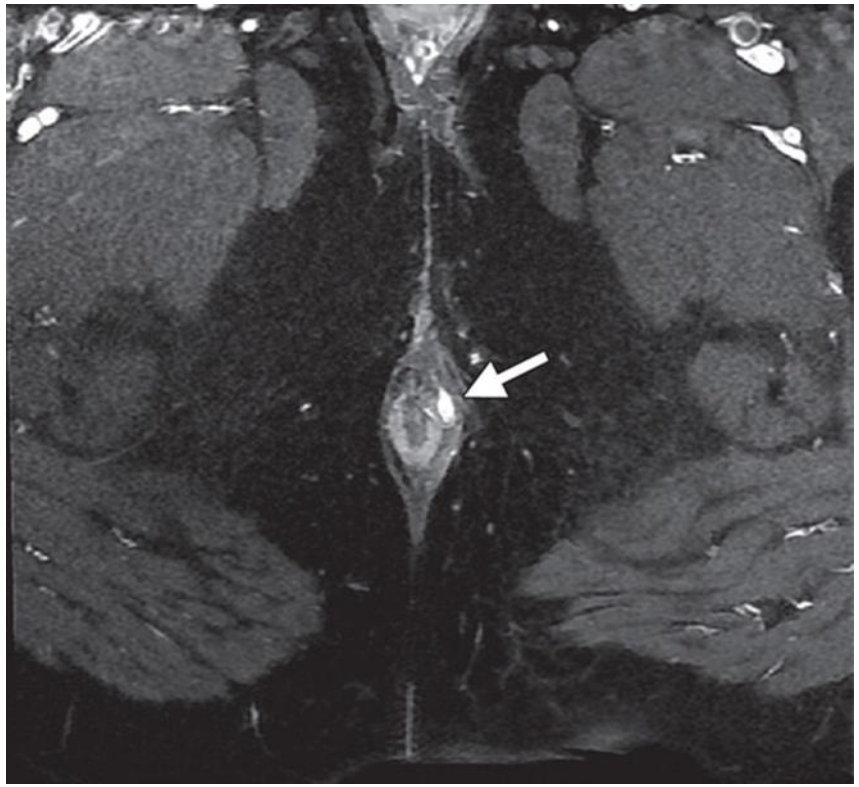
grade 3, transsphincteric;

grade 4, transsphincteric with abscess or secondary track in ischioanal fossa;

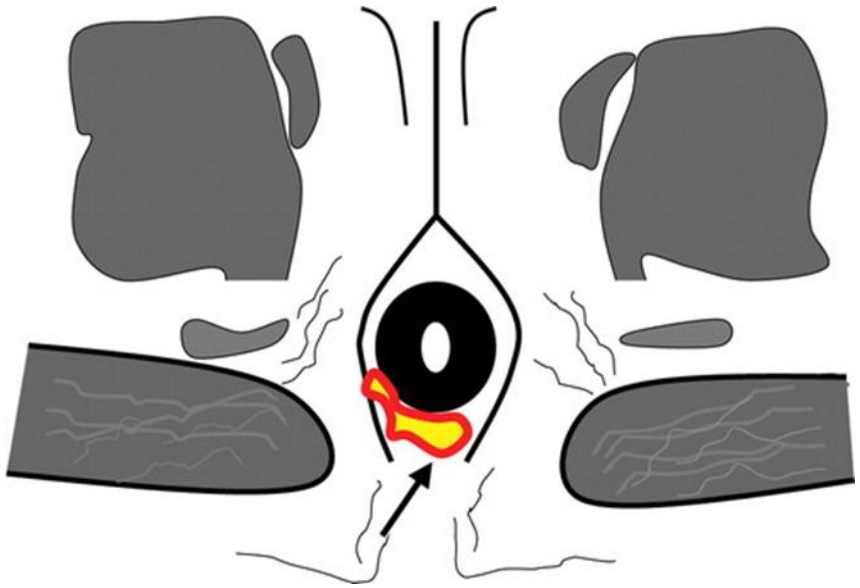
grade 5, supralevator and translevator.

