

# Hemorrhoidal Disease: What You Should Know?

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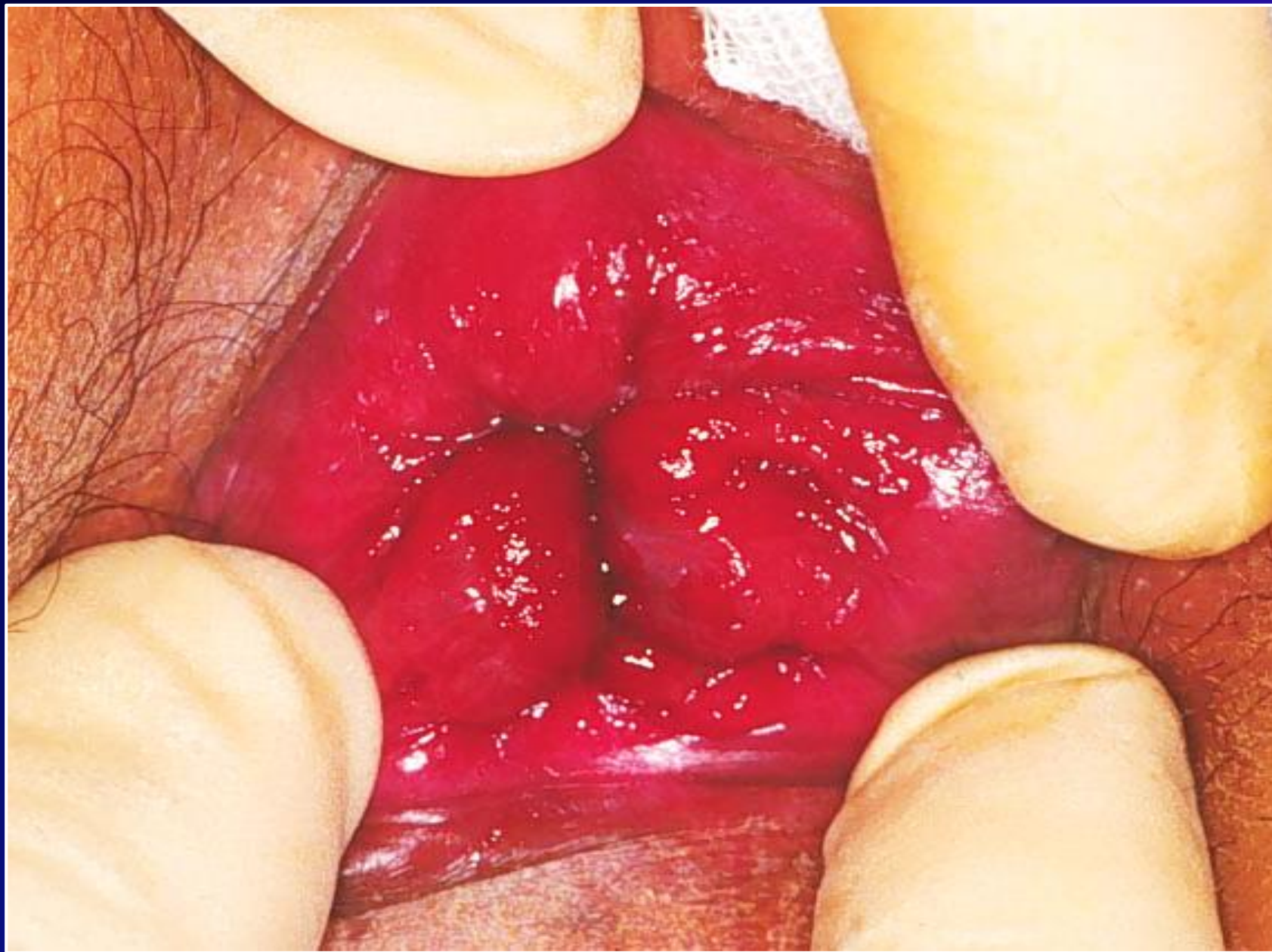
# Disclosure

No any benefit related  
to this lecture

# Outline

- How does it look like?
- Pathophysiology
- Treatment

How does it  
look like?





