



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
<ul style="list-style-type: none">• Sponsoring of onderzoeksgeld• Honorarium of andere (financiële) vergoeding• Aandeelhouder• Andere relatie, namelijk adviesraad	<ul style="list-style-type: none">• Dr Falk Pharma Benelux BV, Abbvie BV• Geen• Geen• Dr Falk Pharma Benelux BV, Abbvie BV



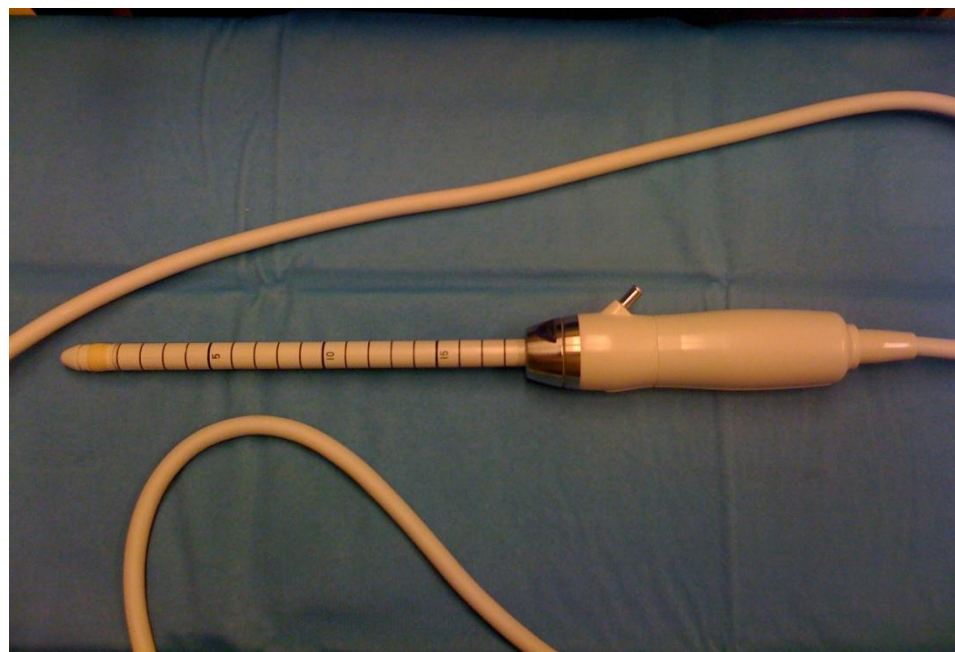
Introduction

- 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

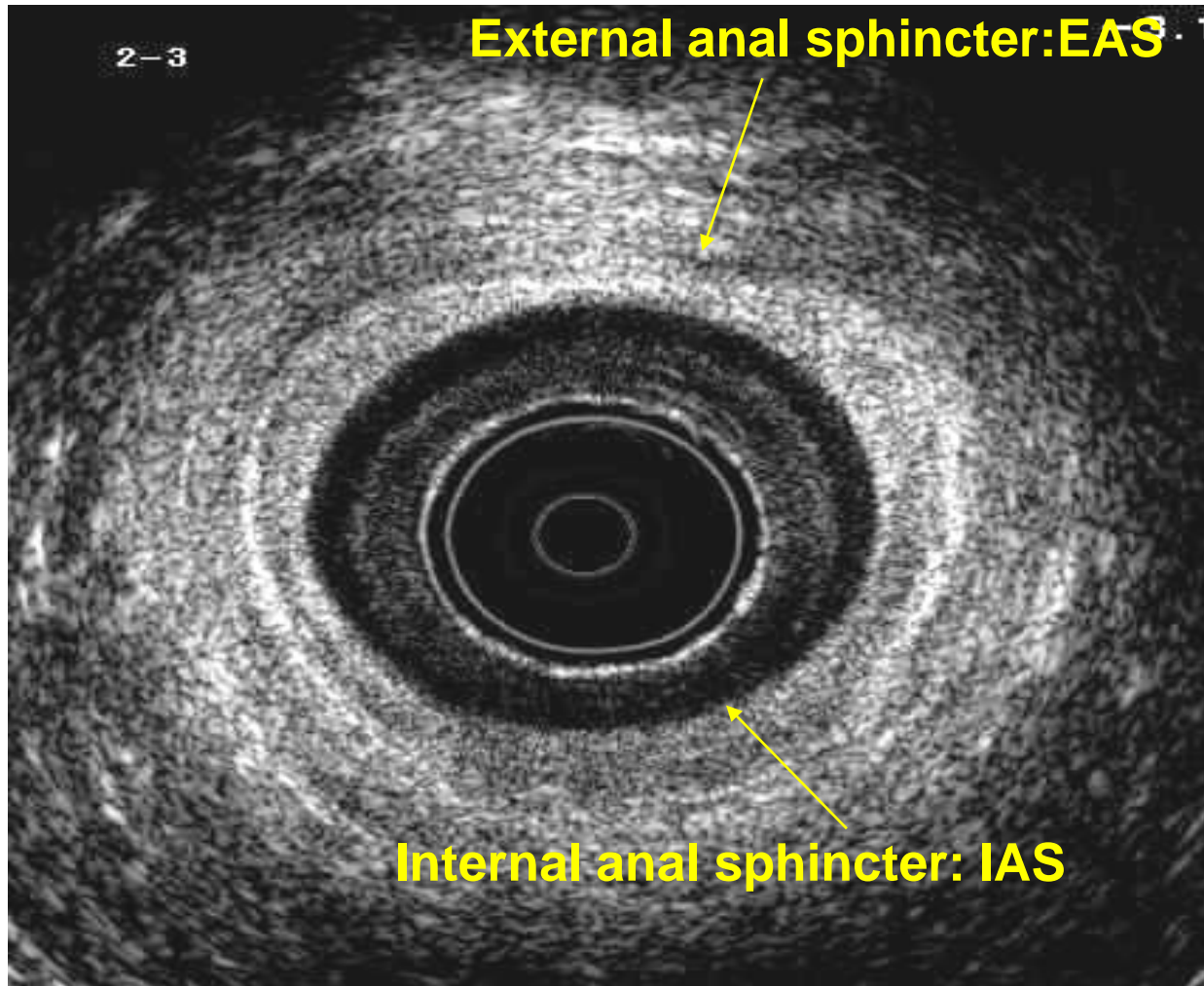




