DISEASES OF THE ANUS AND ANAL CANAL

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Learning objectives:

To understand:

- ✓ The anatomy of the anus and anal canal and their relationship to surgical disease and its treatment
- ✓ The pathology, clinical presentation, investigation, differential diagnosis and treatment of diseases that affect the anus and anal canal
- ✓ That anal disease is common and its treatment tends to be conservative, although surgery may be required
- ✓ That any damage to the anus, including too aggressive or inappropriate surgery, may render the patient permanently disabled

Lecture outlines:

1. ANATOMY
2. EXAMINATION
3. PHYSIOLOGICAL ASPECTS OF THE ANAL SPHINCTERS AND PELVIC FLOOR, AND SPECIAL INVESTIGATIONS
4. CONGENITAL ABNORMALITIES
5. ANAL INCONTINENCE
6. ANAL FISSURE
7. HYPERTROPHIED ANAL PAPILLA
8. PROCTALGIA FUGAX
9. HAEMORRHOID
10. PRURITIS ANI
11. ANORECTAL ABSCESSES
12. FISTULA-*IN-ANO*
13. HIDRADENITIS SUPPURATIVA
14. CONDYLOMATA ACCUMINATA (ANAL WARTS)
15. ANAL INTRAEPITHELIAL NEOPLASIA
16. NON-MALIGNANT STRICTURES– ANAL STENOSIS
17. MALIGNANT TUMOURS
    - MALIGNANT LESIONS OF THE ANUS AND ANAL CANAL
    - OTHER ANAL MALIGNANCIES

Anal canal anatomy

- ✓ The internal sphincter is composed of circular, non-striated involuntary muscle supplied by autonomic nerves
- ✓ The external sphincter is composed of striated voluntary muscle supplied by the pudendal nerve
- ✓ Extensions from the longitudinal muscle layer support the sphincter complex
- ✓ The space between sphincters is known as the intersphincteric plane
- ✓ The superior part of the external sphincter fuses with the puborectalis muscle, which is essential for maintaining the anorectal angle, necessary for continence
- ✓ The lower part of the anal canal is lined by sensitive squamous epithelium
- ✓ Blood supply to the anal canal is via superior, middle and inferior rectal vessels
- ✓ Lymphatic drainage of the lower half of the anal canal goes to inguinal lymph nodes

EXAMINATION OF THE ANUS

- ✓ Inspection
- ✓ Digital anal examination with the index finger
- ✓ Proctoscopy
- ✓ Sigmoidoscopy

PHYSIOLOGICAL ASPECTS OF THE ANAL SPHINCTERS AND PELVIC FLOOR, AND SPECIAL INVESTIGATIONS

1. Perineal position and degree of descent on straining
2. functional anal canal length, resting tone (reflective predominantly of internal sphincter activity) and squeeze increment (reflective of external sphincter function)
3. endoluminal ultrasound
4. conduction velocity along the pudendal nerve
5. needle electromyogram (EMG)
6. evacuation proctography ± EMG
7. dynamic magnetic resonance (MR) proctography

CONGENITAL ABNORMALITIES

Imperforate anus - A rare congenital disorder

- ✓ Classified as being high or low depending on the site of the rectal termination in relation to the pelvic floor
- ✓ Low defects: relatively easy to correct but prone to constipation
- ✓ High defects: more difficult to correct and prone to faecal incontinence
- ✓ Clinical management : meconium on perineum or in urine, distal rectal air at lateral prone radiograph
- ✓ Treatment is surgery

CONGENITAL ABNORMALITIES

Postanal dermoid

- ✓ Asymptomatic
- ✓ Intected
- ✓ Sinus
- ✓ Difficulty in defecation
- ✓ Palpable on rectal examination

Differential diagnoses

anterior sacral meningocele, pilonidal sinus, anal fistula; dermoid exudes sebum when pressed through PR and contrast radiography

Treatment is surgery

Postanal dimple (synonym: fovea coccygea)

At tip of coccyx of no significance

Pilonidal sinus

- ✓ Aqcuired rather than congenital
- ✓ more in men
- ✓ more in 2nd & 3rd decades
- ✓ more in dark-haired individuals
- ✓ pain, swelling and discharge constitutional symptoms, repeated abscesses away from the midline.
- ✓ The primary sinus may have one or many openings, all of which are strictly in the midline between the level of the sacrococcygeal joint and the tip of the coccyx

