SINUS AND FISTULA

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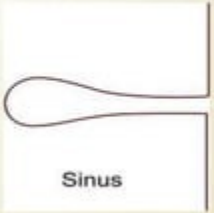
DEFINITION

SINUS:

- Blind track lined by granulation tissue leading from epithelial surface down into the tissues.
- Latin: Hollow (or) a bay



CAUSES

CONGENITAL

Preauricular sinus

ACQUIRED

TB sinus

Pilonidal sinus

Median mental sinus

Actinomycosis

II. INFLAMMATORY:

Intestinal actinomycosis, TB

III. MALIGNANCY:

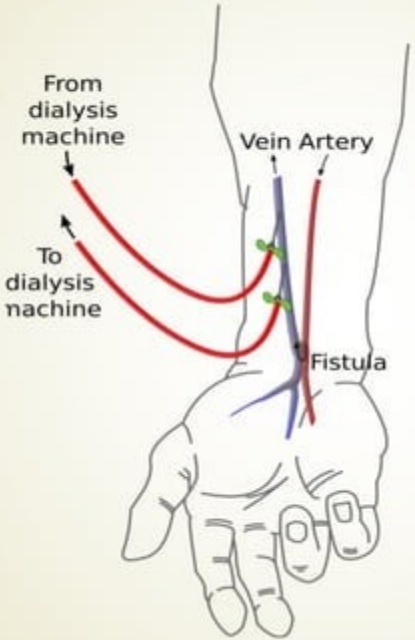
when growth of one organ penetrates into the nearby organ.

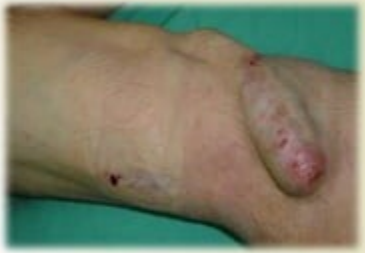
e.g., Rectovesical fistula in carcinoma rectum

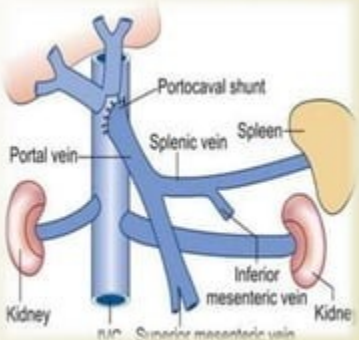
IV. IATROGENIC:

Cimino fistula- AVF for hemodialysis

ECK fistula- to treat esophageal varices in portal HTN


From dialysis machine
To dialysis machine
Vein
Artery
Fistula




Portocaval shunt
Splenic vein
Spleen
Portal vein
Inferior mesenteric vein
Kidney
Kidne

FISTULA

EXTERNAL

- Orocutaneous
- Enterocutaneous
- Appendicular
- Thyroglossal
- Branchial

INTERNAL

- Tracheo-esophageal
- Colovesical
- Rectovesical
- AVF
- Cholecystoduodenal

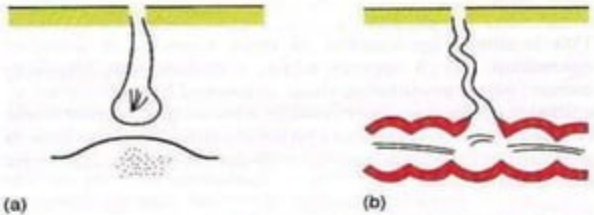


Fig. 12.18 (a) A sinus, and (b) a fistula. Both usually arise from a preceding abscess. (a) This shows that a sinus is a blind track, in this case a pilonidal sinus with its hairs; (b) this shows that a fistula is a track connecting two (epithelial) lined surfaces, in this case a colocutaneous fistula.

Causes for persistence of sinus (or) fistula

- Presence of a foreign body. e.g., suture material
- Presence of necrotic tissue underneath. e.g.,sequestrum
- Insufficient (or) non-dependent drainage.
  e.g., TB sinus
- Distal obstruction. e.g., faecal (or) biliary fistula
- Persistent drainage like urine/faeces/CSF
- Lack of rest

[contd.]

- Epithelialisation (or) endothelisation of the track. e.g., AVF
- Malignancy.
- Dense fibrosis
- Irradiation
- Malnutrition
- Specific causes. e.g., TB, actinomycosis
- Ischemia
- Drugs. e.g., steroids
- Interference by the patient

PATHOPHYSIOLOGY

CONGENITAL:

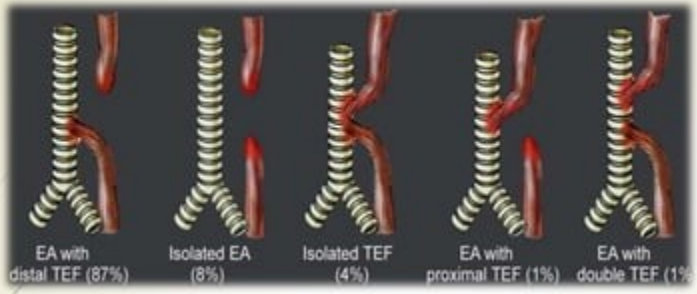
Arise from remnants of embryonic ducts that persist instead of being obliterated and disappearing completely during embryonic development.

