

tion of depth and diameter of bladder neck dilation in incontinent women. Using Endovaginal Ultrasound (EVUS) to measure bladder wall thickness, Khullar et al. found that women with urinary symptoms and detrusor instability had significantly thicker bladder walls than women with SUI. Another study confirmed that bladder wall thickness greater than 5 mm at EVUS was a sensitive screening method for diagnosing detrusor instability in symptomatic women without outflow obstruction. TPUS and EVUS allow comprehensive evaluation of many abnormalities of the female urethra such as urethral diverticula, abscesses, tumors, and other urethral and paraurethral lesions. Multiplanar EVUS also gives the opportunity to assess the vascularity of the urethra which is believed to contribute to continence. Wiczorek et al. demonstrated that urethral vasculature is different along its entire length, with the mid-urethra, which includes the RS muscle, having the greatest intensity of perfusion. In females with SUI, urethral perfusion appeared significantly reduced.

Ultrasonography also allows the evaluation of tapes used in anti-incontinence surgery as improper positioning or dislodgement may be associated with failed surgery. Dietz et al. performed 3D-TPUS to assess the effectiveness of suburethral slings (TVT™, IVS™, Sparc™). All three tapes were visualized by ultrasound and showed comparable short term clinical and anatomical outcomes. Using 3D-TPUS, Ng et al. found that the midurethral position of the tension-free vaginal tape (TVT) may not be essential in restoring continence, a finding confirmed by Dietz et al., and that the TVT once inserted may not always remain in the midurethral position, likely due to shifting of the tape in the immediate postoperative period. Actual tape migration weeks, months or years after implantation, however, seems unlikely. It has been shown that over-elevation of the bladder neck after Burch colposuspension is associated with postoperative symptoms of the overactive bladder, and this is also observed after obstructive TVTs. Tighter placement of transobturator tapes seems to be associated with less UUI postoperatively, at least in the medium term.

Ultrasound is particularly useful in the assessment of postoperative voiding dysfunction. The minimal gap between implant and SP on maximal Valsalva seems the single most useful parameter in the postoperative evaluation of suburethral tapes as it is negatively associated with voiding dysfunction and positively associated with both SUI and UUI.

KÖ-13 [17:15]

Ultrasound evaluation of posterior compartment defects

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Ultrasonographic imaging is gaining a key role in the understanding of pelvic floor disorders of the posterior compartment. Endoanal and endorectal ultrasonography (EAUS/ERUS), endovaginal ultrasonography (EVUS) and dynamic transperineal US (DTPUS) are nowadays increasingly used in clinical practice for patients suffering from fecal incontinence, pelvic organs prolapse, obstructed defecation and anorectal sepsis. These non-invasive techniques not only provide a superior depiction of the pelvic anatomy but also yield unique dynamic information.

Recently, several new ultrasound techniques have been developed that could significantly improve the diagnostic value of ultrasonography (US) in this field. Three-dimensional (3D) and real-time four-dimensional (4D) imaging have been introduced into routine medical practice. These techniques overcome some of the difficulties and limitations associated with conventional two-dimensional (2D) US. Although 2D cross-sectional images may provide valuable information, it is often difficult to interpret the relationship between different pelvic floor structures because the 3D anatomy must be reconstructed mentally. Three-dimensional reconstructions may closely resemble the real 3D anatomy and can therefore significantly improve the assessment of normal and pathologic anatomy. Complex information on the exact location, extent, and relation of relevant pelvic structures can be displayed in a single 3D image. Interactive manipulation of the 3D data on the computer also increases the ability to assess critical details.

It seems likely that these new diagnostic tools will be increasingly used in the future to provide more detailed information on the morphology and function of examined organs, to achieve better accuracy in the diagnosis of complex diseases, to facilitate planning and monitoring of operations, and for surgical training.

EAUS has become the gold standard for the morphological assessment of the anal canal. It can differentiate between incontinent patients with intact anal sphincters and those with sphincter lesions (defects, scarring, thinning, thickening, and atrophy). Tears are defined by an interruption of the circumferential fibrillar echo texture. Scarring is characterized by loss of normal architecture, with an area of amorphous texture that usually has low reflectivity. The operator should identify if there is a combined lesion of the internal (IAS) and external anal sphincters (EAS) or if the lesion involves just one muscle. The number, circumferential (radial angle in degrees or in hours of the clock site) and longitudinal (proximal, distal or full length) extension of the defect should be also reported. In addition, 3D-EAUS allows to measure length, thickness, area of sphincter defect in the sagittal and coronal planes and volume of sphincter damage. EVUS can assess the levator ani muscle. Avulsion of the levator ani from the inferior pubic rami can be accurately evaluated and the levator ani gap measured. Levator ani damage

is a risk factor for the development of pelvic organ prolapse and is correlated to recurrence after reconstructive surgery.