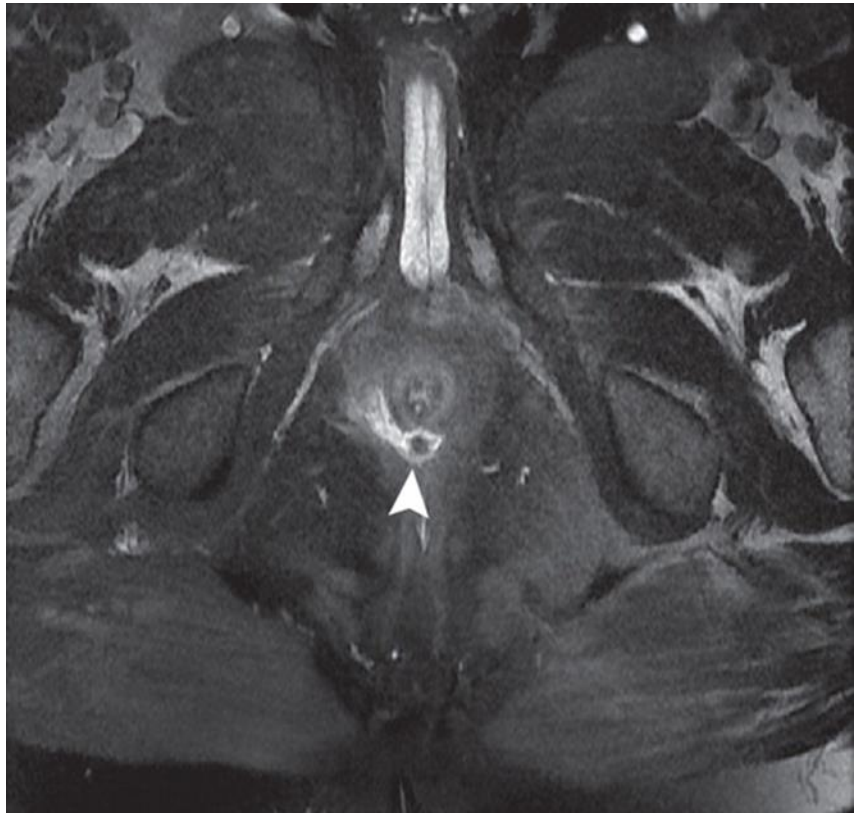
Grade 1: Simple Linear Intersphincteric Fistula.



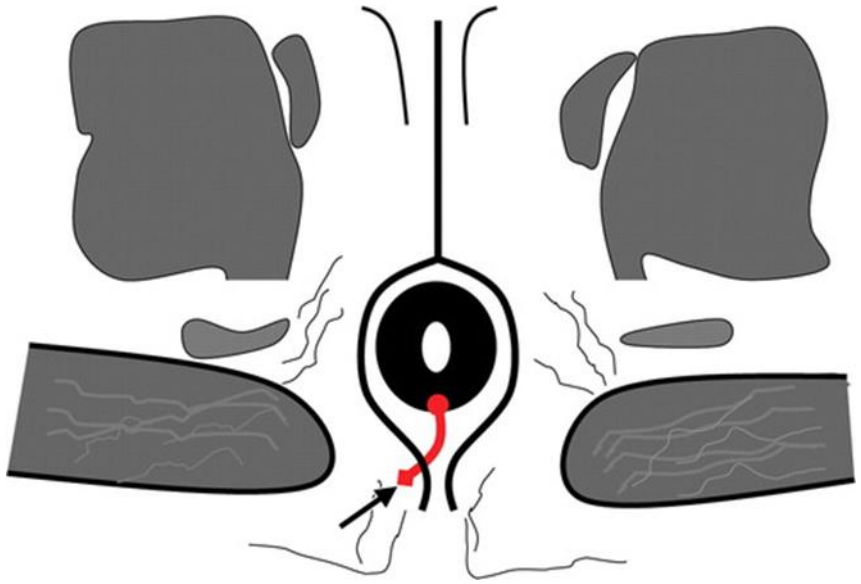


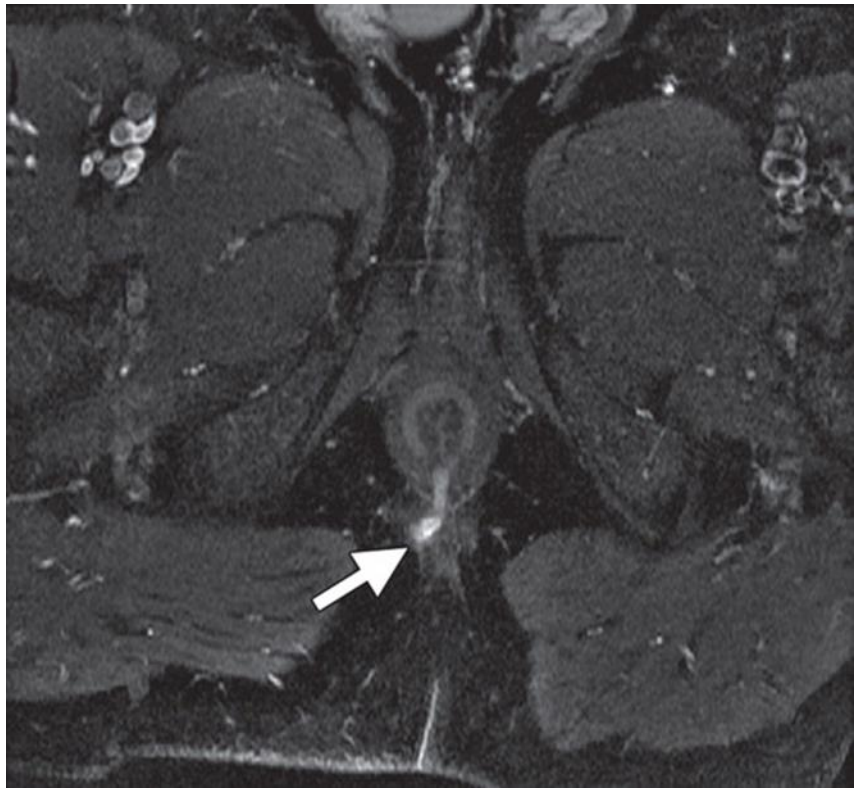
Grade 2: Intersphincteric Fistula with an Abscess or Secondary Track.