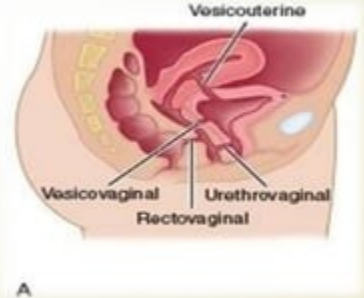
e.g., pre-auricular sinus, branchial fistula, TOF, congenital AVF.

ACQUIRED :

Usually secondary to presence of foreign body, necrotic tissue in affected area (or) microbial infection (or) following inadequate drainage of abscess.

e.g., perianal abscess when bursts spontaneously into skin forming a sinus and when bursts into both skin and anal canal forming a fistula.


EA with distal TEF (87%)
Isolated EA (8%)
Isolated TEF (4%)
EA with proximal TEF (1%)
EA with double TEF (1%


Vesicouterine
Vesicovaginal
Urethrovaginal
Rectovaginal
A

CLINICAL FEATURES

Usually asymptomatic but when infected manifest as-

- Recurrent/ persistent discharge.
- Pain.
- Constitutional symptoms if any deep seated origin.

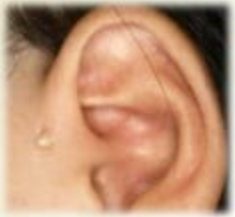
CLINICAL EXAMINATION

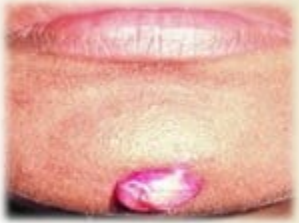
INSPECTION:

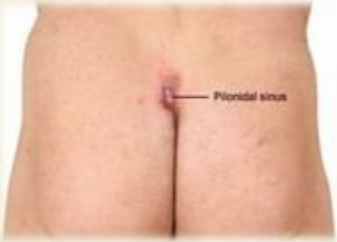
1. Location: usually gives diagnosis in most of the cases.

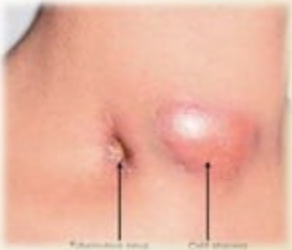
SINUS: pre-auricular- root of helix of ear.
median mental- symphysis menti.
TB- neck.

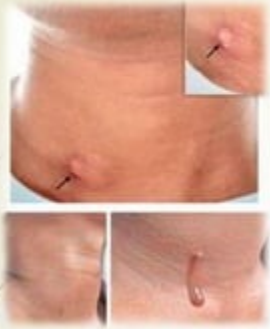
FISTULA: branchial- sternomastoid ant border.
parotid- parotid region
thyroglossal- midline of neck below hyoid.

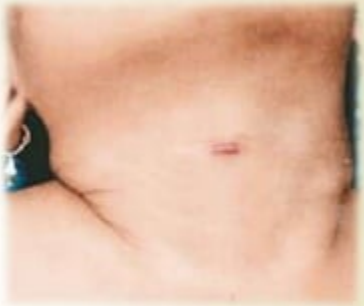


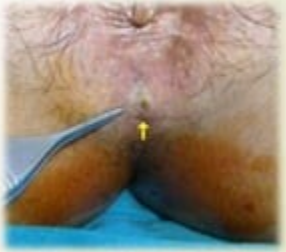



Pilonidal sinus









2. Number: usually single but multiple seen in HIV patients (or) actinomycosis.

3. Opening:

a) sprouting with granulation tissue-foreign body.

b) flushing with skin- TB

4. Surrounding area:

erythematous- inflammatory

bluish- TB

excoriated- faecal

pigmented- chronic sinus/fistulae.