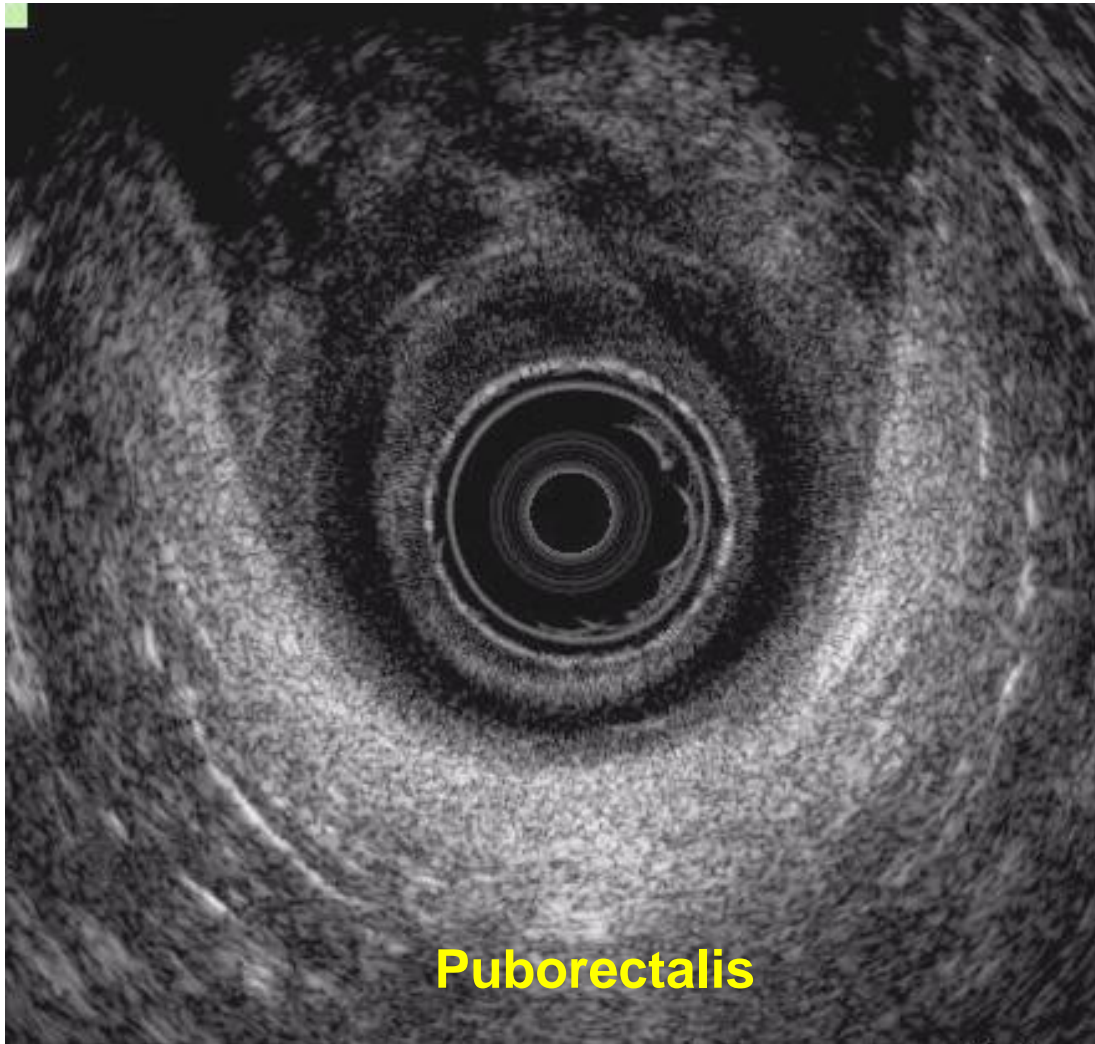
Different EUS techniques

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

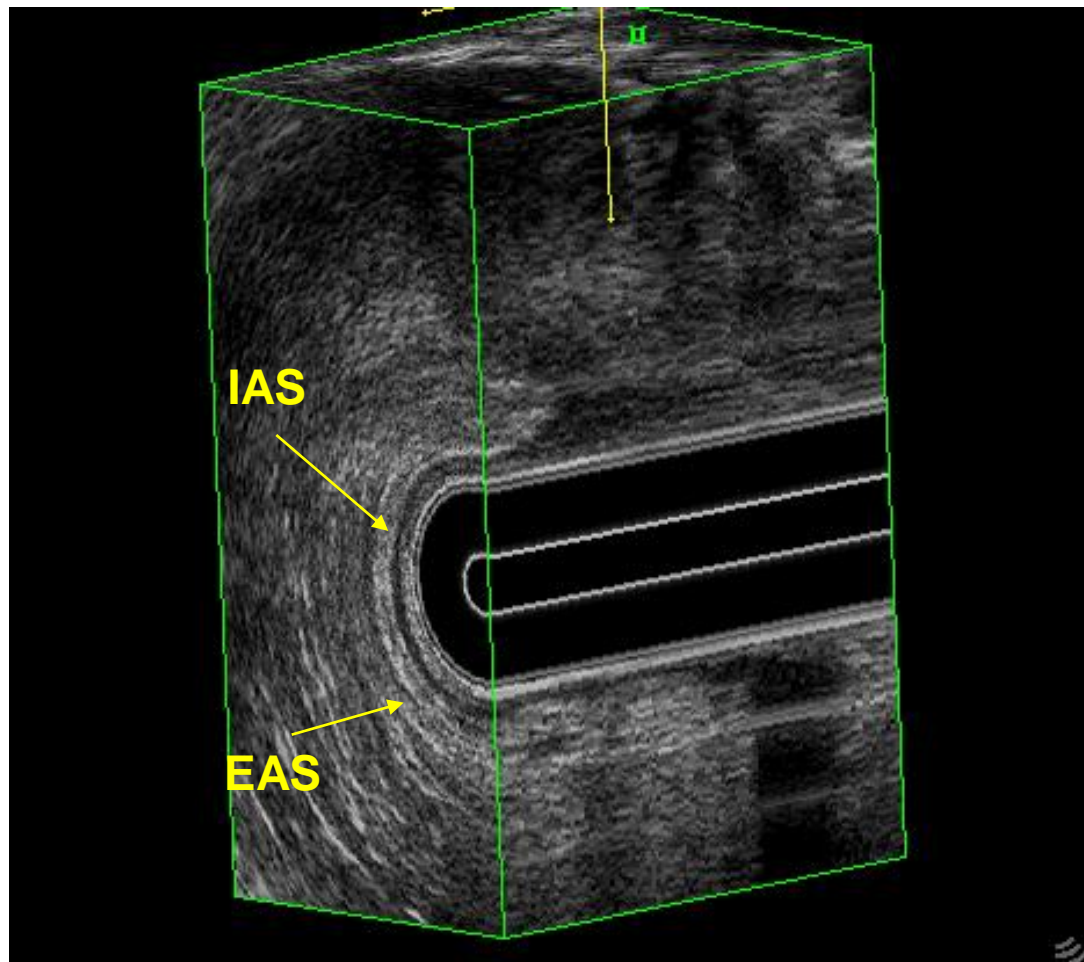
