

## **Npl ano-rettale**

### **Endosonographic assessment of the response of rectal cancer to preoperative radiotherapy.**

[Hepatogastroenterology](#). 2009 Nov-Dec;56(96):1645-50.

[Tankova L](#), [Hadjieva T](#), [Kovatchki D](#), [Damianov N](#).

Clinical Center of Gastroenterology, Clinic of Gastroenterology, University Hospital "Queen Joanna", Sofia, Bulgaria. drtankova@abv.bg

#### **Abstract**

**BACKGROUND/AIMS:** The accuracy of endoluminal ultrasonographic restaging of rectal cancer after chemoradiation has not been extensively studied and its definitive clinical utility has yet to be defined. The aim of the present study is to assess the benefit of endoluminal ultrasonography with Doppler evaluation for rectal cancer restaging after preoperative radiotherapy. **METHODOLOGY:** Twenty six patients (10 female, 16 males, mean age--58 years) with histologically proven rectal cancer underwent preoperative radiotherapy. All patients were examined by endoluminal (endorectal or endovaginal) ultrasonography. Endosonography was repeated on 13 patients after small fractions preoperative radiotherapy. **RESULTS:** The mean transversal diameter of lesions before preoperative radiotherapy established by endoluminal ultrasonography is 33mm +/- 11 mm. After preoperative radiotherapy we detect significant reduction of 33% in the transversal tumor size--mean 23mm +/- 7mm ( $p < 0.001$ ). After radiation the mean distance from the tumor to the internal anal sphincter increases without statistical significance by 5%: from 59 +/- 18 mm to 62 +/- 16 mm ( $p = 0.165$ ). Compared to histological data, endosonographic restaging after radiotherapy is accurate in 9/13 (69%) for T parameter and 11/13 (85%) for N. After preoperative radiotherapy tumor sonographic structure is hyperechoic (homogeneous or inhomogeneous)--in 9 patients and only in 4 cases the tumor remains hypoechoic. Power Doppler exam before radiotherapy shows poor vascularization in 5 tumors--(19%). Abundant vascularization is found in 9 cases--(35%). In the remaining 12 patients tumor vascularization is considered as moderate. In 8 out of 13 cases (61.5%) after radiotherapy, vascular signals are less expressed. Lack of vascular alterations on pulse color and power Doppler flow is detected in the remaining 5 patients. No patients have more expressed vascularization on power Doppler examination after radiotherapy. **CONCLUSION:** According to our results the accuracy of endosonographic restaging after radiotherapy is lower for assessment of T criterion and is better for N parameter. Doppler findings are promising in the evaluation of tumor vascularity, respectively its predictive and prognostic values.

### **Endosonographic staging of lower intestinal malignancy.**

[Best Pract Res Clin Gastroenterol](#). 2009;23(5):663-70.

[Schizas AM](#), [Williams AB](#), [Meenan J](#).

Department of Colo-rectal Surgery, Guy's and St. Thomas' Hospital, London, UK.

#### **Abstract**

The use of EUS in the assessment of rectal pathology is well established. The accurate staging of lower intestinal tumours predicts prognosis and guides the planning of individual patient treatment. Increased experience and the development of high resolution three-dimensional EUS has lead to the greater accuracy of rectal staging with EUS of rectal

tumours now considered the gold standard showing T stage accuracy that ranges from 75% to 95%, with N stage accuracy ranging from 65% to 80%. The use of EUS in the staging of colonic pathology, however, is not so well established though advances in miniprobe EUS has improved the assessment of colonic tumours. EUS is also of benefit in the assessment of anal pathology though here, accurate correlation with histology has not been firmly established.

### **Endoanal ultrasound for anal cancer staging.**

[Int J Colorectal Dis.](#) 2010 Jun 22. [Epub ahead of print] [Jacopo M.](#)

General Surgery I, University of Siena, Ospedale Le Scotte, Viale Bracci 1, 53100, Siena, Italy, Jamjac64@hotmail.com.

