

ASCESSI e FISTOLE

Three-dimensional endoanal ultrasonographic assessment of an anal fistula with and without H(2)O(2) enhancement.

[Kim Y](#), [Park YJ](#).

[World J Gastroenterol](#). 2009 Oct 14;15(38):4810-5.

Department of Surgery, Dongguk University Ilsan Hospital, Ilsandong-Gu, Goyang-Si, Gyeonggi-Do, South Korea.

AIM: To evaluate the effectiveness of three-dimensional endoanal ultrasound (3D-EAUS) in the assessment of anal fistulae with and without H(2)O(2) enhancement. **METHODS:** Sixty-one patients (37 males, aged 17-74 years) with anal fistulae, which were not simple low types, were evaluated by physical examination and 3D-EAUS with and without enhancement. Fistula classification was determined with each modality and compared to operative findings as the reference standard. **RESULTS:** The accuracy of 3D-EAUS was significantly higher than that of physical examination in detecting the primary tract (84.4% vs 68.7%, $P = 0.037$) and secondary extension (81.8% vs 62.1%, $P = 0.01$) and localizing the internal opening (84.2% vs 59.7%, $P = 0.004$). A contrast study with H(2)O(2) detected several more fistula components including two primary suprasphincteric fistula tracks and one supralelevator secondary extension, which were not detected on non-contrast study. However, there was no significant difference in accuracy between 3D-EAUS and H(2)O(2)-enhanced 3D-EAUS with respect to classification of the primary tract (84.4% vs 89.1%, $P = 0.435$) or secondary extension (81.8% vs 86.4%, $P = 0.435$) or localization of the internal opening (84.2% vs 89.5%, $P = 0.406$). **CONCLUSION:** 3D-EAUS was highly reliable in the diagnosis of an anal fistula. H(2)O(2) enhancement was helpful at times and selective use in difficult cases may be economical and reliable.

Changes in anorectal morphologic and functional parameters after fistula-in-ano surgery.

[Roig JV](#), [Jordán J](#), [García-Armengol J](#), [Esclapez P](#), [Solana A](#).

[Dis Colon Rectum](#). 2009 Aug;52(8):1462-9.

Unidad de Coloproctología, Servicio de Cirugía General y Digestiva, Consorcio Hospital General Universitario de Valencia, Valencia, Spain. roig_jvi@gva.es

PURPOSE: This study aimed to analyze changes in anal continence and morphologic and functional anorectal variables after fistula-in-ano surgery in a patient series with a high rate of complex fistulas. **METHODS:** One hundred twenty patients with a mean age of 46.9 (standard deviation, 12.8) years were prospectively analyzed by evaluating anal continence, results of endoanal ultrasound examination and anorectal manometry, and pudendal nerve terminal motor latency before and after fistula-in-ano surgery. **RESULTS:** Forty-three patients (35.8%) were referred for recurrent fistulas; fistulas in and 70 (58.3%) were considered complex. Preoperatively, 17 patients (14.2%) presented with impaired continence. At follow-up, 59 patients (49.2%) had some degree of incontinence ($P < 0.001$). The techniques that most affected continence were rectal advancement flap and fistulotomy. Endoanal ultrasound examination showed that the number of patients with internal anal sphincter defects increased from 37 (30.8%) to 78 (74.3%) after surgery ($P < 0.001$); those with external anal sphincter defects increased from 17 (15.9%) to 34 (32.4%) (P

< 0.001). Techniques most associated with increases in internal anal sphincter defects were fistulotomy (P < 0.003) and rectal advancement flap (P < 0.004). Anal manometry showed significant decreases in maximal resting pressure and maximum squeeze pressure in patients with previous incontinence (P < 0.001), and in those with internal anal sphincter defects (P < 0.001). Fistulotomy decreased both resting pressure (P < 0.004) and squeeze pressure (P < 0.007), whereas rectal advancement flap significantly reduced only resting pressure. Pudendal nerve latency did not differentiate continent and incontinent patients, and showed no postoperative change. CONCLUSIONS: Anal continence is significantly affected after fistula-in-ano surgery, mainly because of sphincteric lesions that affect anal canal pressures and that can be imaged with endoanal ultrasound. It is important to preoperatively recognize sphincter defects to allow adequate surgical treatment.