Pilonidal sinus

Treatment:

- ✓ Conservative : cleaning & hygiene
- ✓ abscess treatment if no response to conservative & antibiotics,drain & curettage
- ✓ treatment of chronic pilonidal disease
- ✓ Recurrence can take place treated by revision surgery

Anal incontinence

Causes of anal incontinence

Congenital/childhood

- Anorectal anomalies
- Spina bifida
- Hirschsprung's disease
- Behavioural

Acquired/adulthood

- Diabetes mellitus
- Cerebrovascular accident
- Parkinson's disease
- Multiple sclerosis
- Spinal cord injury
- Other neurological conditions:

Myotonic dystrophy

Shy–Drager syndrome

Amyloid neuropathy

- Gastrointestinal infection
- Irritable bowel syndrome
- Metabolic bowel disease
- Inflammatory bowel disease
- Megacolon/megarectum
- Anal trauma
- Abdominal surgery:

Small bowel resection

Colonic resection

Anal incontinence

●● Pelvic surgery:

Hysterectomy

Rectal excision

●● Pelvic malignancy

●● Pelvic radiotherapy

●● Rectal prolapse

●● Rectal evacuatory disorder:

Mechanical, e.g. rectocoele, intussusception

Functional, i.e. pelvic floor dyssynergia

●● Anal surgery:

Haemorrhoidectomy

Surgery for fistula

Surgery for fissure

Rectal disimpaction

●● Obstetric events

General

●● Ageing

●● Dependence of nursing care

●● Obesity

●● Psychobehavioural factors

●● Intellectual incapacity

●● Drugs:

Primary constipating and laxative agents

Secondary effects

Anal incontinence

- ✓ Prompt history taking & examination will clear the cause of incontinence
- ✓ Investigations will pinpoint the exact cause which is either structural muscle damage or neurological cause
- ✓ Treatment is either conservative or (if failed) surgical by repair, reefing or augmentation. Neurostimulation of sacral nerve by needle can be also used.

ANAL FISSURE (fissure-*in*-*ano*)

- ✓ Is a longitudinal split in the anoderm of the distal anal canal,which extends from the anal verge proximally towards, but not beyond, the dentate line
- ✓ Aetiology of acute fissure by hard defecation or less repeated passage of diarrhea; more in posterior midline, while in anterior midline in females after vaginal delivery, Ectopic site suggests a more sinister cause, chronicity develop from repeated trauma, anal hypertonicity and vascular insufficiency, either secondary to increased sphincter tone or because the posterior commisure is less well perfused than the remainder of the anal circumference

ANAL FISSURE (fissure-*in*-*ano*)

Symptoms:

- ✓ Pain on defaecation
- ✓ Bright-red bleeding
- ✓ Mucus discharge
- ✓ Constipation
- ✓ Most in young adult
- ✓ Both sexes affected equally

ANAL FISSURE (fissure-*in*-*ano*)

Treatment

- ✓ Conservative

Diet & stool softener

0.2% glyceryl nitrate topically (may cause headache)

2% diltiazem

10-100 units Botox

Cure may reach 50%

- ✓ Surgery

manual (four- or eight-digit) sphincter dilatation

Lateral anal sphincterotomy

Anal advancement flap

Hypertrophied anal papilla

- ✓ Incidentally found or cause pain by snipped or infection, treatment by excision

Proctalgia fugax

- ✓ Severe pain, harmless, may need treatment by amitryptiline, salbutamol inhaler, Botox in puborectalis muscle

HAEMORRHOIDS

- ✓ Primary internal haemorrhoids
- ✓ Secondary internal haemorrhoids to certain causes as:

1. Anorectal carcinoma
2. local, e.g. anorectal deformity, hypotonic anal sphincter;
3. abdominal, e.g. ascites;
4. pelvic, e.g. gravid uterus, uterine neoplasm (fibroid, carcinoma of the uterus or cervix), ovarian neoplasm, bladder carcinoma;
5. neurological, e.g. paraplegia, multiple sclerosis