### **Multimodal preoperative evaluation system in surgical decision making for rectal cancer: a randomized controlled trial.**

[Int J Colorectal Dis.](#) 2010 Mar;25(3):351-8.

[Wang X](#), [Lv D](#), [Song H](#), [Deng L](#), [Gao Q](#), [Wu J](#), [Shi Y](#), [Li L](#).

Anal-Colorectal Surgery, West China Hospital, Sichuan University, 37, Guo Xue Xiang, Chengdu, China.

#### **Abstract**

**PURPOSE:** Multimodal preoperative evaluation (MPE) is a novel strategy for surgical decision making, incorporating the transrectal ultrasound (TRUS), 64 multi-slice spiral computer tomography (MSCT), and serum amyloid A protein (SAA) for rectal cancer. This trial aims to determine the accuracy of MPE in preoperative staging and its role in surgical decision making for rectal cancer. **METHODS:** Two hundred twenty-five participants with histologically proven rectal cancer with tumor height less than 10 cm were randomly assigned into three arms in the ratio 1:1:1. Arm A (MPE) was multimodal staged by the combination of MSCT, TRUS, and SAA. Arm B (MSCT+SAA) was staged by MSCT and SAA. Arm C (MSCT) was staged only by MSCT. The primary endpoints were the accuracy of preoperative staging and expected surgical procedures. This study is registered as an International Standard Randomised Controlled Trial, number ChiCTR-DT-00000409. **RESULTS:** The analysis showed statistical difference in the accuracy of T staging between arm A and B (94.6% vs. 77.8%,  $P=0.003$ ) and arm A and C (94.6% vs. 80.6%,  $P=0.010$ ). Statistical difference was also observed between the accuracies of preoperative N staging between arm A and C (85.1% vs. 69.4%,  $P=0.023$ ) and arm A and B (85.1% vs. 84.7%,  $P=0.029$ ). Surgical decision making in arm A was more accurate than that in arm C (95.9% vs. 80.6%,  $P=0.001$ ). Pathological T stage ( $P<0.001$ ), N stage ( $P<0.001$ ), tumor node metastasis stage ( $P<0.001$ ), serum level of SAA ( $P=0.002$ ), and tumor height ( $P=0.030$ ) were significantly associated with final surgical procedures. **CONCLUSION:** MPE is an effective strategy in preoperative staging and more accurate than other available strategies in surgical decision making for rectal cancer

## Fistole

### **Anal endosonography and fistulography for fistula-in-ano.** [Radiol Med.](#) 2010 Feb 22. [Epub ahead of print]

[Pomerri F](#), [Dodi G](#), [Pintacuda G](#), [Amadio L](#), [Muzzio PC](#).

Dipartimento di Scienze Medico-Diagnostiche e Terapie Speciali, Clinica Chirurgica II, Università di Padova, Via Giustiniani 2, 35128, Padova, Italy, [fabio.pomerri@unipd.it](mailto:fabio.pomerri@unipd.it).

#### **Abstract**

**PURPOSE:** In this study, a comparison was made of the accuracy and clinical usefulness of anal endosonography and fistulography in the preoperative classification of fistulas-in-ano. **MATERIALS AND METHODS:** A total of 113 patients with a clinical diagnosis of cryptoglandular fistula-in-ano who were awaiting surgery were included in this retrospective review. Patients were preoperatively investigated by anal endosonography and/or modified fistulography by inserting a Foley catheter into the rectum and a metal ring close to the anus. The catheter and ring served as radiopaque anal markers. Fistula classification obtained by the two diagnostic modalities was compared with surgical classification as the criterion standard. **RESULTS:** Endoanal ultrasound and fistulography identified 82.8% and 100% of primary tracks, 79% and 74.2% of internal openings, 98% and 91.8% of secondary tracks and 92.9% and 87.8% of abscesses, respectively. **CONCLUSIONS:** Anal endosonography and fistulography with radiopaque markers are important complements to surgical exploration for investigating anal sepsis and may be of value to the surgeon in planning a therapeutic strategy.