5. Discharge:

- White thin caseous, cheesy like- TB sinus
- Faecal- faecal fistula
- Yellow sulphur granules- actinomycosis
- Bony granules- osteomyelitis
- Yellow purulent- staph. infections
- Thin mucous like- brachial fistula
- Saliva- parotid fistula

Palpation:

a) **Temperature and tenderness:**

b) **Discharge:** after application of pressure over the surrounding area.

c) **Induration:** present in chronic fistulae/sinus as in actinomycosis, OM

TB Sinus induration absent.

d) **Fixity:**

e) **Palpation at deeper plane:**

lymph nodes- TB

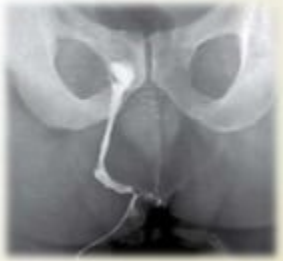
Thickening of bone underneath- OM

INVESTIGATIONS

- CBP- Hb, TLC, DLC, ESR.
- Discharge for C/S , AFB, cytology, Gram staining.
- X-RAY of the part to rule out OM, foreign body.
- X-RAY KUB and USG abdomen in cases of lumbar fistula to rule out staghorn calculi.
- MRI
- BIOPSY from edge of sinus
- CT Sinusogram

FISTULOGRAPHY/ SINUSOGRAPHY:

- For knowing the exact extent/origin of sinus (or)fistula.
- Water soluble or ultrafluid lipoidal iodine dye is used.
- Lipoidal iodine is poppy seed oil containing 40% iodine.



TREATMENT

BASIC PRINCIPLES:

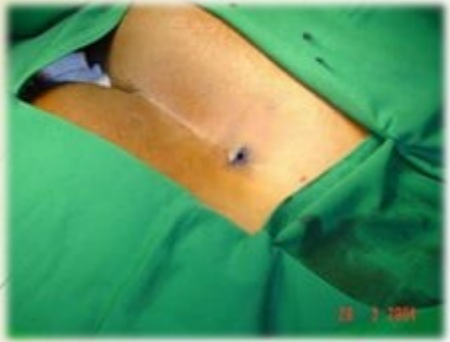
- Antibiotics
- Adequate rest
- Adequate excision
- Adequate drainage.

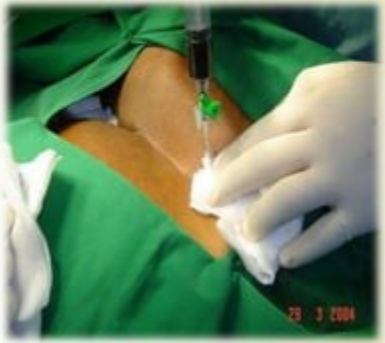
- After excision specimen **SHOULD** be sent for HPE.
- Treating the cause.

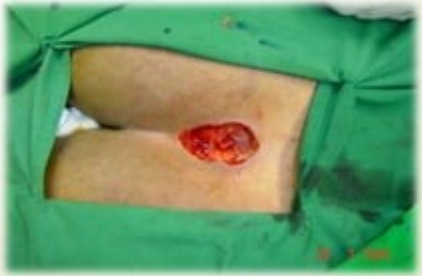
  e.g., ATT for TB sinus.

  removal of any foreign body.

  sequestrectomy for OM.







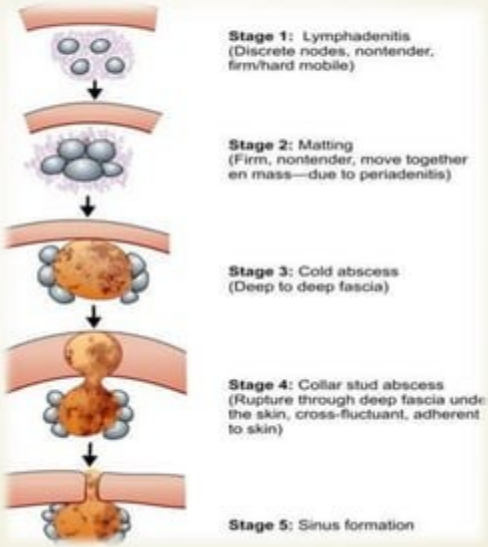
TUBERCULAR SINUS OF NECK

Causative organism: mostly M.tuberculosis
but also M.bovis

Site and mode of infection:

a) lymph nodes in anterior triangle from tonsils.
b) lymph nodes in posterior triangle from adenoids.
c) supraclavicular nodes from apex of the lung.

Clinical stages:



Stage of lymphadentis:

non-tender,discrete,mobile,firm lymph nodes

Stage of peridenitis:

due to involvement of capsule.

non-tender,MATTED,mobile together, firm

⬇

pathognomic of TB

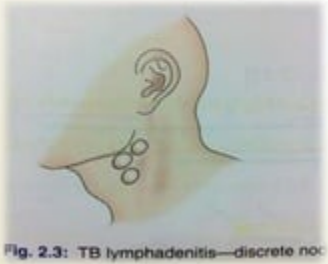
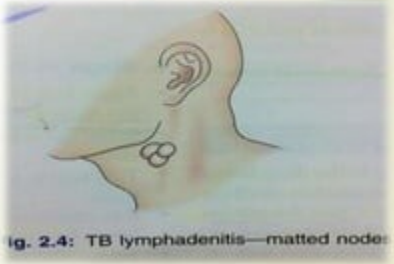


