

Uroginecologie - tehnici chirurgicale

Up-to-date surgical guidelines for the treatment of urinary incontinence and urogenital prolapse

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In every day practice we meet patients that require our help regarding various urinary disorders. Very often, after completing urological specific examinations, we took into consideration cystitis or pseudo-cystitis supported by an extra-bladder affection. We are referring to those patients that follow the gynecologist-urologist circuit often finished to the neurologists' or even psychiatrists'. Also these female

patients often present different pelvic floor disorders that complicate our therapeutic indications. Even if symptoms like increased frequency, urgency, nocturia, affect the lifestyle of these patients', we followed the literature protocol concerning the stress urinary incontinence as a major symptom. The urinary incontinence combined with urogenital prolapse represents a major health problem. Olsen and the coworkers

showed that up to 11,1% of the 80 year-old women may have an intervention for urogenital prolapse and incontinence and up to 29% have re-interventions [1].

In the United States of America, one out of nine female patients requires anatomical pelvic disorder surgery and one out of four requires re-intervention, each year up to 15 - 20 billion dollars being spent for this problem [2]. Based on these studies, Oradea urology clinic conducted a screening in order to find these medical conditions; our results showed a higher prevalence (23%): from 327 female patients, 262 had urinary disorders (increased frequency, urgency, nocturia) often combined, 180th with stress urinary incontinence and 70th with pelvic floor disorders (cystocel, rectocel, cystorectocel, vault prolapse, uterine prolapse) also in various associations.

According to Papa Petros' integral theory, all those urinary symptoms result from an early urinary reflex activated due to a lax vagina which doesn't allow the support of the bladder during filling. It is well-known that the vagina does not have its own strength due to its structure, therefore being necessary to sustain it with support elements: pubourethral ligaments, tendinous arch of endopelvic fascia, uterosacral and cardinal ligaments, together with tendinous center. According to this theory, the opening and closing of the bladder neck result from the action of



Figure 1. Central cystocel

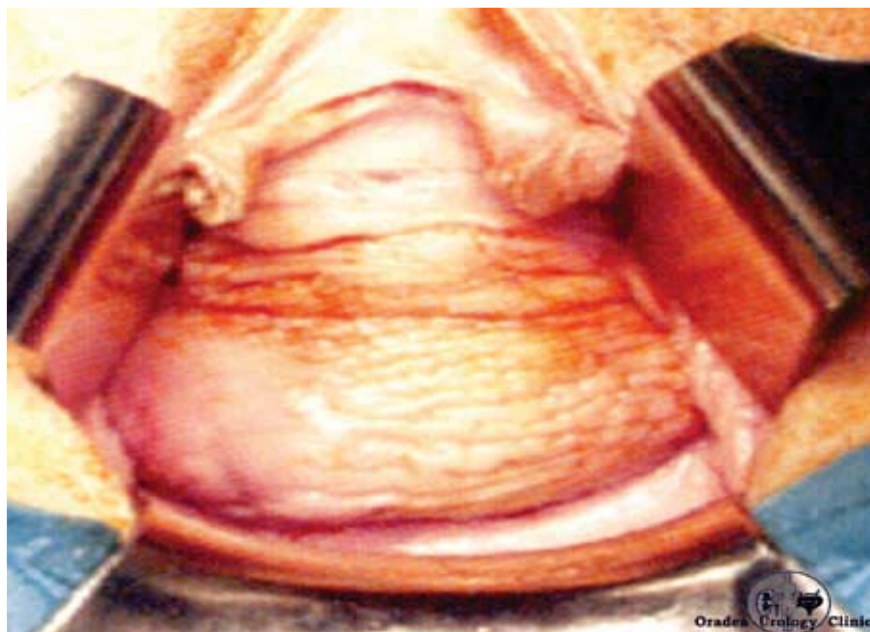


Figure 2. Lateral cystocele

CALENDAR MICȚIONAL

NUME: PRENUME: DATA DEBUT:

În coloana din stânga bifați ora când urinați și notați volumul eliminat
În coloana din dreapta marcați cu o cruce de flecare dată când aveți o pierdere involuntară de urină.