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

[World J Gastroenterol.](#) 2009 Oct 14;15(38):4810-5.  
[Kim Y](#), [Park YJ](#).

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

#### **Abstract**

**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.

### **Anal endosonography and fistulography for fistula-in-ano**

**F. Pomerri<sup>1, 3</sup> ✉, G. Dodi<sup>2</sup>, G. Pintacuda<sup>3</sup>, L. Amadio<sup>2</sup> and P.C. Muzzio<sup>1, 3</sup>**

La Radiologia Medica **Published online:** 22 February 2010

#### **Abstract**

##### *Purpose*

In this study, a comparison was made of the accuracy and clinical usefulness of anal endosonography and fistulography in the preoperative classification of fistulas-in-ano.

##### *Materials and methods*

A total of 113 patients with a clinical diagnosis of cryptoglandular fistula-in-ano who were awaiting surgery were included in this retrospective review. Patients were preoperatively investigated by anal endosonography and/or modified fistulography by inserting a Foley catheter into the rectum and a metal ring close to the anus. The catheter and ring served as radiopaque anal markers. Fistula classification obtained by the two diagnostic modalities was compared with surgical classification as the criterion standard.

##### *Results*

Endoanal ultrasound and fistulography identified 82.8% and 100% of primary tracks, 79% and 74.2% of internal openings, 98% and 91.8% of secondary tracks and 92.9% and 87.8% of abscesses, respectively.

##### *Conclusions*

Anal endosonography and fistulography with radiopaque markers are important complements to surgical exploration for investigating anal sepsis and may be of value to the surgeon in planning a therapeutic strategy.

**Keywords** Anal fistula - Anal endosonography - Fistulography - Surgery

## **Incontinenza**

**Endo-anal ultrasound versus endo-anal magnetic resonance imaging for the depiction of external anal sphincter pathology in patients with faecal incontinence: a systematic review.**

[Magy Seb.](#) 2010 Feb;63(1):9-15. [Sajid MS](#), [Khatri K](#), [Siddiqui MR](#), [Baig MK](#).

Worthing Hospital, West Sussex BN11 2DH, UK. [surgeon1wrh@hotmail.com](mailto:surgeon1wrh@hotmail.com)

#### **Abstract**

**OBJECTIVE:** To evaluate the endo-anal ultrasound (EAUS) versus endo-anal magnetic resonance imaging (EAMRI) in the diagnosis of external anal sphincter defects (EAS) in patients with faecal incontinence (FI). **METHODS:** Studies on EAUS and EAMRI were selected and analyzed to generate summative data. **RESULTS:** Five studies encompassing 347 patients of FI were included in this review. Three studies validated the results of EAUS and EAMRI by surgery (61 patients). In the fixed effect model, EAUS was superior to EAMRI in the depiction of EAS defects. On combined analysis of five studies using fixed effect model, both EAUS and EAMRI were equally effective. However, there was a significant heterogeneity between studies. **CONCLUSION:** EAUS and EAMRI are comparable in the diagnosis of EAS defects in patients of FI. Since EAUS is an

economical, quicker and easily available imaging modality, it may be used a preferable investigation for the diagnosis of EAS defects in patients of FI.

### **Endosonographic elastography of the anal sphincter in patients with fecal incontinence.**

[Scand J Gastroenterol.](#) 2010;45(1):30-8.  
[Allgayer H, Ignee A, Dietrich CF.](#)

Department of Gastroenterology and Metabolism, Rehaklinik Ob der Tauber, Reha Zentren Baden-Württemberg, Germany.