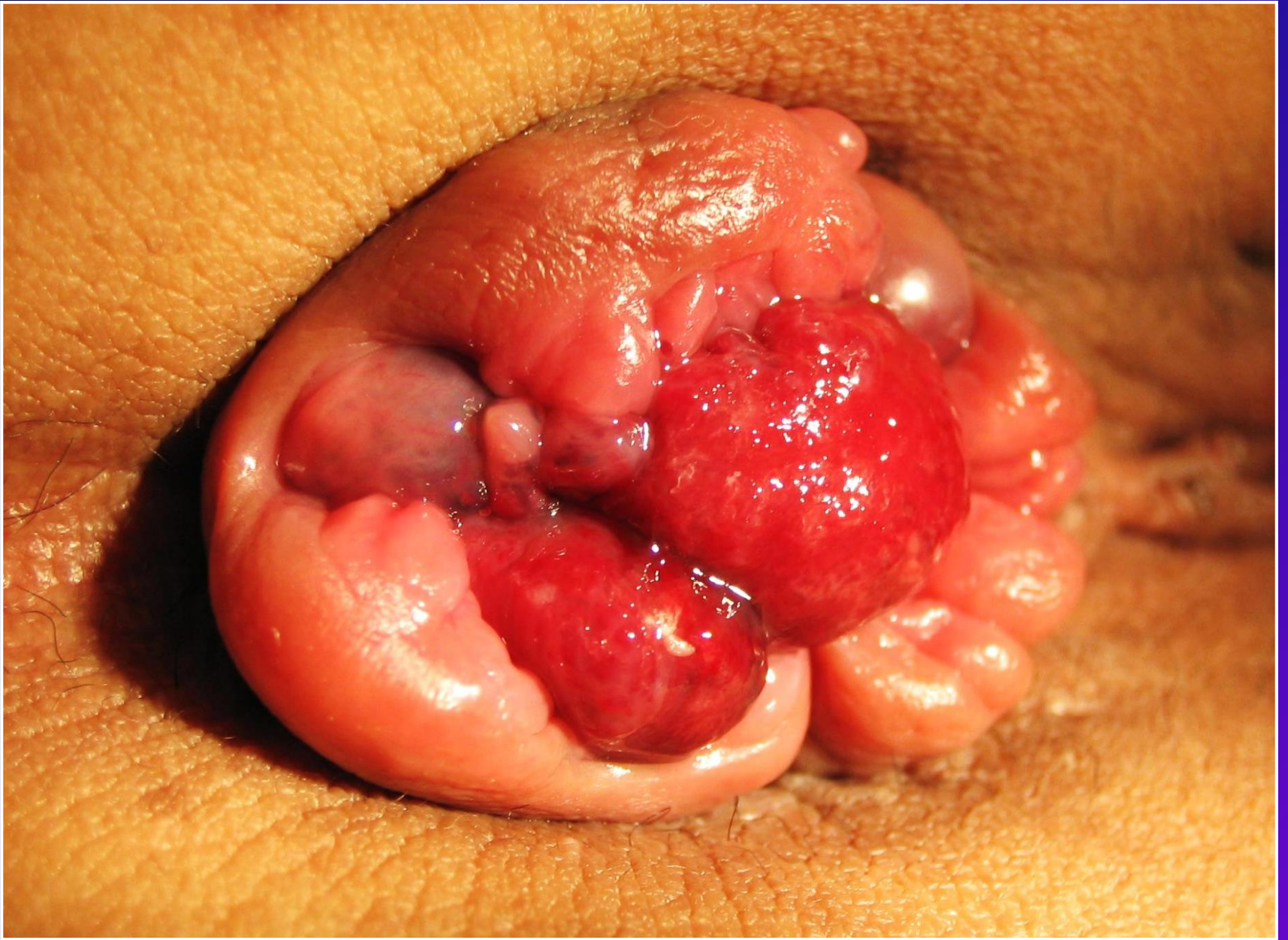
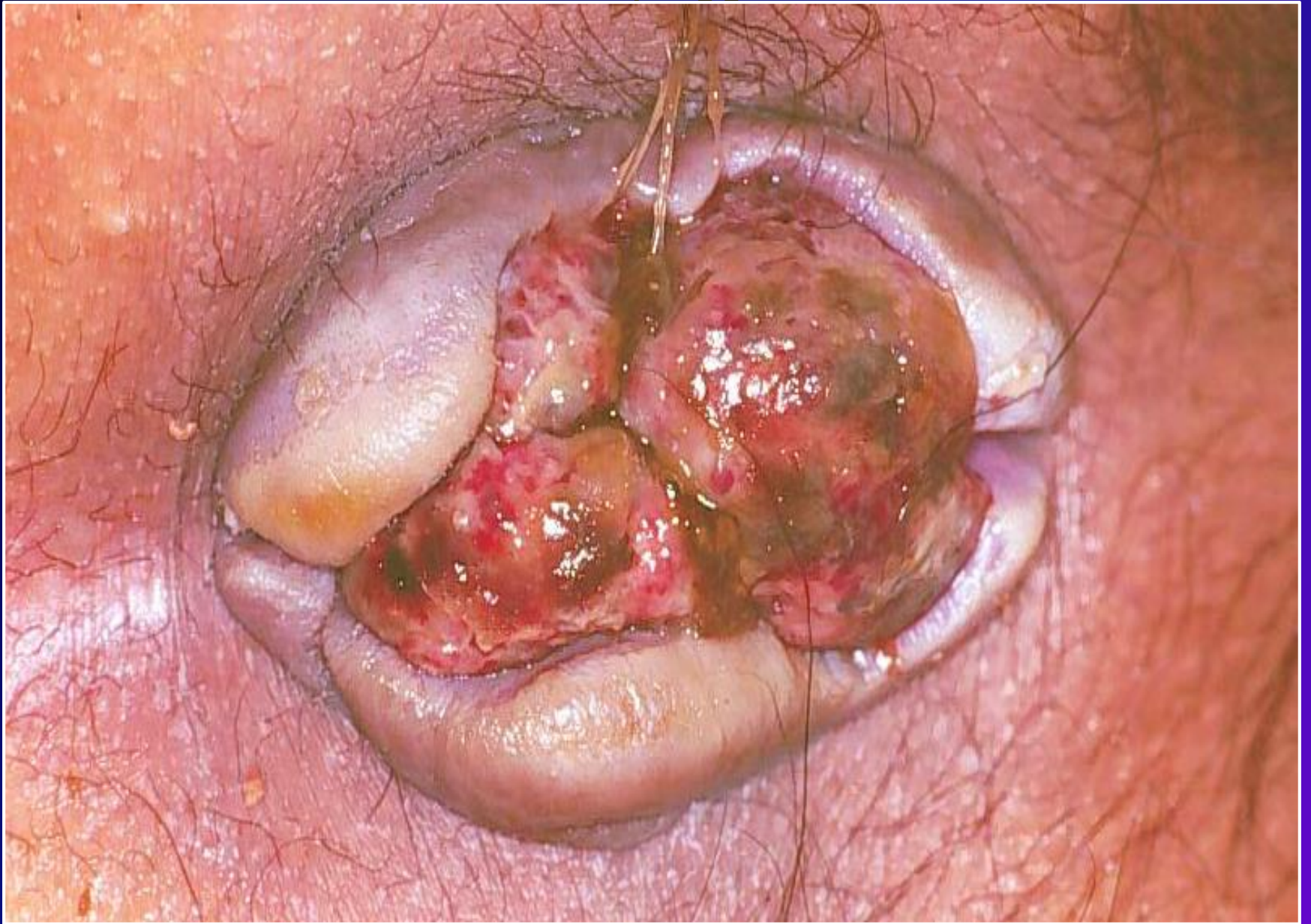




