Anal Fistula

**Definition:** A chronic tract lined by granulation tissue, connecting usually the anal canal or rarely the rectum with the peri-anal skin.

**Aetiology:**
1. *Neglected ano-rectal abscess.* The liability of any abscess in this region to end in a fistula is due to:
   a. Presence of **fatty tissue** around the anus with weak capacity for **healing**.
   b. **Spasm** of internal anal sphincter → impairment of proper drainage.
   c. The **internal opening** in the anal canal acts as a constant source of **infection**.

**Pathology:**
- **Composition:**
  1. **A track:** It is lined by infected granulation tissues and surrounded by fibrosis.
  2. **External opening:** Present on the perianal skin. The farther the external opening from the anal orifice the higher the fistula.
  3. **Internal opening:** Present on the m.m. of the anal canal or rectum (rare). The height of this opening determines the type of the fistula.

- **Most fistulae** originate & have its **internal ring** in the anal crypts at the level of dentate line & communicate to intersphincteric abscess.
**Classification:** Anal fistulae are classified according to:

a. **Internal opening** is above or below the level of anorectal ring:
   1. **Low anal fistula:** int. opening is below the anorectal ring.
   2. **High anal fistula:** int. opening is at or above the anorectal ring.

b. **The relationship of the track** to external anal sphincter:
   1. **Inter-sphincteric fistula:** (70%) The track runs downwards along the intersphincteric plane to reach the skin near the anal verge.
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* Structure *
- Int. opening
- Track
- Granulation
- Ext. opening
- mm of anal canal
- Skin

* Goodsall’s Rule *
- Extra-Sphincteric
- Trans-Sphincteric
- Supra Sphincteric
- Inter Sphincteric

* Classification *
- Puborectalis muscle
- Internal anal sphincter
- External anal sphincter
- Superficial fistula
- Extrasphincteric fistula (Parks type 4)
- Transsphincteric fistula (Parks type 2)
- Intersphincteric fistula (Parks type 1)
- Suprasphincteric fistula (Parks type 3)
2- **Trans-sphincteric fistula**: (25%) The track runs across the external anal sphincter on its way to the skin.

3- **Supra-sphincteric fistula**: rare, the track passes upwards along the intersphincteric plane then turns laterally above the ano-rectal ring to enter the ischiorectal fossa and reach the perianal skin.

4- **Extra-sphincteric (Supralevator) fistula**: rare, the track pass outside the sphincters extending from the perianal skin through the ischiorectal fossa and levator ani to open into the rectum.

- **Goodsall’s rule**: A transverse line bisecting the anus.
  a. **Fistulae in front of this line** are straight and have separate openings.
  b. **Fistulae behind this line** are curved and open internally by a common opening present in the midline posteriorly (posteriorly, the track is deflected laterally by the anococcygeal raphe) and take the shape of a horse shoe.
* **Complications:**
  1. *Recurrent peri-anal* abscess due to blockage of the external opening.
  3. *Pruritis and eczyma* due to chronic discharge.
  4. *Carcinoma* related to the internal opening of the fistula.

* **Clinical Picture:**

  **A) Symptoms:**
  1. **History** of neglected perianal abscess which had burst spontaneously.
  2. Chronic **discharge:** pus, mucous, blood but **never stool**.
  3. **Pruritis ani** and eczyma.
  4. **Recurrent** perianal suppuration and pain.
  5. History of the **cause** (if the fistula 2nd. to specific pathology).

  **B) Signs:**
  1. **Inspection:**
     ♦ The **external opening** appear as a small papule with a hole in its centre.
     ♦ Note the site, number, position & discharge (mention **Goodsall’s rule**).
  2. **Palpation:** The track can be felt as an indurated **cord** like structure beneath the perianal skin.
  3. **P-R exam. & proctoscopy:** to detect
     ♦ Any **specific pathology** as cancer rectum.
     ♦ Level of the **internal opening** which is felt as an indurated depression or nodule (to detect level of fistula).
* Investigations:

1- **Endoanal ultrasound**.

2- **MRI**: (most important investigation)
   - Visualize the openings & track with its relation to anal sphincters.

2- **Proctoscopy** show the internal opening and its relation to the ano-rectal ring.

4- **Ba. enema** and **Colonoscopy** to exclude specific pathology as Crohn’s disease.

5- **Recently fistuloscopy** is diagnostic and therapeutic.

**Proctoscopic view**

Show internal

Openings of multiple fistulae
* Treatment:

I) Recently fistula lazer closure:
- Flexible, radially emitting tube is placed into the fistulous tract, the energy is emitted over the course of the fistular track → local tissue shrinkage and protein denaturation → obliteration of the track of the fistula.
- The laser procedure for anal fistula is a safe, effective, minimally invasive, sphincter-preserving procedure with a high success rate.

II) Opern surgery:

- **Aim**: eradication of infection by complete deroofing with laid open (fistulotomy) or removal of the fistulous track and adjacent scar tissue (fistulectomy), which results in larger wounds which is left open, well drained to heal from the depth by healthy granulation tissues.

1- **Inter-sphincteric (Low Level) fistula**: One stage laid-open (fistulotomy) operation. The track with all its branches are opened with division of part of the lower part of internal sphincter
for deroofing of the track, the infected granulation tissues are curatted and the wound is left open well drained to heal.

2- **Trans-sphincteric fistula**: Deroofing the track by division of the lower part of the internal anal sphincter & the superficial and subcutaneous parts of the external anal sphincter.

3- **Supra-sphincteric fistula: 2 stages fistulotomy** operation.
   
   a. **First stage**: The lower part of the fistula is laid open with division of S.C. part of the external sphincter and a drainage seton (silicone string) suture is passed in the remaining part of the tract to keep the tract opened, well drained and excite fibrosis.

   b. **Second stage**: 6 weeks later, the remaining part of the track is laid open, guided by seton suture, with division of the deep part of external anal sphincter (no risk of incontinence because the fibrosed of the sphincter prevent its retraction).

*N.B: 2 stages fistulotomy can be replaced by a cutting seton* is inserted tightly in the tract of the fistula with intentional pressure placed on the tract. The seton can then be serially tightened in the office over time → gradual cutting of tract & surrounding sphincteric muscles with formation of fibrous tissue prevents muscles separation.

4- **Extra-sphincteric fistulae**: the classical treatment is treatment of the cause + Proximal colostomy + staged fistulotomy.
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**N.B:**
- Before & after surgery, frequent warm dittol baths & antibiotics (ciprofloxacin & metronidazol) should be used to keep the wound sterile to allow healing.
- **Fistulectomy** is excision of the fistula and surrounding tissues resulting in a larger wound, prolonged healing time, and higher risks of incontinence. Therefore fistuolotomy is better & commonly used.

III) Recently for complex high fistula, laser treatment is done for the simple superficial part of the track, is combined with one of the following recent techniques:

1) **Anal Fistula Plug:**
   - Surgisis anal fistula plug is a natural biomaterial provides a matrix to allow infiltration of the patient’s connective tissue.
2) Ligation & removal of the Intersphincteric Fistula Tract

3) Fibrin Glue:
   - Fibrin glue is a tissue adhesive → The sealant degrades as the fibrotic reaction progresses, ultimately getting fully replaced by the natural tissue.
4) **Video assisted anal fistula treatment** : (VAAFT)

- Fistuloscopy with VAAFT is also performed as a day surgery, it leaves no surgical wounds in the perianal region.
- This technique is used for more complex fistulas as a diagnostic and therapeutic modality.
- The procedure include cleaning and diathermy of the tract with closure of internal ring from inside the anus.

**Fistuloscope**

**VAAFT**