#### **Abstract**

**OBJECTIVE:** In fecal incontinence the role of elastography has not yet been evaluated. We performed a trial to further characterize the internal and external anal sphincter in patients with fecal incontinence and compared a visual assessment scale with a computerized program for quantifying elastic properties of the anal sphincter. **MATERIAL AND METHODS:** Fifty consecutive patients with fecal incontinence were studied (n = 31 following lower anterior resection, n = 8 with Crohn's disease, n = 9 following colon surgery, n = 2 others). Elastogram color distribution within the sphincter representing elastic properties was quantified using a visual analog scale and an off-line computerized area calculation program. **RESULTS:** The main finding was that the inner anal sphincter (IAS) differed significantly from the external anal sphincter (EAS) with regard to elastogram color distribution. There were no significant correlations with clinical and functional parameters. There was, however, a non-significant increase in the percentage of blue (hard) areas in the IAS in patients neoadjuvantly irradiated for rectal or cervical cancer compared to non-irradiated patients, which was accompanied by a significant decrease in the resting sphincter pressure ( $p < 0.009$ ). **CONCLUSIONS:** The IAS, a smooth muscle, and the EAS, a striated muscle, have different elastogram color distributions, probably reflecting their different elastic properties. The absence of significant correlations with the major clinical and functional parameters suggests that in routine clinical practice ultrasound real-time elastography may not yield additional information in patients with fecal incontinence. There may be exceptions, particularly in irradiated patients.

### **[Endoanal ultrasound findings in patients with faecal incontinence using a scoring system]**

[Article in Spanish]

[Cir Esp.](#) 2009 Nov;86(5):290-5. Epub 2009 Aug 19.  
[Salvans S, Parés D, Pera M, Pascual M, Alonso S, Courtier R, Gil MJ, Maestre Y, Ibañez-Zafón I, Delgado-Aros S, Grande L.](#)

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

#### **Abstract**

**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.

## Pelvic Floor

Anal endosonographic findings in women after vaginal delivery.

[Eur J Radiol.](#) 2009 Nov 10. [Epub ahead of print]  
[Kołodziejczak M](#), [Sudoł-Szopińska I](#), [Stefański R](#), [Panorska AK](#), [Gardyszewska A](#), [Krasnodębski I](#).

Department of Proctology, Hospital at Solec, Warsaw, Poland.

### Abstract

**OBJECTIVE:** To estimate a frequency of obstetric anal sphincters defects in women after vaginal delivery. **METHODS:** The study included 102 women, aged from 16 to 40 years (mean age 28.6 years). 28 women had perineal lacerations of 3rd and 4th degree. 22 women had instrumental delivery. Anal endosonography was performed on all participants using BK Medical scanner Pro focus with a 3D endoprobe during the first week after delivery. Starck's classification was used to score sphincters defects. **RESULTS:** The endosonographic images were abnormal in 8 out of 102 women (7.8%). Follow-up examinations after 6 weeks confirmed defects in 6 out of 102 women (5.8%). Five women had external anal sphincter torn, and 1 woman had both sphincters, internal and external, defected. Discordance between endosonographic diagnosis of defect and clinical assessment of sphincters continuity was demonstrated in 6 (5.9%) out of 8 initially found, including 2 (1.9%) false endosonographic results and 4 (3.9%) false clinical diagnosis (occult sphincter defects). The endosonography sensitivity and accuracy in sphincter defect diagnostic amounted to 100% and 98%, respectively. **CONCLUSIONS:** (1) Anal sphincters' tears in symptomatic women are not as frequent as it was believed. (2) The defect diagnosis in the first week after delivery should be verified by a follow-up endosonography in 6 weeks, after regression of the edema and hematoma.

### The future of urodynamics: non-invasive ultrasound videourodynamics.

[Int J Urol.](#) 2010 Mar;17(3):241-9. Epub 2010 Feb 3.  
[Ozawa H](#), [Igarashi T](#), [Uematsu K](#), [Watanabe T](#), [Kumon H](#).