Imaging of perianal fistulas.

[Ziech M](#), [Felt-Bersma R](#), [Stoker J](#).

[Clin Gastroenterol Hepatol](#). 2009 Oct;7(10):1037-45. Epub 2009 Jul 31.

Department of Radiology, Academic Medical Center, University of Amsterdam, Amsterdam 1105 AZ, The Netherlands.

Perianal fistulas, cryptoglandular or Crohn's disease-related, have a tendency to recur. Recurrence usually is owing to missed infection during surgery for cryptoglandular fistulas or insufficient response to medical treatment in Crohn's disease. It is now recognized that preoperative imaging (endoanal ultrasound and magnetic resonance imaging) can help to identify extensions that otherwise would be missed during surgery and therefore prevent recurrence. For medical therapy, the extent of the disease and the presence of abscesses are identified with imaging and therapy response can be monitored. The purpose of this review is to give an up-to-date overview of the anal anatomy, classification of perianal fistulas, and the role of imaging modalities in the management of patients with perianal fistulas.

INCONTINENZA e LESIONI OSTETRICHE

3D endoanal ultrasonography of external anal sphincter defects in patients with faecal incontinence: Correlation with symptoms and manometry.

[Wasserberg N](#), [Mazaheri A](#), [Petroni P](#), [Tulchinsky H](#), [Kaufman HS](#).

[Colorectal Dis](#). 2010 Jan 12. [Epub ahead of print]

Department of Surgery, Division of Colorectal and Pelvic Floor Surgery, Keck School of Medicine, University of Southern California, Los Angeles, California 90033, USA.

Abstract Aim: Anal sphincter anatomy on two dimensional endoanal- ultrasonography (EUS) does not always correlate with the clinical data. The purpose of this study was to determine if three-dimensional measurements yield a better correlation. Method: The study group included consecutive patients who underwent three-dimensional EUS for fecal incontinence over a two year period. The medical charts were reviewed for Cleveland Clinic Foundation Fecal Incontinence (CCF-FI) score and manometric pressures. EUS images were reviewed for the presence of an external anal sphincter (EAS) defect and its extent, as determined by the radial angle, length in the sagittal plane, and percent volume deficit. Correlational analyses were performed between the

clinical and imaging data. Results: Sixty one patients of median age 53 years (15-82) were evaluated. 32 patients had either a complete (17) or partial (15) EAS defect and 29 patients had an intact sphincter. CCF-FI scores were similar in patients with and without an EAS defect (12.5+/-5.6 and 11.4 +/- 5.5, respectively). The intact-sphincter group had a significantly greater EAS length (3+/-0.4 vs, 2+/-0.62 cm, p=0.02) and higher mean maximal squeeze pressure (MMSP) (99.7+/-52.6 vs. 66.9+/-52.9 mmHg, p=0.009). There were no statistically significant correlations between MMSP, CCF-FI score, and EAS status on 3D EUS. Mean percent volume of the defect was similar in patients with complete and partial tears (14.5+/-5.5 and 17.5+/-7.2%, p=0.25) and showed no correlation with physiologic tests or symptom scores. Conclusions: Improvements in external anal sphincter imaging have not yielded a better association with the clinical findings. The lack of clinical differences between patients with different EAS tears may reflect their similar volumetric defects.

Defects on endoanal ultrasound and anal incontinence after primary repair of fourth-degree anal sphincter rupture: a study of the anal sphincter complex and puborectal muscle.

[Sakse A](#), [Secher NJ](#), [Ottesen M](#), [Starck M](#).

[Ultrasound Obstet Gynecol.](#) 2009 Dec;34(6):693-8.