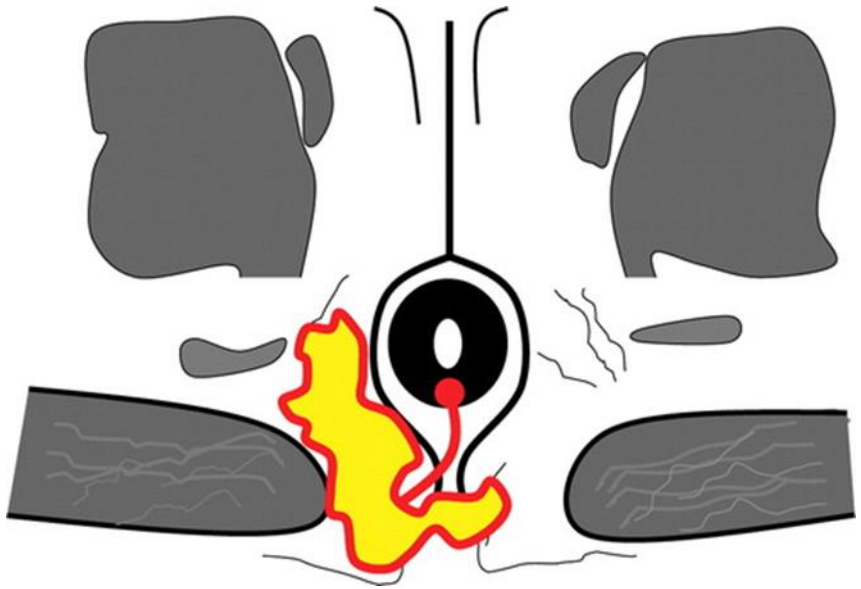


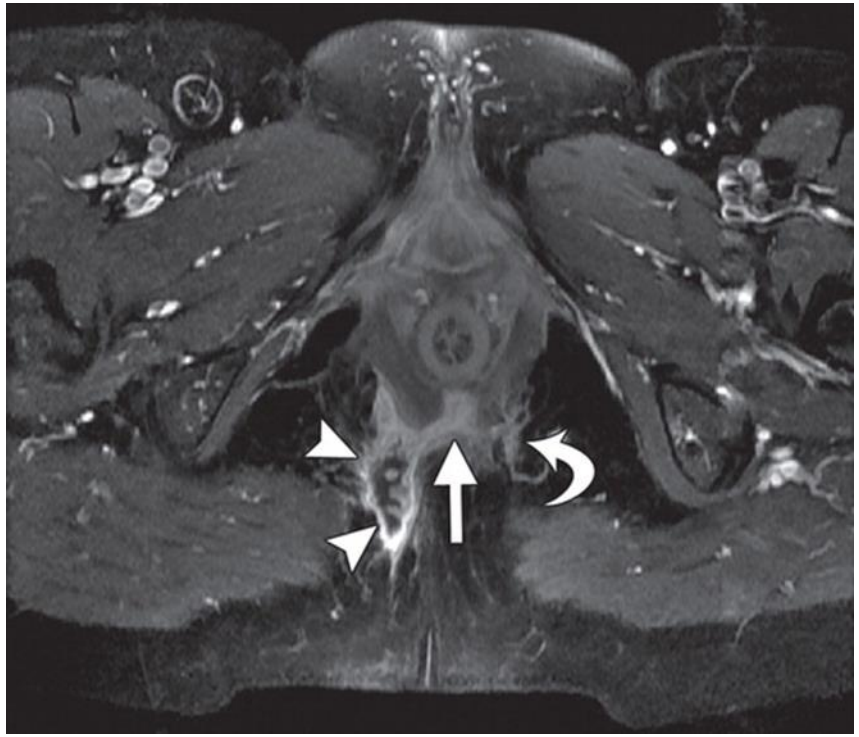
Grade 3: Transsphincteric Fistula.