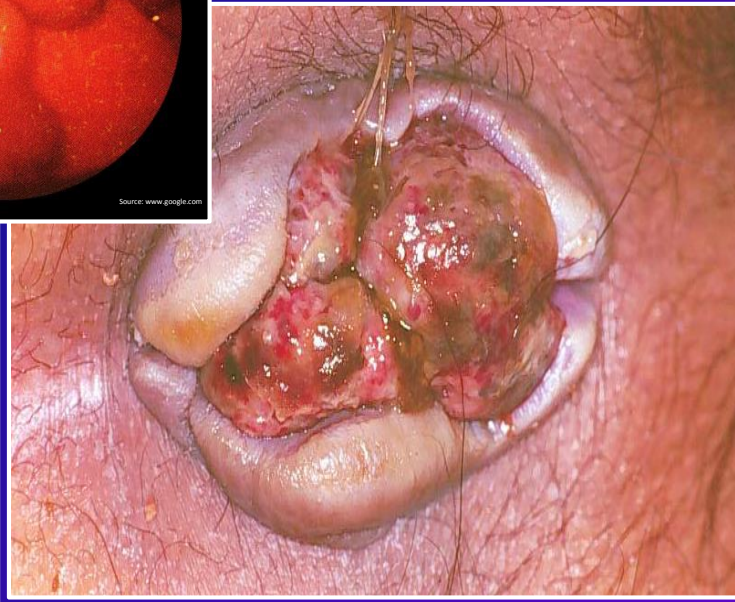
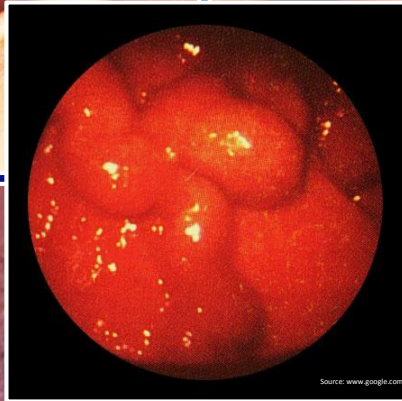
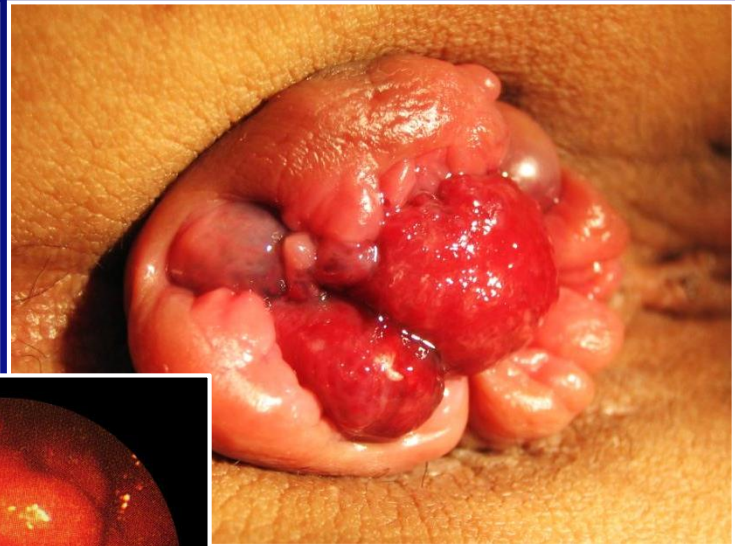
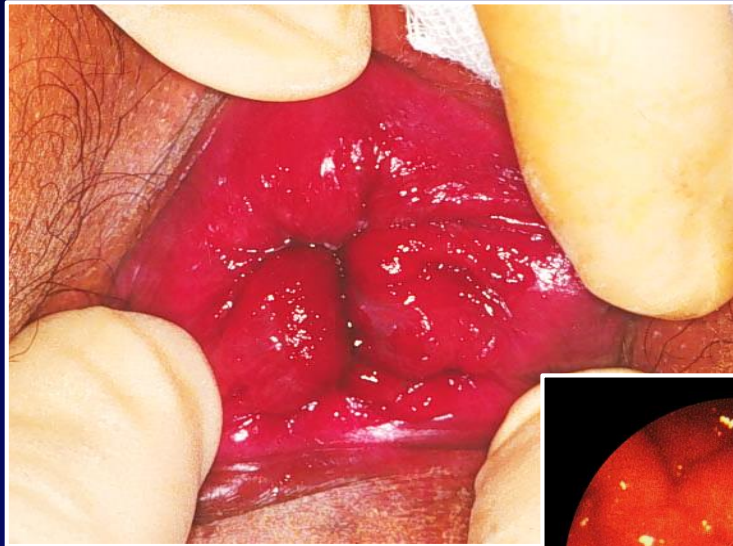