Department of Obstetrics and Gynaecology, Hvidovre Hospital, University of Copenhagen, Copenhagen, Denmark. abelone.sakse@hvh.regionh.dk

OBJECTIVES: To perform three-dimensional endoanal ultrasound (EAUS) after primary repair of fourth-degree anal sphincter rupture (ASR) and correlate the sonographic defects with anal incontinence (AI); to measure the axial and sagittal thickness and angle of the puborectal muscle (PRM) as well as the length of the anal canal, and then correlate these measures with AI; and to assess the interobserver measurement agreement between an inexperienced and an experienced sonologist. **METHODS:** EAUS was offered to 84 consecutive women, who were asked to answer a validated questionnaire after fourth-degree ASR. AI was graded according to the Wexner score and EAUS defects were graded according to the Starck score. **RESULTS:** Sixty-one women (73%) answered the questionnaire. The median (range) follow-up time was 5.1 (1.3-8.7) years. Thirty-three (54%) of these women underwent EAUS and were included in the study. There was no difference in the incontinence scores between women who underwent EAUS and those who did not. Eleven of the women who underwent EAUS (33%) were continent, 22 women (67%) had flatus incontinence at least once a month, of whom 12 also had incontinence for liquid stool and two had incontinence for solid stool. The median Wexner score was 2 (range, 0-12). Five of the patients (15%) had no ultrasound defects. All of the patients with Wexner scores ≥ 4 had a Starck score of ≥ 10 . No association between ultrasound defects and AI was demonstrated, however, the angle of the PRM and parity were associated with Starck score. No clear association between the measurements of the PRM and AI was shown. The experienced observer detected more of the small defects than did the inexperienced observer. **CONCLUSION:** In a 1-9-year follow-up period after primary suture of fourth-degree ASR, the frequency of AI was high, at 67%. No clear association was seen between AI and sphincter defects detected on ultrasonography. There was an association between the angle of the PRM and the extent of ultrasound defects.

Endoanal ultrasound findings in patients with faecal incontinence using a scoring system.

[Article in Spanish]

[Salvans S](#), [Parés D](#), [Pera M](#), [Pascual M](#), [Alonso S](#), [Courtier R](#), [Gil MJ](#), [Maestre Y](#), [Ibañez-Zafón I](#), [Delgado-Aros S](#), [Grande L](#).

[Cir Esp](#). 2009 Nov;86(5):290-5. Epub 2009 Aug 19.

Unidad de Cirugía Colorrectal, Servicio de Cirugía General y Digestiva, Hospital Universitari del Mar, Barcelona, España.

INTRODUCTION: The main aim of the study was to apply a severity classification of sphincter lesions detected by endoanal ultrasound using Starck score in patients who suffered faecal incontinence. **MATERIAL AND METHOD:** Data were analysed on 133 patients with faecal incontinence. Those in whom anal sphincter lesions were detected by endoanal ultrasound are described and their corresponding scores according to Starck classification calculated. This system scores severity of detected sphincter lesions from 0 to 16, involving the three axes of the anal canal. Patient demographic characteristics and anorectal manometry results were also analysed. The relationship between this score, patient gender and age, and anorectal manometric results were also analysed. **RESULTS:** A total of 83 (62.4%) patients had some type of anal sphincter lesion. The presence of sphincter defects was not related to gender ($P=0.172$), although it did correlate with younger ages ($P=0.028$). The severity of anal sphincter damage by Starck score did not show significant correlation to gender ($P=0.327$) or to the age ($P=0.350$) of patients. However, a significant correlation was detected between Starck score and anal resting pressure ($P=0.008$) or anorectal squeeze pressure ($P=0.011$). **CONCLUSIONS:** The presence of anal sphincter injuries could be well defined by Starck score in patients with faecal incontinence. Severity of damage scored by Starck correlated with anorectal manometric results.

Comparison of anorectal manometry to endoanal ultrasound in the evaluation of fecal incontinence.

[Reddymasu SC](#), [Singh S](#), [Waheed S](#), [Oropeza-Vail M](#), [McCallum RW](#), [Olyae M](#).

[Am J Med Sci](#). 2009 May;337(5):336-9

Department of Medicine, Division of Gastroenterology, University of Kansas Medical Center, Kansas City, Kansas 66160, USA.

