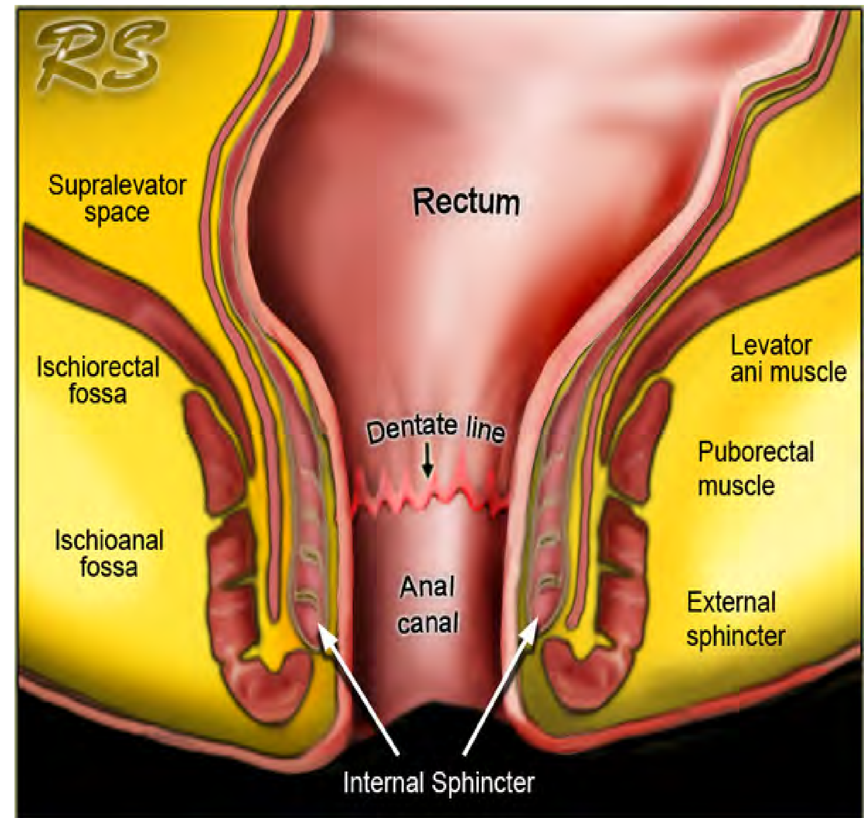
Dr Naeem Khan

MBBs,FRCS,FICS,FRACS
General and laparoscopic surgeon
(Colorectal , Hernia ,GallBladder)

- Anatomy
- Haemorrhoids
- Anal fissure
- Peri anal fistula/abcess
- Anal cancer
- Rectal prolapse

- 4 cm long
- Embryologically originates from proctoderm fused with the rectum (derived from the hindgut)
- lower 2 cm of the anal canal is lined by the anoderm, a thin stratified squamous epithelium that lacks hair follicles, sweat or sebaceous glands



Anal Sphincter Muscles

1: Internal sphincter Muscle;

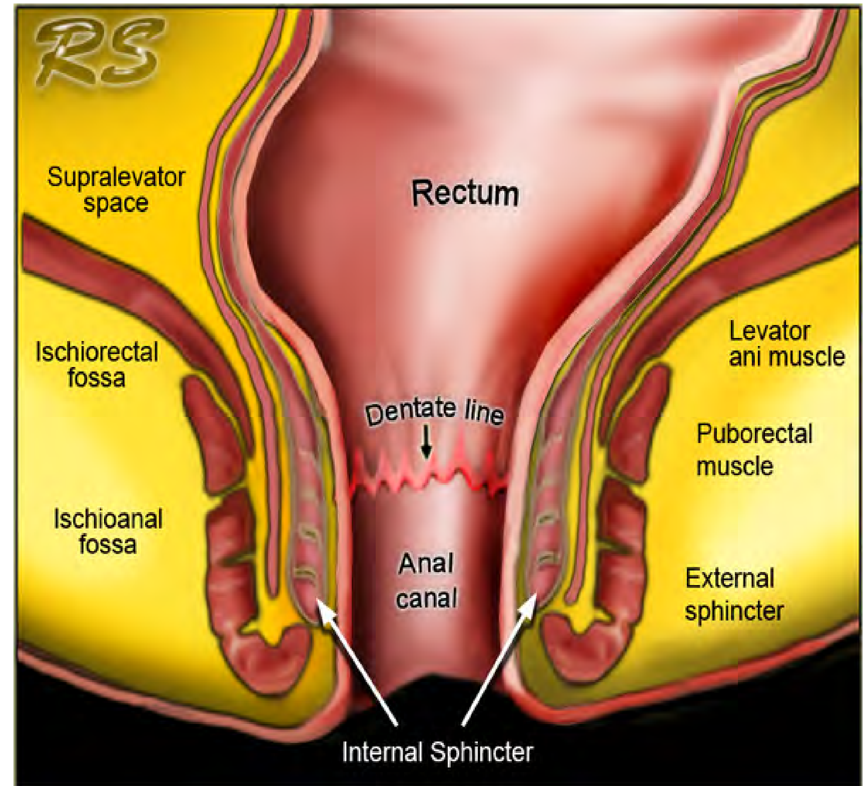
- Smooth muscle
- Autonomic control-HAS RESTING TONE
- Extension of the circular muscle of the rectum

2:External sphincter muscle

-Striated muscle somatic -pudendal nerve

-Voluntary control by submucosal, superficial and deep muscle

-Deep segment continuous with puborectalis muscle and forms the anorectal ring (palpable upon digital examination)