- ✓ External haemorrhoids
- ✓ Internoexternal haemorrhoids

HAEMORRHOIDS

- ✓ Primary internal haemorrhoids

Theories of development

PORTAL HYPERTENSION AND VARICOSE VEINS

hyperplasia of the ‘corpus cavernosum recti’

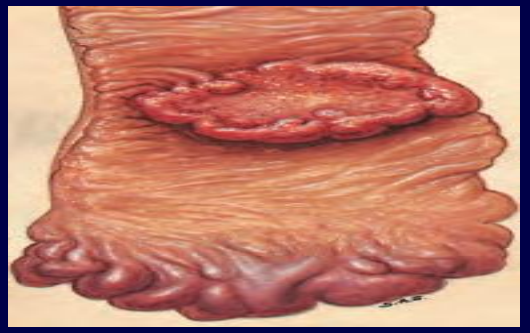
INFECTION

DIET AND STOOL CONSISTENCY

ANAL HYPERTONIA

AGEING

CURRENT VIEW



HAEMORRHOIDS

- Primary internal haemorrhoids

Clinical features

Haemorrhoids or piles are symptomatic anal cushions They are more common when intra-abdominal pressure is raised, e.g. in obesity, constipation and pregnancy .

Classically, they occur in the 3, 7 and 11 o'clock positions with the patient in the lithotomy osition .

Symptoms of haemorrhoids:

Bright-red, painless bleeding ± anaemia

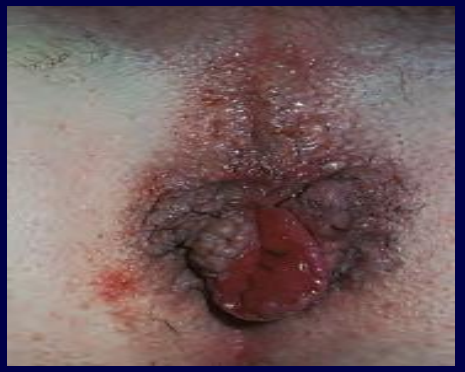
Mucus discharge (passing ground glass)

Prolapse

Pain only on prolapse

Four degrees of haemorrhoids

- ✓ First degree – bleed only, no prolapse
- ✓ Second degree – prolapse but reduce spontaneously
- ✓ Third degree – prolapse and have to be manually reduced →
- ✓ Fourth degree – permanently prolapsed

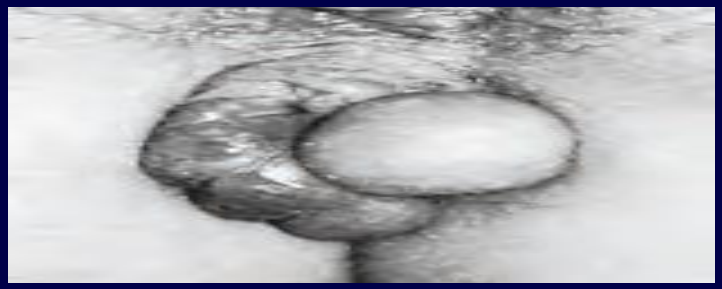


HAEMORRHOIDS

- ✓ Primary internal haemorrhoids

Complications

1. Strangulation and thrombosis →
2. Ulceration
3. Gangrene
4. Portal pyaemia
5. Fibrosis



HAEMORRHOIDS

- ✓ Primary internal haemorrhoids

Complications treatment

1. Strangulation, thrombosis & gangrene

- ✓ Surgery under antibiotics cover
- ✓ bed rest, pain relief, warm or cold saline compresses with firm pressure usually cause the pile to shrink in 3-4 days

2. Severe haemorrhage

- ✓ Exclude blood diathesis, morphine, blood transfusion and surgery

HAEMORRHOIDS

- ✓ Primary internal haemorrhoids

Management

- ✓ Consevative measures
- ✓ Sclerotherapy
- ✓ Banding
- ✓ Haemorrhoidectomy (open, closed or Stapled haemorrhoidopexy)

Relative indications

1. Third- and fourth-degree haemorrhoids;
2. Second-degree haemorrhoids that have not been cured by non-operative treatments
3. Fibrosed haemorrhoids
4. Interno-external haemorrhoids when the external haemorrhoid is well defined
5. Haemorrhoidal bleeding sufficient to cause anaemia.