2D EUS: IAS and EAS



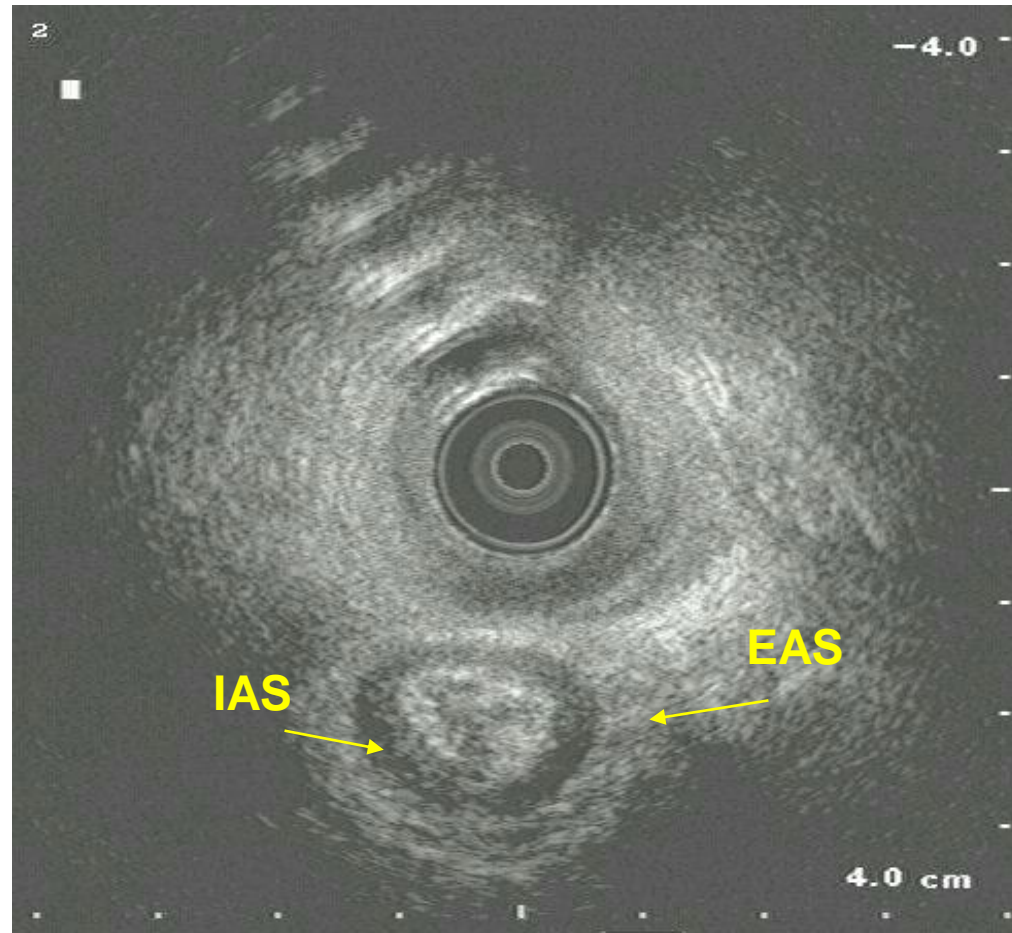
2D EUS: IAS and EAS



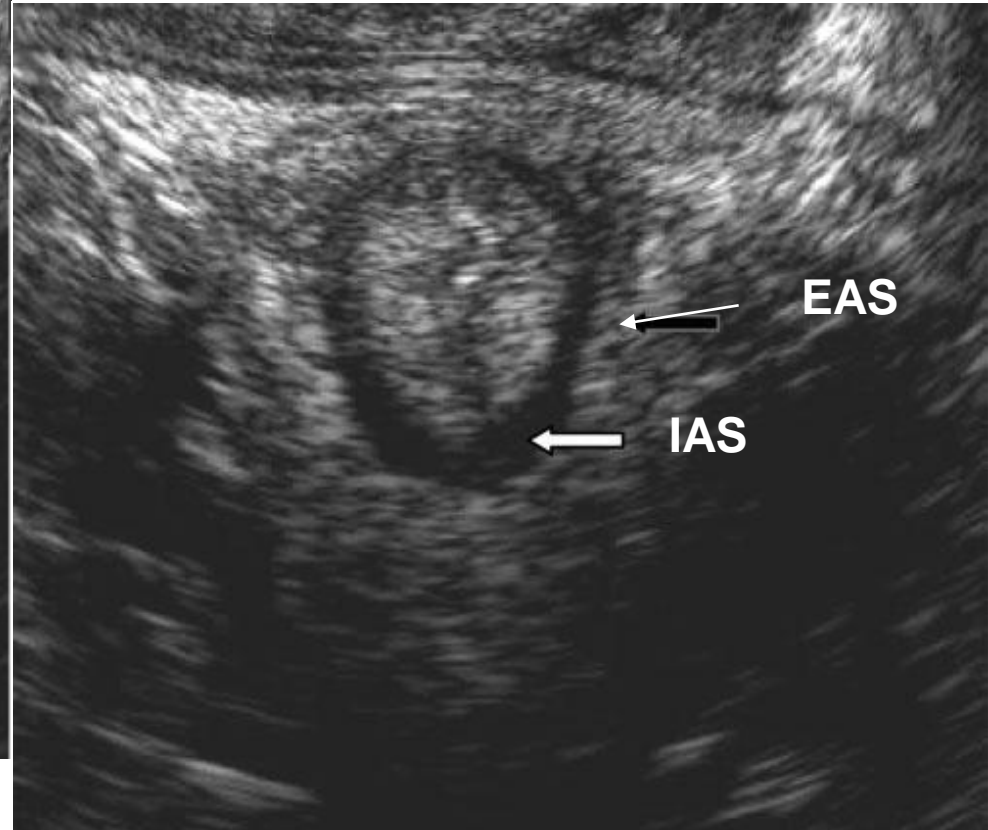
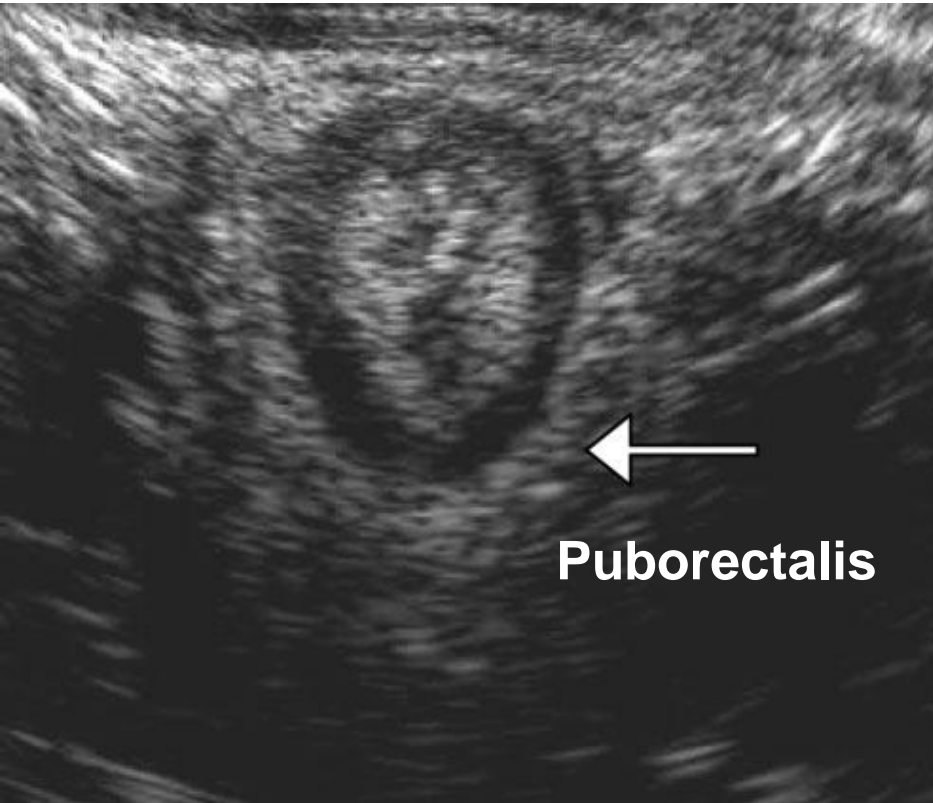
3D EUS