Department of Urology, Kawasaki Hospital, Kawasaki Medical University, Okayama, Japan. urozawa@gmail.com

## **Abstract**

A totally non-invasive transperineal urodynamic technique using Doppler ultrasonography has been developed. Normal urine doesn't have blood cells so urine was thought not to produce Doppler effects. However, basic studies confirmed that the decrease of pressure at high velocity (Bernoulli effects) caused dissolved gas to form microbubbles, which are detected by Doppler ultrasonography. Subjects sat and a probe was advanced via remote control to achieve gentle contact with the perineal skin. The digital uroflow data signals and the color Doppler ultrasound video images were processed on a personal computer. This method was viable to diagnose the degree of bladder outlet obstruction. The advantage of being rapid, effective, and equipped with no special attachments allows it to surpass any other non-invasive urodynamic methods. The difference between the echocardiogram and the ultrasound urodynamic system is only the frequency of obtaining velocity information: more than 50 times per minute vs once every several hours, respectively. Although the ultrasound urodynamic system is more difficult to develop than the echocardiogram, one principle is shared by both methods. The patient can void freely without interruptions, there is no contact between the penis and the equipment and it is specifically directed toward non-invasive diagnosis. The development of non-invasive Doppler ultrasound videourodynamics will dramatically expand understanding of voiding function.

## **Clinical and transperineal ultrasound findings in females with stress urinary incontinence versus normal controls.**

[Pak J Biol Sci.](#) 2009 Nov 1;12(21):1434-7.  
[Hajebrahimi S](#), [Azaripour A](#), [Sadeghi-Bazargani H](#).

Department of Urology, Imam Reza University Hospital, Golgasht Ave., Tabriz, Iran.

## **Abstract**

Study was aimed at comparing clinical and transperineal ultrasound findings of females with stress urinary incontinence and normal controls. Between 2004 and 2005, 40 women with stress urinary incontinence (mean age 47.5 years) diagnosed by history via ICIQ-SF (International consultation on Incontinence Questionnaire-Short Form) and 40 healthy female volunteers without any incontinence or LUTS (mean age 42.1 years) underwent transperineal ultrasonography for determination of posterior urethrovesical (beta) angle, bladder neck funneling and hypermobility of urethra. These findings were compared between patients and controls with regard to clinical data. Beta angle wider than 130 degrees, bladder neck funneling and hypermobility of urethra with transperineal ultrasonography were more common among cases than controls. LR (Likelihood Ratio) for urinary incontinence of these parameters was 2.5, 2.1 and 2, respectively. Perineal ultrasonography is highly associated with clinical findings. Hypermobility of urethra had highest sensitivity for diagnose of stress urinary incontinence but the specificity of bladder neck funneling in perineal sonography was higher.

## **[The role of ultrasound in the exploration of pelvic floor disorders]**

[Article in French]

[Prog Urol.](#) 2009 Dec;19(13):947-52. Epub 2009 Oct 24.  
[Lapray JF](#), [Costa P](#), [Delmas V](#), [Haab F](#).

Centre de radiologie, 151 avenue de Saxe, 69003 Lyon, France. lapray@wanadoo.fr

## **Abstract**

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.

## **Effects of age on levator function and morphometry of the levator hiatus in women with pelvic floor disorders.**

[Int Urogynecol J Pelvic Floor Dysfunct.](#) 2010 Apr 24. [Epub ahead of print]  
[Weemhoff M](#), [Shek KL](#), [Dietz HP](#).

Department of Obstetrics & Gynaecology, GROW, school for oncology and developmental biology, Maastricht University Medical Centre, P.O. Box 5800, 6202 AZ, Maastricht, The Netherlands, m.weemhoff@mumc.nl.

## **Abstract**

**INTRODUCTION AND HYPOTHESIS:** Epidemiological data supports the hypothesis that ageing is a risk factor for pelvic organ prolapse. In this study, we intended to determine the effect of age on levator function and morphometry in women with pelvic floor disorders. **METHODS:** Three hundred seventy-five patients underwent an interview, physical examination and transperineal ultrasound. Clinical assessment included palpation using the Modified Oxford Scale. Ultrasonography was performed to diagnose levator defects and assess levator hiatal morphometry. **RESULTS:** Pelvic floor muscle strength was weakly associated with patient age ( $r = -0.25$ ,  $p < 0.01$ ). This remained true after accounting for the confounders parity and levator defects. Morphometry of the levator hiatus was weakly positively correlated with age. **CONCLUSIONS:** Ageing seems to have a limited effect on contractility and distensibility of the pelvic floor muscle. The small effect of ageing results in reduced contraction strength and increased hiatal diameters. This effect is partly confounded by parity and levator defects.