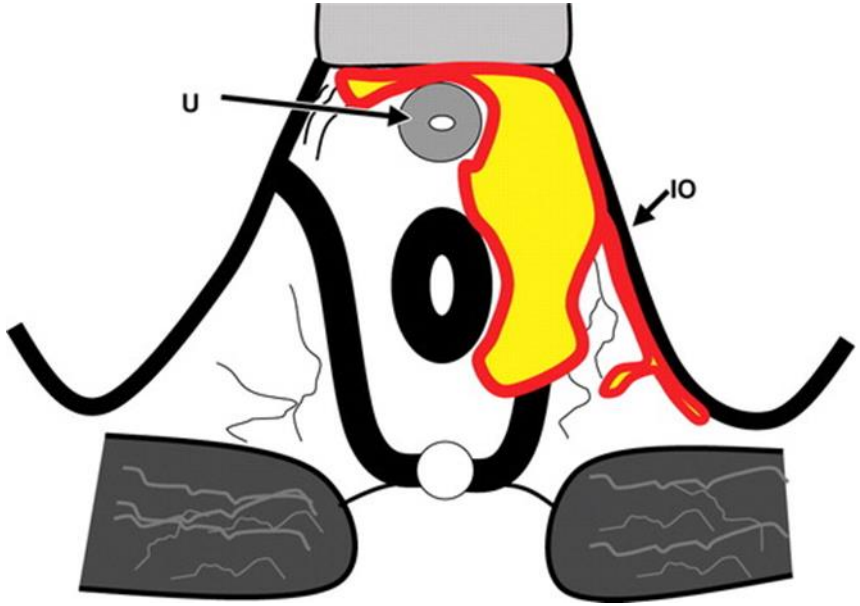


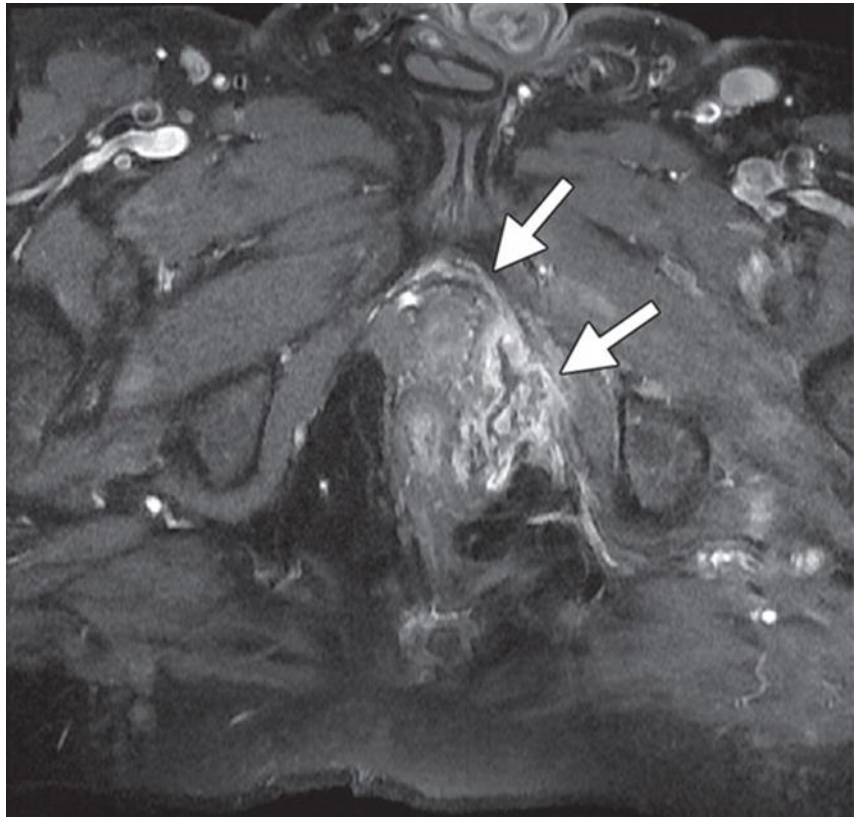
Grade 4: Transsphincteric Fistula with an Abscess or Secondary Track in the Ischiorectal or Ischioanal Fossa.





Grade 5: Supralevator and Translevator Disease.



