Anal canal and anorectal diseases.

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Objectives of lecture.

1-To clarify the anatomy of anal canal.

2-To outline the commonest anorectal diseases,their investigation and treatment.

AIM of lecture

By the end of this lecture,the students should be able to know about the most common problems of anorectal region and their diagnosis and treatment.

Surgical anatomy:

- The anal canal co commences at the level where the rectum pass through the pelvic diaphragm and end at the anal verge:

1. Anorectal ring.
2. External sphincter.
3. Internal sphincter.
4. Intersphenicteric space.
5. Dentate line.

- **Anorectal ring**: Marks the junction between the rectum and anal canal. It is formed by the joining of the puburectalis, deep part of the external sphincter, and the highest part of the internal sphincter.
- **External sphincter**: It forms the bulk of the sphincter complex and its divided into three parts; subcutaneous, superficial, and deep. It is voluntary muscle with somatic innervation by the pudendal nerve. Is has a red color.

- **Internal sphincter:** It is the thickened, distal, 4cm of circular muscle coat of the rectum. It is involuntary, and innervated by the autonomic nervous system.
- **Intersphinecteric space:** It is located between the external sphincter and the internal sphincter and it represents a potential space for extension of perinatal infection because it contain the blind ends of the anal glands.
- **Dentate line:** It is the line which separates the anal canal into upper and lower parts. The upper part is lined by mucosa which is innervated by autonomic nerve supply, while the lower half is lined by a sensitive squamous epithelium (somatic innervation).

- **Blood supply**: It is by the superior, middle, and inferior rectal vessels.
- **Lymphatic Drainage**: The upper half is to lymph nodes along the inferior rectal vessels, while the lower half is to the inguinal lymph nodes

Diseases of the anorectal region and anal canal:

Imperforated anus:

- It is a rare congenital disorder and is divided into high and low types, depending on the level of termination of the rectum in relation to the pelvic floor.
- The high type: it is difficult to be corrected and needs multistaged operations it is prone for Faecal incontinence.
- The low type: it is relatively easy to be corrected and it is prone for chronic constipation due to anal stenosis after surgical correction.

Post anal dermoid:

- It is located in the space anterior to the sacrum and coccyx and is a cystic lesion. It usually remain asymptomatic until adulthood when it became prone for infection.

>arge cystic lesion may present as difficulty in defecation.

- It should be differentiated from the anterior sacral meningocele which enlarge when the child cries and is frequently associated with paralysis of the lower limb and incontinence.
- Rx:- is by surgical excision

Pilonidal sinus:

- It describes a condition found in the natal cleft overlying the coccyx, consisting of one or more, usually noninfected midline opening which is communicating with a fibrous track lined with granulation tissue and containing hair lying loosely within the lumen.

- <u>Pathology and etiology:</u>

- Congenital theories.

- Acquired theories: which is more accepted than congenital one.

It is thought that combination of buttock friction and shearing forces in that area allows shed hair and broken hair which have collected there to drill through the midline skin, or that infection in relation to hair follicle allow hair to enter the skin by the suction created by movement of the buttocks, so creating a subcutaneous, chronically infected midline tract

- <u>Clinical features:</u>

- Males more than females.

- Intermittent pain, swelling, discharge at the base of the spine due to infection.

- Frequent attacks of abscess formation.

- Single or multiple openings at the subcutaneous regions.

Treatment: ▶

- Conservative treatment: which is appropriate for minor sinuses, include; ▶ cleaning of tract and removal of all hairs, regular sheaving of the area, strict hygiene, and ABs cover may be used.

- Surgical treatment: 1. Open method: by excision of the sinus. Leave the ▶ wound opened to heal by granulation tissue. It carries the lowest recurrence rate, but long time of healing.

2. Closure of the wound after excision of the sinus. ▶

- Excision with closure at the midline. ▶

- Flap closure: ▶

1. Bascoms procedure. ▶
2. Z-closure. ▶
3. Karydakis procedure. ▶
4. Rhomboid flap. ▶

- It leads for short period of healing but with higher rate of recurrence ▶

Anal incontinence:

- Causes:

A. Congenital / childhood:

1. Anorectal anomalies.
2. Spina bifida.
3. H-S disease.
4. Behavioral

B. Acquired / adulthood: ▶

1. DM, CVA, MS. ▶
2. Parkinons disease. ▶
3. Spinal cord injuries and other neurological disorders. ▶
4. GIT infections. ▶
5. IBS, megacolon, anal trauma. ▶
6. Abdominal surgery (colonic resection). ▶
7. Pelvic surgery (anterior resection). ▶
8. Pelvic malignancies. ▶
9. Pelvic radiotherapies. ▶
10. Rectal prolapse. ▶
11. Anal surgery (hemorrhoidectomy, fistula surgery, fissure surgery). ▶
12. Obestetric events (labour ▶

C. General factors:

1. Aging, obesity, psychological diseases,

2. Drug induced (laxative).

- **Treatment:**

- Conservative treatment: which includes stool bulking or constipating agents, bowel retraining and anal plugs which expand within and thus seal the anal

canal. If fail go to the surgical treatment.