## **Pelvic floor ultrasound: a review.**

[Am J Obstet Gynecol.](#) 2010 Apr;202(4):321-34.  
[Dietz HP](#).

University of Sydney, Nepean Clinical School, Penrith, Australia. hpdietz@bigpond.com

## **Abstract**

Imaging currently plays a limited role in the investigation of pelvic floor disorders. It is obvious that magnetic resonance imaging has limitations in urogynecology and female urology at present due to cost and access limitations and due to the fact that it is generally a static, not a dynamic, method. However, none of those limitations apply to sonography, a diagnostic method that is very much part of general practice in obstetrics and gynecology.



Translabial or transperineal ultrasound is helpful in determining residual urine; detrusor wall thickness; bladder neck mobility; urethral integrity; anterior, central, and posterior compartment prolapse; and levator anatomy and function. It is at least equivalent to other imaging methods in visualizing such diverse conditions as urethral diverticula, rectal intussusception, mesh dislodgment, and avulsion of the puborectalis muscle. Ultrasound is the only imaging method able to visualize modern mesh slings and implants and may predict who actually needs such implants. Delivery-related levator trauma is the most important known etiologic factor for pelvic organ prolapse and not difficult to diagnose on 3-/4-dimensional and even on 2-dimensional pelvic floor ultrasound. It is likely that this will be an important driver behind the universal use of this technology. This review gives an overview of the method and its main current uses in clinical assessment and research. Copyright 2010 Mosby, Inc. All rights reserved.

### **Does levator ani injury affect cystocele type?**

[Ultrasound Obstet Gynecol.](#) 2010 Jun 24. [Epub ahead of print]  
[Eisenberg V](#), [Chantarasorn V](#), [Shek K](#), [Dietz H](#).

Sheba Medical Centre, Tel Hashomer, Israel.

#### **Abstract**

**OBJECTIVE:** To determine the prevalence of levator ani injury in patients with different types of cystocele, as defined by translabial ultrasound, in order to shed light on potential pathophysiological mechanisms. **METHODS:** The datasets of 222 women who had undergone a physical examination, urodynamic testing and 4D pelvic floor ultrasound were evaluated offline for prolapse, levator ani hiatal dimensions and levator ani trauma using tomographic ultrasound imaging (TUI), blinded against all clinical and urodynamic data. Cystoceles reaching below the symphysis pubis on ultrasound, were classified based on bladder neck position, retrovesical angle (RVA) and urethral rotation as Green II (cystourethrocele), or Green III (cystocele with intact RVA). **RESULTS:** Of 102 women who had a cystocele reaching below the symphysis pubis, 63 were classified as a Green type II and 39 as a Green type III cystocele. Women with Green type III cystoceles were older (59.4 vs. 48.7 years,  $p<0.001$ ), had more severe prolapse (71 vs. 43%,  $p=0.004$ ), and objective voiding dysfunction (39 vs. 18%,  $p=0.018$ ). Women with Green III cystoceles also had larger hiatal dimensions and were more often diagnosed with an avulsion of the levator ani muscle (69 vs. 35%,  $p=0.001$ ). **CONCLUSIONS:** A cystocele with an intact RVA is more likely to be associated with avulsion injury of the levator ani muscle and thus more likely to be caused by birth related trauma. This contradicts the commonly held belief that such cystoceles are due to central rather than lateral fascial defects.

### **Levator avulsion is a risk factor for cystocele recurrence.**

[Ultrasound Obstet Gynecol.](#) 2010 May 5;36(1):76-80. [Epub ahead of print]  
[Dietz HP](#), [Chantarasorn V](#), [Shek KL](#).

Sydney Medical School Nepean, University of Sydney, Nepean Hospital, Penrith, Australia.