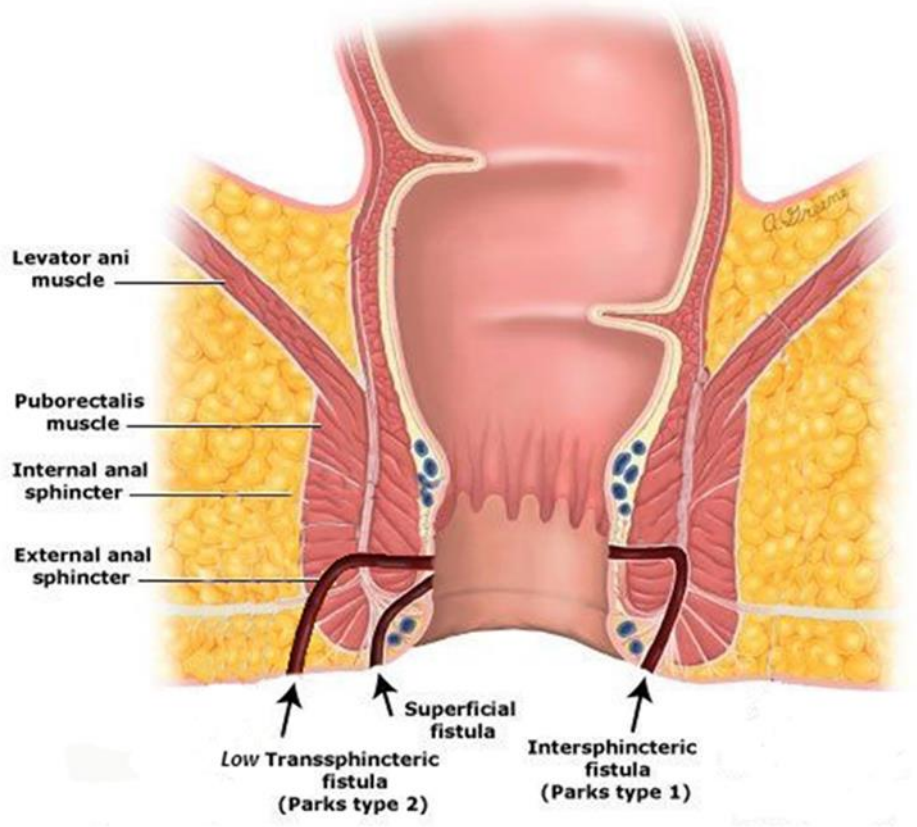


Simple Fistulas that you can cut(lay open):

-Intersphincteric fistulas.

-Low Superficial fistulas.

-transphincteric fistulas that involve <30% of the external sphincter.



Complex anal fistula:

Fistulas that you cannot cut (lay open) :

-Transphincteric fistulas that involve >30% of the external sphincter.

-Suprasphincteric

-Extrasphincteric

-Horse shoe

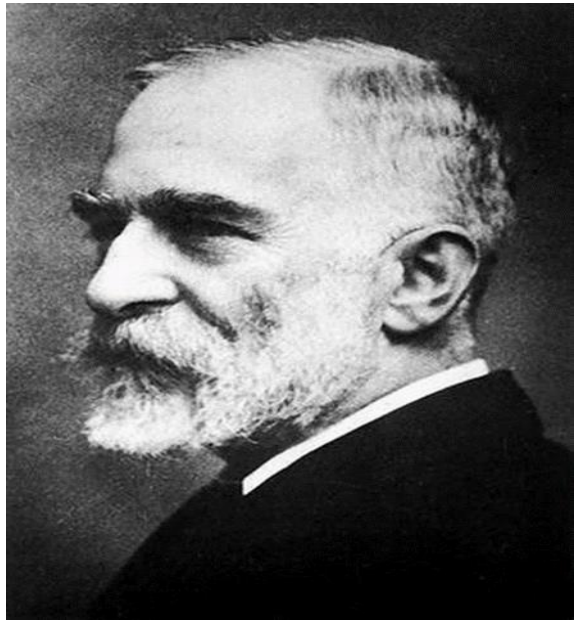
-Anterior fistula in females

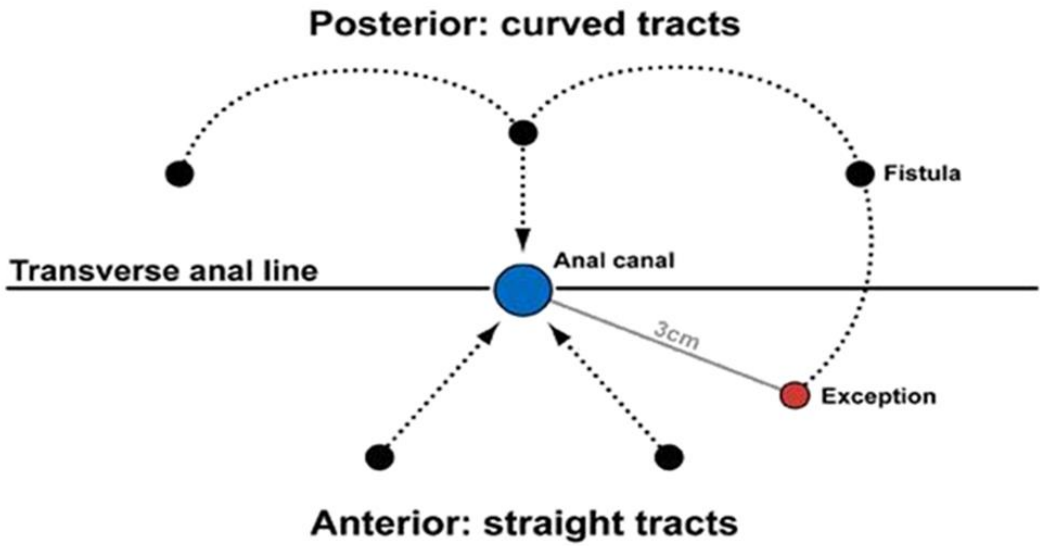
-Anal fistula associated with IBD

-Anal fistula associated with fecal incontinence.

