

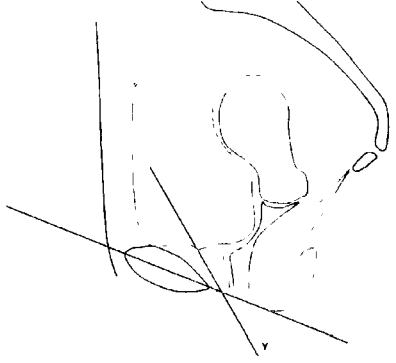
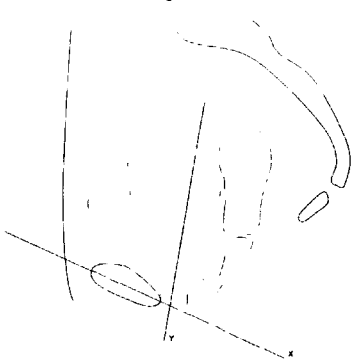
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	TENSION-FREE VAGINAL TAPE AFTER MULTIPLE INCONTINENCE OPERATIONS –MAGNETIC RESONANCE IN THE CHOICE OF THE TECHNIQUE AND IN THE ASSESSMENT OF THE OUTCOME	
	<u>Aims of Study</u>	
	<p>TVT is a well established method for treatment of genuine urinary stress incontinence. Recurrent incontinence, however, is a problem where no uniform approach is known and the effect and indications of different procedures is subject of intensive research. The diagnosis of “frozen urethra” is particularly difficult to treat. New methods of medical imaging give us the better chance to understand the anatomy and its changes after operation. The aim of our study was to document a successful unusual surgery on incontinent patient with frozen urethra after multiple operations.</p>	
	<u>Methods</u>	
	<p>32 years old lady after multiple operations (Table 1) with severe urinary stress incontinence due to the „frozen urethra“ with no urethral mobility in its entire course was referred to our clinic. Standard tests according to International Continence Society (ICS) were done first. To gain better idea about the anatomy, introital sonography and magnetic resonance (MR) with the bladder filled to 300 cc of sterile saline were performed. MR examination consisted of gaining thin axial images from the level of bladder apex to outer meatus of urethra. Based on these data, 3- dimensional computer model was created. In the sagittal plane, dynamic scans at rest and during pressure maneuvers (squeezing, Valsalva) were done. We saw a slight chance to set a continence mechanism by liberating urethra and bladder from the scarred Retzius space to restore some mobility. A new continence mechanism could have been introduced by inserting the TVT around middle/distal urethra. Atypical insertion of the prolene tape was chosen with its fixation to the periost of the dorsal aspect of the symphysis and to the skin. To prevent the scarring and recurrent fixation of urethra to symphysis and to preserve its mobility, we used a special antiadherent nest (oxidated regenerated cellulose). The separation of lower urinary tract organs from pubic bones reached distal urethra and prolene mesh passed from vagina to retropubic space and through fascia and abdominal wall. After an uncomplicated postoperative voiding restoration was the patient dismissed fully continent. We repeated MRI and ultrasound 3 weeks and 5 months later. Urodynamics was performed at the second follow-up visit.</p>	
	<u>Results</u>	
	<p>Figure 1 – Dynamic MR during Valsalva before operation – outlines</p> 	<p>Figure 2 - Dynamic MR during Valsalva after operation - outlines</p> 

Figure 3 3-D model after operation
dissected spaced is in orange colour



Figure 4 Sagittal dynamic MR during squeezing
dissected space in front of the bladder



A lady with stable bladder, short urethra and strongly positive stress profile and normal uroflow has entered the study. On vaginal examination, there were close contact of the anterior vaginal wall with the posterior aspect of pubic bone. Ultrasound and MR revealed no mobility of urethra and bladder base in its entire course. The angle between the urethra and axis of the pubic bone was 39 degrees (Figure 1). 3-dimensional model of pelvic structures gave us detailed knowledge about the anatomy at rest.

5 months after the surgery, the lady was stress continent with no urge symptoms. Her stress profile remained positive, the bladder was stable and normal uroflow was preserved. She remained dry during a standard ICS pad-weight test.

Interestingly, the mobility of urethra has not changed significantly. Scary plate composed of anterior vaginal wall, urethra and distal part of anterior bladder wall has preserved its rigidity, but its orientation has changed. The angle between urethra and axis of symphysis after operation was 75 degrees (Figure 2). 3-dimensional model showed the effect of operation in detail. Ultrasound was important for determination of the position of the prolene tape after operation.

Conclusions

No single method give complex information about function and anatomy of female pelvic organs. Multiple inputs should be analysed to gain the best-possible idea. Recently introduced method of 3-dimensional modelling based on MRI and dynamic MR examination help to describe the anatomy a function substantially.

We have not found enough increase of urethral mobility after the procedure to explain fully the new continence mechanism by traditional "kinking". New angle of urethra with its distal end passing through a relatively rigid hole composed of posterior border of pubic bone and the TVT favours the theory of increased hydrostatic pressure within this region. In theory, this could exceed the pressure within urinary bladder and proximal urethra. The lack of the change in the stress profile needs to be explained, but it is in accord with findings after primary TVT for GSI. The idea of insertion of antiadherent nest into the dissected Retzius Space to avoid recurrent scarring seems to help. Longer follow-up is needed to access its durability.

New, non-invasive technology can bring information, that would eventually lead to full understanding of continence mechanism.

The presented, so far successful, operation in this complicated case bring new hope to patients suffering from recurrent urinary stress incontinence.

References

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 - 2 Structural aspect of the extrinsic continence mechanism. *Obstet Gynecol* 1998, 72:296-301.
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