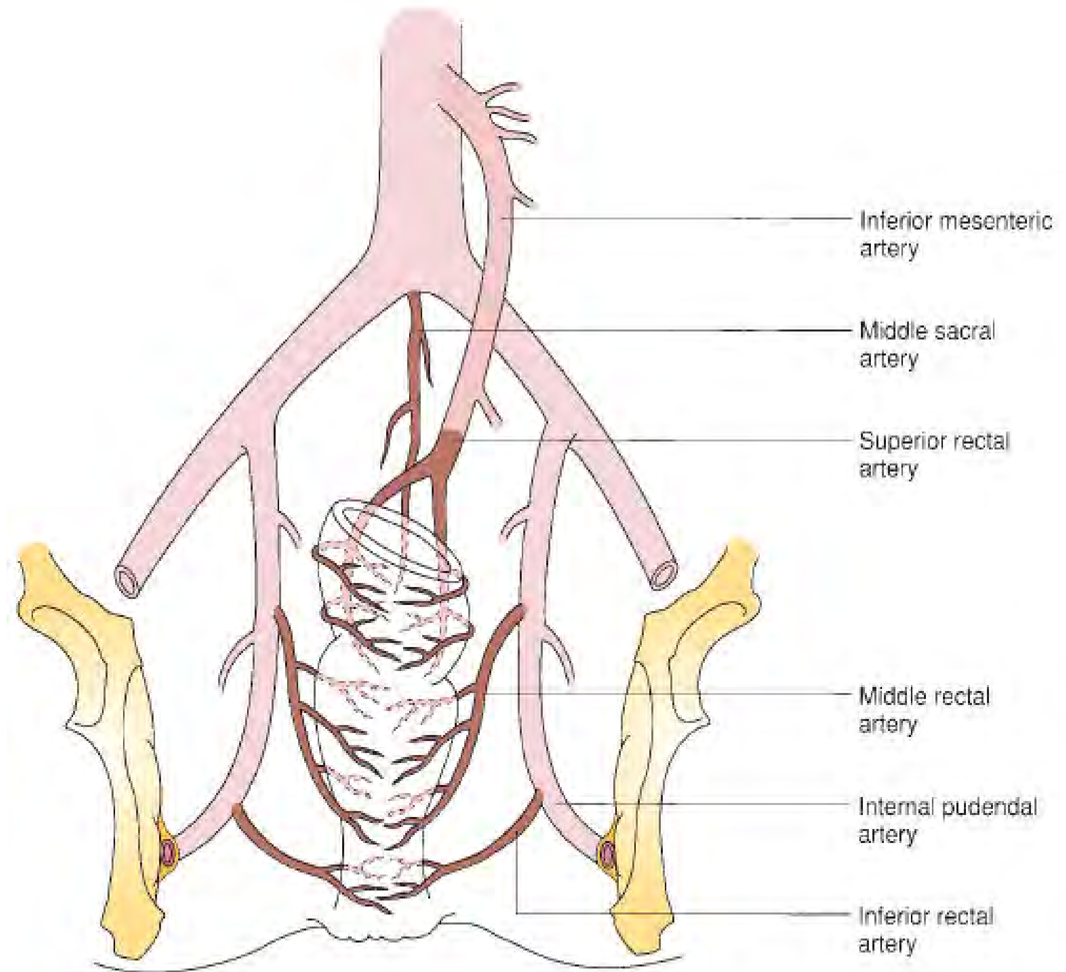
BLOOD SUPPLY

1-- **superior hemorrhoidal artery** IMA-(portal circulation)

2-middle and inferior hemorrhoidal artery – (systemic circulation)

internal pudendal artery – internal iliac a- systemic

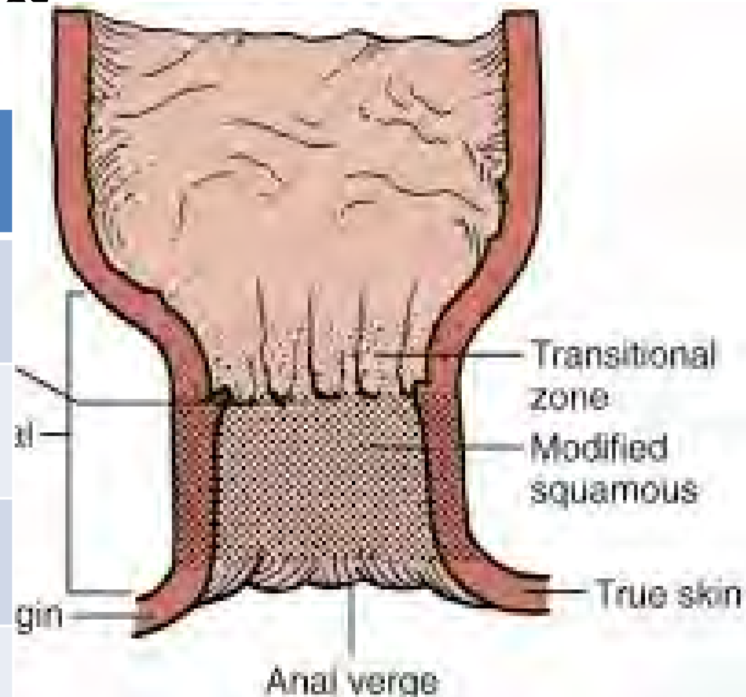
-Porto systemic shunt

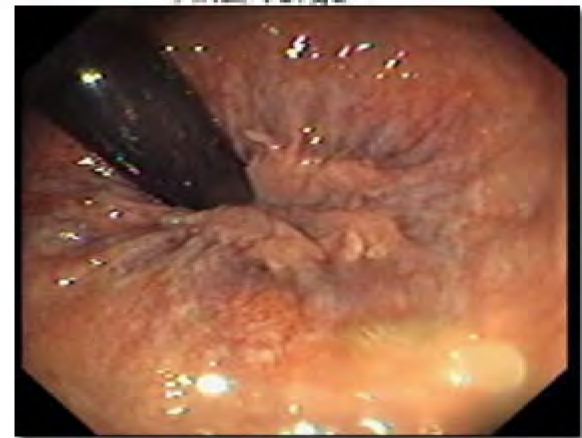


DENTATE LINE.-

Developmentally, this line represents the hindgut-proctodeum 2 cm above the anal verge .

	ABOVE	BELOW
epithelium	squamous	columnar
Lymphatic drainage	Internal iliac	Inguinal nodes
haemorrhoids	internal	external
sensations	Very sensitive	insensate
carcinoma	scc	adenocarcinoma
Blood supply	Sup.rectal art/vei (portal circulation)	Middle/inf rectal art./vein(systemic circ.)



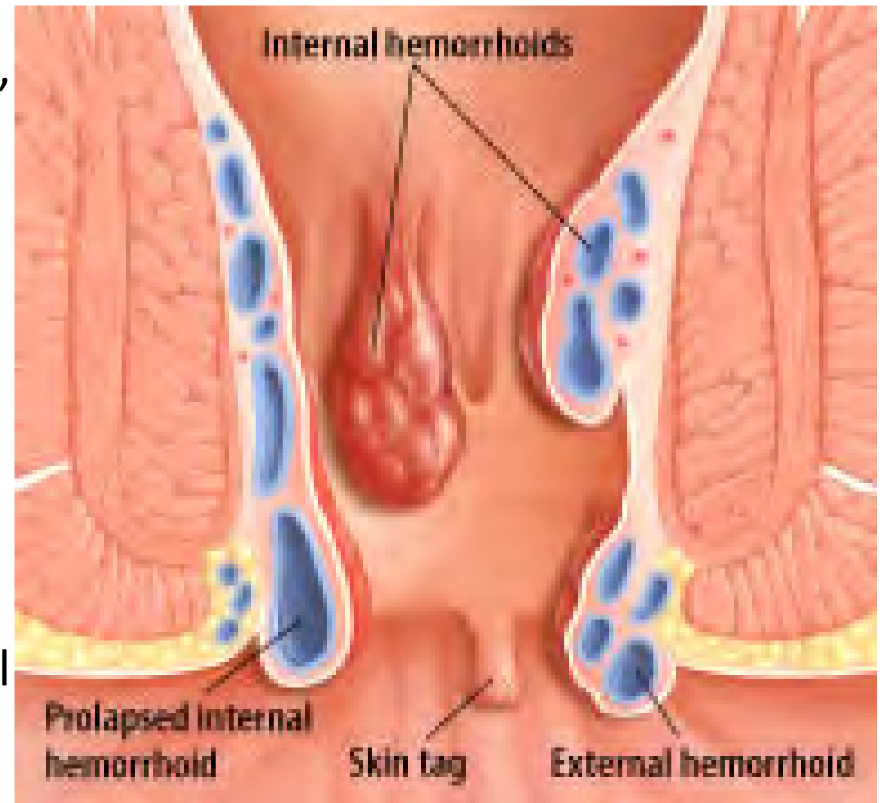


HAEMORRHOIDS

- Haemorrhoidal disease is very common, involving between 4.4% and 36.4% of the overall population
- **1-External** –Below the dentate line and are very painful
- **2-internal** –Above the dentate line and are painless unless thrombosed.