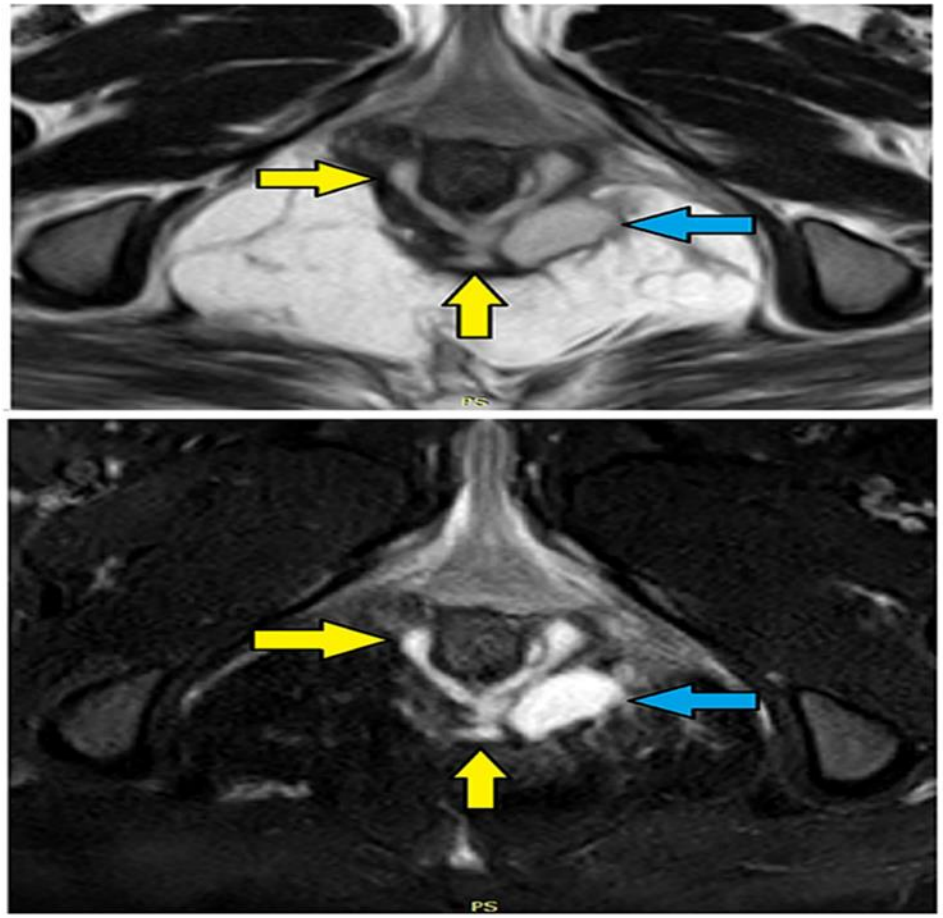
Goodsall's rule

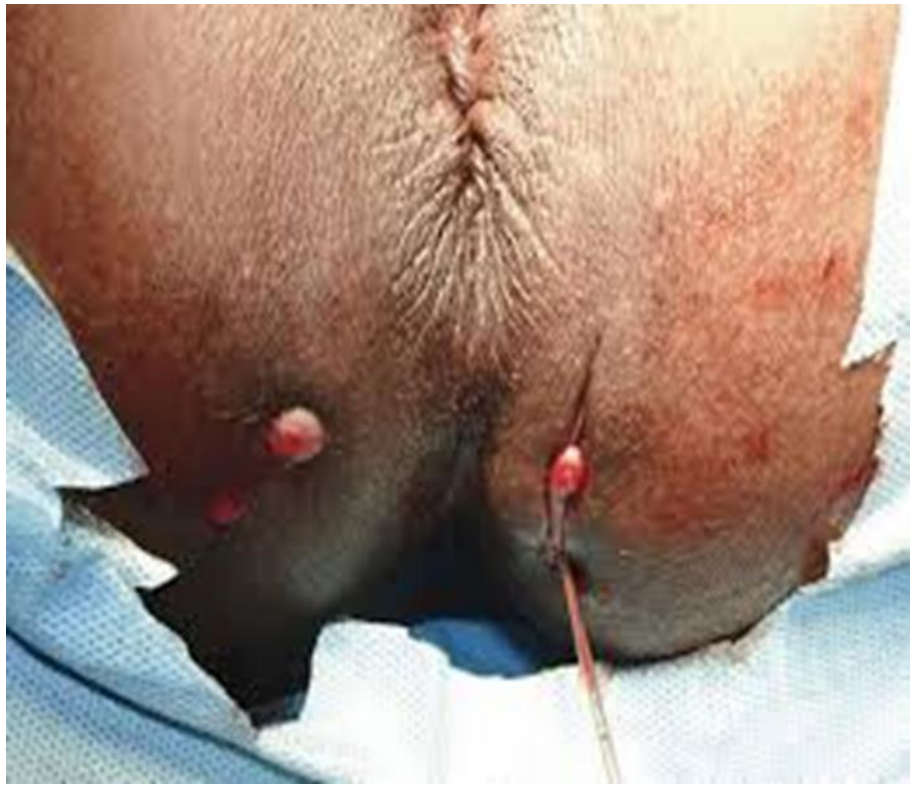
Goodsall's rule says when the external opening of fistula in ano lies behind the transverse anal line or anterior and beyond 3 cm the internal opening is in the midline posteriorly and the track will be curved. When the external opening is in front of the transverse line but within 3 cm from the anus, the internal opening will be in the same radial line of the external opening and tract will be straight.