- ✓ Transanal haemorrhoidal dearterialisation (THD) OR Haemorrhoid artery ligation operation (HALO)

HAEMORRHOIDS

- ✓ Primary internal haemorrhoids

Postoperative care

- ✓ *Discharge within 1-2 days*
- ✓ *twice warm baths*
- ✓ *Bulk laxative twice daily*
- ✓ *Analgesia (5-day course of metronidazole)*
- ✓ *PR exam after 3-4 weeks → if stenosis → Dilator*

HAEMORRHOIDS

- ✓ Primary internal haemorrhoids

Postoperative complications

- ✓ *Early : Pain*
  Acute retention of urine
  Reactionary haemorrhage
- ✓ *Late : Secondary haemorrhage*
  Anal stricture
  Anal fissure & submucous abscesses
  Incontinence

HAEMORRHOIDS

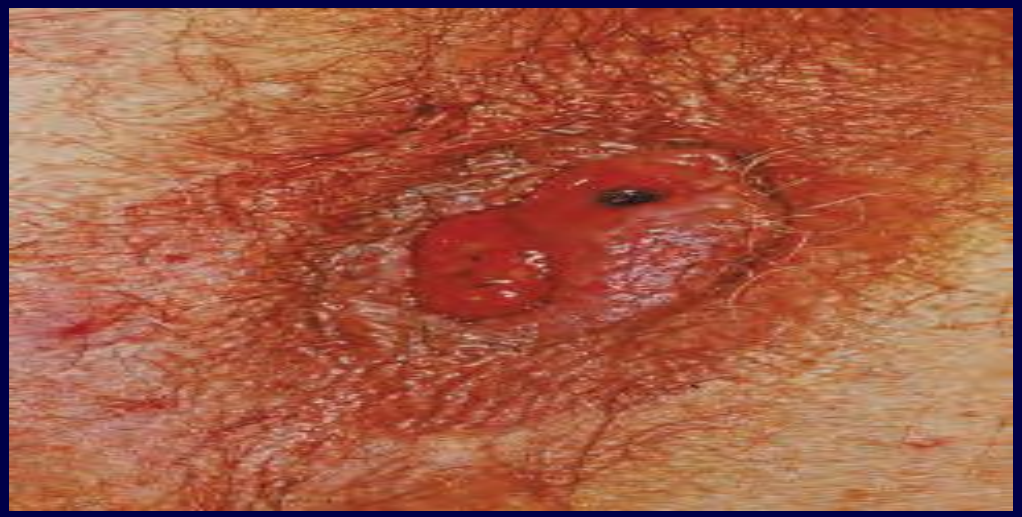
- ✓ External Haemorrhoids (Perianal Haematoma)

  *a 5-day, painful,self-curing lesion

  present in 1st 24- hours clot evacuated

  Untreated it may resolve, suppurate,

  fibrose or be cutaneous tag, burst & clot exudes or continue bleeding



PRURITIS ANI

- ✓ Intractable itching around the anus, a common condition. Usually, the skin is reddened and hyperkeratotic and it may become cracked and moist
- ✓ Causes :

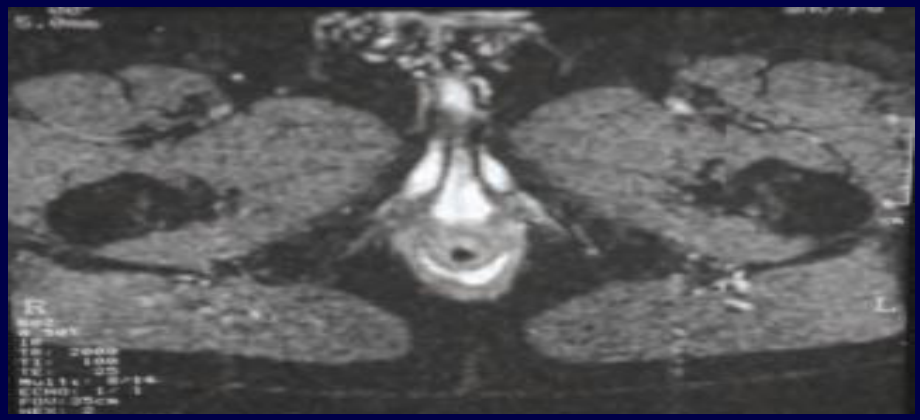
1. Lack of cleanliness
2. Anal or perianal discharge
3. Vaginal discharge
4. Parasitic causes
5. Epidermophytosis
6. Allergy
7. Skin disease
8. Bacterial infection
9. Psychoneurosis
10. Diabetes