Vaginal endosonography



Transperineal ultrasound



Fecal incontinence

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

EUS in the evaluation of sphincter defects

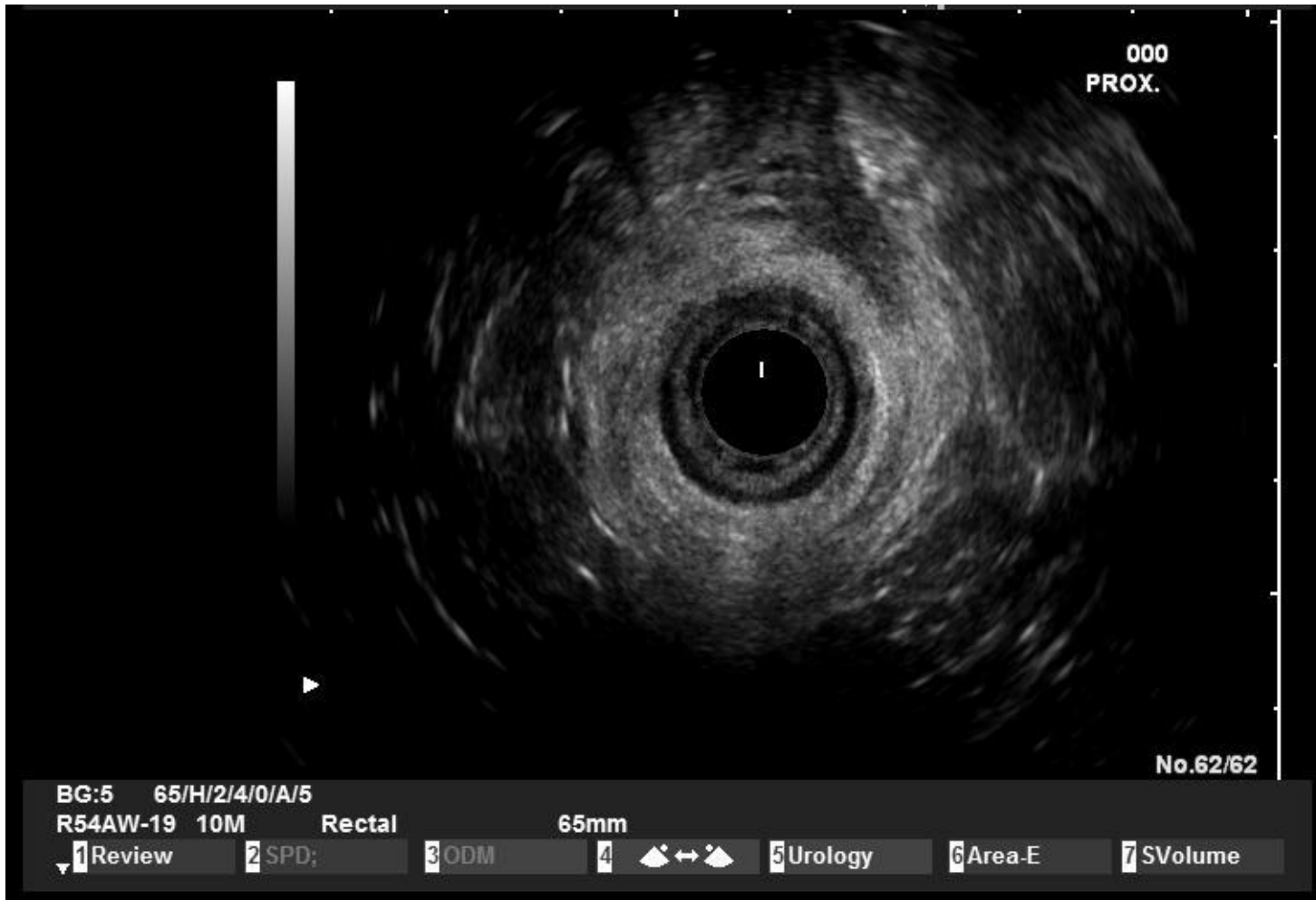
- EUS is an ideal tool for assessing sphincter defects
 - Good correlation with histological and surgical findings
 - Good reproducibility
 - Main indication is for selecting patients amenable for surgical repair

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

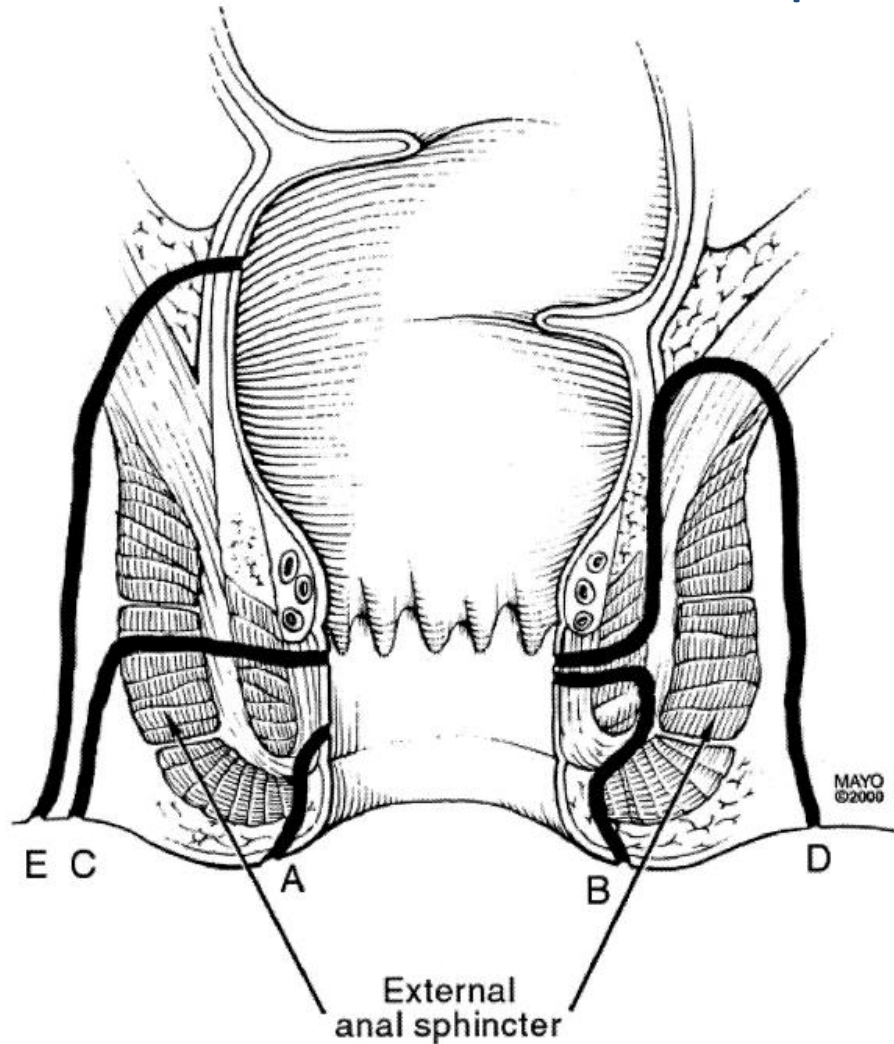
- In earlier studies EUS seemed to be superior for assessing the IAS
- Both techniques are equivalent for assessing the EAS
- However, a variation of techniques were used in different studies
- MRI does seem superior for assessing EAS atrophy