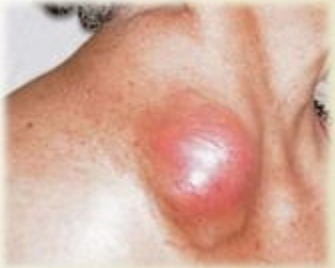
Fig. 2.3: TB lymphadenitis—discrete no



ig. 2.4: TB lymphadenitis—matted node

Stage of cold abscess:

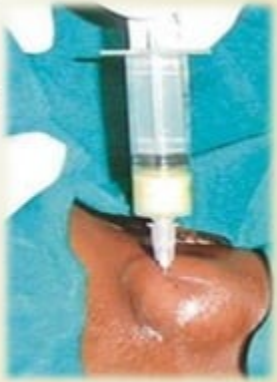
- due to caseating necrosis.
- non-tender, cystic, fluctuant swelling not adherent to overlying skin.
- Sternocleidomastoid contraction test- present deep to deep fascia
- trans illumination negative



TREATMENT:

- Zig-zag aspiration by wide bore needle in non-dependent area to avoid a persistent sinus.
- Instillation of 1g streptomycin +/- INH in solution with closure of wound without placing a drain.
- ATT

NOTE: I&D not done-persistent TB sinus.



Stage of collar stud abscess:

cold abscess ruptures through deep fascia forming an another swelling in sub-cutaneous plane.

- Fluctuant, adherent to skin.
- Treated like a cold abscess.

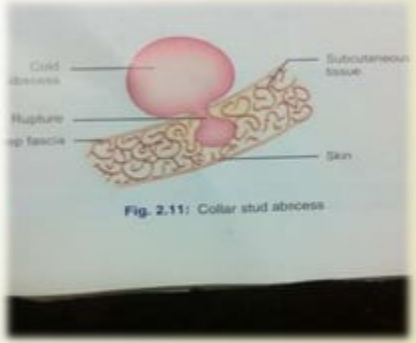


Fig. 2.11: Collar stud abscess

Collar stud abscess

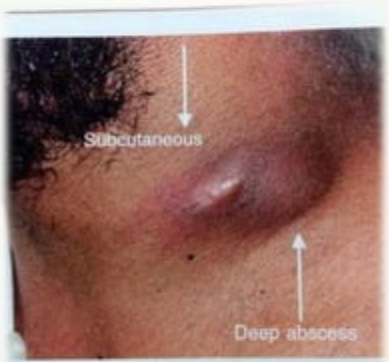
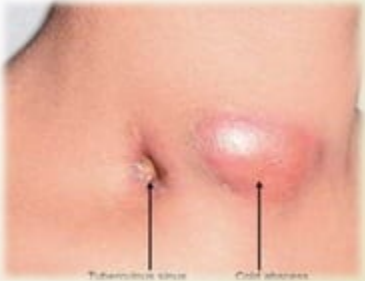


Fig. 2.12: Collar stud abscess

Stage of sinus:

- collar stud abscess bursts out leading to a persistent discharging sinus.
- Can be multiple, wide opening, undermined edges, non-mobile.
- Bluish discoloration around the edges.
- NO INDURATION.

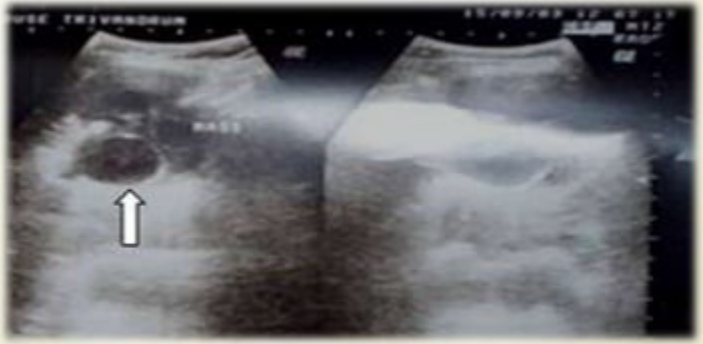


INVESTIGATIONS

- Hematocrit, ESR↑, S.albumin ↓, S.globulin ↑
- FNAC of lymph nodes and smear for AFB and C/S
- Open node biopsy of lymph nodes.
- Edge biopsy of sinus- granuloma.
- mantoux test
- Chest X ray
- Sputum for AFB

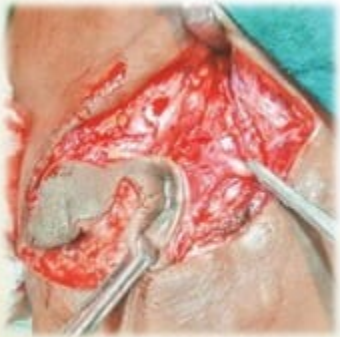
Sometimes, USG neck to detect cold abscess.

- Hypoechoeic lesions with internal echoes S/O debris within.
- Guided aspiration of cold abscess.