Internal Haemorrhoids

- Prolapse of normal mucosal cushions containing blood vessels, smooth muscle, and connective tissue.
- Dilatation-mechanical or vascular
- These cushions are located in the left lateral, right posterior, and right anterior regions of the canal(3,7 &11 o clock correlating with the superior rectal artery branches)
- Typical symptom-fresh painless bleeding-bright red due to arterial source
- Prolapsing anal mass
- pruritis



- Classification of internal hemorrhoids

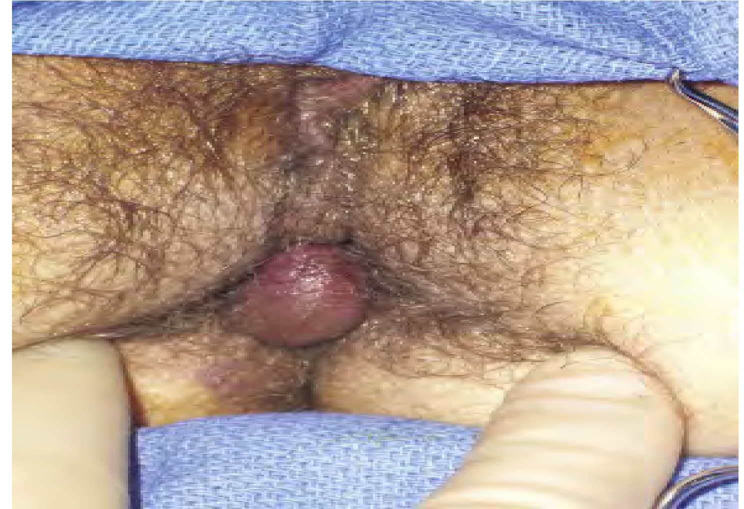
- Grade I No prolapse but bleeding
- Grade II Prolapse with spontaneous reduction
- Grade III Prolapse requiring manual reduction
- Grade IV Prolapse that is not amenable to reduction secondary to thrombosis/incarceration

etiology

- <u>**Underlying cause:**</u>
- Constant straining with constipation as well as diarrhoea
- **Sedentary lifestyle**-inadequate fibre
- intraabdominal pressure—such as pregnancy, ascites,
- Pelvic tumor-venous outflow reduced
- Portal HTN

External haemorrhoids

- Arise in the skin covered lower one-third of the anal canal veins of the external haemorrhoidal plexus
- Covered with skin, have cutaneous sensation .
- Thrombosed external piles are called perianal haematoma as well
- - - Caused by spontaneous rupture of one of the external veins
- - Painful



Spray the area with topical Xylocaine spray
- Infiltrate the haemorrhoids with Xylocaine 1% and Ad
- With heavy Mayo scissors, excise the top of the haemorrhoid
- Bathe in salt baths, prn analgesia, regular aperients

treatment

- If only bleed
  - Conservative medical ,life style modification
  - Rubber banding
- If prolapse and bleed
  - haemorrhoidectomy

treatment

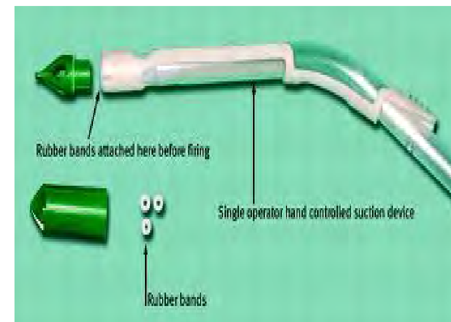
Medical management

- Address is underlying cause!
- Which is usually lifestyle modification advice
- dietary changes
- should drink approximately 6 to 8 (12 oz) glasses of fluid daily.
- Fiber intake should be increased to 25 to 30 grams per day psyllium or hydrophilic colloid are often required y
- improve anal hygiene.
- Avoid food and medication causing diarrheal or constipation
- Regular toilet regimens
- NSAIDS stopped if bleeding
- over-the-counter topical treatments-no clinical trials have proven efficacy for preventing prolapse or bleeding

RUBBER BAND LIGATION

Outpatient procedure

- -More effective grade 2 and early grade 3 internal haemorrhoids
- -May be followed by pain for up to 48 h
- Infection and life-threatening hemorrhage uncommon risks
- more successful than sclerotherapy for the treatment of hemorrhoids
- well-tolerated procedure
- complication rate of rubber band ligation is less
- Minor bleeding-vasovagal reaction
- If patient experiences pain – band has been applied too low – remove
- Pain developing in 1 – 2 days may be due to ischaemia
- Relief with analgesia and metronidazole



Sclerotherapy

- Injection sclerotherapy
- - No advantage over the administration of fibre supplements
- - Serious side-effects
  - o Pelvic cellulitis
  - o Necrotizing fasciitis
  - o Chemical prostatitis
  - o Impotence
- - 5% phenol with 0.5% menthol (oily phenol BP)
- - Insert needle into submucosa at the anorectal junction
- - 3 – 5mL into submucosa at each site

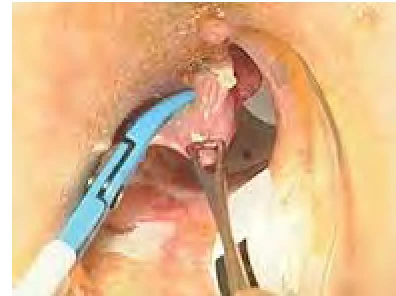
surgery

- Surgical treatment for grade III and IV haemorrhoids
- superior to any proposed conservative procedure
- Problems with Surgery
- - Post-operative pain
- - Pain on defaecation
- - Prolonged sphincter spasm

- 1-standard excision haemorrhoids
- Staple
- Ligasure
- HLRAR

Ligasure hemorrhoidectomy

- Ligasure is a new energy device that uses precisely calculated and focused energy delivery to achieve the desired tissue effect.
- minimal amount of energy to cut tissue, resulting in less collateral damage to surrounding tissues
- cut and coagulate tissues
- seal tissue at the same time



- **Randomized clinical trial of LigaSure and conventional diathermy haemorrhoidectomy.**
- Muzi MG, Milito G, Nigro C, Cadeddu F, Andreoli F, Amabile D, Farinon AM - **Br J Surg** - Aug 2007; 94(8); 937-42
- 284 -randomized ligasure and surgical excision
- Operating time, postoperative pain score, hospital stay, postoperative complications, wound healing time and time to return to normal activities were assessed
- Ligasure significantly less pain and shorter wound healing time as well less time to work.

  - **Randomized clinical trial of LigaSure and conventional diathermy haemorrhoidectomy.**
  - Muzi MG, Milito G, Nigro C, Cadeddu F, Andreoli F, Amabile D, Farinon AM - Br J Surg - Aug 2007; 94(8); 937-42

Metanalysis- Ligsure vs Conventional Haemorrhoidectomy

- Multi-database systematic search
- Twelve studies with 1142 patients
- pain score at the first day following surgery was significantly less in the Ligasure group (10 studies, 835 patients, WMD −2.07 CI −2.77 to −1.38).
- The conventional technique took significantly longer to complete (11 trials, 9.15 minutes, CI 3.21 to 15.09).
- Significantly less urinary retentions and less delayed wound healing were noted following Ligasure haemorrhoidectomy.

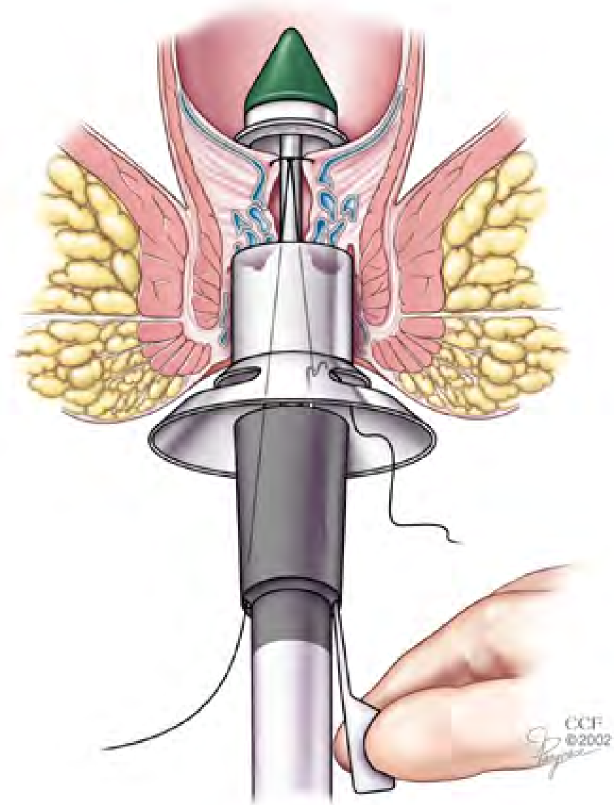
  - **Pain after conventional versus Ligasure haemorrhoidectomy. A meta-analysis**
  - S.W. Nienhuijs, and I.H.J.T. de Hingh
  - International Journal of Surgery, 2010-01-01, Volume 8, Issue 4, Pages 269-273