DTPUS has been shown to demonstrate rectocele, enterocele, and rectal intussusception with images comparable to defecography. The extent of a rectocele is measured as the maximal depth of the protrusion beyond the expected margin of the normal anterior rectal wall. On sonographic imaging, a herniation of a depth of greater than 10 mm has been considered diagnostic. The rectal intussusception may be observed as an invagination of the rectal wall into the rectal lumen or the anal canal during maximal Valsalva maneuver. Enterocele is ultrasonographically visualized as downward displacement of abdominal contents into the vagina, ventral to the rectal ampulla and anal canal. Small bowel may be identifiable due to its peristalsis. The extent of an enterocele is measured against the inferior margin of the symphysis pubis. Pelvic floor dyssynergy can be documented during Valsalva maneuver because the anorectal angle (ARA) becomes narrower, the levator hiatus (LH) is shortened in the anteroposterior dimension and the puborectalis (PR) thickens in evidence of a contraction. The most relevant utility of EAUS applies in the detection of localized EAS and/or IAS defects in patients with obstructive defecation disorders.

The configuration of perianal sepsis and the relationship of abscesses or fistulae with IAS and EAS are the most important factors influencing the results of surgical management. Preoperative identification of all loculate purulent areas and definition of the anatomy of the primary fistulous tract, secondary extensions, and internal opening plays an important role in adequately planning the operative approach in order to ensure complete drainage of abscesses, to prevent early recurrence after surgical treatment, and to minimize iatrogenic damage of sphincters and the risk of minor or major degrees of incontinence. EAUS has been demonstrated to be a very helpful diagnostic tool in accurately assessing all fistula or abscess characteristics. It can be easily repeated while following patients with perianal sepsis to choose the optimal timing and modality of surgical treatment, to evaluate the integrity of or damage to sphincters after operation, and to identify recurrence of fistula. It also gives information about the state of the anal sphincters, which is valuable in performing successful fistula surgery. A fistula tract affecting minimal muscle can be safely excised, but where the bulk of external sphincter muscle is affected, it is best treated by seton drainage or mucosal advancement flap.

KÖ-14 [18:00]

What is future of perinatal imaging?

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Understanding the structure and function of the fetal nervous system has been the dream of physicians for centuries.

The pioneering efforts of Ian Donald in obstetric ultrasound in the latter part of the twentieth century have permitted this dream to become a reality.

The initial contribution of obstetric ultrasound focused on the normal and abnormal structure. As first neuro-sonographic diagnose, anencephaly was described, followed later by increasingly subtle central nervous system abnormalities such as agenesis of the corpus callosum. Now, 4D sonography in the functional evaluation of the fetal brain has become the challenge for investigators in obstetric ultrasound. There are many functional neurological abnormalities, with cerebral palsy (CP) as one of the most important, whose causes are still poorly understood. This etiological uncertainty makes CP a rewarding medico-legal field. Attorneys throughout the world want to relate neurological abnormalities exclusively to intrapartum events associated with suspected hypoxemia, such as usage of oxytocin, forceps or vacuum delivery, and failure to perform a timely Cesarean delivery.

While during the last two decades obstetricians have become a risk group in regards to medico-legal complications, there have been substantial advances in understanding the etiology of cerebral palsy: only 10% of later diagnosed CP are caused by intrapartum asphyxia. But many questions still remain open. The final goal of prevention may be more achievable after scientific comprehension of many collaborative factors involved in the origination of CP, this still mysterious entity. The new field of fetal neurology with the latest diagnostic tool KANET offers a professional challenge. With 4D sonography it is now possible to define reproducible parameters for the assessment of normal neurobehavioral development. There is urgent need for further multicentric studies until a sufficient degree of normative data is available and the predictive validity of specific aspects of fetal neurobehavior to child developmental outcome is better established. The role of obstetrician in the antenatal detection of CP is new exciting challenge.

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KÖ-15 [08:30]

IUGR: the past, the present, the future

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To know the past can make more complete the understanding of the present and facilitate the possible future. Intrauterine growth restriction represent also today an important issue in perinatal medicine. In fact this clinical condition is present in about 8% of the pregnancies and is the second cause of peri-