



# Transanal endosonography for the evaluation of the anal sphincters

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## Disclosure belangen

(potentiële) belangenverstrengeling	Zie hieronder
Voor bijeenkomst mogelijk relevante relaties met bedrijven	Bedrijfsnamen
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# Introduction

- Transanal ultrasonography (EUS) is a well established technique to evaluate the anal sphincters and rectum
- Results have a good reproducibility in experienced hands
- Indications:
  - Sphincter defects
  - Perianal fistulas
  - Rectal tumors



## Technique

- Image is based on acoustic reflections
- Ultrasound scanner
- Rigid probe providing a 360° axial view of the anal canal
- Frequency: 7.5, 10 MHz
- Patient in left lateral or supine position

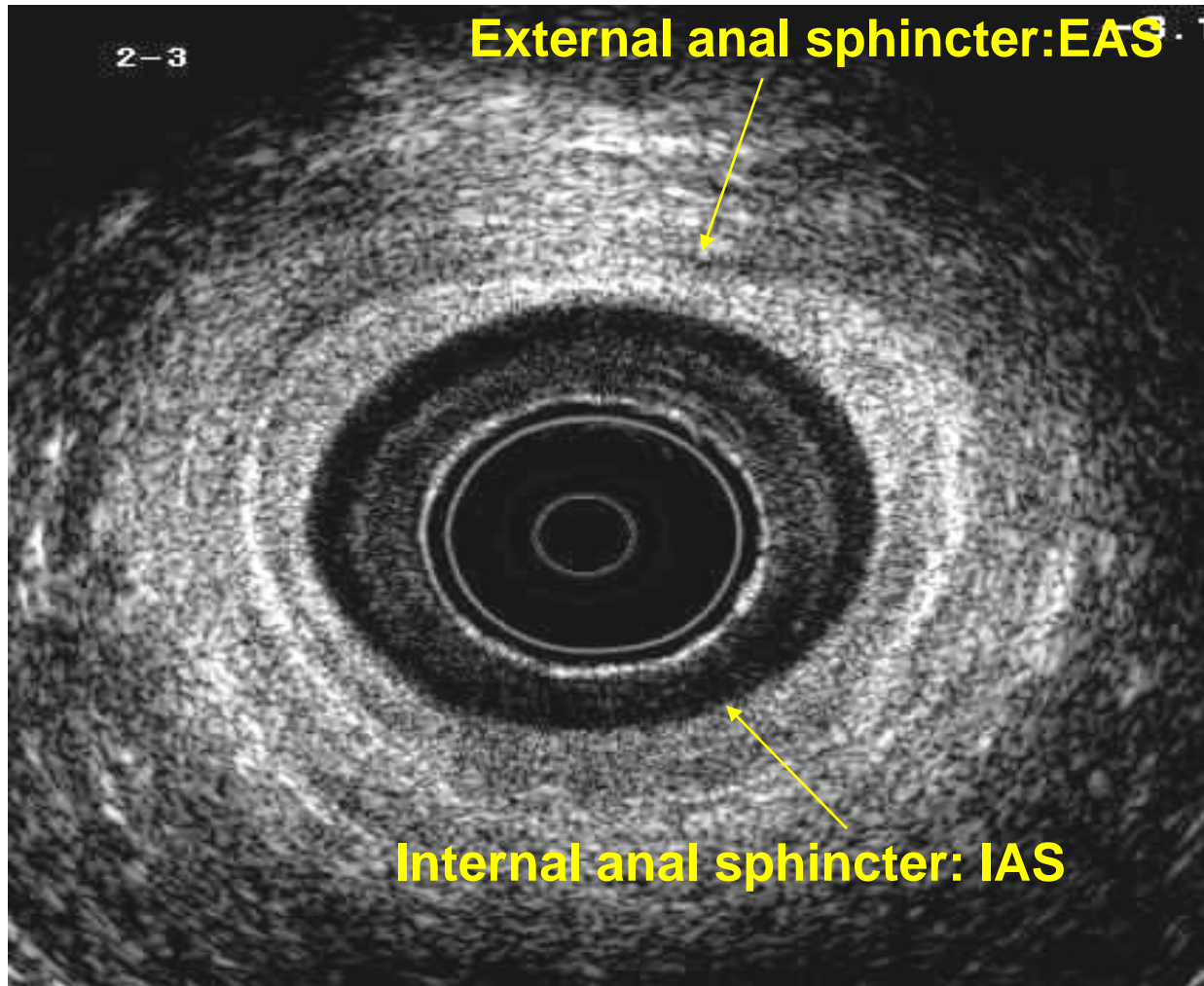




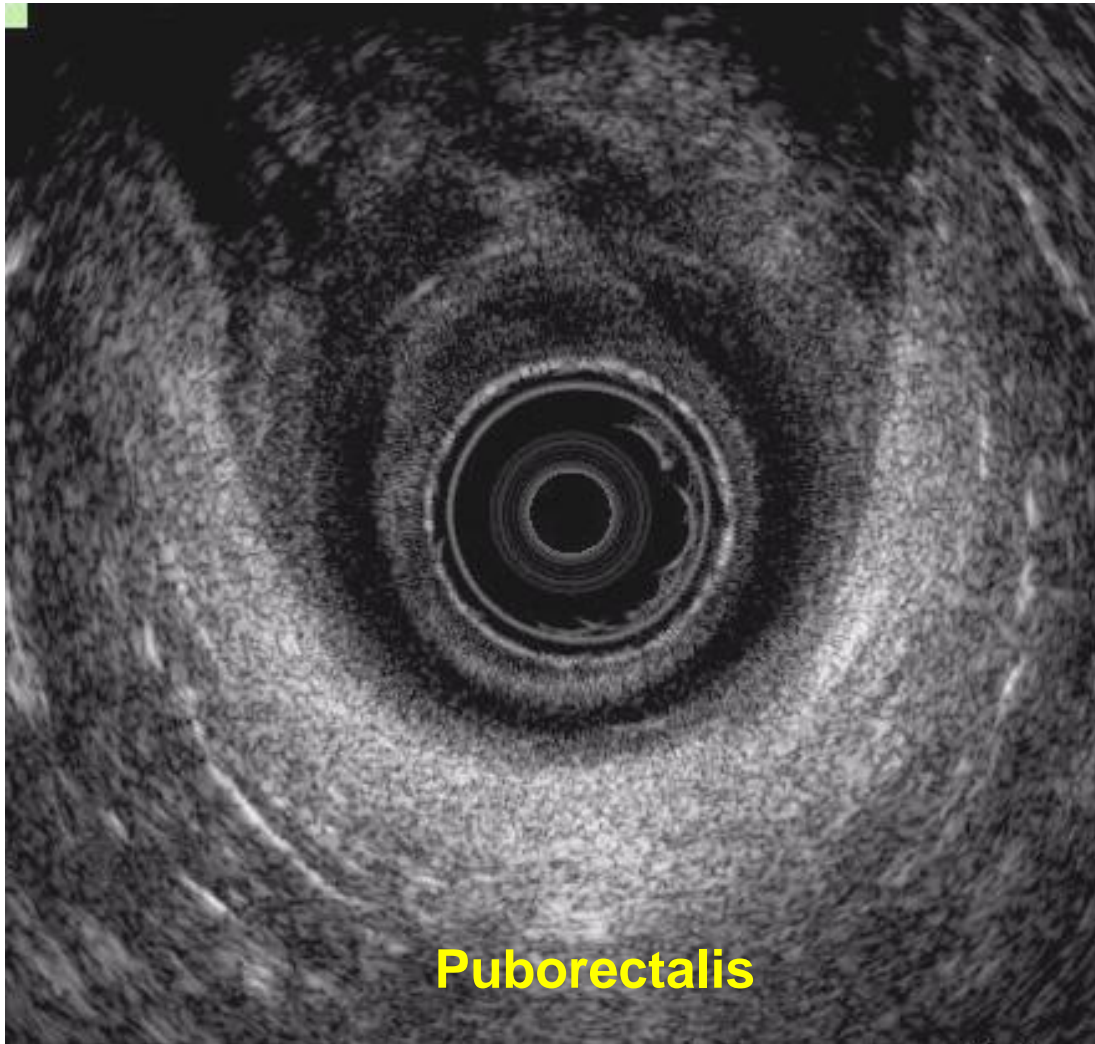
## Different EUS techniques

- 2D:
  - Cross-sectional images in the axial plane
- 3D:
  - Multiplanar images
  - Volume measurements
  - Image storage
  - Research
- Vaginal endosonography
- Transperineal endosonography:
  - Less invasive