Figure 1









# What is hemorrhoid?

- Engorge vein?
- AVM
- ???



# Pathophysiology?

# Enzymes involved

- MMP<sup>(1)</sup> → degradation of elastin, fibronectin & collagen
- MMP-9 → over-expressed in hemorrhoids<sup>(1)</sup>
- Activation of MMP-2 & MMP-9
  - disruption of the capillary bed
  - angioproliferative activity of TGF- $\beta$ <sup>(1)</sup>  
(transforming growth factor  $\beta$ )

# Microvascular density

- Was increased in hemorrhoidal tissue
- Suggested of neovascularization
- Endoglin (CD105) (proliferative marker for neovascularization) was expressed in > half of hemorrhoidal tissue compared to normal anorectal mucosa



# Arterial supply

- Terminal branches of superior rectal artery supplying the anal cushion in patients with hemorrhoids had a significantly:
  - larger diameter
  - greater blood flow
  - higher peak velocitycompared to those of healthy volunteers<sup>(1-2)</sup>

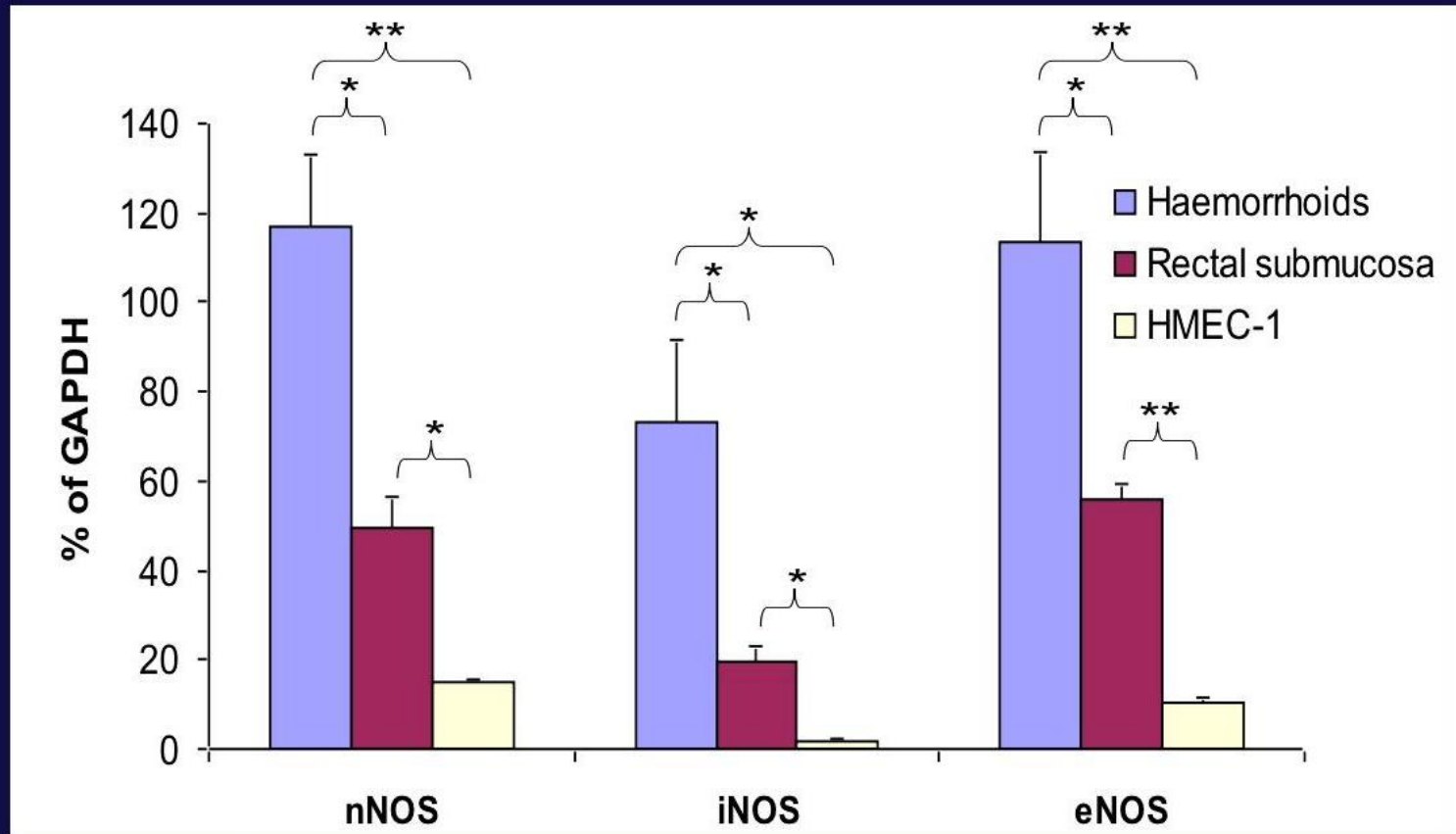
1) Aigner F, Gruber H, Conrad F, Eder J, et al. Revised morphology and hemodynamics of the anorectal vascular plexus: impact on the course of hemorrhoidal disease. Int J Colorectal Dis. 2009;24:105–113