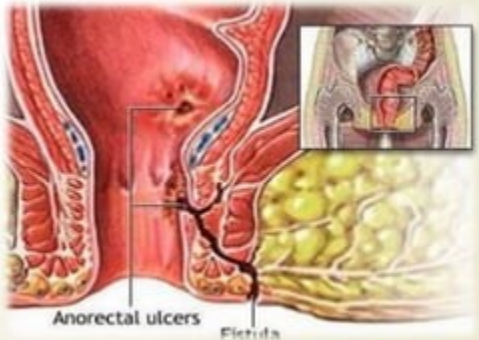
TREATMENT

- ATT
- Excision of sinus tract with excision of diseased lymph nodes.



FISTULA-IN-ANO

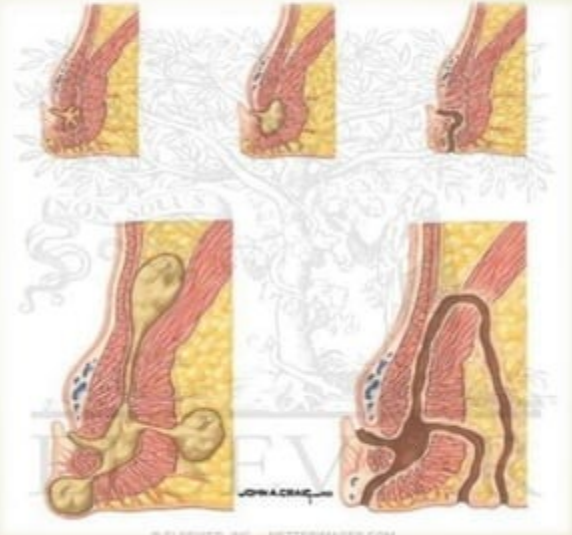
Chronic abnormal communication usually lined to some degree by granulation tissue, which runs outwards from anorectal lumen (internal opening) to skin of perineum or the buttocks (external opening)



AETIOPATHOGENESIS

- Cryptoglandular (90% cases)
- Non cryptoglandular (10% cases)
  - TB
  - Diabetes mellitus
  - Crohn's disease
  - Carcinoma rectum
  - Trauma
  - Lymphogranuloma venereum
  - Radiotherapy
  - Immunocompromised patients (HIV etc.,)

CRYPTOGLANDULAR HYPOTHESIS

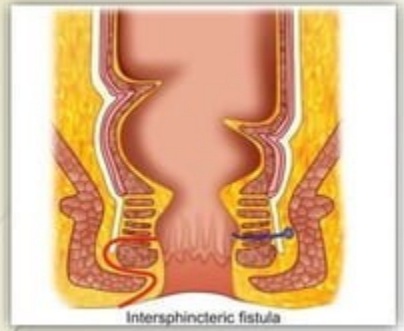


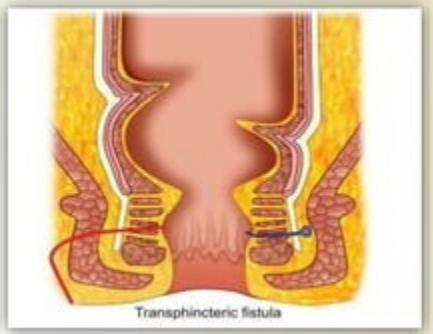
CLASSIFICATION

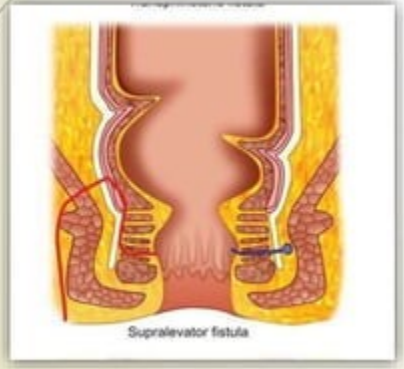
PARK'S CLASSIFICATION:

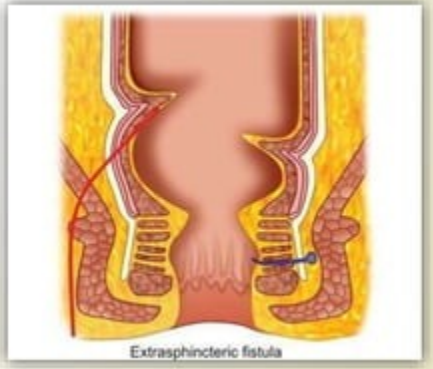
(relation of primary tract to external sphincter)

- Inter sphincteric (45%)
- Trans sphincteric (40%)
- Supra sphincteric
- Extra sphincteric


Intersphincteric fistula

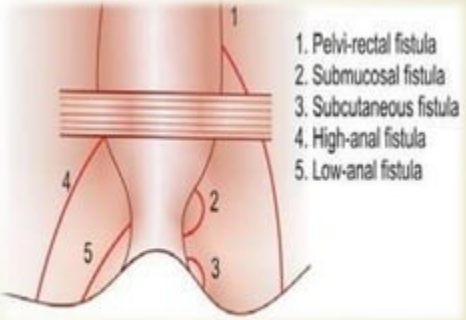

Transphincteric fistula


Supralevator fistula


Extrasphincteric fistula

STANDARD CLASSIFICATION

- Sub cutaneous
- Sub mucous
- Low anal
- High anal
- Pelvi rectal



- Can be

  low level fistula- open into anal canal below the internal ring.

  high level fistula- at/ above the internal ring.