PRURITIS ANI

- ✓Treatment :

1. Hygiene measures
2. Hydrocortisone
3. Strapping the buttocks
4. Surgery in surgically treatable cause

ANORECTAL ABSCESSES



- ✓ Aetiology
  - common
  - male > female
  - skin-type organism or cryptoglandular origin
  - site follow the anatomical spaces according to underlying cause

ANORECTAL ABSCESSES

- ✓ Presentation
  - Early(1-2 days) or late
  - Severe symptoms vs ,more tolerable according to site
  - Constitutional symptoms according to site
- ✓ Differential diagnosis
  - Abscesses connected with a *pilonidal sinus*,
  - *Bartholin's gland* or *cowper's gland*

ANORECTAL ABSCESSES

- ✓ management
  - surgery
  - pus culture & sensitivity
  - histopathological examination
  - antibiotics

FISTULA-IN-ANO (ANAL FISTULA)

Aetiology

- ✓ Non-specific, idiopathic or cryptoglandular
- ✓ Specific like crohn's disease, tuberculosis, lymphogranuloma venereum,actinomycosis, rectal duplication,foreign body and malignancy (which may also very rarely arise within a longstanding fistula)

FISTULA-IN-ANO (ANAL FISTULA)

Presentation

- ✓ Male > female
- ✓ Third, fourth and fifth decades of life are most commonly affected
- ✓ Previous anorectal abscess
- ✓ Intermittent purulent discharge (which may be bloody) and pain

FISTULA-IN-ANO (ANAL FISTULA)

Classification

- ✓ High or Low
- ✓ Simple or complex
- ✓ intershincteric, trans-phincteric, suprashincteric

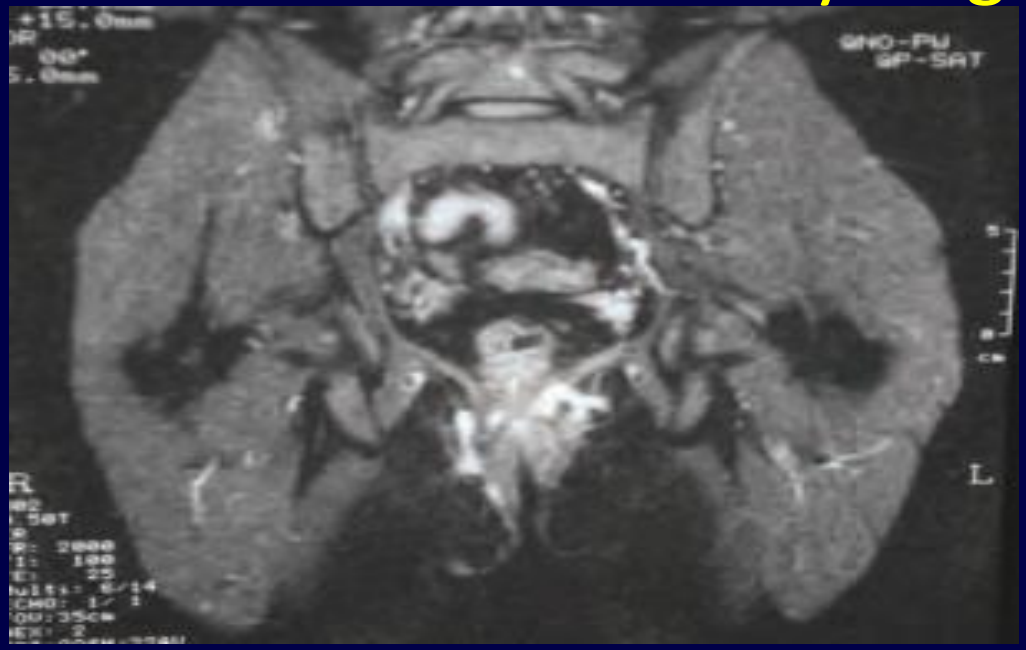
Clinical assessment

- ✓ Full medical history
- ✓ Induration with or without GA
- ✓ Sphincter condition
- ✓ Proctosigmoidoscopy
- ✓ Goodsall's law
- ✓ Hydrogen peroxide