BACKGROUND: Fecal incontinence (FI) is a common clinical condition with a negative impact on the quality of life. Commonly performed tests to evaluate FI include anorectal manometry (ARM) and endoanal ultrasonography (EAU). Objective of our study was to compare the results of these 2 tests in a cohort of patients with FI. **METHODS:** Retrospective study of 27 patients (20 women) referred to the gastrointestinal motility clinic for FI. EAU and ARM were performed in all patients. Demographic data and information regarding etiology of FI was also recorded. **RESULTS:** Mean age of the patients was 56 years (range 26-87 years). Etiology of FI was obstetric trauma in 4, pelvic surgery in 9, pelvic trauma in 3, pelvic radiation in 1, and idiopathic in 8. Based on the ARM data, 14 of 27 had a weak external sphincter squeeze pressure and 3 had impaired rectal sensation, whereas with the EAU there was thinning of the external anal sphincter in 3 and complete disruption in 1, and abnormalities of the internal anal sphincter (IAS) in 7 of 27 with thinning, and defects. Overall, only 2 of 27 had normal findings by combined ARM and EAU. **CONCLUSIONS:** Although the yield of finding major sphincter defects was low, only a small percentage of patients had a normal ARM or EAU. When there are degrees of external anal sphincter thinning or partial or complete disruption of the sphincters, a good correlation with ARM is achieved. EAU and ARM are complimentary investigations for the thorough assessment of the anal sphincter apparatus.

Assessment of sonographic quality of anal sphincter muscles in patients with faecal incontinence.

[Pinsk I](#), [Brown J](#), [Phang PT](#).

[Colorectal Dis.](#) 2009 Nov;11(9):933-40. Epub 2008 Oct 31.

Department of Surgery B, Soroka Medical Center, Ben-Gurion University of the Negev, Beer Sheva, Israel.

OBJECTIVE: The main application of endoanal ultrasonography (US) in evaluation of faecal incontinence is to identify surgically correctable sphincter defects. The aim of our study was to determine whether qualitative changes in echogenicity and in uniformity of internal (IAS) and external (EAS) anal sphincter muscles detected on endoanal US correlate with other anal laboratory tests and modified Wexner faecal incontinence functional score. **METHOD:** Records on 99 patients having complete information on anorectal manometry, faecal incontinence scoring and available endoanal US imaging of the anal sphincters were included in statistical analysis. Anatomic appearance and changes in echogenicity of the anal sphincter muscles were recorded according to the proposed scoring system. Endoanal US defect and quality component scores for IAS and EAS as well as the total score were correlated with anal laboratory tests and incontinence score using Spearman's correlations test. **RESULTS:** There was a trend for correlation between IAS quality score and incontinence score ($P = 0.06$), but no correlation for IAS defect score. EAS defect score had a significant negative correlation with maximum squeeze pressure (MSP) ($P = 0.031$). Distal EAS quality score had a significant correlation with incontinence score ($P = 0.002$). EAS total score correlated with MSP ($P = 0.02$) and incontinence score ($P = 0.006$). Endoanal US total score was significantly correlated with incontinence score ($P = 0.006$), maximal resting (MRP) ($P = 0.035$) and MSP ($P = 0.045$) and high pressure anal canal zone length ($P = 0.03$). **CONCLUSION:** Sonographic morphology of anal sphincter muscles correlates with anal laboratory tests and functional incontinence score. Qualitative ultrasound scoring instrument may improve evaluation of

Outcome of primary repair of obstetric anal sphincter injuries (OASIS) - does the grade of tear matter?

[Roos AM](#), [Thakar MR](#), [Sultan MA](#).

[Ultrasound Obstet Gynecol.](#) 2009 Dec 9. [Epub ahead of print]

Dept. of Obstetrics & Gynecology, Mayday University Hospital.

