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A NEW ULTRASOUND TECHNIQUE OF THE PELVIC FLOOR TO ASSIST IN SITE SPECIFIC REPAIR SELECTION AND MESH COMPLICATION MANAGEMENT

Hypothesis / aims of study

To optimise treatment in pelvic floor surgery, knowledge of contributing defects and anatomical structures is invaluable. For treatment to be successful, it is instrumental to know whether the prolapse of the anterior vaginal vault involves apical descensus or whether a rectocele, an enterocele or both contribute to posterior vaginal wall prolapse.

Pelvic floor ultrasonography can contribute to obtain a documentable and objective diagnosis to assist in corresponding treatment selection. This cost efficient technique renders more expensive (MRI) or invasive techniques redundant in many cases.

Due to the variety of surgical methods using prostheses to treat pelvic floor prolapse and incontinence, there is a need to objectify the surgical outcome and individualise treatment for postoperative recurrences and complications. Utilising pelvic floor ultrasonography yields new insights regarding the position of the graft, its shape and their relation to adjacent structures and organs.

This new method will be described in detail illustrated by a few examples of relevant cases.

Study design, materials and methods

Pelvic floor ultrasonography is a new ultrasound concept which combines introitual, vaginal and abdominal ultrasonography. With this combination it is possible to gain a three-dimensional image of all pelvic floor compartments, offering a good view on both the anatomical structures and the implanted prostheses without requiring a 3D scanner.

The examination starts with introital ultrasonography to provide insight into the periurethral space. During vaginal scanning, tilting of the ultrasound plane and varying the axes of the probe yields a complete image of all vaginal compartments including implanted slings and meshes. A similar scanning technique is also a useful tool to determine the potential causes for recurrence and/or complications. Based on the objective documentation, it is possible to propose an individualized treatment recommendation.

Results

The technique allows to distinguish between a urocele with and without funnelling and a cystocele. Similarly the differentiation between a traction and a pulsion cystocele is possible, all implying different therapeutic strategies. A latent urge incontinence can be diagnosed preoperative to counsel the patient accordingly. The loss of stability in the central compartment can be assessed and quantified which may lead to different surgical interventions, especially in cases involving the anterior vaginal wall. Furthermore, it is possible to evaluate posterior vaginal wall prolapse and differentiate between a rectocele and an enterocele which allows the surgeon to get all necessary information whether an operation with or without an implant will be more successfully. Moreover the surgeon will get information about anatomical variations like diverticuli, tumours and fistulas.

Besides the anatomical information the surgeon can get with the pelvic floor ultrasonography, he also gets a view on the ability of the patient to perform an effective pelvic floor muscle contraction.

After implantation of a sling or a mesh, the material can be examined and documented in size, shape and position. An essential benefit is the possibility to evaluate the relation between the anatomical structures and the implant in vivo, as this may offer a possible prediction of long term surgical success. If smaller complications are detected, they can be easily treated by small site specific surgical interventions. Even late complications with the implant can often be fixed in a minimally invasive fashion, as ultrasound can identify exactly the possible causes of the underlying problem.

Interpretation of results

Postoperative voiding dysfunction after a sling implantation can be caused by multiple problems. Pelvic floor ultrasonography yields information whether the retention is caused by a hematoma, which could be treated conservatively, or if the implanted sling requires to be loosened surgically.

After implantation of an anterior mesh complicated by urinary retention, the new ultrasound technique provides information whether conservative measures or a surgical intervention are indicated. If the problem is caused by a too distal mesh placement, it can often be resolved by a minimal revision of the mesh in that area. This way, the patient can be saved from long lasting, ineffective and painful treatment.

Vaginal pain, dysparaunia or recurring colpitis are often based on local folding of the implant with imminent erosion or even possible formation of fistulas. With sonographic imaging, a specific therapy can be enabled.

Even in recurrent prolapse after mesh implantation, pelvic floor ultrasonography can help to find the cause of the failure and offers information for potential small revisions, for example when the mesh has locally dislodged. Reattachment of the mesh at this site can often offer a minimally invasive solution in these patients.

Concluding message

Pelvic floor ultrasonography presents a method to gain objective and reproducible diagnoses in a non-invasive and fast way. Future prospective studies based on the ultrasound technique described in this pilot study will have to confirm whether this technique can add value as a therapeutic concept in treatment of pelvic floor disorders and specifically in identifying site-specific interventions for treating postoperative recurrences and complications after use of prostheses.

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