FISTULA-IN-ANO (ANAL FISTULA)

Special investigations

- ✓ Manometry
- ✓ Endoanal ultrasound with or without hydrogen peroxide
- ✓ MRI →
- ✓ Fistulography
- ✓ CT scan



FISTULA-IN-ANO (ANAL FISTULA)

Surgical management

- ✓ Fistulotomy
- ✓ Fistulectomy
- ✓ Ligation of intersphincteric fistula tract(LIFT)
- ✓ Seton
  - Loose seton
    - long term palliation
    - before advanced technique
    - staged fistulotomy
    - preserve the external sphincter in trans-sphincteric fistulae
  - Cutting seton
- ✓ Advancement flaps
- ✓ Biological agents
  - fibrin glue
  - porcine small intestinal submucosa
  - Cross-linked porcine dermal collagen

HIDRADENITIS SUPPURATIVA

This is a chronic suppurative condition of apocrine gland bearing skin, which is found in the axillae, submammary

regions, nape of the neck, groin, mons pubis, inner thighs and

sides of the scrotum, as well as the perineum and buttocks.

Acne, pilonidal sinus and chronic scalp folliculitis may coexist with

hidradenitis suppurativa in the condition 'follicular occlusion tetrad'.

✓ Pathology

Secondary infection (with Staphylococcus aureus, Streptococcus milleri and anaerobes) causes further local extension, skin damage and deformity, with multiple communicating subcutaneous fistulae

✓ Presentation

From puberty to 4th decade, female > male, obesity is associated, it may involve the anal canal anoderm but it does not extend above the dentate line or involve the sphincter muscles themselves

✓ Differential diagnosis

early stages, furunculosis

Late, Crohn's disease, cryptoglandular fistula, pilonidal sinus, tuberculosis, actinomycosis, lymphogranuloma venereum and granuloma inguinale

✓ Treatment

General measures

If relapse & progress treat by surgery

CONDYLOMATA ACCUMINATA (ANAL WARTS)

Human papillomavirus (HPV) forms the aetiological basis of anal and perianal warts, anal intraepithelial neoplasia (AIN) and squamous cell carcinoma of the anus, (vulval intraepithelial neoplasia (VIN), cervical intraepithelial neoplasia (CIN) and cancers).

Presentation

Early : pain ,pruritis, discharge, bleeding & pinkish-white wart

Late :giant condylomata (Buschke–Löwenstein tumour)

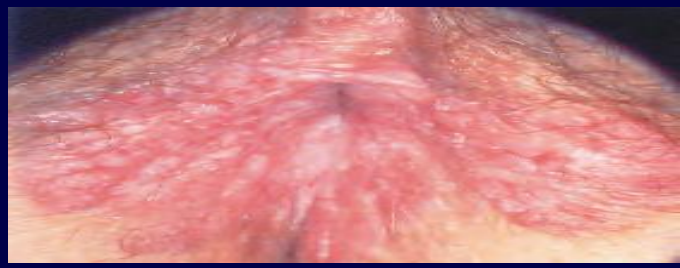
Diagnosis aided by aceto-whitening, confirmed by biopsy

Treatment

serial application of 25% podophyllin OR surgery

ANAL INTRAEPITHELIAL NEOPLASIA

classified according to the degree of dysplasia on biopsy into AIN I, AIN II and AIN III, according to the lack of keratocyte maturation and extension of the proliferative zone from the lower third (AIN I) to the full thickness of the epithelium (AIN III),



Presentation

Low-grade lesions

AIN III lesions

symptoms include pruritis, pain, bleeding and discharge

Regression of AIN III rarely occurs, but AIN I and AIN II may regress

Diagnosis & management

Suspicion of white lesions & biopsy

Local excision if < 30% of circumference, if > 30% wide local excision + flap or graft closure ± colostomy