- Can be

  Simple- without any extensions

  Complex- with extensions

- Can be

  single

  multiple- TB, ulcerative colitis, crohn's, HIV, LGV

CLINICAL PRESENTATION

- Intermittent discharge

  (sero-purulent/ bloody)

- Pain

  (which increases until temporary relief occurs when pus discharges)

- Pruritus ani

- Previous h/o anal gland infection

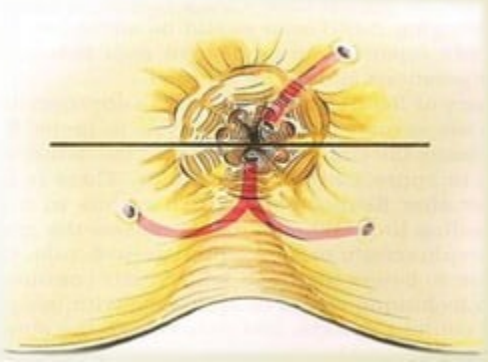
CLINICAL ASSESMENT

- **HISTORY:** full medical history incl. obstetric,anal, gastrointestinal, surgical, continence
- **DRE**: area of induration, fibrous tract and internal opening may be felt ("button-hole" defect in Ca rectum)
- **PROCTOSIGMOIDOSCOPY:**

  To evaluate rectal mucosa for any underlying disease process.

GOODSALL'S RULE

- If external opening in anterior half of anus, fistula usually runs directly into anal canal.
- If external opening in posterior half of anus, fistula usually curves midline of the anal canal posteriorly.



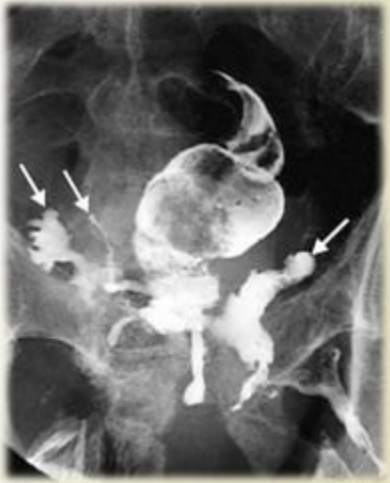
IMAGING

- Fistulography
- Endoanal ultrasound
- MRI

Fistulography:

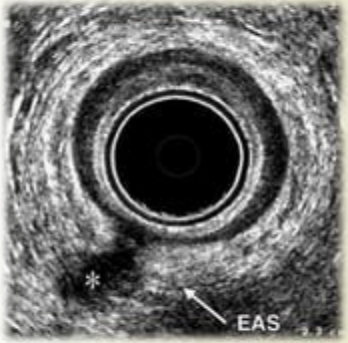
- Reveals primary and secondary tracts.

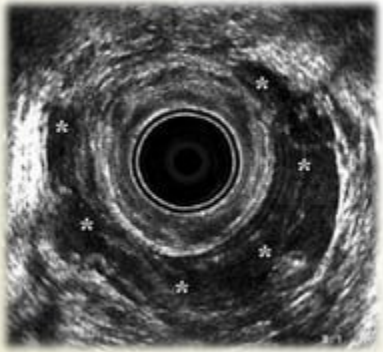
- Useful if extra sphincteric fistula suspected.



ENDO ANAL ULTRASOUND

- Determines sphincter integrity.
- Complexity of fistula.

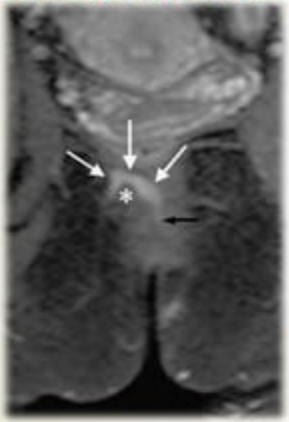




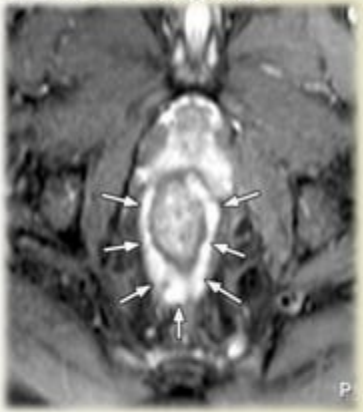
horse-shoe fistula

MRI

"GOLD STANDARD" for fistula-in-ano imaging.