2) Aigner F, Bodner G, Gruber H, Conrad F, Fritsch H, Margreiter R, Bonatti H. The vascular nature of hemorrhoids. J Gastrointest Surg. 2006;10:1044–1050

# Nitric oxide synthase

Nitric oxide synthase (synthesizes nitric oxide from L-arginine) was increase significantly in hemorrhoidal tissue

# Nitric Oxide Synthase ↑



Western Blotting

Lohsiriwat V. PhD thesis (Nottingham,UK) 2010



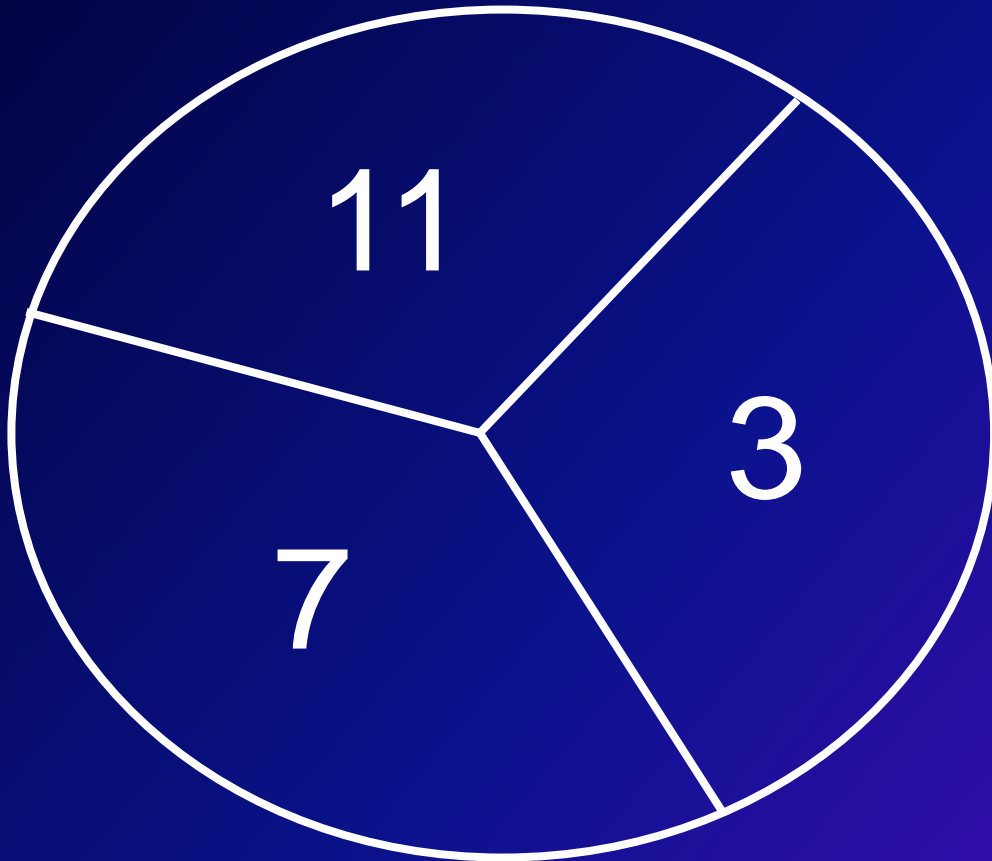
# Anal cushion<sup>(1)</sup> (>44 y.)