	Luni		Marți		Miercuri		Joi		Vineri		Sâmbătă		Duminică	
	Vol. urinat	Pier-deri	Vol. urinat	Pier-deri	Vol. urinat	Pier-deri	Vol. urinat	Pier-deri	Vol. urinat	Pier-deri	Vol. urinat	Pier-deri	Vol. urinat	Pier-deri
6 - 7h	100	+	150	+	-	X	50	+	250	+	-	+	-	+
7 - 8h	-	+	-	+	100	X	30	+	30	+	120	+	200	+
8 - 9h	-	+	50	+	40	+	-	+	-	+	-	+	50	+
9 - 10h	450	+	30	+	20	+	-	+	200	+	-	+	80	+
10 - 11h	70	+	60	+	-	+	550	+	360	+	50	+	50	+
11 - 12h	40	+	-	+	-	+	40	+	350	+	-	+	175	+
12 - 13h	40	+	-	+	250	+	-	+	125	+	-	+	150	+
13 - 14h	-	+	-	+	-	+	20	+	50	+	75	+	175	+
14 - 15h	-	+	150	+	-	+	30	+	125	+	70	+	100	+
15 - 16h	-	+	-	+	-	+	150	+	100	+	100	+	-	+
16 - 17h	100	+	250	+	-	+	-	+	100	+	100	+	315	+
17 - 18h	100	+	100	+	150	+	150	+	125	+	-	+	330	+
18 - 19h	-	+	180	+	200	+	40	+	-	+	180	+	100	+
19 - 20h	30	+	-	+	200	+	-	+	410	+	-	+	130	+
20 - 21h	40	+	-	+	100	+	20	+	150	+	50	+	-	+
21 - 22h	-	+	220	+	350	+	60	+	50	+	-	+	180	+
22 - 23h	-	+	-	+	-	+	100	+	60	+	150	+	100	+
23 - 24h	60	+	40	+	100	+	-	+	-	+	-	+	-	+
24 - 1h	30	+	40	+	-	+	60	+	-	+	200	+	-	+
1 - 2h	50	+	-	+	60	+	-	+	250	+	-	+	-	+
2 - 3h	60	+	-	+	-	+	-	+	-	+	-	+	-	+
3 - 4h	-	+	-	+	-	+	-	+	-	+	100	+	400	+
4 - 5h	-	+	-	+	-	+	-	+	150	+	-	+	-	+
5 - 6h	-	+	400	+	400	+	350	+	-	+	-	+	-	+

Oradea Urology Clinic

Figure 3. Voiding diary

the forces that pull the vagina ahead (the pubococcygeal muscle), backwards (elevator ani muscles) and down (longitudinal ani muscle). The movement of the bladder neck at the same time with the vagina is due to normal bounds between the basis of the bladder and of the vagina, and also between the inferior third of the urethra and of the vagina. Papa Petros' has managed to categorize vaginal defects anatomically and to establish an operator algorithm. Symptoms like increased frequency and urgency may appear in all of the three compartments, while stress urinary incontinence is specific to the anterior compartment (the alteration of the pubourethral ligaments), and symptoms like nocturia, pelvic pain, sacral pain, are characteristic to the posterior vaginal compartment.

The current surgical treatment of those patients with stress urinary incontinence is based on two models: the intrapelvic position of the bladder neck and of the proximal urethra, and the urethral hammock theory. According to the first theory, the increase of intraabdominal pressure will lead to an equal repartition of this pressure at the bladder and urethra level and thus, the female patient will be continent. Lose of the intrapelvic position of the bladder neck due to the vaginal prolapse (vaginal laxity) will lead to overcome of the intraurethral pressure, clinically represented by stress urinary incontinence. Bringing the neck of the bladder to its original intrapelvic position (Burch colposuspension) would solve the stress urinary incontinence.

The urethral hammock theory is referring to the alteration of the intimate contact between the vagina and urethra (the birth is considered to be a risk factor), the urethra is losing its sustaining during the increase of the intraabdominal pressure. The repairing of the urethral hammock along with the weakened pubourethral ligaments, often combined with prolapse, will solve the stress urinary incontinence by guarantying the action of the three forces which open and close the neck.

There were and still are discussions about when and especially who is supposed to operate the stress urinary incontinence associated or not with the urogenital prolapse. If stress urinary incontinence is considered to be a



Figure 4. The profile urinary cystography



Figure 5. Valves vaginal examination

functional disorder, and pelvic floor disorder is an anatomical alteration, any experienced surgeon in the vaginal surgery (urologist, gynecologist, general surgeon) or a team of surgeons may proceed to the intervention.