#### **Abstract**

**OBJECTIVES:** To determine whether levator avulsion is a risk factor for recurrence after cystocele repair. **METHODS:** This was an audit of women who underwent anterior colporrhaphy at a tertiary hospital between 2002 and 2005, who were followed up by

interview, clinical examination and four-dimensional translabial ultrasound examination 3-6 years later. RESULTS: Of 242 patients identified through theater records we were able to contact 171 (71%). Of 83 who agreed to attend, 24 (29%) reported symptoms of recurrent prolapse. There were 33 (40%) recurrent cystoceles (Stage 2 + ), and 34 (41%) had a significant cystocele on ultrasound examination. On pelvic floor tomographic ultrasound examination, a levator avulsion was detected in 29 (35%) patients. The relative risk of recurrence in women with avulsion was 3.9 (95% CI, 2.4-5.8) when ultrasound criteria of recurrent cystocele were used, and 2.9 (95% CI, 1.7-4.5) when using clinical staging. CONCLUSION: Levator avulsion is associated with a relative risk of 3-4 for cystocele recurrence after anterior colporrhaphy.

### **Unilateral coronal diameters of the levator hiatus: baseline data for the automated detection of avulsion of the levator ani muscle.**

[Ultrasound Obstet Gynecol.](#) 2010 Mar 30. [Epub ahead of print]  
[Ismail SI](#), [Shek KL](#), [Dietz HP](#).

Urogynaecology Unit, Nepean Clinical School, University of Sydney, Penrith, New South Wales, Australia.

#### **Abstract**

OBJECTIVE: Levator ani avulsion injury is associated with pelvic organ prolapse. Although it can be detected by magnetic resonance imaging or translabial ultrasound, both require substantial training. This retrospective study provides baseline measurements of unilateral coronal diameters of the levator hiatus and assesses its use to predict levator ani avulsion injury, as a step towards automated detection. METHODS: Datasets of 787 patients seen in a tertiary urogynecological unit were assessed, including history, examination and three/four dimensional pelvic floor ultrasound. Unilateral coronal diameters were measured offline in stored volume datasets, blinded against clinical data. Volumes obtained during maximum pelvic floor muscle contraction were used, resorting to volumes obtained at rest for patients unable to contract their pelvic floor muscles. RESULTS: Ultrasound images were available for 761 patients, including 16 (2.1%) who could not contract their pelvic floor muscles, generating 1522 unilateral measurements (2 sides for 761 patients). Levator ani avulsion injury was associated with significant increase in the unilateral coronal diameter (2.57 +/- 0.5cm vs 2.1 +/- 0.3cm, P < 0.0001). Receiver operator curve analysis showed an area under the curve of 0.801 (95% confidence interval 0.765 - 0.837). A cut-off of 2.3 cm had a sensitivity of 71% and a specificity of 79% for the diagnosis of levator ani avulsion injury. CONCLUSIONS: Levator ani avulsion injury is associated with a significant increase in unilateral coronal diameter. A cut off point of 2.3cm is reasonable for the diagnosis levator ani avulsion injury. It is hoped that this information will enable automated detection of levator ani avulsion injury.

### **The role of two- and three-dimensional dynamic ultrasonography in pelvic organ prolapse.**

[J Minim Invasive Gynecol.](#) 2010 May-Jun;17(3):282-94. Epub 2010 Feb 19.  
[Dietz HP](#).