- Abnormal dilatation & distortion
- Destruction of supporting connective tissue within the anal cushion
- Inflammation & vascular hyperplasia may be seen<sup>(2)</sup>

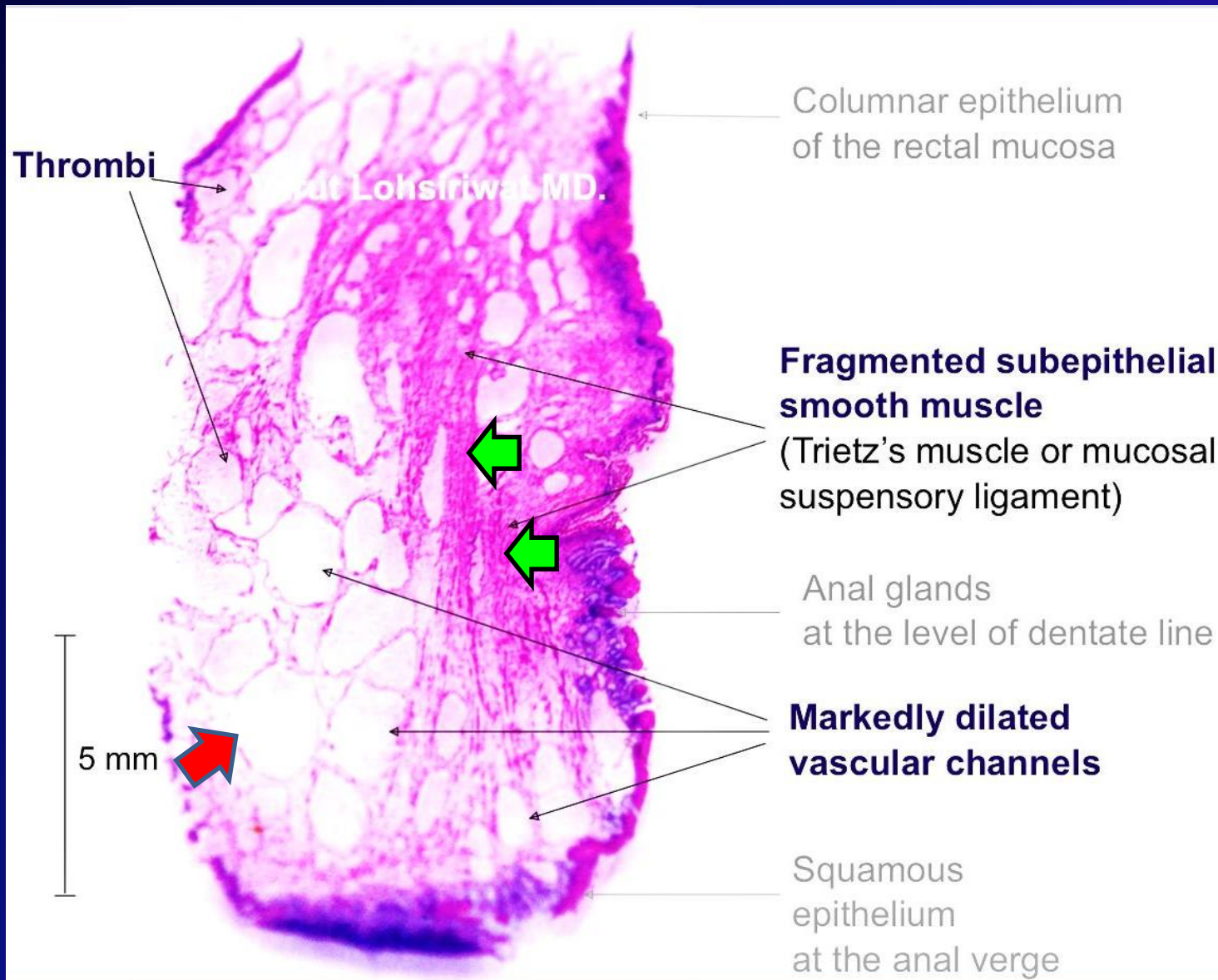
1) Thomson WH. The nature of haemorrhoids. Br J Surg. 1975;62:542–552

2) Morgado PJ, Suárez JA, Gómez LG, Morgado PJ. Histoclinical basis for a new classification of hemorrhoidal disease. Dis Colon Rectum. 1988;31:474–480.