Topical imiquimod, 5% or oral retinoids

Anti-HPV treatment; vaccination may reduce incidence

Females with AIN III → yearly cervical smear test

NON-MALIGNANT STRICTURES – ANAL STENOSIS

Causes: Spasmodic as in anal fissure or secondary megacolon OR Organic

1. Postoperative stricture: 90% after haemorrhoidectomy or hemorrhoidopexy or anastomosis
2. Irradiation stricture : chemoradiation for anal carcinoma or any pelvic tumours
3. Senile anal stenosis : internal sphincter contraction, treated by repeated dilatation.
4. Lymphogranuloma inguinale : tubular inflammatory stricture mostly in females. Treated by antibiotics in early and surgery in late disease.
5. Inflammatory bowel disease : Crohns' & rarely UC, Annular > 1. CA should be suspected to biopsy it.
6. Endometriosis : frequent menstrual bleeding and pain in 1st 2 days
7. Neoplastic : If bleeding after dilatation of stricture biopsy & repeated biopsy even.

Clinical features : Constipation, pain, bleeding mucus discharge &subacute or acute intestinal obstruction

NON-MALIGNANT STRICTURES – ANAL STENOSIS

Rectal examination : With or without GA + biopsy & gentle dilatation

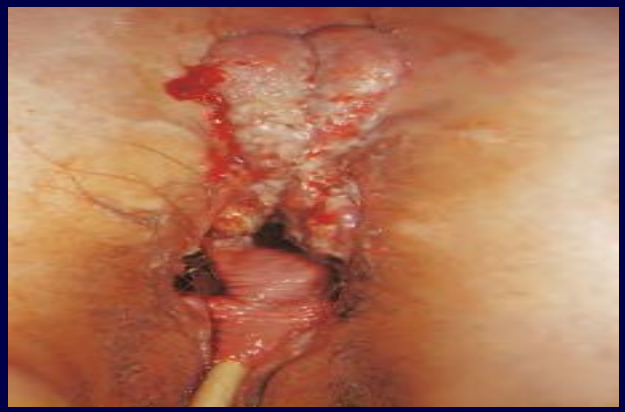
Treatment : According to the cause.

- ✓ Prophylactic as in Crohns' or lymphogranuloma inguinale
- ✓ Dilatation
- ✓ Anoplasty in severe stricture mostly postoperative stricture.
- ✓ Colostomy or ileostomy with restorative resection, usually if causing obstruction.
- ✓ Rectal excision and coloanal anastomosis

MALIGNANT TUMOURS

Malignant lesions of the anus and anal canal

1. Squamous cell CA below dentate line
2. Basaloid(Cloacogenic or transitional) above dentate (All called epidermoid carcinoma)
3. Adenocarcinoma
4. Melanoma
5. Lymphoma
6. Sarcoma



MALIGNANT TUMOURS

Malignant lesions of the anus and anal canal

Squamous cell carcinoma

- ✓ More in females
- ✓ Symptoms as pain, bleeding, mass, pruritis,discharge, fecal incontinence and anovaginal fistula
- ✓ On examination irregular indurated tender ulceration

Management:

MALIGNANT TUMOURS

Malignant lesions of the anus and anal canal

Squamous cell carcinoma

- ✓ Initial staging by clinical exam, biopsy & inguinal L.N. assessment.
- ✓ Local staging by MRI, CT, PET scan

Treatment:

Local excision for small marginal tumours

Chemoradiotherapy (5-fu+mitomycin C or cisplatin)

If relapse AP resection with posterior vaginal wall & mucocutaneous flap for perineum

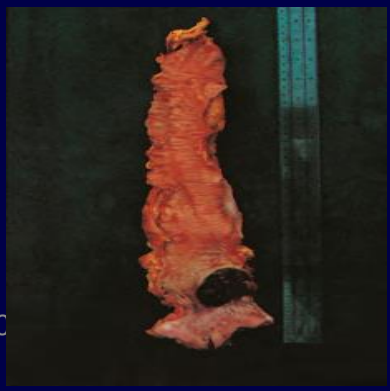
MALIGNANT TUMOURS

Malignant lesions of the anus and anal canal

Other anal malignancies

- ✓ Adenocarcinoma from distal rectal CA or anal glandular epithelium or fistula-in-ano

  treatment by AP resection ± previous radiotherapy or chemoradiotherapy
- ✓ Malignant melanoma of anal canal at transisional zone looks bluish-black soft mass mimic thrombosed external pile although it may be Amelanotic
- ✓ Perianal paget's disease



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