## 2D EUS: IAS and EAS

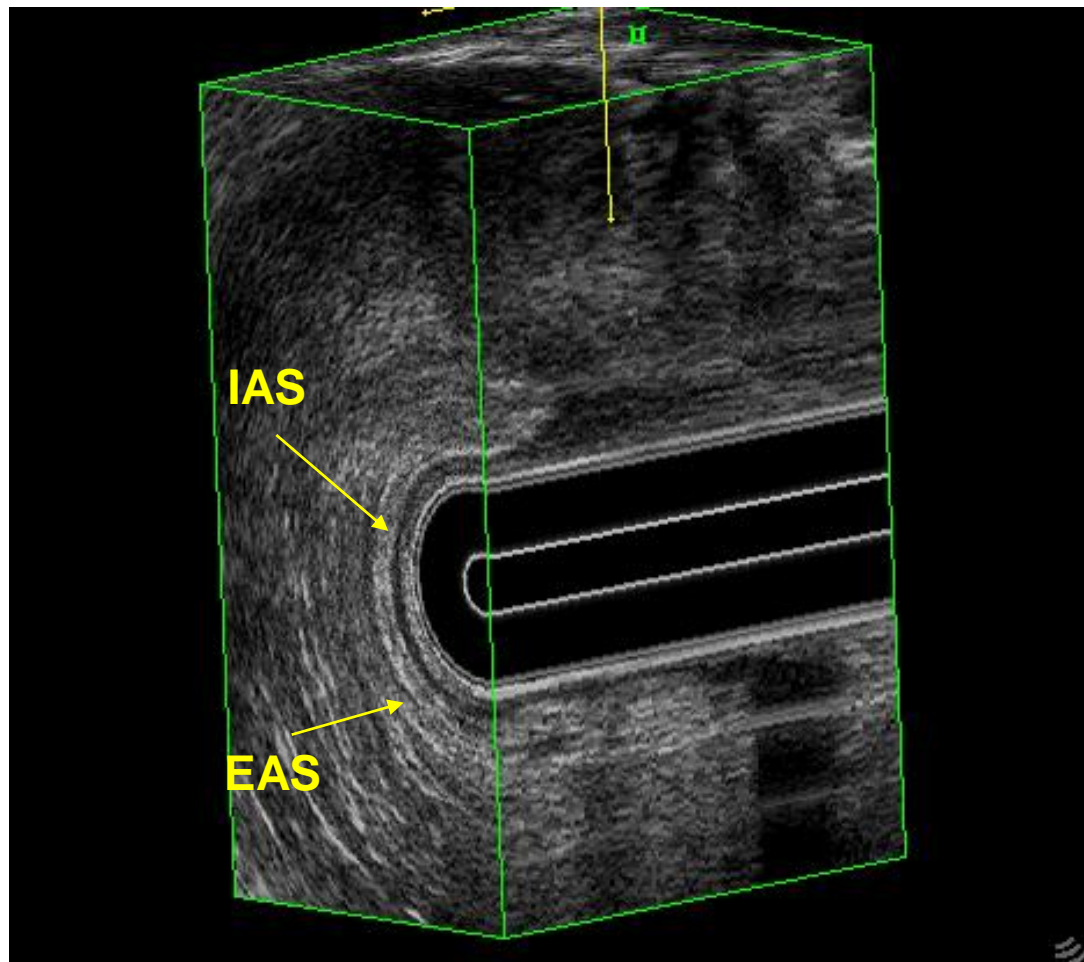


## 2D EUS: IAS and EAS

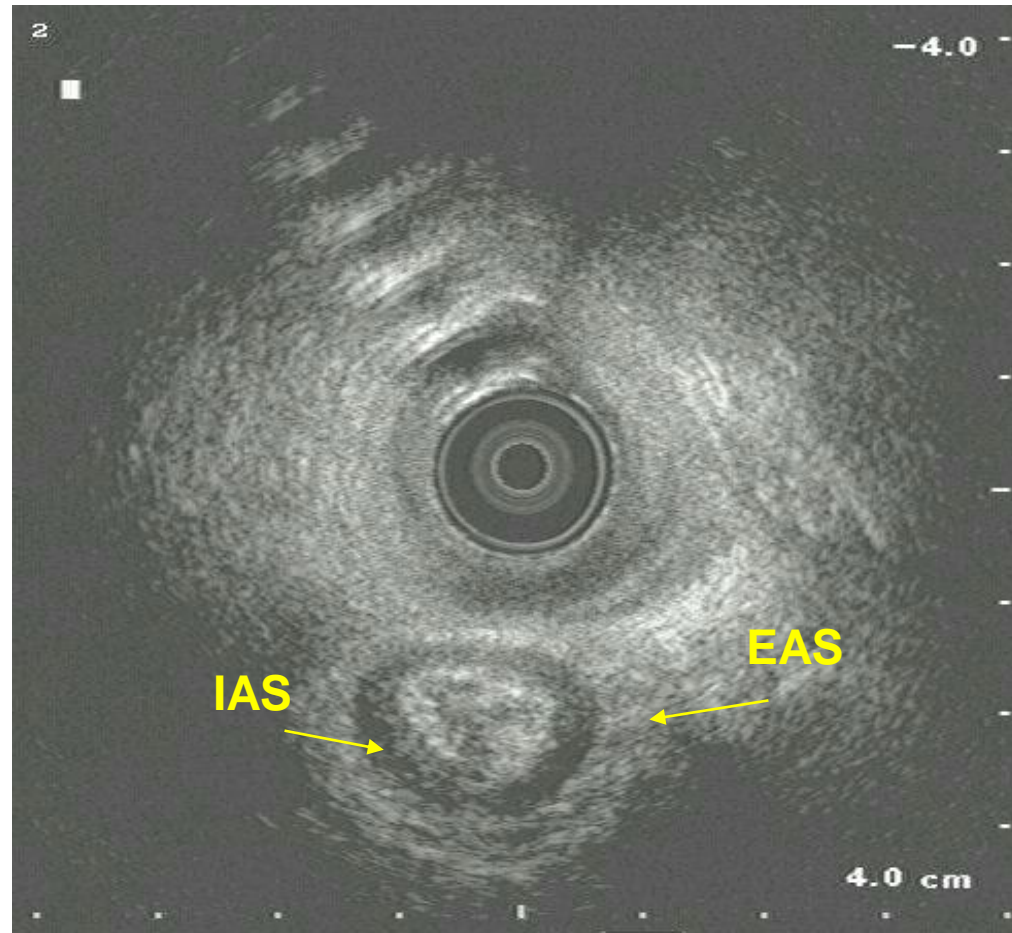




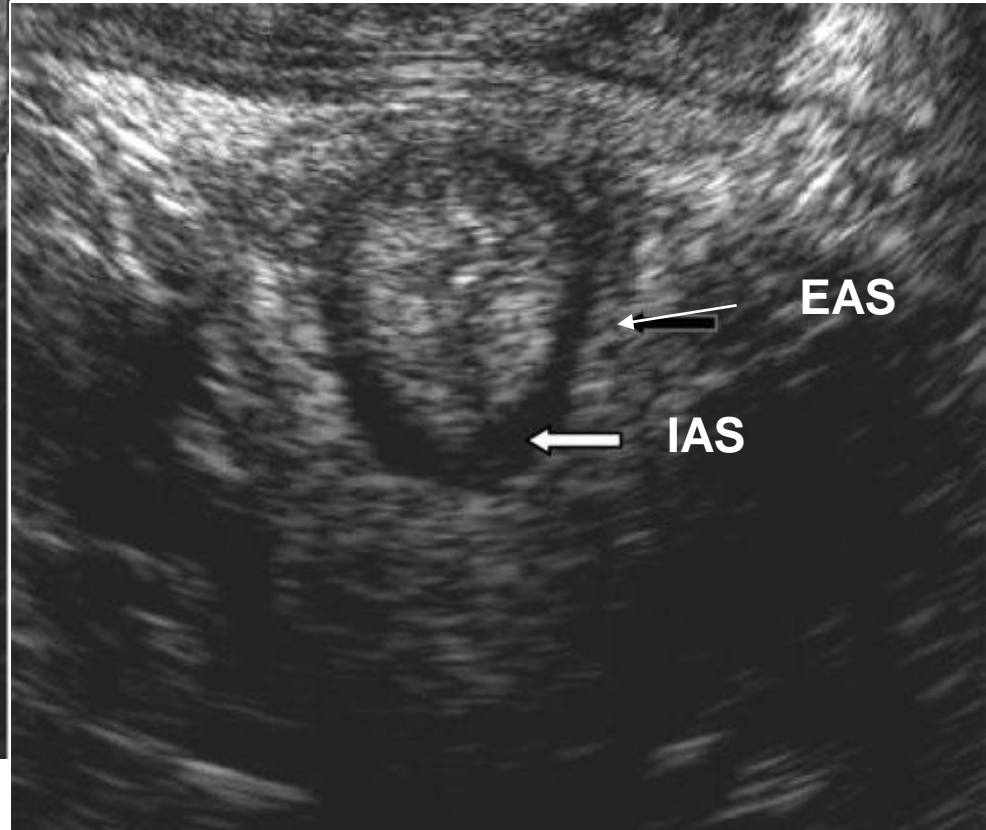
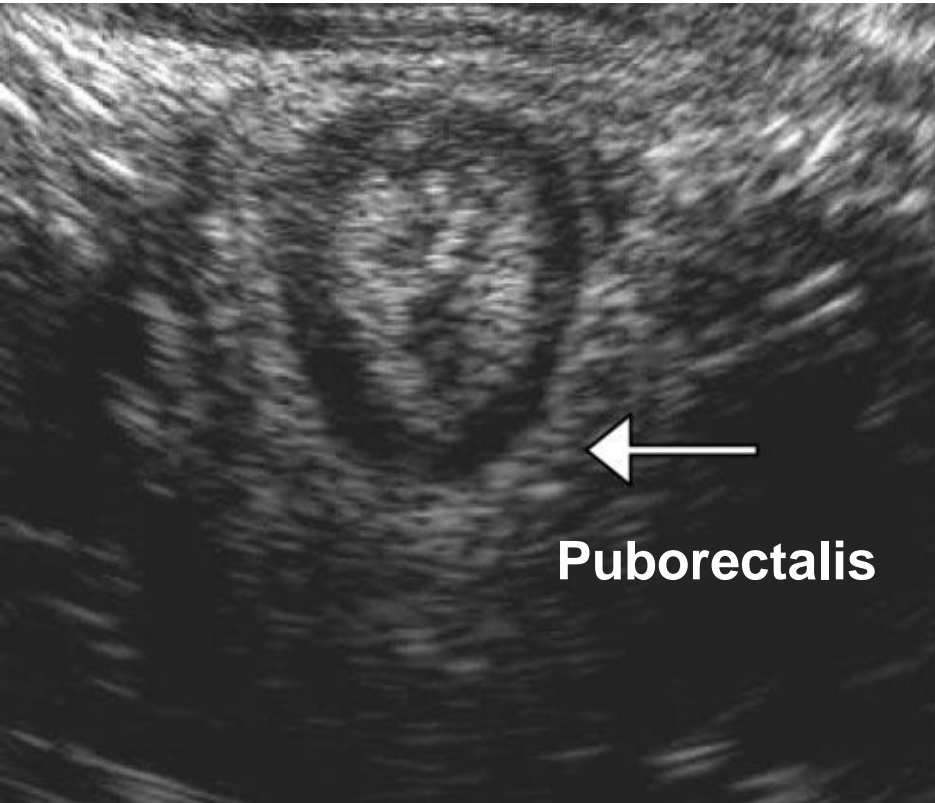
# 3D EUS



# Vaginal endosonography



# Transperineal ultrasound



# Fecal incontinence

- Sphincter defects:
  - Obstetric trauma
  - Anal surgery
  - Trauma

# EUS in the evaluation of sphincter defects

- EUS is an ideal tool for assessing sphincter defects
  - Good correlation with histological and surgical findings
  - Good reproducibility
  - Main indication is for selecting patients amenable for surgical repair

Law et al. Br J Surg 1991  
Bartram CI, et al. Gut 1995  
Sultan AH, et al. Gut 1995  
Sultan AH, et al. Br J Surg 1994  
Deen KI, et al. Ann Surg 1993

# Sphincter defect



# Sphincter defect





## Transanal EUS compared to other EUS techniques

- Transanal EUS and transvaginal EUS seem to be comparable for detecting sphincter defects
- Results for transanal EUS and transperineal EUS differ for detecting sphincter defects
  - Different techniques were used in these studies

Poen AC et al. Br J Surg 1998  
Stewart LK et al. AJR 1999  
Frudinger A, et al. AJR 1997  
Roche B, et al. Eur Radiol 2001  
Lohse C et al. Eur J Obstet Gynaecol 2002  
Ooms D et al. Dis Colon Rectum 2012