# The 3 main cushions



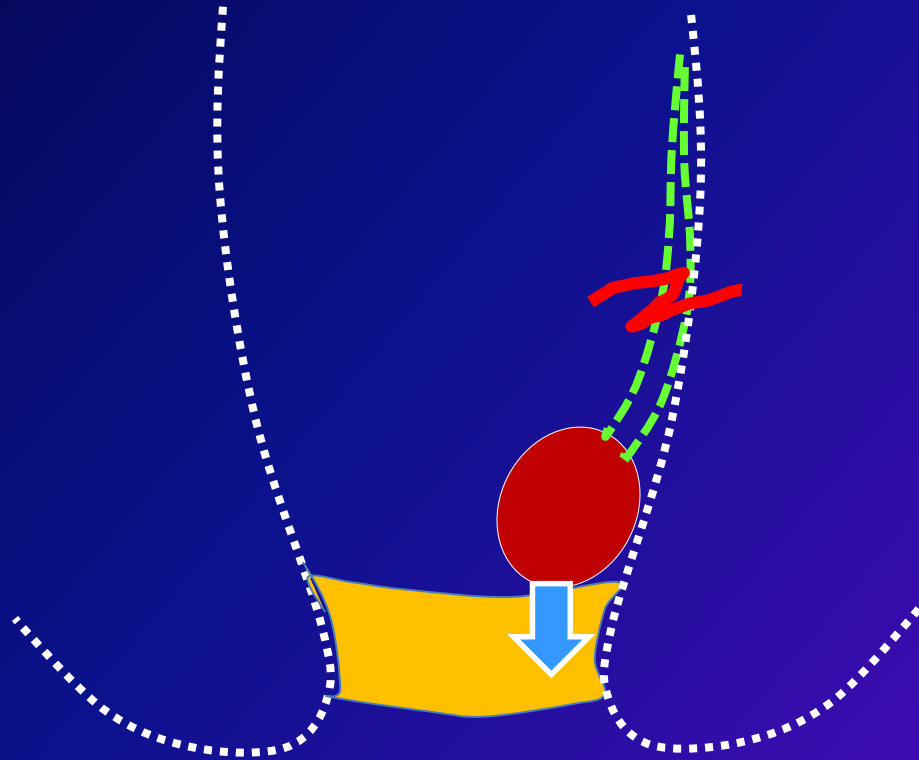
Cushions might play role in continence (gas)



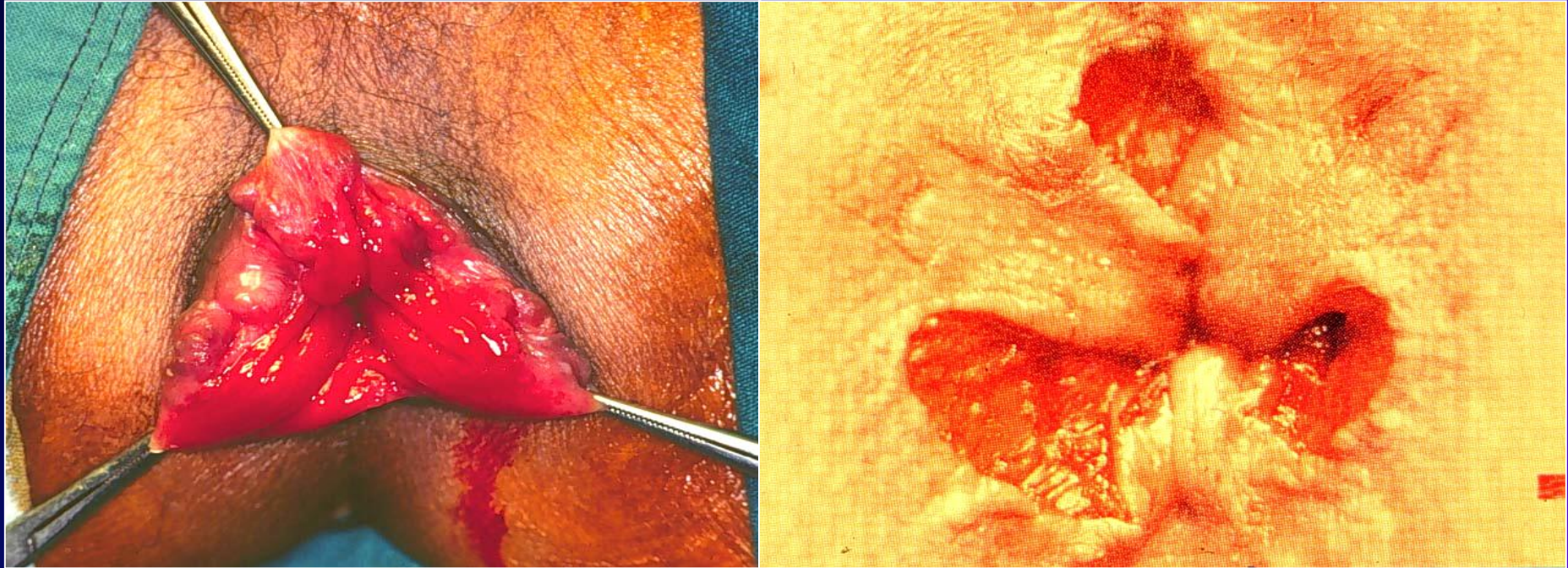
Courtesy of Dr. Varut Lohsiriwat , Siriraj Hospital



# Cushion & Hemorrhoid



รูป 26



Intra-anal anatomical excision

# Treatment of Hemorrhoid

(Hemorrhoidal disease)

# Treatment of Hemorrhoid

- Medical Rx.
- Sclerosing agent
- Barron ligation
- Power sources (coagulate, excise)
- Hemorrhoidopexy
- Hemorrhoidectomy
- Hemorrhoid Artery Ligation (HAL)
- Cryotherapy