- Surgical treatment:

1. Reunite divided sphincter muscles.
2. Reef external sphincter and puburectalis muscles.
3. Augmentation of anal sphincter by muscle transport flaps (G.M. transport), or gracilis muscle transport.
4. Artificial bowel sphincter by using of inflatable cuff around anal canal.
5. Colostomy for uncontrolled cases.

Anal fissure:

- It is a longitudinal split in the anoderm of the anal canal which extend from the anal verge towards, but not beyond the D.L. (Dentate line).

- **Causes:**

- Strained evacuation of a hard stool (commonest).
- Repeated passage or diarrhea (less common).
- Vaginal delivery (anterior fissure).
- Vascular insufficiency due increase tonicity of anal sphincter lead to impaired healing of anal fissure

- **Pathology:**

- Posterior anal fissure (90%).
- Anterior anal fissure (10%) (females > males).
- Acute anal fissure with little fibrosis and no skin tag.
- Chronic anal fissure with marked fibrosis and tags around the fissure.

- **Clinical features:**

- Severe pain on defecation.
- Bright red bleeding.
- Mucous discharge.
- Constipation with megacolon especially in children.

- **Treatment**:

- Conservative treatment: include the following:

1. Stool bulking and softening agents.
2. Analgesia and antibiotics
3. Drugs which ease relaxation of internal sphincter and increases blood supply
of the area of the anal verge (GTN 0.2% and Deltiazem 2%)

- Surgical treatment: when the above fail:

1. Lateral anal sphincterotomy with or without fissurectomy is the standard
operation nowadays.
2. Posterior sphincterotomy and fissurectomy which carry high risk of faecal
incontinence.
3. Anal advancement flap.

Hemorrhoid:

- Symptomatic dilated veins of the anal cushion which are of two types:

1. **Internal hemorrhoid:** which arise from the superior rectal vessels and classically occur at position 3, 7, 11 o'clock position when the patient is in the lithotomy position.

2. **External hemorrhoid:** are related to venous channel of inferior hemorrhoidal plexus. It is usually situated below the dentate line.

- **Secondary hemorrhoid**: occur in minor venous plexuses of the anal cushions. Usually located between the primary (major) hemorrhoids.

3. **Externo-internal hemorrhoid:** is the result of the extension of the internal hemorrhoid to involve the external venous plexus

• Theories of development of the hemorrhoids:

- Portal hypertension: varicose veins.

- Other vascular causes: hemorrhoids may be due to hemangiomatous changes.

- Infections: repeated infections may lead to weakness of venous plexuses in submucosa ==> dilatation.

- Diet and stool consistency: fiber deficient diet ==> hard stool ==> constipation ==> straining ==> development of hemorrhoids.

- Anal hypertonia: raised anal canal resting pressure ==> hemorrhoid. A vice versa may be true.

- Lead to weakness of supporting structures of anal canal cushion ==> hemorrhoids.

- Hereditary factors: there is weakness of the walls of the veins of the anal cushion ==> hemorrhoids.

- **Clinical features:**

- Bright-red, painless, bleeding (unlike anal fissure).
- Mucous discharge and itching.
- Prolapse.
- Pain: which occur only in complicated hemorrhoid. (Prolapse, ulceration,

infection, thrombosis, gangrene and strangulation).

- ***Grading of hemorrhoids:***

- First grade: bleeding only no prolapse.
- Second grade: prolapsed but return spontaneously.
- Third grade: prolapsed but only reduced manually.
- Forth grade: permanent prolapse.

- Treatment of hemorrhoids:

- Exclusion of other causes of endorectal bleeding like malignancy, diseases of rectum and colon. Ca. of the rectum may present as hemorrhoid and bleeding per rectum.

- Injection of sclerosing agents which is suitable for first grade and early second grade hemorrhoid. It involves injection of 5% phenol in almond oil which lead to severe inflammation and fibrosis.

- Banding procedure: by using rubber band which is suitable for second degree hemorrhoid. It leads to necrosis and sloughing of hemorrhoid within 10 days

- Operations for hemorrhoid:

1) Indications:

1. 3rd and 4th degree hemorrhoid.
2. Failure of previous treatment.
3. Fibrosed hemorrhoid.
4. External-internal hemorrhoid.

2) Operation: it is hemorrhoidectomy which include excision and ligation procedures and it is of two types (open and closed).

3) Complications of the operation:

1. Early: pain, acute urine retention, and reactionary bleeding.
2. Late: secondary hemorrhage, anal stricture, anal fissure, and anal incontinence.