Ligsure vs Conventional Haemorrhoidectomy

- **LigaSure Haemorrhoidectomy versus Conventional Diathermy for IV-Degree Haemorrhoids: Is It the Treatment of Choice? A Randomized, Clinical Trial.**
- Gentile M, De Rosa M, Carbone G, Pilone V, Mosella F, Forestieri P - ISRN Gastroenterol - 2011; 2011
- Small no 52 pts-mean OT time shorter as well less pain day 3
- Conclusion –ligasure is effective and rx of choice for large 4th degree haemorrhoids

Staple haemorrhoidectomy

- Circular stapling device resects a strip of mucosa from above the dentate line
- Significant reduction in post-operative pain
- Faster procedure
- BUT---------
  - Treats only internal haemorrhoids
  - Learning curve
  - Serious complications
  - Cost



Stapled haemorrhoidopexy with conventional haemorrhoidectomy

- 29 RCT -2055 patients
- Staple group higher rate of recurrence
- Shorter hospital stay and faster return to work in staple group
- Same complication rate

Systematic review and meta-analysis of randomized controlled trials comparing stapled haemorrhoidopexy with conventional haemorrhoidectomy.

Shao WJ, Li GC, Zhang ZH, Yang BL, Sun GD, Chen YQ - Br J Surg - Feb 2008;

- 52 pts
- Rnadomozed 37 each
- Evaluation;
- Operation time shorter 25 min vs 30 min
- Return to painless defecation significantly faster 10 (6-14) vs 12 day (9-19 days)

- **Conclusion:**
- **Hemorrhoidectomy with a circular staple device is easy to perform**
- **and achieves better results than the Milligan-Morgan technique in**
- **terms of postoperative pain and recovery**

- **Stapled and Open Hemorrhoidectomy: Randomized Controlled Trial of Early**
- **Results-World J. Surg. 27, 203–207, 2003**
- **DOI: 10.1007/s00268-002-6459-5**

- Domenico Palimento, M.D.,1 Marcello Picchio, M.D.,1 Ugo Attanasio, M.D.,1 Assunta Lombardi, M.D.,1
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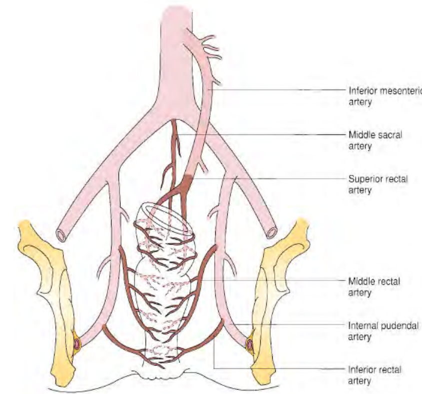
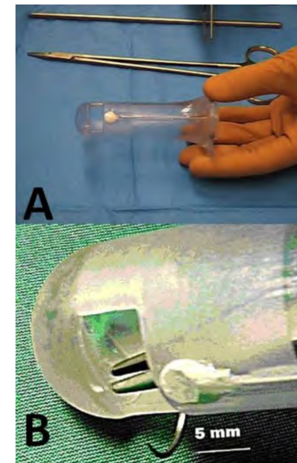
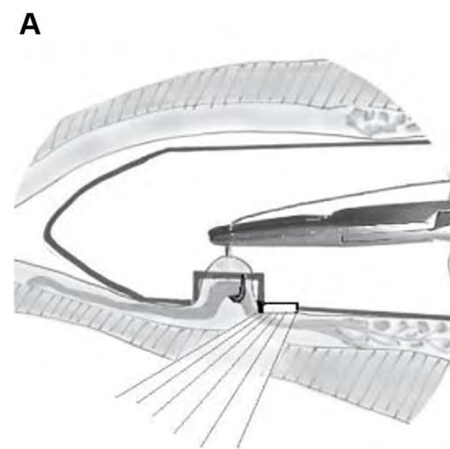
HALRAR

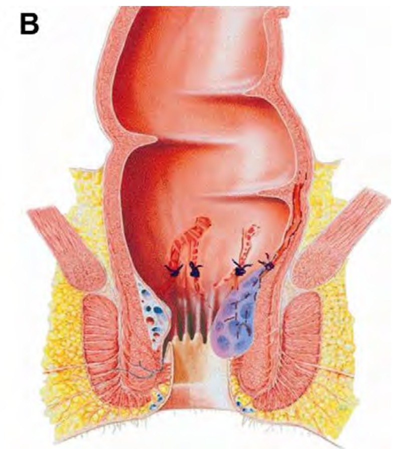
- Doppler ultrasound probe to identify terminal branches of superior haemorrhoidal
- artery which are suture ligated through a slit proctoscope
- Suture only haemorrhoidectomy
- mini-invasive, with low morbidity, and satisfactory short and medium term functional results



- The instrument used consists of an HALTM probe, a transparent resectoscope, provided with a centimetre-sized window at its end through which the ligations are performed. Resectoscope has light source.
- A Doppler transducer, connected to the hand-held Doppler apparatus, is found at the base of this window

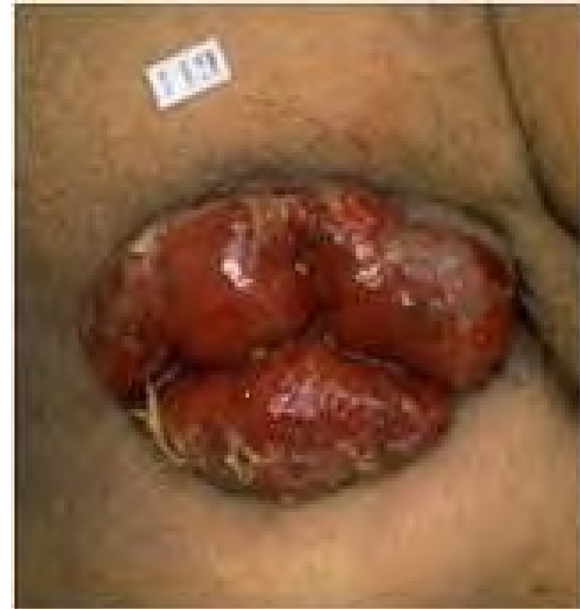






strangulated haemorrhoids

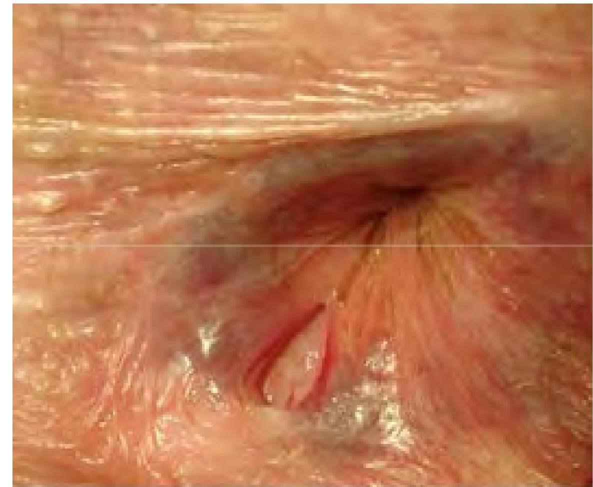
- Conservative treatment
  - ice packs and analgesia
  - Ab
  - Bed rest
  - Elevate foot end
  - sugar
- Emergency haemorrhoidectomy
  - High complication rate



ANAL FISSURE

Def:

- Ulcer or split in the skin lined (distal) part of the anal canal .
- P.C: Stab like pain on defecation
- Most acute and heal spontaneously.
- Common site is posterior midline(women-10% anterior)



Anal fissure

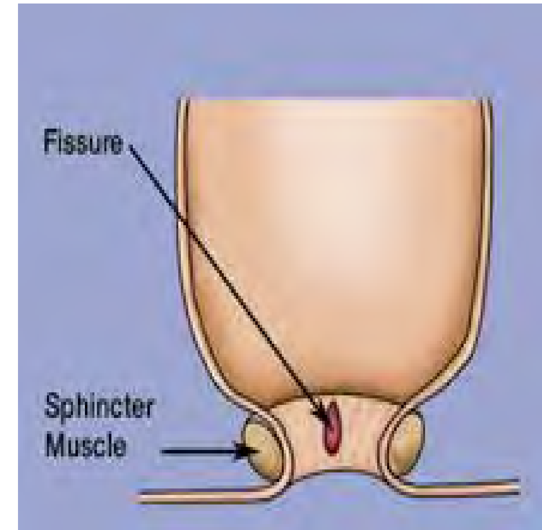
- Constipation-hard faecal bolus
- Childbirth(3-10%)
- Crohns disease -Medical management
    - Immunosuppressives
    - Antibiotics
    - Little role for surgical treatment
- Occasional diarrheal
- Anal scc
- Post-operative – haemorrhoidectomy

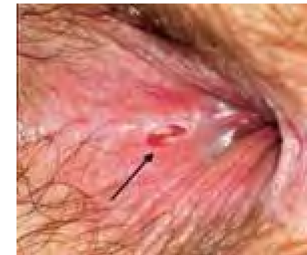
Chronic fissure

- Thick indurated edges
- Sentinel tag
- Absence of granulation tissue with white fibres of IAS visible at base.
- There is associated spasm of IAS causing pain and discomfort

Spasm of internal sphincter

- Leading cause of non healing is spasm of the internal sphincter
- Poor blood supply and perfusion –posterior midline ischemia
- So treatment (both medical and surgical) is aimed at restoring the normal tone of the IAS





Treatment

- Medical Nonoperative treatment
  - Psyllium fiber and bulking agents
  - Sitz baths
  - Topical anesthetics
  - Anti-inflammatory ointment
- Pharmaceutical therapy
  - Topical nitroglycerin (nitric oxide)
  - Topical calcium channel blockers
  - Oral calcium channel blockers
  - Botulinum toxin injections

- Surgical techniques
  - Lateral internal sphincterotomy (LIS) (recommended surgical management)
  - Anal advancement flap (alternative to LIS)
  - Fissurectomy
  - Anal dilation (considered but not recommended

Rectogesic ointment -GTN

- Reducing intra-anal pressure (relax IAS)
- Vasodilatory effect on anal vesselsTopical paste applied tds
- 0.2% strength (compared with 2% strength for GTN patches)
- >80% fissures healed in 2-3 weeks
- Side effects include headaches, flushing and dizziness on standing, burning sensation in the anus, development of tolerance.
- 25% of patients will be unable to tolerate
- Calcium channel blockers (topical)
- - 1- 2% diltiazem cream-less S/E

Botulinum toxin (Botox®) injection

- Rapid action-within few hours
- Non traumatic
- Effect last 3-4 month – enough for fissure to heal
- No damage /division of IAS
- Very good option in females-already attenuated IAS

surgery

- Botox vs Lateral internal Sphinterotomy (LIS)
  - RCT, 111 patients
  - 20-30 IU botox injected anteriorly (50) vs open LIS (61)

		LIS	Botox	
Healing	@ 1/12	82%	74%	($p = 0.023$)
Healing	@ 6/12	96%	87%	($p = 0.212$)
Healing	@ 12/12	94%	75%	($p = 0.008$)
Incontinence		16%	0%	($p < 0.001$)
Return to work		15 days	1 day	($p < 0.0001$)

- Mentes, Dis Colon Rectum 2003; 46:232-237

surgery

- Lateral sphinterotomy- 96% healing rate
- Partial division of Internal sphincter
- S/e-30 incontinence
- Lords manoeuvre – forceful dilatation (8 fingers)of the sphincter complex is not practiced now days

if Non healing

-consider crohns disease

-HIV

-malignancy-

surgery

- Advantages
  - Can be performed under LA as day case
  - Wounds heal quickly
  - Low recurrence rates
  - Can perform concomitant procedure without increased risk of complication
    - Leong, Dis Colon Rectum 1994; 37:1130-1132

surgery

- Disadvantages
  - Impaired continence - up to 38% notice some change
    - Soiling - 27% (open) vs 16% (closed); $p < 0.001$
    - Stool - 12% vs 3%; $p < 0.001$
    - Flatus - 30% vs 24%; $p < 0.062$
      - Garcia-Aguilar, Dis Colon Rectum 1996; 440-443 (549 patients)
  - Multiple series have similar rates of incontinence
    - Females at greater risk - shorter anal sphincter
      - preexisting childbirth injury
  - Prolapsed haemorrhoids (+/- thrombosis)
  - Haemorrhage
  - Abscess / Fistula
  - Recurrence rate – 1-3% in most series

    ⇨ Overall complication rate 6-7%

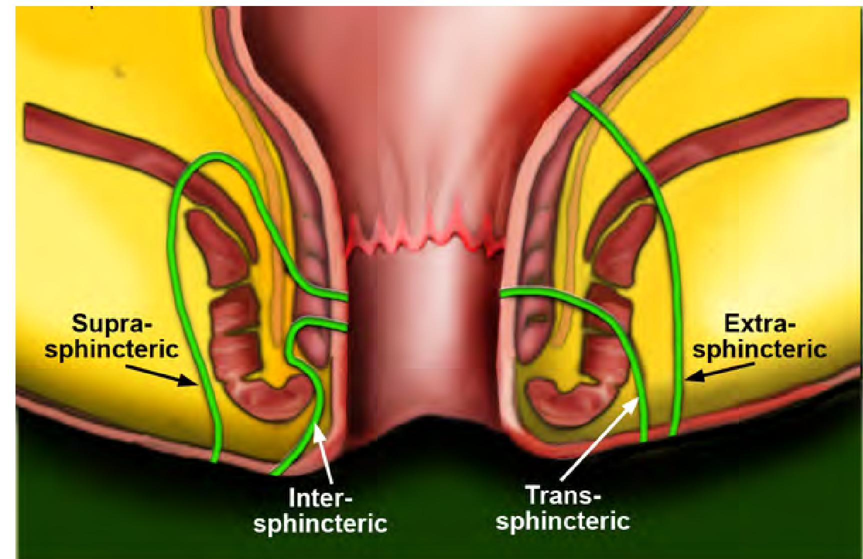
FISTULA IN ANO

- Hollow tract lined with granulation tissue connecting a primary opening inside the anal canal to a secondary opening in the perianal skin

- Causes:
- history of an abscess
- Crypto glandular theory: Anal canal glands at the dentate line afford a path for infecting organisms to reach the intramuscular space
- -crohns dsease-
- -radiation
- -TB ,actinimycosis

Parks classification

- 4 Types of fistula:
- A-Intersphincteric -70%
- - Common course - Via internal sphincter to the intersphincteric space and then to the perineum
- B-Trans-sphincteric-25%
- - Common course - Low via internal and external sphincters into the ischiorectal fossa and then to the perineum
- C-Suprasphincteric -5%
- - Common course - Via intersphincteric space superiorly to above puborectalis muscle into ischiorectal fossa and then to perineum
- D-Extrasphincteric
- - Common course - From perianal skin through levator ani muscles to the rectal wall completely outside sphincter mechanism
- - One percent of all anal fistulae