OBJECTIVES:: The aim was to assess risk factors and outcome of different grades of obstetric anal sphincter injuries (OASIS) after primary repair, and secondly to assess the relationship between outcome and anal sphincter defects, as diagnosed with endoanal ultrasound. **METHODS::** Included were 531 consecutive women (including 8 tertiary referrals) who sustained OASIS and were followed-up between July 2002 and July 2008. At follow up defecatory symptoms and bowel related Quality of Life (QoL) were evaluated. Anal manometry and endoanal ultrasound were performed. **RESULTS::** Mean follow-up was 9 weeks (SD 5.9) after delivery. Compared to a minor (grade 3a/3b) tear a major (3c/4(th) degree) tear had a significantly poorer outcome ($p < 0.05$) with respect to the development of defecatory symptoms and associated QoL as well as anal manometry. Women with major tears were significantly more likely to have an endosonographic isolated internal anal sphincter (IAS) or combined IAS and external anal sphincter (EAS) defect. Combined defects were associated with a higher risk of incontinence of loose stool and lower anal canal

pressures. Epidural use was the only independent factor predicting a major tear. CONCLUSIONS:: The finding of more endosonographic anal sphincter defects in women with major tears compared to minor tears is the probable cause of a less favorable outcome of primary repair. Endosonographic combined defects are associated with poorer outcome and it is therefore important to identify the full extent of injury at delivery in women who sustain OASIS, paying particular attention to the repair of the disrupted IAS.

NPL ANO

Mucinous adenocarcinoma arising in an anorectal fistula.

[Venclauskas L](#), [Saladzinskas Z](#), [Tamelis A](#), [Pranys D](#), [Pavalkis D](#).

[Medicina \(Kaunas\)](#). 2009;45(4):286-90.

Department of Surgery, Kaunas University of Medicine, Eiveniu 2, Kaunas, Lithuania.
linasvenclauskasg@yahoo.com

Mucinous adenocarcinoma in association with chronic anal fistula is a rare case in clinical practice. The aim of this article was to report a rare case of anal gland mucinous adenocarcinoma in a patient who was treated in the Hospital of Kaunas University of Medicine. CASE REPORT: A 70-year-old male was treated for anorectal fistula in the surgical department. Four operations were performed for perineal abscess during the period of 15 years. During the period of 15 years, the patient complained of purulent secretion from the perineal abscess. After the last operation, anorectal fistula developed. Multiple biopsies and scrapings of the fistulous track were taken for histological examination. Histological examination revealed mucinous adenocarcinoma, G2. Subsequently, the patient underwent endoanal ultrasound, computed tomography scan, and colonoscopy. The computed tomography scan did not show pathology in the abdomen, but showed soft tissue induration at the site of anorectal fistula. Colonoscopy investigation did not show any pathology in the rectum and bowels. Endoanal ultrasound findings showed soft tissue induration at the site of anorectal fistula, no tumor in the rectum wall. The patient underwent abdominoperineal resection. Histological examination after abdominoperineal resection revealed anal duct mucinous adenocarcinoma pT2 N0 L0 V0 R0, G2. Metastases to the mesenteric lymph nodes were not detected. On the eighth day after abdominoperineal resection, the patient was discharged from the hospital for follow-up. SUMMARY: Mucinous adenocarcinoma in anorectal fistula is a rare condition. If surgical treatment for perineal abscess or anorectal fistula is not successful for a long time, mucinous adenocarcinoma should be suspected.

Accuracy of endoanal ultrasound in the follow-up assessment for squamous cell carcinoma of the anal canal treated with radiochemotherapy.

[Martellucci J](#), [Naldini G](#), [Colosimo C](#), [Cionini L](#), [Rossi M](#).

[Surg Endosc](#). 2009 May;23(5):1054-7. Epub 2008 Sep 24.