In posterior horseshoe fistulas, the internal opening is assumed to be in the posterior midline:





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Original Research Article

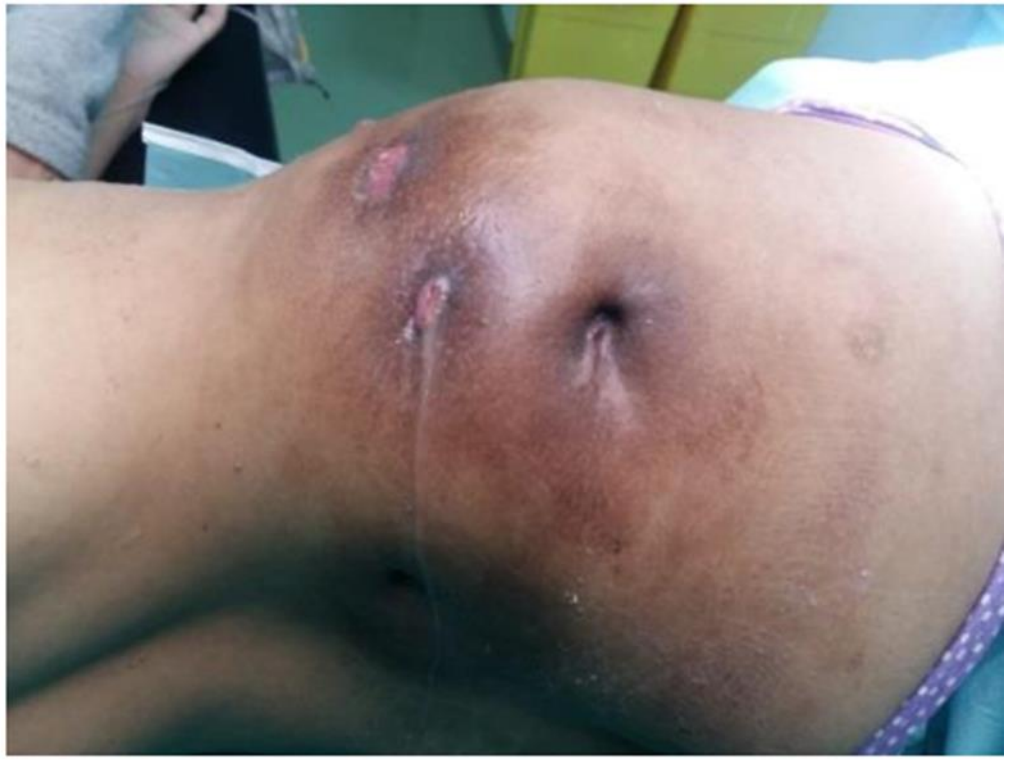
Goodsall's rule– its predictive accuracy in tracing the tract of fistula in ano

Devi V. S., Sunandha Kumari Lawrence Thulasibai*, Deepak Paul, Anu V. Babu, Jayasankar, Beena Kumari

Results: Predictive accuracy of Goodsall's rule found to be 84.6% in case of fistula with an anterior external opening. While in case of fistula with posterior external opening this found to be 69.1%. Overall predictive accuracy of Goodsall's rule is 77%.