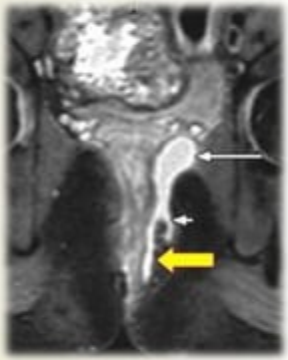


high variety supra sphincteric fistula.

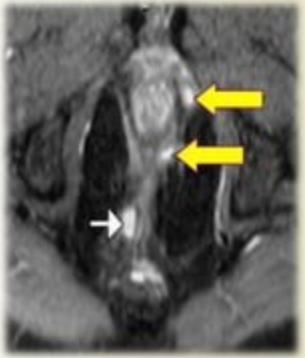


horse-shoe fistula.

MRI



Abscesses and extensions



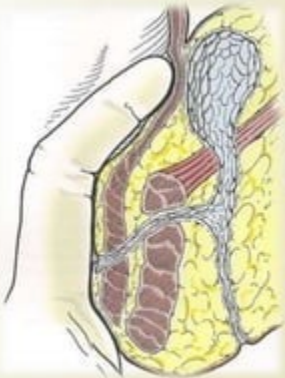
contralateral disease

PRINCIPLES OF TREATMENT

- **Control sepsis**
  - EUA
  - Laying open abscesses and secondary tracts
  - Adequate drainage – seton insertion

- **Define anatomy**
  - Openings and tracts
    - ✓Internal and External
    - ✓Single –v- multiple
    - ✓Extensions / Horseshoe
  - Relation to sphincter complex
    - ✓High –v- Low

- **Exclude co-existent disease**



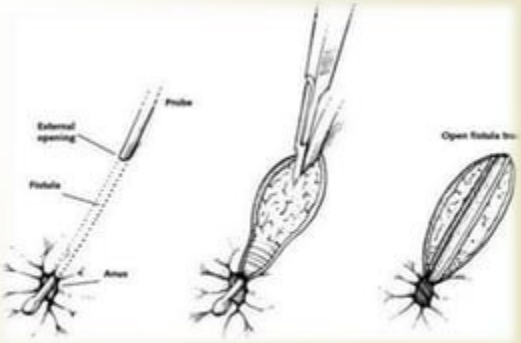
SURGICAL MANAGEMENT

- Fistulotomy (The laying open technique)
- Fistulectomy
- Seton techniques
- Fibrin glue
- Anal fistula plug
- Advancement flap
- LIFT procedure.

} sphincter preserving techniques.

FISTULOTOMY

- In inter-sphincteric and low trans-sphincteric fistulas.
- Identification of tract with probe followed by division of all structures between external and internal openings.
- Secondary tracts laid open.
- +/- marsupialization.



Advantages

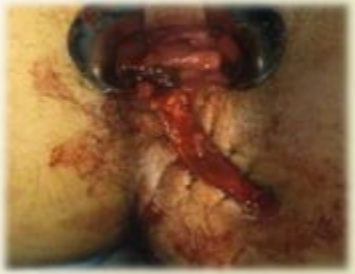
least chance of recurrence

relatively easy procedure

minor degree of incontinence.

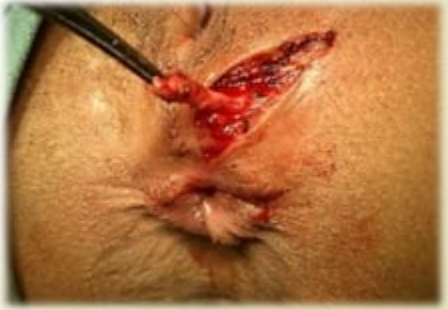
Risks

results in large and deep wounds that might take months to heal.



FISTULECTOMY

- All chronic (low) and also for posterior horse-shoe shaped fistulas.
- Excision of entire fibrous tissue and tract and wound kept open.
- Sphincter repair +/- advancement flap.
- High anal fistulas
  +/-colostomy.



SETON SUTURE PLACEMENT

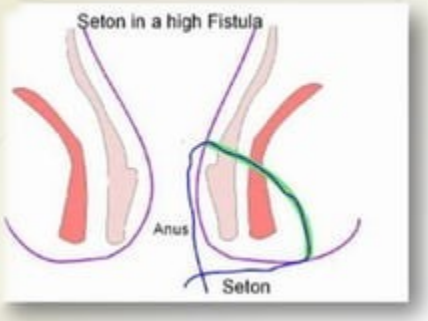
- Preferable surgical option for high variety.
- Setons are usually made from rubber slings
- 2 types of seton suture can be placed
- Draining Seton