Current surgical techniques are based on profound knowledge of the local anatomy [5], strength elements used in repairing the pelvic floor and some anatomical markers that are not always easy to localize during the intervention. The tendinous arch of endopelvic fascia should be palpable on all its length from pubis to ischiadic spine. The ischiadic spine must be found and palpated in order to prevent the interception of the pudental nerve and of the sacrospinal ligament. There must not be forgotten the ischiorectal fossa: limited medial by the elevator ani muscle, lateral by the internal obturator muscle, inferior by the urogenital diaphragm and ventral by the gluteus muscle, a space filled with fat without any important anatomical elements, crossed by devices during interventions with meshes and interventions that fix the vagina to the sacrospinos ligament.

Symptomatology

These patients present increased frequency, stress urinary incontinence, pressure sensations, the feeling of a lump ("something coming down"), the feeling of a foreign body, urgency, dyspareunia, sacral pain, pelvic pain, symptoms that have a major impact on the quality of life and on their lifestyle. A responsible objective exam is essential, being well-known the fact that the patients do not acknowledge the existence of a prolapse until it overcomes the hymeneal membrane. Thus, we find cystocel from a central defect (figure 1), lateral defect (figure 2), mixed cystocel, uterine prolapse, rectocel, enterocel and most often different combinations of those.

Diagnosis

Many times we must demonstrate that what the patient loses represents indeed urine and the loose is through the urethra. There are being used different intravaginal tampon tests and different colorants administrated intravenous or through the bladder. The questionnaire is important, but most important is the voiding diary (figura 3) – where patients



Figure 6

write the number of the micturitions, the urine volume, and the urgency hours, because it may become a mean of re-education of the bladder[6].

The abdominal examination, perineo-genital (bulbocavernous reflex), the emphasize of the urethral hipermobility (Q test), the profile urinary cistography (figure 4), are also important; valves vaginal examination (figure 5) will show

the altered vaginal compartment.

In order to underline the stress urinary incontinence, the patient will be set in gynecological position, the bladder will be filled with 250-300 ml of salt solution at room temperature, and then the patient will be asked to cough.

Stress urinary incontinence is appreciated to be only when the urinary loses appears at the same time with the

increase of intraabdominal pressure. Urinary loses that appear after the patient coughs raise the suspicion of associated detrusor instability. It is compulsory that the test be taken also in standing position (figure 7), and when the patient presents an associated cystocele there must be searched for the occult incontinence (the rise of the cystocele with an applied tampon or a valve, asking the patient to cough).

The ultrasound follows the dynamics of the opening and closing of the bladder neck; videourodynamic, colpocistography, colpocystodefecography, MRI, being expensive explorations with limited indications. Generally, the urodynamic testing is not able to anticipate the answer to the treatment (Artibani W.), and there are authors that consider urodynamic testing at patients with detrusor instability a negative factor for rehabilitation, because after tape surgery also those patients with detrusor instability have 60% chances for rehabilitation [7]. Nevertheless, urodynamic test is a mandatory exploration at patients with backsliding after pelvic surgery, vaginal surgery or radiotherapy.

Up-to-date surgical guidelines for the treatment of urinary incontinence and urogenital prolapse.

Up-to-date surgical treatment.

1. Burch technique (figure 8) – the anchorage of the vagina to the Cooper ligament, still remain an intervention commonly used for the treatment of stress urinary incontinence. There are authors that consider this technique useful only if there is no detrusor instability [8]. Further more, post operator obstructive subvesical phenomena leads in some cases to urethral catheterization.

2. TVT (Tension-free Vaginal tape) procedure (figure 9), published in by Ulmsten in 1995, and then by Papa Petros under the name of IVS (Intravaginal sling) procedure, consists in setting a polypropylene sling under the middle part of the urethra in order to restore the urethral hammock at the site of the compression of urethra during the increase of the abdominal pressure; this will avoid the urinal flow. The sling is lead suprapubic, retropubic, through the space of Rhetzius [9].

3. TOT (Transobturator sling) (figure



Figure 7. The test with the patient in standing position.