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

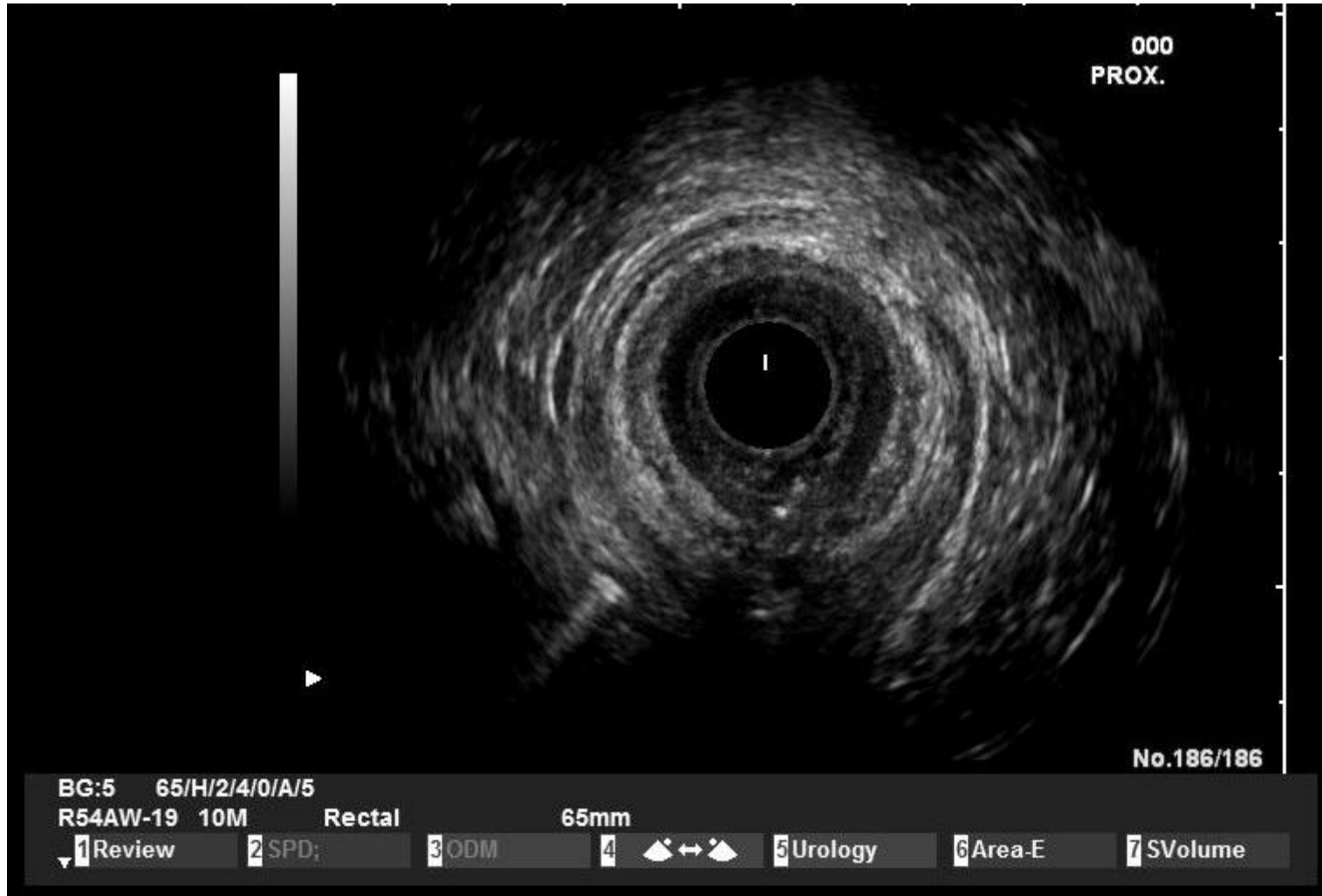
EUS for the evaluation of perianal fistulas