SURGICAL MANAGEMENT

- SEVERAL OPTIONS
- If asymptomatic-not treated but still needs EUA in immunocomprmised-treated
- If diagnosed at time of drainage of perianal abcess and it is low -can be layed open otherwise wait untill tract mature

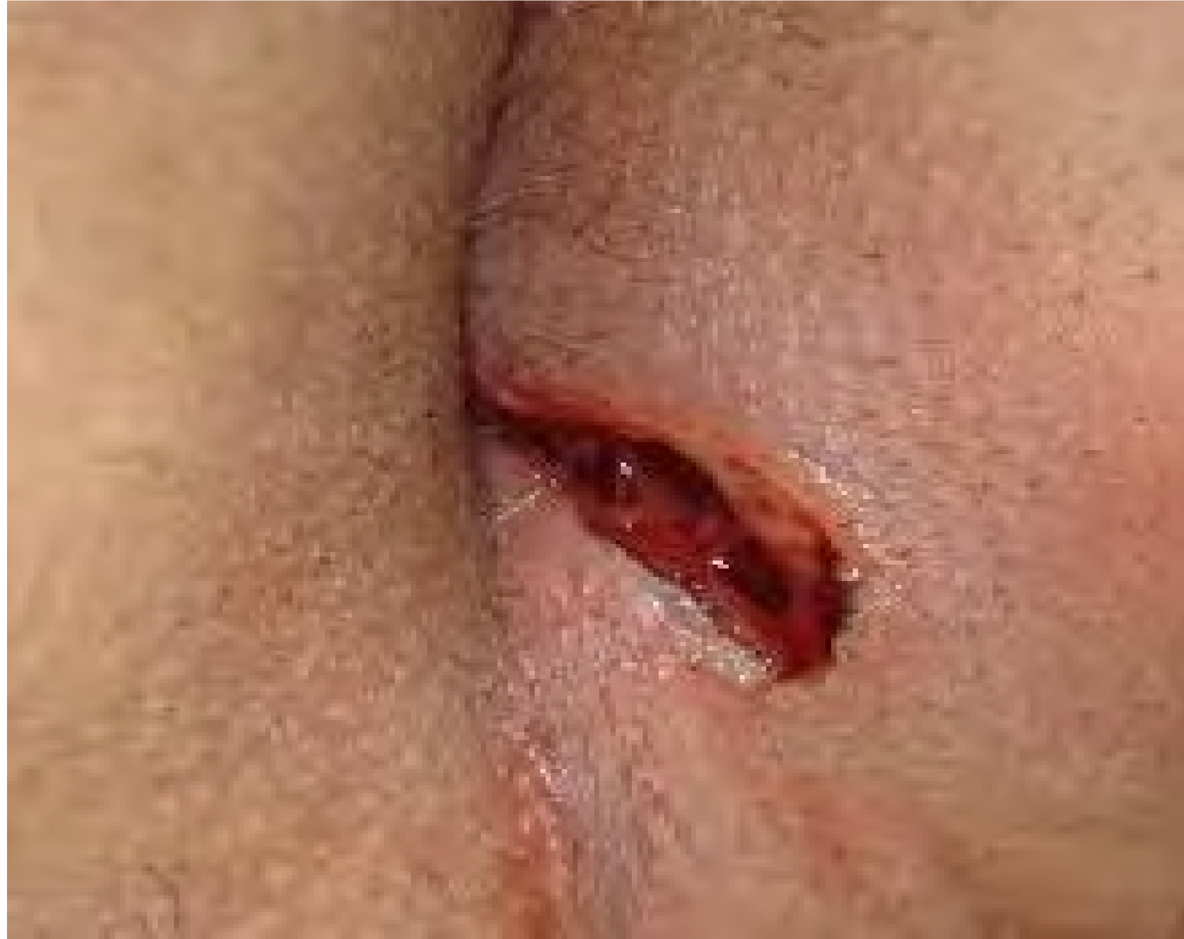
- LAY OPEN-only if simple and low
- If complex:
- SETON PLACEMENT
- FIBRIN GLUE
- MESH PLUG
- ADVANCEMENT RECTAL MUCOSAL FLAP
- LIFT
- COLOSTOMY

Treatment/investigations

- MRI
- Endirectal USS
- CT scan
- EUA

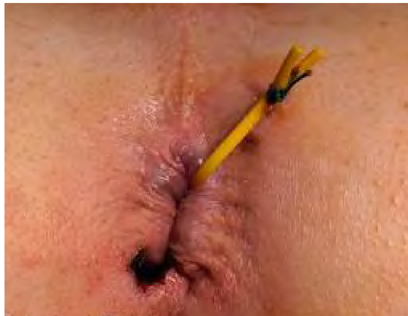
- Principle
- Location internal opening
- Location external opening
- Closure of the primacy tract
- Closure of the secondary tract
- Assess sphincter involvement

Laying Open Fistula

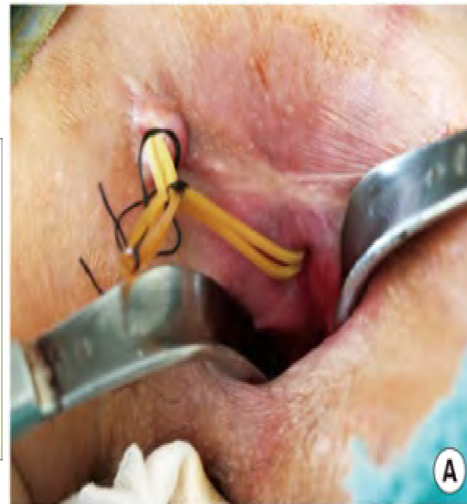


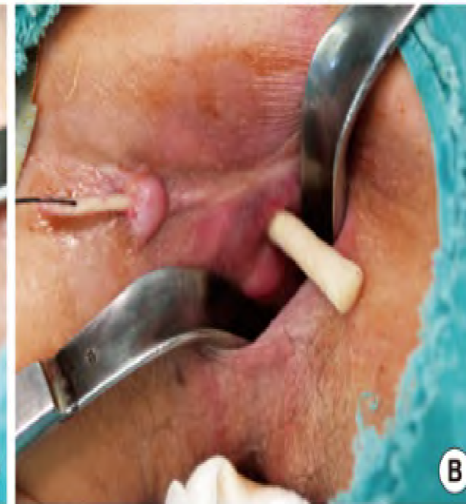
setons

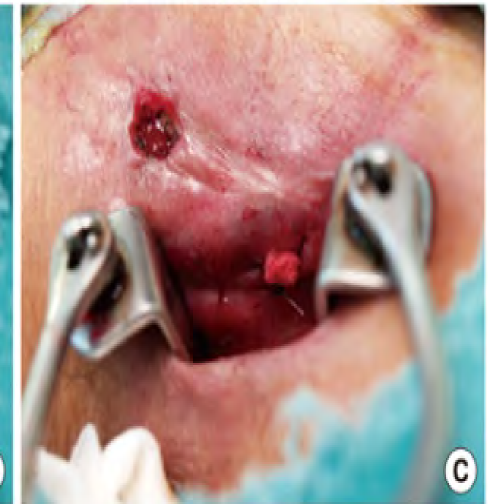
inserting a thin tube through the fistula tract
Cutting setons-tightened over time, gradually cutting through the sphincter muscle and healing as it goes
Draining –loose setons- which keeps it open and allows pus to drain out