# EUS compared to MRI for evaluation of sphincter defects

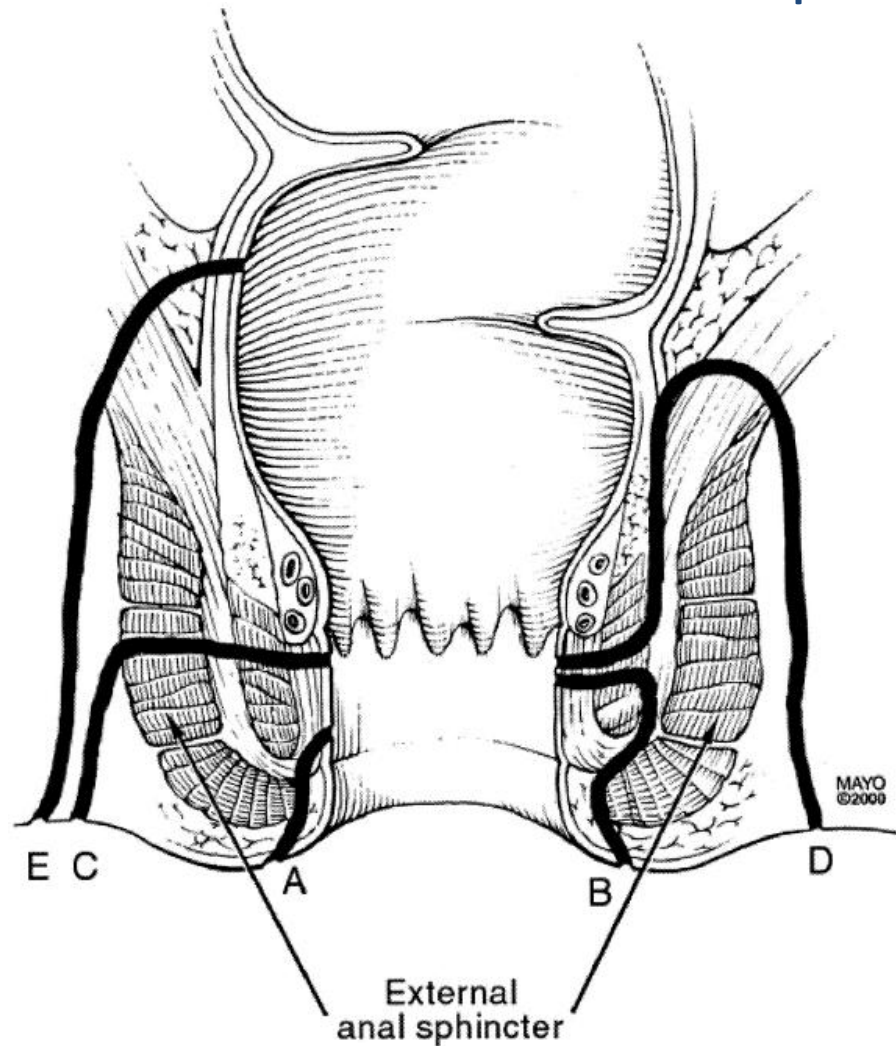
- In earlier studies EUS seemed to be superior for assessing the IAS
- Both techniques are equivalent for assessing the EAS
- However, a variation of techniques were used in different studies
- MRI does seem superior for assessing EAS atrophy

Malouf AJ, et al. AJR 2000  
Williams AB, et al. Dis colon rectum 2002  
Briel JW, et al. Int J Colorectal Dis 2000  
West RL et al. Int J Colorectal Dis 2005  
Cazemier M, Dis Colon Rectum 2006

# Perianal fistulas

- Type of fistulas:
  - Cryptoglandular
  - Morbus Crohn

# Classification of perianal fistulas



## Parks classification

A: superficial

B: intersphincteric

C: transsphincteric

D: suprasphincteric

E: extrasphincteric



# Classification of perianal fistulas

- Simpel:
  - Superficial
  - Intersphincteric
- Complex:
  - Transsphincteric, suprasphincteric, extrasphincteric
  - Secondary tracts
  - Multiple external openings
  - Rectovaginal