- 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

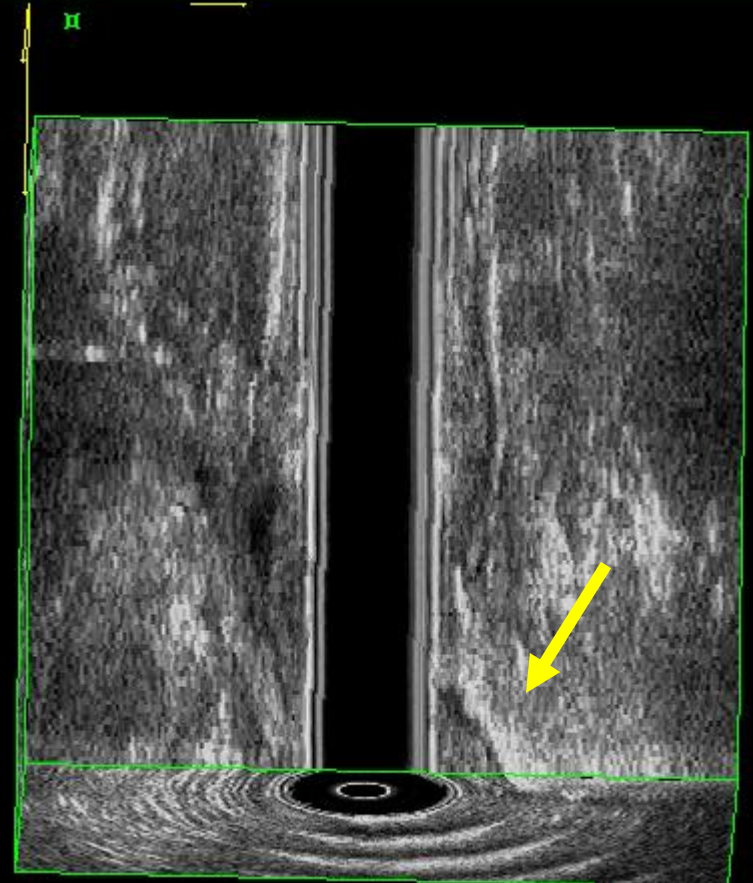
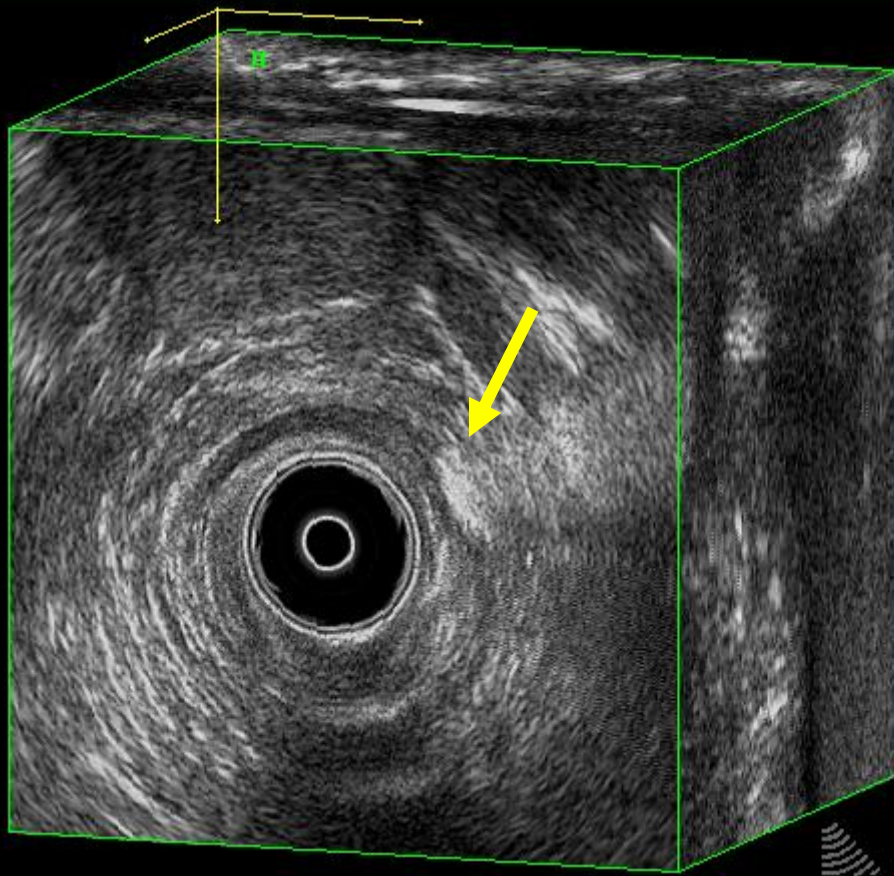
Transsphincteric fistula



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