Surgisis biological mesh plug







FIBRIN GLUE

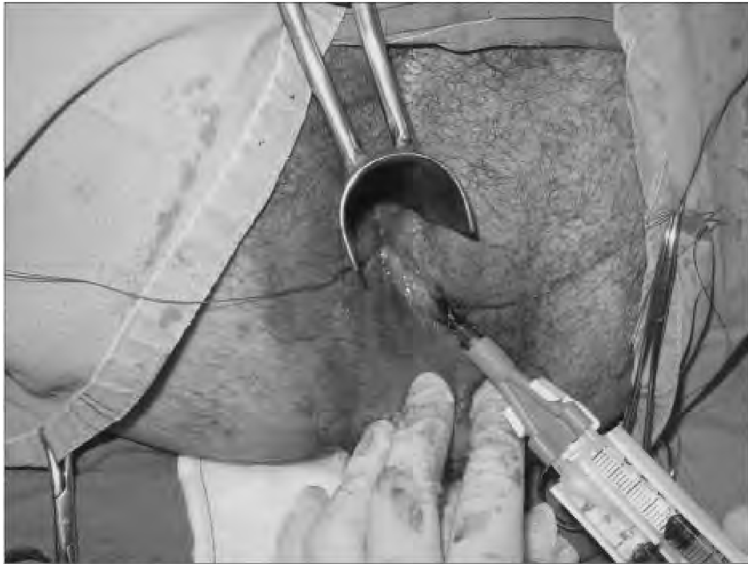
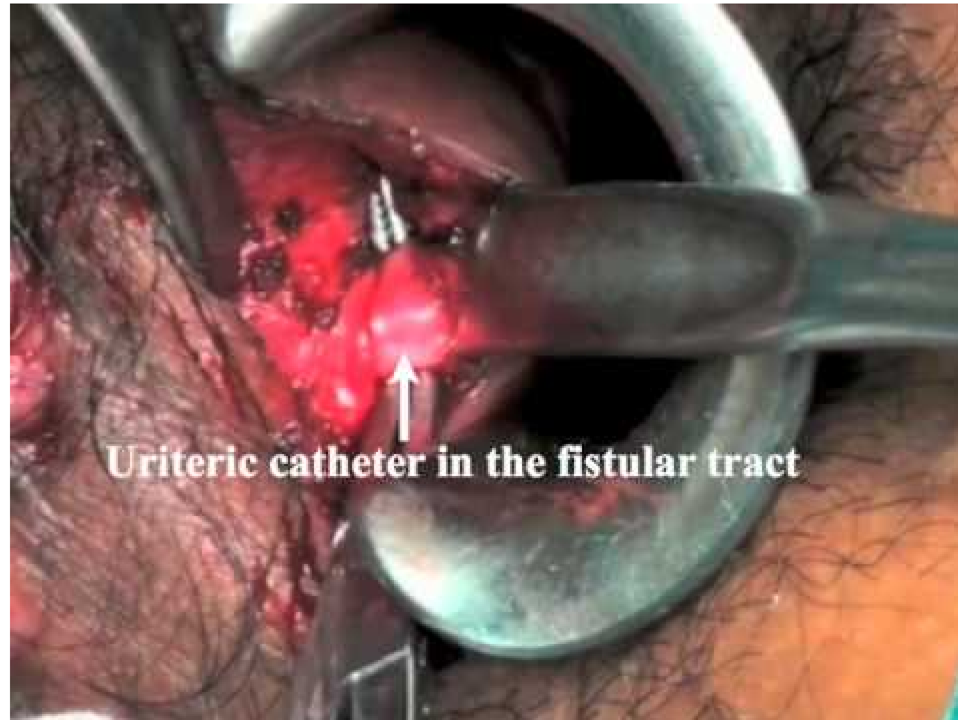


FIGURE 1. Fibrin glue being instilled through the external opening of a fistula using the double-channel injector. A Vicryl suture was placed at the internal orifice inside the anal canal

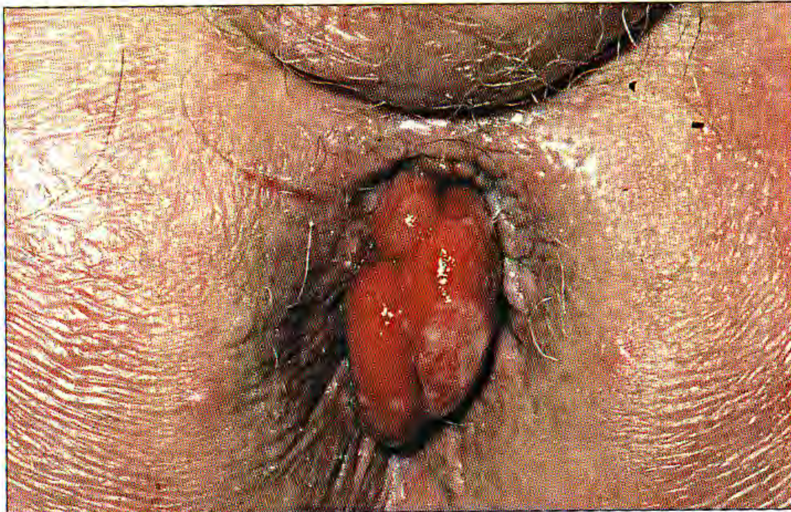
- SUCCESS RATE -50%
- Not very popular

LIFT



ANAL CANCER

Primarily is squamous cell carcinoma



Anal Cancer Facts

- 1-2% of all large bowel cancers, 4% of anorectal cancers
- Estimated 4,660 new cases in 2006
  - (1,910 - male; 2,750 - female)
- 75-80% are squamous cell cancers
- 15% are adenocarcinomas
- Keratinizing and low-grade squamous morphology associated with anal margin cancers
- 70% are stage I or II on presentation
- 20% have nodes on presentation; 30-63% will have nodes on surgery
- Cancers involving the anal canal below the dentate line have a higher risk of inguinal nodes

ANAL CANCER

- Human papilloma Virus (73%-84% Incidence)

Serotype 16 & (18)

- Sexual Activity RR= 31x Male Homosexual
- History of Cervical Cancer RR=5x
- Immunosuppression RR =100x
- HIV RR=60x Unclear whether related to HIV itself

Possibly related to HPV infection

- Smoking RR=7-10x
- Condylomata-AIN –LGD-HGD-cancer

TABLE 1. RISK FACTORS FOR ANAL CANCER

Strong evidence

Human papillomavirus infection (anogenital warts)
History of receptive anal intercourse
History of sexually transmitted disease
More than 10 sexual partners
History of cervical, vulvar, or vaginal cancer
Immunosuppression after solid-organ transplantation

Moderately strong evidence

Human immunodeficiency virus infection
Long-term use of corticosteroids
Cigarette smoking

Anal pap smears

- HIV + patients –early detection high risk patients
- +ve smear cytology receive further evaluation with high resolution anoscopy
- Allow detection of precancerous growth –AIN is precursor of anal cancer
- If HGD-ablation –topical 5FU,anoscopic directed electrocautery,trichloracetic acid
- No established guidelines yet
- HPV vaccines significnt progress in prevention of HPV related malignancy(Gardasil –meck and co 6,1,16,18) protect againsy anus vagina vulva malignancy