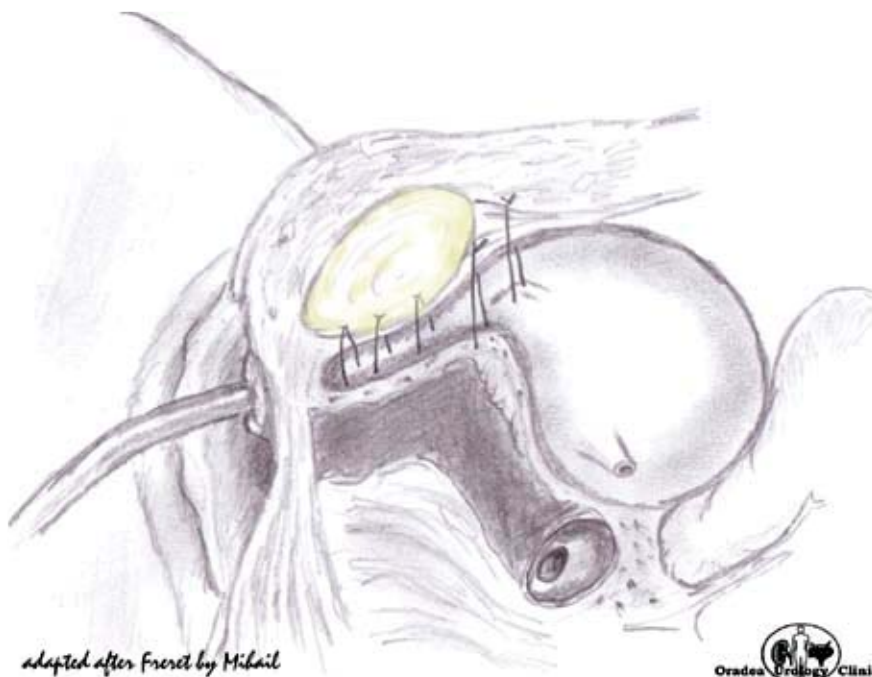


Figure 8. Burch technique

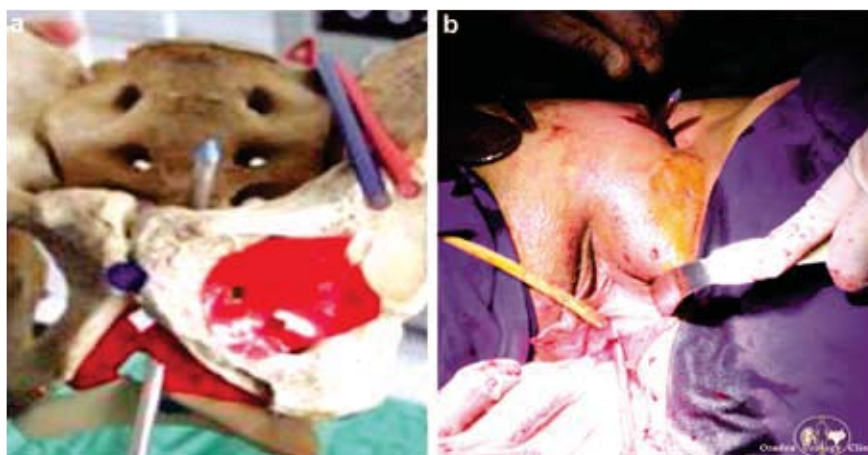


Figure 9. TVT technique

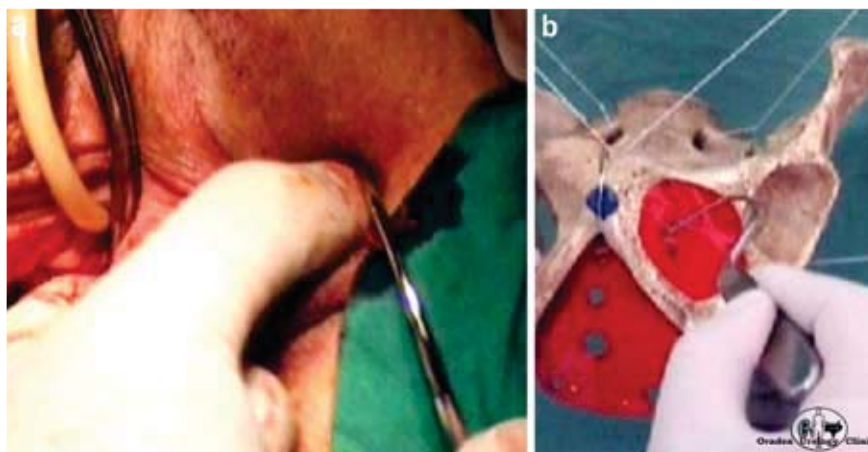


Figure 10. TOT technique

10) procedure was described in 2002 by Delorme. It consists in the obturator placement of the sling, avoiding the blind retropubic passage and, unlike the TVT (where the urethra is being suspended by the sling), in this case the urethra is supported. This will lead to the decrease of the de novo urgency which might appear after this type of procedures [10,11].