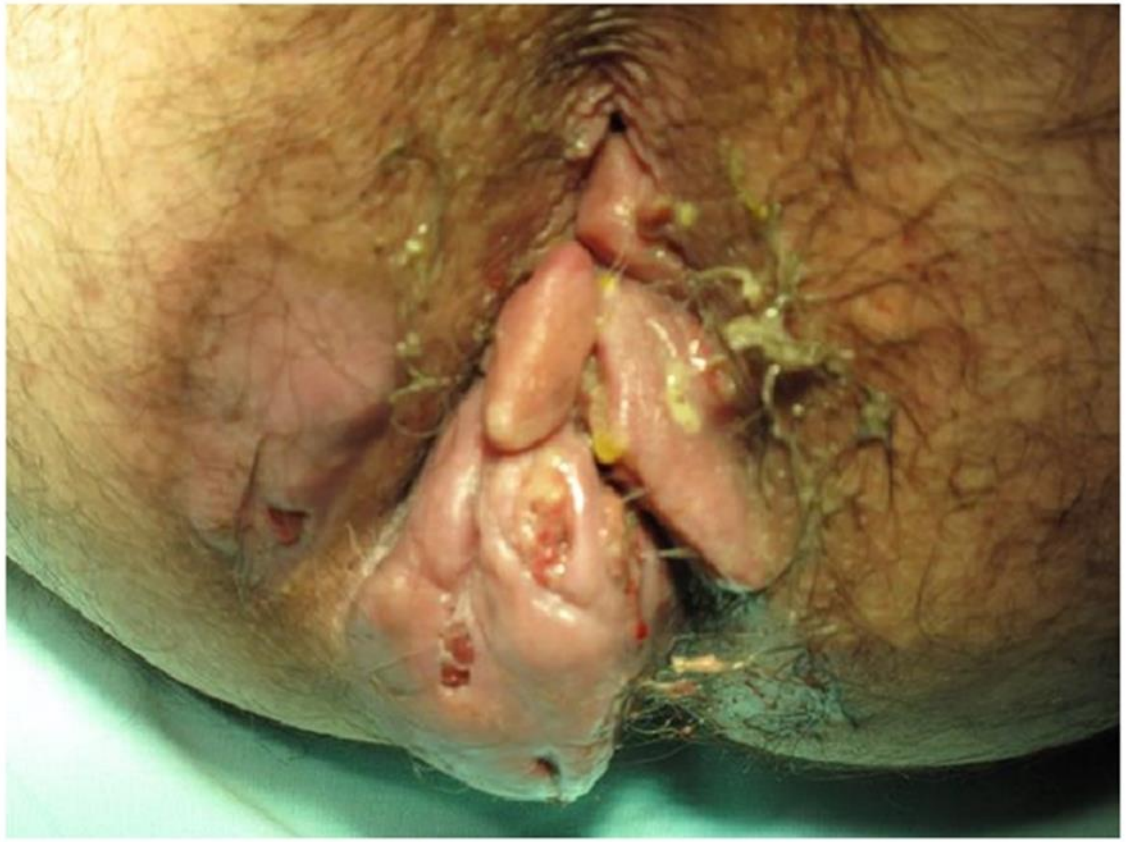
Conclusions: Goodsall's rule can be used as guide in predicting the tract.

FISTULA IN INFLAMMATORY BOWEL DISEASE

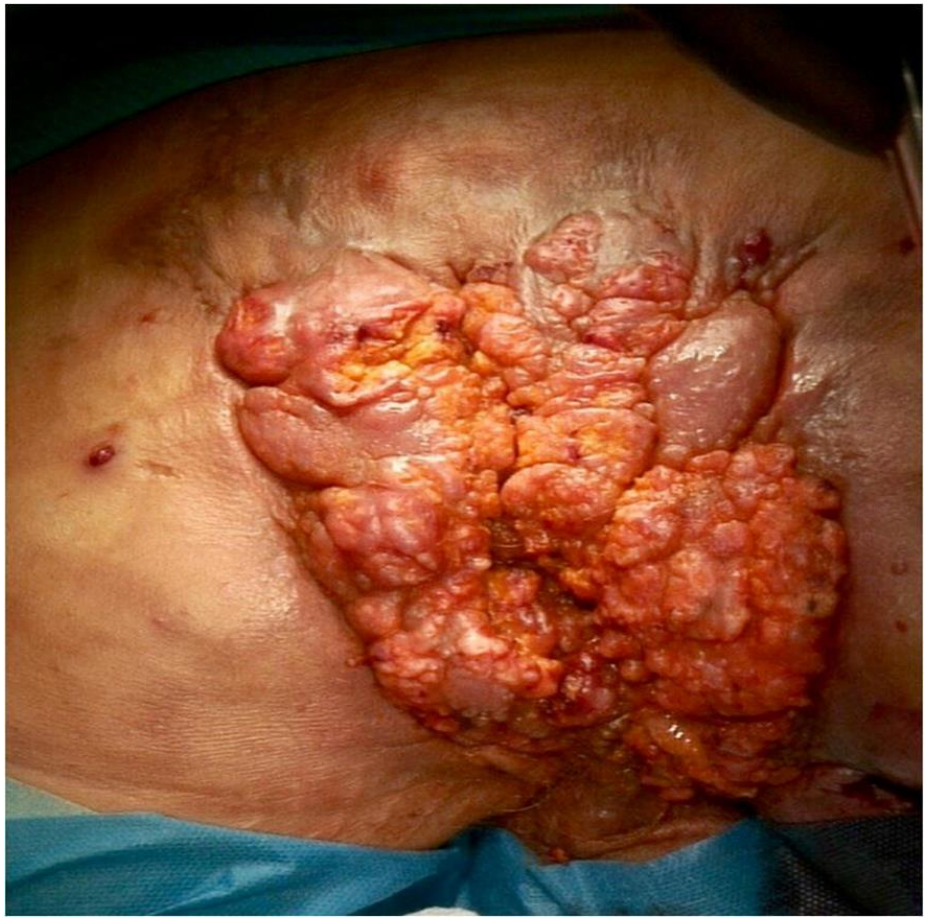


ıe patient gluteal fistulas at the emergency room

Anal fistula on top of rectal adenocarcinoma



Extensive multiple anal fistula complicated by squamous cell carcinoma.



THANK YOU