Department of General Surgery I, University of Siena, Siena, Italy. Jamjac64@hotmail.com

BACKGROUND: Radiochemotherapy has largely replaced surgery in the treatment for squamous cell cancer of the anal canal. Transanal ultrasonography is well documented as an important investigation method in the management of anal carcinoma. This study aimed to evaluate the accuracy of endoanal ultrasound in the study of the postradiation findings and to distinguish

between postradiation fibrosis, residual tumor, and local recurrence. **METHODS:** The study enrolled 16 consecutive patients with biopsy-proven squamous carcinoma of the anal canal between 2003 and 2006. All the patients underwent a pretreatment and at least four posttreatment endosonographies, according to the follow-up period. All the patients were treated with the same radiochemotherapy protocol. **RESULTS:** Nine patients had stage uT2 disease; none had uT3 disease; and seven had uT4 disease. There was no evidence of residual tumor in the T2 group after treatment. In the T4 patients after treatment, ultrasound demonstrated tumor regression or abnormalities considered to be radiation-induced changes rather than residual diseases. Only for three patients was a posttreatment biopsy performed to evaluate recurrence (two uT2 and one uT4). Surgical treatment of recurrence was performed for two uT4 patients. **CONCLUSIONS:** Endoanal ultrasound is a safe and effective method for evaluating and following anal cancer before and after treatment. Experience and evaluation during the period of the ultrasonographic abnormalities could give a clear idea concerning the evolution of the anal tumors treated with radiochemotherapy.

ODS – PAVIMENTO PELVICO

The role of ultrasound in the exploration of pelvic floor disorders.

[Article in French]

[Lapray JF](#), [Costa P](#), [Delmas V](#), [Haab F](#).

[Prog Urol](#). 2009 Dec;19(13):947-52. Epub 2009 Oct 24

Centre de radiologie, 151, avenue de Saxe, 69003 Lyon, France.

Dynamic ultrasound, especially perineal and introital, allows the appreciation of the prolapses (cystoptosis, bladder neck and urethral mobility, enterocele, rectocele). It remains, however, clearly more limited in the precise study of posterior colpoceles, and especially in anorectal disorders, than colpocystodefecography or dynamic MRI. Endoanal ultrasound is the first line morphological examination of the anal sphincter. Perineal and introital ultrasound examinations are useful to appreciate certain complications with suburethral tape and pelvic mesh. For an appreciation of the morphology of the pelvis and post-mictional residual, the ultrasound remains the first line examination. Pelvic and endovaginal ultrasounds should be systematic, in the absence of MRI, in the presurgical assessment of a prolapse: checks for an ovarian lesion or endometrial cancer (obesity being a risk factor in the menopausal woman), evaluation of uterine volume in the younger woman.

VARIE

The internal anal sphincter in systemic sclerosis.

[Koh CE](#), [Young CJ](#), [Wright CM](#), [Byrne CM](#), [Young JM](#).

[Dis Colon Rectum](#). 2009 Feb;52(2):315-8.

Surgical Outcomes and Research Centre (SOuRCe), Royal Prince Alfred Hospital, Sydney, New South Wales, Australia. cherry_koh@hotmail.com

PURPOSE: Fecal incontinence in systemic sclerosis can occur secondary to fibrous replacement of the internal sphincter or ischemic myopathy of internal anal sphincter from vasculitis. Both lead to

morphologic changes of the internal anal sphincter on endoanal ultrasound. This study documents the morphologic changes that can occur. **METHODS:** A retrospective study of consecutive patients with systemic sclerosis and fecal incontinence was performed. Endoanal ultrasound was performed by using a 10 MHz Bruel and Kjaer endoprobe. Internal anal sphincter thickness and echogenicity were assessed at mid anal canal using prospectively collected images. Sphincter thicknesses were measured at 3, 6, 9, and 12 o'clock positions and averaged. Sphincter quality was assessed as homogeneous or heterogeneous and hyperechoic or hypoechoic by an experienced colorectal surgeon. Sphincter thickness was compared with sex- and age-matched controls by using Wilcoxon's signed-rank test. **RESULTS:** There were 11 patients (all women). Two distinct morphologic changes were observed where patients had a thickened, homogeneous, and hypoechoic internal anal sphincter, or a thinned, difficult to discern, and hyperechoic internal anal sphincter. Average sphincter thickness was 1.6 (range, 0.8-4) mm, which was significantly different from control subjects ($P = 0.028$). **CONCLUSIONS:** Available literature suggest that internal anal sphincter in systemic sclerosis is invariably thinned and hyperechoic. This series suggests that two distinct morphologic changes are possible.