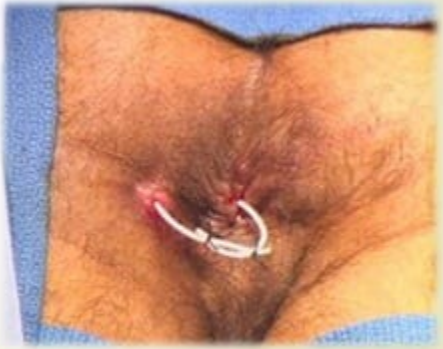
  Facilitates draining of sepsis

  Left loose and allows fistula to heal by fibrosis
- Cutting Seto

  Slowly "cheese-wires" though the sphincter muscle

  Allows fibrosis to take place behind as it gradually cuts through


Seton in a high Fistula
Anus
Seton



FIBRIN GLUE

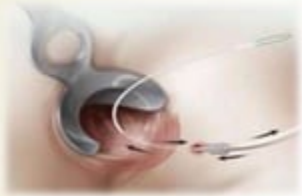
- Multi component system containing mainly human plasma fibrinogen and thrombin.
- Injected into fistula track which hardens in few minutes and fills the track.

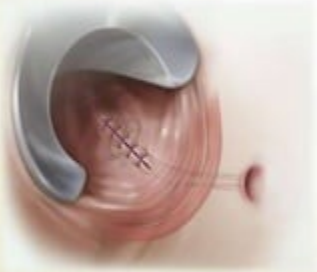
ANAL FISTULA PLUG

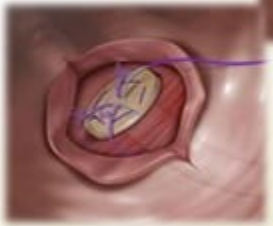
- The Anal fistula plug is a minimally invasive and *sphincter-preserving* alternative to traditional fistula surgery.
- The plug is a conical device and is placed by drawing it through the fistula tract and suturing it in place.
- the plug, once implanted, incorporates naturally over time into the human tissue (human cells and tissues will 'grow' into the plug), thus facilitating the closure of the fistula.

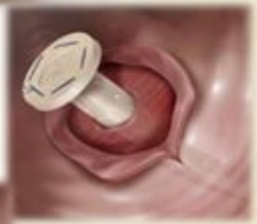
FISTULA PLUG

FISTULA PLUG:





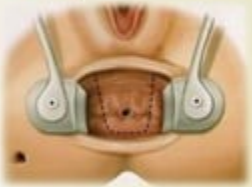


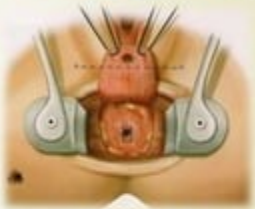


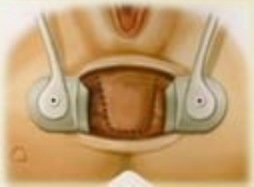
ADVANCEMENT FLAPS

Endorectal

- Fistula tract probed
- Flap raised
  - Mucosa + Int. Sphincter
- Internal opening excised/closed
- Flap advanced & sutured



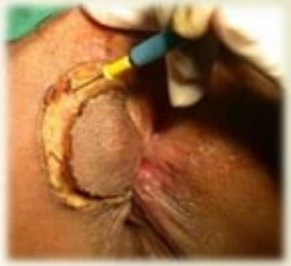


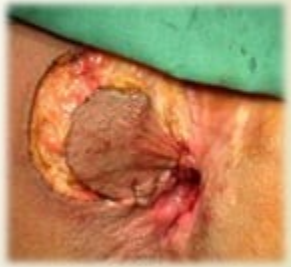


ADVANCEMENT FLAP

Anodermal

- Fistula tract probed
- Flap raised
  - Anodermal
- Flap advanced & sutures
- External defect closed



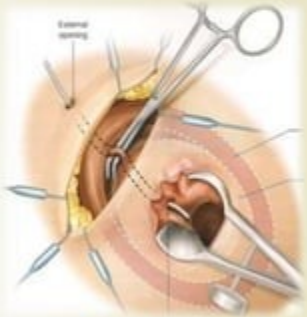


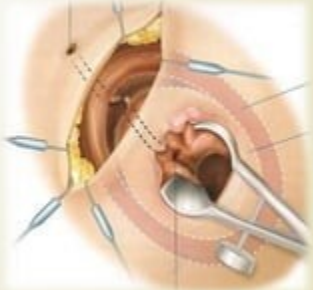
LIFT PROCEDURE

Ligation of **I**nter sphincteric **F**istula **T**ract

- Trans sphincteric fistula
- Draining seton – 6 weeks

- Tract prepared with fistula brush
  - Debrides
  - De-epithelializes





FOLLOW UP

As with most anorectal disorders, follow-up care includes:

- Perianal baths,
- analgesics for pain,
- stool bulking agents, and
- good perianal hygiene


thank you!