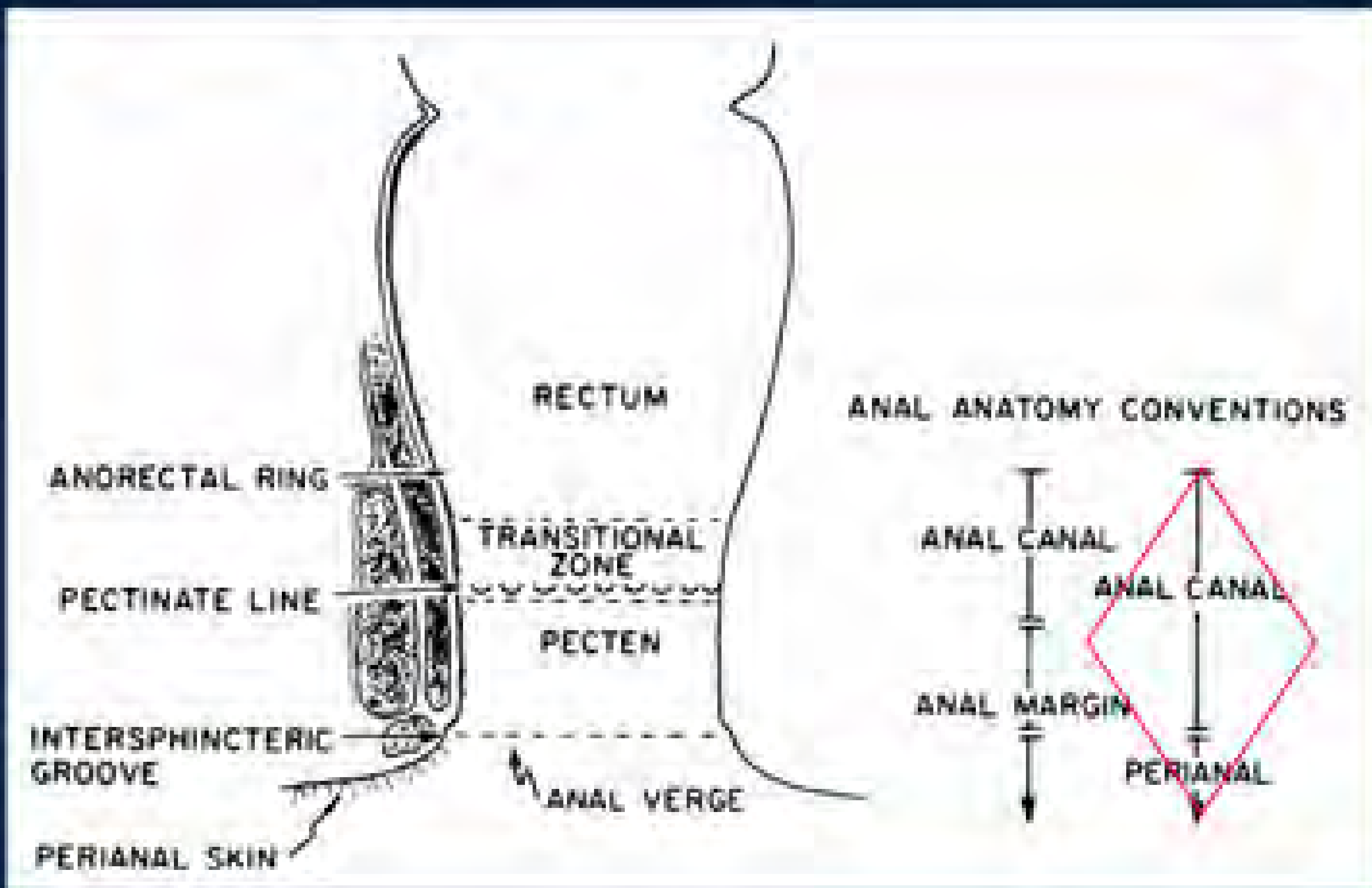
ANAL CANCER

- Rectal Bleeding 45%
- 30% Pain or sensation of mass
- 20% nil symptoms
- *About 50% of patients have a delay in diagnosis*

<u>Investigations</u>

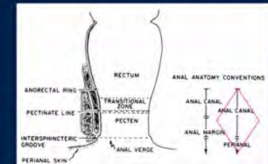
- Biopsy
- CT abdomen
- CXR
- Endoanal Ultrasound

First Decision: Is This an Anal Margin or an Anal Canal Cancer?



Why the Concern Regarding Anal Canal vs. Anal Margin Cancers?

- Perianal cancers can be treated like skin cancers
  - Keratinizing
  - Low-grade
  - <2 cm



ANAL CANCER-treatment

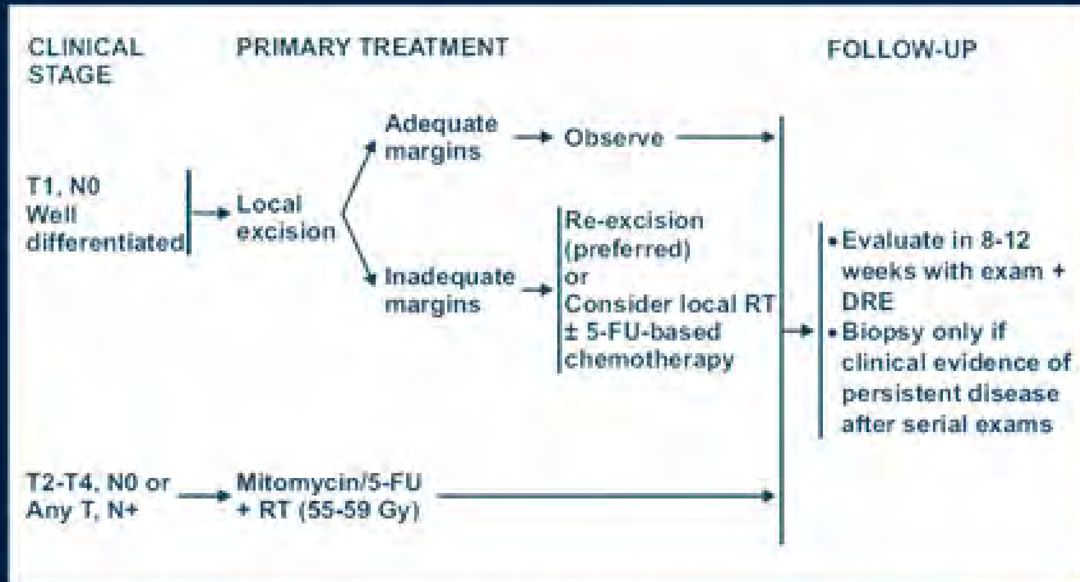
- Until the mid-1970s, surgery was the gold standard for the treatment of anal canal cancer.
- The standard surgical technique was an APR.
- Nigro 1974 reported x3 cases and then further 28 cases

- Now definitive chemoradiation(mitomycin+5FU) used to treat anal canal cancer with equivalent or better tumor control and significantly reduced mortality compared to APR.

Treatment

Anal Margin Cancer

Clinical Practice Guidelines in Oncology – v.1.2007



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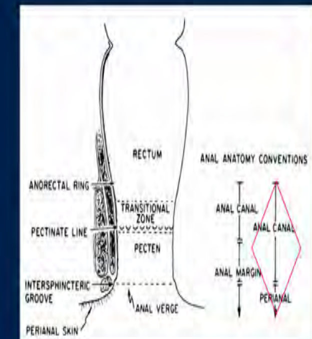
ANAL-2



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Anal Canal Cancer

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CLINICAL PRESENTATION		WORKUP	CLINICAL STAGE
Anal canal cancer →	Biopsy: squamous cell carcinoma →	• Digital rectal examination (DRE) • Inguinal lymph node evaluation • Biopsy or FNA if suspicious nodes • Chest x-ray or Chest CT • Anoscopy • Abdominal/pelvic CT or MRI • PET scan • Consider HIV testing + CD4 level if indicated • Gynecological exam for women, including screening for cervical cancer	T1-2, N0 → T3-T4, N0 or Any T, N+ →

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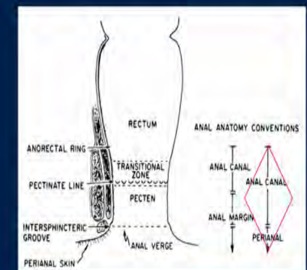

Rectal prolapse

- Disease of extremes of age
- Most embarrassing symptom is – incontinence
- Treatment is surgical
- Abdominal approach –less recurrence but needs GA-younger pts
- Perineal approach-can be done under LA but high recurrence uptill 40%-for medical unfit elderly

Take home

- Painful defecation suspect deep abscess
- All PR bleeding needs proper assessment and investigations
- Acute fissures heal by medical tretment
- Anal fistula do not need referral to emergency deptt.(if assoc.abcess-yes)
- Life style modification advice –important for recurrence of symptoms