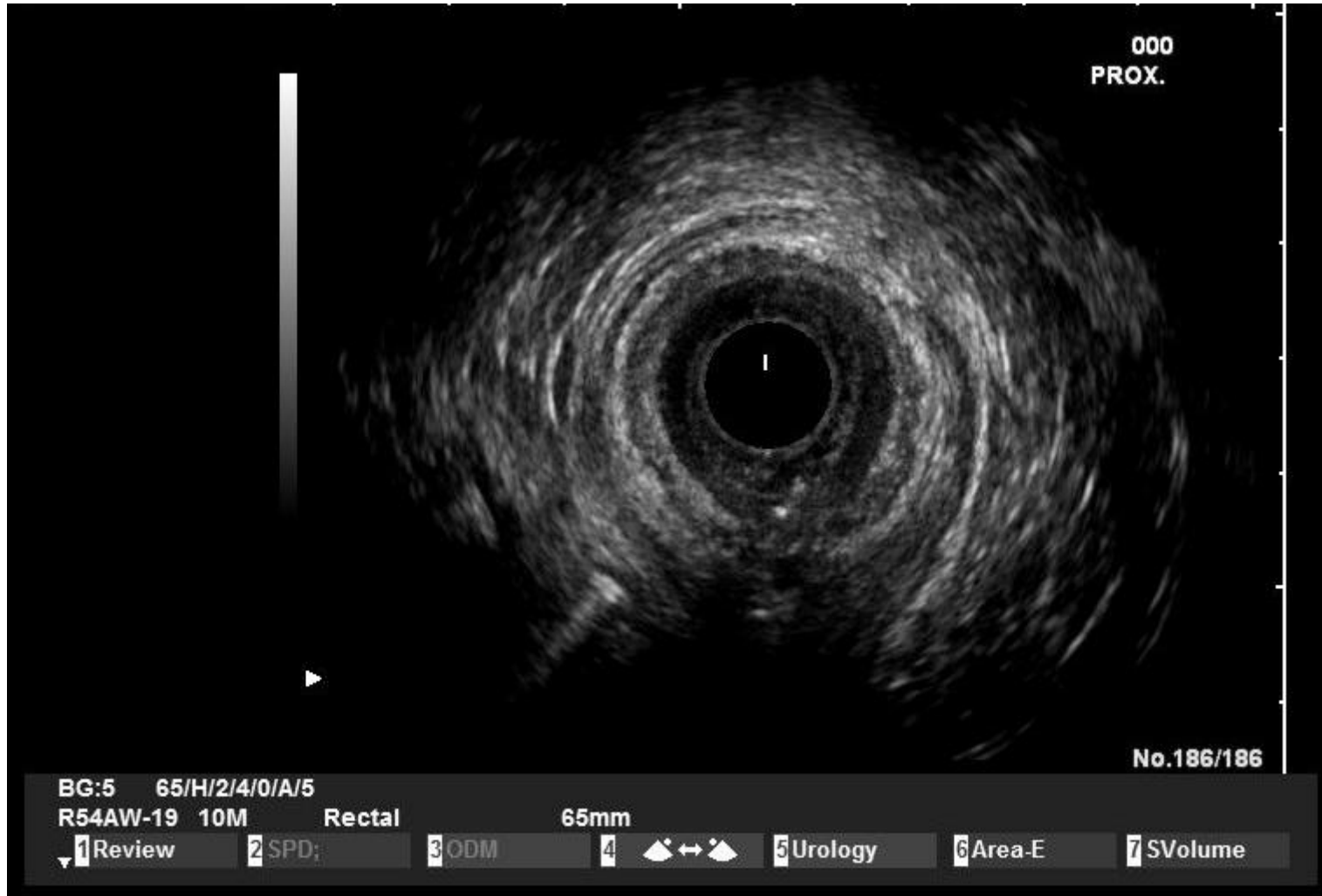
# EUS for the evaluation of perianal fistulas

- EUS:
  - Enables visualisation of fistulas
  - Accurate preoperative assessment can be performed
  - Treatment of perianal fistulas in Crohn's disease can be evaluated
- Hydrogen peroxide can be used as a contrast medium
  - A fistula tract is seen as bright hyperechogenic and can be distinguished from scar tissue
  - This makes it easier to identify the fistula tract, secondary tracts and the internal opening