4. The reinforcement of the vaginal hammock, the curtailment of the external urethral ligament, represent complementary steps of these sling procedures that are necessary sometimes in order to regain the continence.

5. The polypropylene meshes for the central, lateral and mix cystocele are procedures realized in the spirit of Papa Petros' integral theory, which relates the appearance of prolapse to the alteration of the conjunctive tissue. The classic procedures are frequently followed by relapses; therefore the defects must be reinforced with these polypropylene implants. The arms of the implant must be lead transobturator over the tendinous arch of the endopelvic fascia and the sling must be lead under the bladder on a tension-free manner (figure 11).

6. In order to fix the vagina, repair the rectocele and reinforce the uterosacral ligaments, the arms of the implant are lead through the ischioanal fossa with the implant covering the rectovaginal defect.

7. The Bridge technique (figure 13, 14) strengthens the anterior or the posterior vaginal wall using an autologous vaginal flap which will become included into the normal vaginal mucosa after cauterization.

8. Colposacropexy is a procedure that tightens the vagina, or the vagina and the uterus, in case of vault or uterine prolapse. It is a difficult procedure that modifies the vaginal axis and must be avoided in case of a sexually active patient. To diminish the modification of the vaginal axis, some authors recommend the fixation of the vagina on the S2-S3, but in this case there are severe hemorrhagic risks [12].

9. Le Fort technique is a limited procedure which can only be used at old patients (figure 16). The created septum support the uterus and the laterovaginal spaces assure the drainage of the secretions.

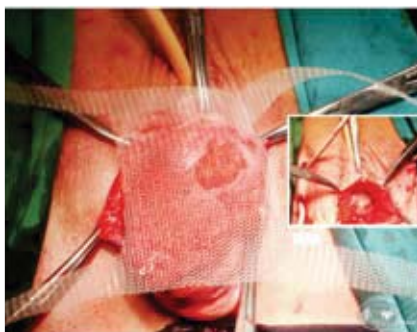


Figure 11



Figure 12



Figure 13. Bridge technique.



Figure 14. Bridge technique.

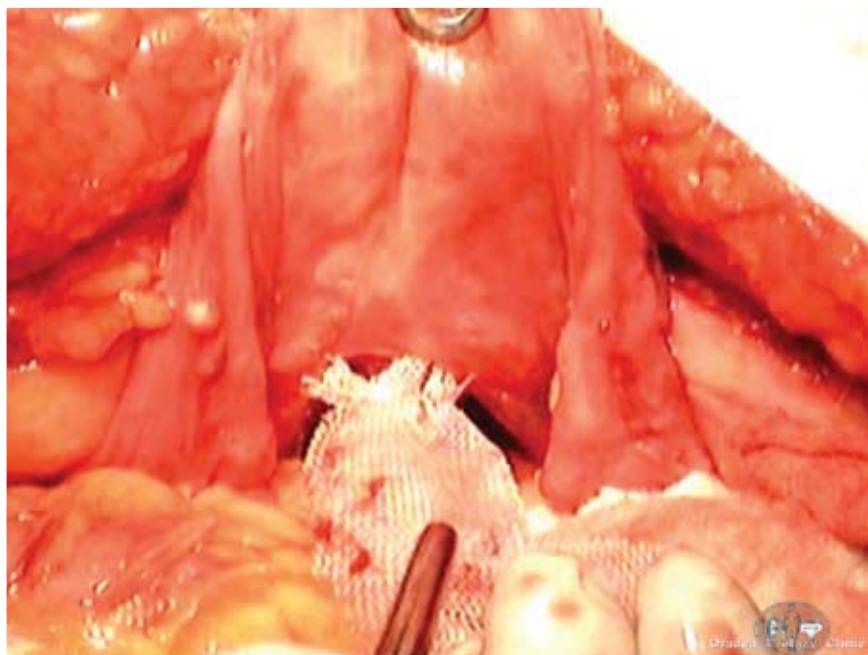


Figure 15. Colposacrohysteropexy.