Sydney Medical School Nepean, Penrith, Australia. [hpdietz@bigpond.com](mailto:hpdietz@bigpond.com)

## **Abstract**

The assessment of pelvic organ prolapse has to date been limited to the clinical evaluation of surface anatomy. This is clearly insufficient. As a result, imaging of pelvic floor function and anatomy is moving from the fringes to the mainstream of obstetrics and gynecology. This is mainly due to the realization that pelvic floor trauma in labor is common, generally overlooked, and a major factor in the causation of pelvic organ prolapse. Modern imaging methods such as magnetic resonance and 3-dimensional ultrasonography have enabled us to diagnose such abnormalities reliably and accurately, most commonly in the form of an avulsion of the puborectalis muscle off its insertion on the os pubis. However, ultrasonography has other advantages in the assessment of pelvic organ prolapse, most notably in the differential diagnosis of posterior compartment prolapse, which can be due to at least 5 different conditions. In this review I will try to summarize the methods of prolapse and pelvic floor assessment by translabial ultrasonography and to describe the most common abnormalities and their consequences. This article will not deal with magnetic resonance imaging because I consider this technology to be of limited clinical utility due to technical restrictions, expense, and access issues.

### **Levator defects can be detected by 2D translabial ultrasound.**

[Int Urogynecol J Pelvic Floor Dysfunct.](#) 2009 Jul;20(7):807-11. Epub 2009 Mar 17.  
[Dietz HP, Shek KL.](#)

Obstetrics and Gynaecology, Nepean Clinical School, Nepean Hospital, University of Sydney, Penrith, NSW, 2750, Australia. [hpdietz@optusnet.com.au](mailto:hpdietz@optusnet.com.au)

## **Abstract**

**INTRODUCTION AND HYPOTHESIS:** Childbirth-related morphological abnormalities or defects of the puborectalis muscle ("avulsion") can be diagnosed by magnetic resonance imaging and three-dimensional (3D) ultrasound, but neither method is universally available. In this study, we tested validity and reproducibility of a new method for diagnosing levator avulsion by 2D translabial ultrasound. **METHODS:** Seventy-five women were examined for major morphological abnormalities of the puborectalis muscle by palpation, 2D and 3D ultrasound (US). For 2D US, we used an oblique parasagittal translabial approach. The operator using 2D US was blinded against all other findings. **RESULTS:** Agreement between observers for diagnosis of avulsion by 2D US was 87% (Cohen's kappa 0.56, CI 0.33-0.80). Agreement between tomographic 3D US and 2D US was 87% (kappa 0.61, CI 0.45-0.77). **CONCLUSIONS:** Defects of the puborectalis muscle can be diagnosed with 2D US. The finding of a discontinuity between the hyperechogenic muscle and the pelvic sidewall is moderately reproducible and agrees moderately well with palpation and 3D US.

## **Emorroidi**

### **Transperineal ultrasound in the assessment of haemorrhoids and haemorrhoidectomy: a pilot study.**

[Tech Coloproctol.](#) 2010 Apr 14. [Epub ahead of print]  
[Zbar AP, Murison R.](#)

Department of Surgery Tamworth Rural Referral Centre, Universities of New England and Newcastle, PO Box 2064, Tamworth, NSW, 2340, Australia, [azbar55@yahoo.com](mailto:azbar55@yahoo.com).

## **Abstract**

**BACKGROUND:** The purpose of the study was the measurement of the anal cushion area using static transperineal ultrasound in a group of patients with symptomatic grade III and IV haemorrhoids about to undergo haemorrhoidectomy and compare them with a group of age-matched normals and the measured area following haemorrhoidectomy. **METHODS:** Transperineal sonography was performed using a linear transducer measuring the anal cushion area by subtracting the measured luminal diameter of the undisturbed anal canal from the inner border of the internal anal sphincter. Measures were made 6 weeks following haemorrhoidectomy. **RESULTS:** Comparisons were made between 22 normals and 36 patients with haemorrhoids (31 evaluable post-operatively). The median area of normals was 0.78 cm<sup>2</sup>, that of pre-operative patients 2.25 cm<sup>2</sup> and that of post-operative cases 1.20 cm<sup>2</sup>. There was a significant difference between pre- and post-operative cases with cushion areas of normal patients being significantly lower than post-operative cases. Variance of measurement in all 3 groups was negligible. **CONCLUSION:** Static transperineal sonography measuring the anal cushion area is reproducible and shows marked differences between normals and patients with symptomatic haemorrhoids. There is a marked effect on measured area resultant from haemorrhoidectomy.