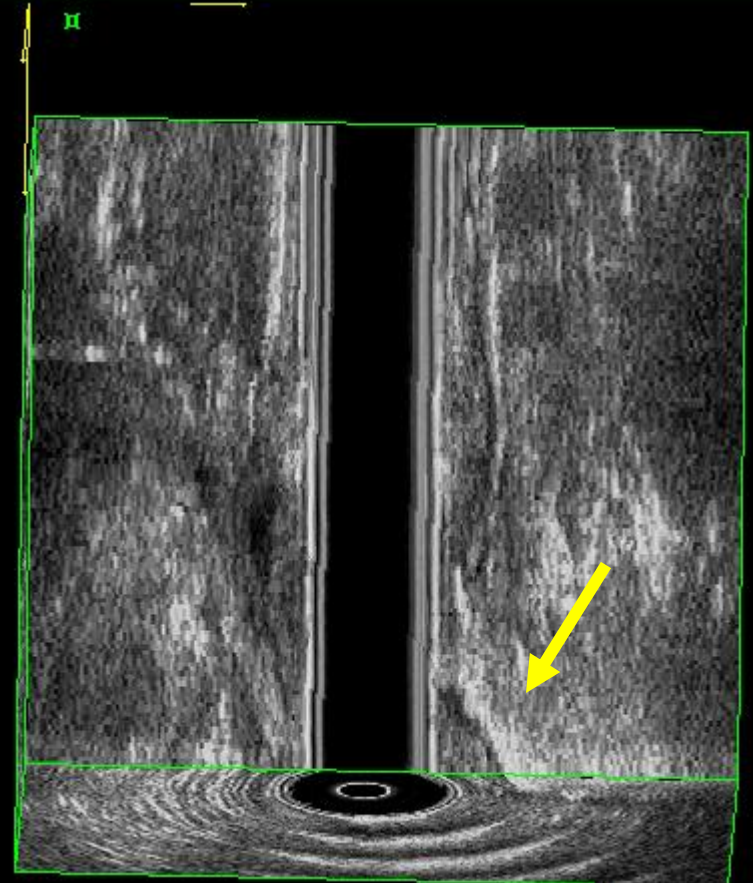
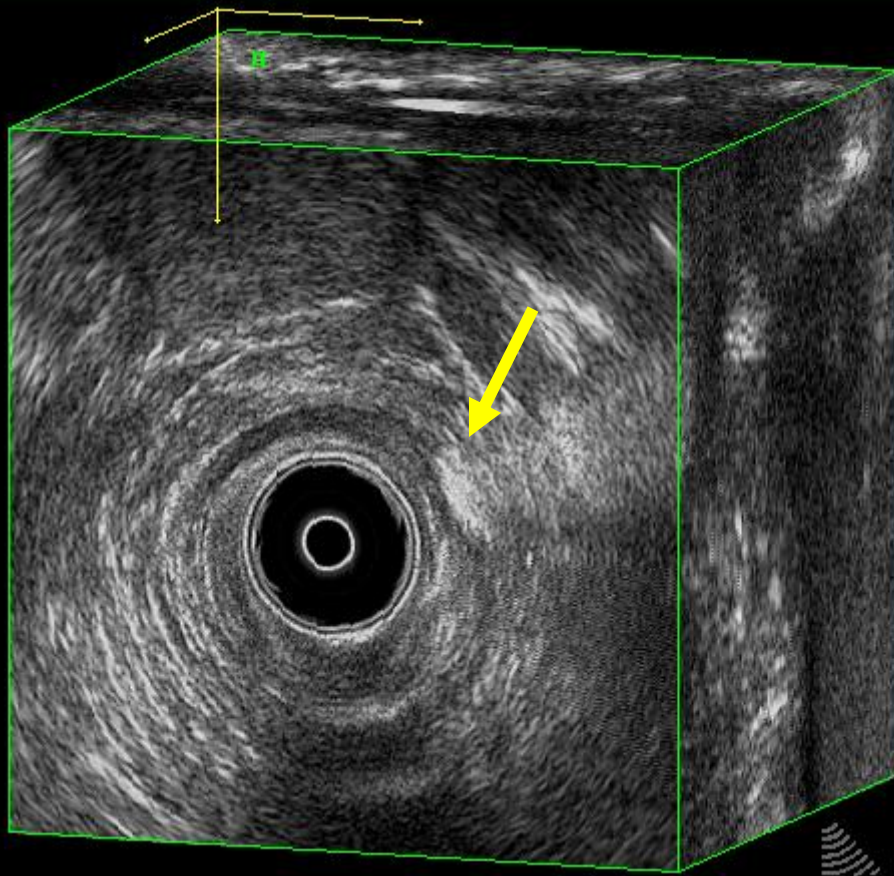
# Transsphincteric fistula



# Transsphincteric fistula: internal opening



# 3D EUS: transsphincteric fistula







## EUS and MRI for the evaluation of perianal fistulas

- 3D hydrogen peroxide enhanced EUS (HPUS) and endoanal MRI agree well for evaluating perianal fistulas
- Good agreement with surgical findings
- Especially for the classification of the primary tract and localisation of the internal opening
- Endoanal MRI and 3D HPUS are associated with similar discomfort and patients have no preference

# A diagnostic accuracy meta-analysis of endoanal ultrasound and MRI for perianal fistula assesment

- Comparable sensitivities for detecting perianal fistulas
- Specificity for MRI was higher, however specificity was low for both techniques
- High degree of data heterogeneity and shortage of applicable studies

## Conclusions

- Transanal EUS is a well established technique to evaluate the anal sphincters and rectum
- EUS is indicated to evaluate sphincter defects and perianal fistulas