Figure 16. Le Fort technique.

Complications:

1. Lesions of the bladder and of the urethra – may appear due to some intempestive dissections, not following the anatomical layers or due to wrong use of the devices during procedures.
2. Ureteral lesions – are more frequent

in abdominal hysterectomies due to an upward traction of the ureters during dissections. The ureters can be also intercepted at the cross-over with the uterine artery (to avoid this, the uterine vessels must be approached as closed as possible to the bladder neck), when

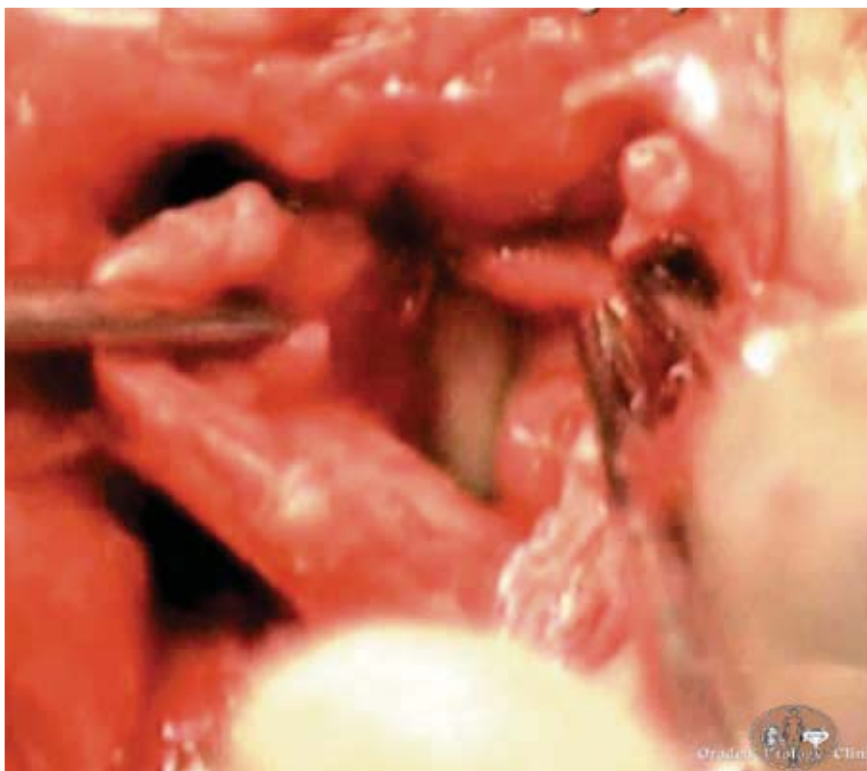


Figure 17. Urethral lesions

this artery is sectioned and ligatured during peritonization. The clinic response of the interception of the ureters is represented by anuria, fever, side pain and ileus

3. Anal lesions – can be avoided using a carefully dissection and by underlining the prerectal fascia. When those lesions

occurs, the rectum must be double layered sutured with vycril. The lesions of the bowel and of the rectum are rare when uterus is well isolated and when there are no intraperitoneal adhesions.

4. Rectovaginal and uretrovaginal fistulae are considered rare incidents but there is a possibility to manifest even

if from the first postoperative week. The early diagnostic allow an efficient treatment before the local inflammation appear. Sadly, the diagnosis is late in the majority of cases, so the procedure need to be postponed for at least 3 months.

5. Urinary retention is usually transient and give up after urethral cateterization, sometimes being necessary to use “a demeure” catheterization for a couple of days. A urethral catheter is normally used from the beginning in the procedures for urogenital prolapse.

6. Hemorrhage. An early abundant hemorrhage indicates a wrong dissection layer; the lack of visibility could lead to the interception of the bladder. A sudden bleeding at the level of the vaginal fornix is a sign in case of uterine artery interception. Commonly, the cauterization must be avoided in order to reduce the death of the tissues and to prevent vesicovaginal fistulae.

7. Dispareuny. Dispareuny appears after an excessive tightening of the vagina – a reason to avoid direct suture on elevators muscles and appear of vicious scars.

8. Recurrent rectocel, vaginal stenosis and vault prolapse are considered rare complications if the diagnosis and surgical indications were correctly applied.

Photos - courtesy Urology Clinic Oradea

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