- Stapled hemorrhoidopexy: which aims to relief symptoms but with preservation of nal cushion.

Anorectal abscess:

- Abscess in the region of anus is common. The most accepted theory for development of this abscess is the cryptoglandular theory of anal glands.
- Infection of anal gland ==> pus ==> travel along the pathways of least resistance which may spread in one of the following directions:

- Downward: perinatal abscess.
- Laterally across external sphincter ischiorectal abscess.
- Superiorly above pelvic diaphragm: supra-levator abscess.
- Intersphinceric abscess.
- Submucosal abscess.

- Anorectal abscess may be **caused by**: F.B, infected hematoma, trauma, deep skin infection as boil. It may occur in patient with D.M., malignancy, and chronic diseases like HIV infected persons.

- **Clinical features:**

- Male > female.

- Painful, throbbing swelling in the anal region, usually with swinging pyrexia.

- **Treatment**:

- By drainage of pus and cover with antibiotics. The drainage of the perinatal and ischiorectal abscesses is thorough the perinatal skin. By using cruciate incision over the most fluctuant point. Always we have to look for a potential underlying

cause.

- Drainage of perinatal abscess usually end by fistula in-ano and infection of fistula

may present as perinatal abscess.

Fistula in-ano:

- It is a chronic abnormal communication, usually lined by granulation tissue which runs outwards from the anorectal lumen to an external opening on the skin of perineum or buttock, or rarely to the vagina.

- **Causes:**

1. Non-specific or idiopathic: usually secondary to perinatal abscess formation from infection of anal glands.

2. Specific: due to chronic diseases including: F.B, T.B, actinomycosis, and malignancy.

- **Classifications:**

1. Low type: in which the internal opening in situated below the anorectal ring. The

majority of fistulas are of this type.

2. High type: in which the internal opening in situated at or above the anorectal ring.

- **Other classification** is the Parks classification:

1. Inter-sphincteric 45%.
2. Trans-sphincteric 40%.
3. Supra-sphincteric.
4. Extra-sphincteric.

- **Clinical assessment and investigations:**

- **Clinical assessment:** include finding of internal and external openings and palpation of the primary track between them and if there is secondary tracks.

Proctoscopy and sigmoidoscopy may be used during clinical assessment.

- **Special investigation:** include:

1. Manometerys: to assess sphincter tone.

2. Endo-anal US: to assess integrity of external sphincter and show the fistula track.

3. Fistulography, MRI, CT-scan: especially for extra-sphincteric fistula and to show secondary extensions

- **Treatment**: the treatment usually requires surgical intervention: ▶

- **Low type fistula:** is usually treated by single stage operation which is either: ▶

1. Fistulotomy: the fistula track is laid open with trimming of edges of ▶ marsupialisation is done to reduced wound size and speed healing.

2. Fistulectomy: which involves coring out the fistula track. ▶

- **High type fistula:** since large proportion of the external sphincter is traversed ▶ by the fistula track, the laid open procedure can lead to incontinence in high percentage of the patients. Usually multi-staged operation is required. Many procedures are found as the following: ▶

1. Setons. ▶
2. Mucosal advanced flap: to cover the internal opening ==> healing. ▶
3. Glues. ▶
4. Colostomy. ▶

Malignant lesions of the anus and anal canal:

- Anal malignancy is rare and account for less than 2% of all large bowel cancers.
- These below the dentate line are squamous cell carcinoma (commonest tumours).
- These above the dentate line are known as epidermoid carcinoma, to distinguish them from non-squamous cell origin (adenocarcinoma, melanoma, lymphoma, and sarcoma).

• Squamous cell carcinoma:

- The incidence of it is raising. ▶
- Directly associated with HPV, AIN, and immunosuppression. ▶
- Pain and bleeding are the commonest presenting symptoms. ▶
- A mass, pruritus or discharge less common. ▶
- O/E: anal margin tumour look like malignant ulcer. ▶
- It may involve anal sphincter. ▶
- Management: ▶

1. Previously: anal margin S.C.C was treated by local excision ▶ and anal canal tumour by A.B resection.
2. Nowadays: primary treatment is chemotherapy. The ▶ chemotherapy include combination of 5-FU, mitomycin, cisplatin.

- 3. Radical surgery: is indicated in those with persistent or recurrent disease following chemotherapy, or other complications of radiotherapy as radionecrosis, incontinence and fistula.

- **Adenocarcinoma:**
- Usually it is extension from rectal adenocarcinoma.
- Rarely it is arising in longstanding anal fissure.
- Treated by A-B resection.
- **Malignant melanoma:**
- It is very rare.
- Present as bluish-black soft mass, mimic ext-pile.
- Prognosis is very rare.

THANK YOU