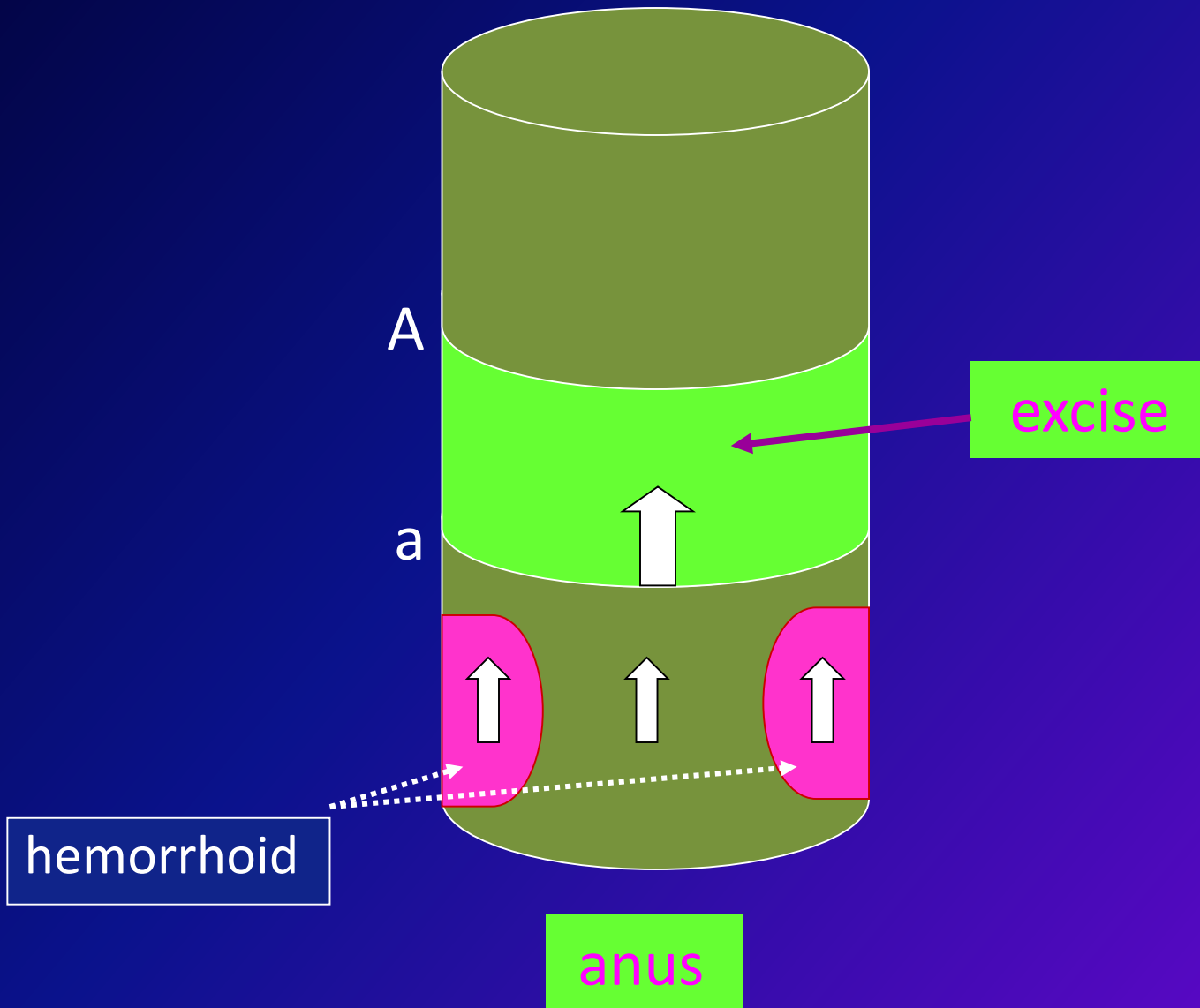
# Medical Rx.

- Regularization of bowel function
- Dealing with the vascular component  
(oral phlebotropic drug, Diosmin & Hesperidin)
- None of the “nitric oxide syntase inhibitor” nor other enzyme blockage were used

# Surgical Rx. principle

- **Scaring** (with/without hemorrhoid removal)
- **Excision** (intra-anal anatomical excision)
- **Retract back** into anal canal  
(away from high pressure zone)

# Hemorrhoidopexy



# Conclusions

- What is hemorrhoid? → Still debate
- Pathophysiology → Still unclear
- Recently → anal cushion theory
- Treatment:
  - Medical: aim at reduce inflammation & regularization of bowel function
  - Surgical: scaring, excision, pull back into anal canal



Still unclear  
Aren't you?

I am sorry

Thank you for your attention



# Hemorrhoidal Artery Ligation

- Doppler-guided Hemorrhoidal Artery Ligation (HAL) for 2<sup>nd</sup> and 3<sup>rd</sup> degree
- HAL+rectoanal repair (RAR = mucopexy) for 4<sup>th</sup> degree

