THE USEFULLNESS OF URODYNAMICS IN UROGYNAECOLOGICAL DISORDERS

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Summary: 286 patients are examined in this paper on the basis of urodynamic assessment. The relation between anamnestic-clinical and urodynamic assessment, the clinical evaluation of female urinary incontinence and the surgical protocol are discussed.

The over wider use of modern urodynamic research has undoubtedly helped towards a better definition of problems concerning the physiology and physiopathology of the low urinary tract. Owing to the urodynamic research, for example, it has been demonstrated how urinary incontinence could be caused by different pathogeneses or pathogenic associations which may require extreme diagnostic accuracy and a careful therapeutic approach. This positive contribution has cancelled superficial and empirical therapeutic approaches.

On the other hand it has made clear that we can reach a correct diagnosis of different urogynaecological pathologies only by means of a previous, complete urodynamic examination of the patient ([1]).

Good diagnostic and therapeutic outcomes put important questions to the clinicians:

– Which patients should undergo urodynamic inspection?
– What purpose should it have?
– Should this condition the choice of the surgical treatment?
– When can a pharmacological treatment be considered as an alternative to a surgical treatment?

The answer to these and other questions is not always, clear, even for the scientist in this field.

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Retrospectively speaking, we consider it useful to try to decide if this examination should be methodically carried out or if it should be restricted only to particular situations ([2]).

In this case we should state when its use may be considered as absolutely essential, when necessary and when not or necessary.

MATERIAL AND METHOD

Our analysis takes into consideration 286 patients. They were all examined at the Urodynamic Center of the Gynaecological Clinic of the University of Padua and were analysed according to the kind of pathology as shown in table 1.

Table 1. – *Urogynaecological disorders: distribution of the cases.*

	Cases
Urinary incontinence (53 associated with static pelvic deficit)	102
Pre and post Wertheim-Meigs controls	57
Neurologic Bladder	8
Abdominal Pelvic Mass	26
Static pelvic deficit (35 associated with urinary incontinence)	146

RESULTS

Considering the clinical habits of patients affected by urinary incontinence, we have noted the presence of such pathology prevalenty in the over-forties and a maximum incidence in the V and VI de-

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cade of life. About 70% of the patients have shown such phenomena after menopause. The maximum incidence was noted after 5-10 years from the ceasing of menstruation.

Likewise, about 50% of the patients who had gone to a specialist had been suffering from incontinente for 5-10 years already.

About 2/3 of these patients noticed some loss of urine when coughing or straining. The 64% of them deemed such urinary losses as light (only some drops) and minimized the problem considering it as normal and acceptable. 12% of them had never borne a child, while 71%, the majority, had already borne 2-3 children. The pathology most often connected was not of urogynecological competence but more often of constipation.

The relation between anamnestic-clinical assessment and the results of the urodynamic examination has provided us with the possibility for interesting considerations (tab. 2).

Table 2. – *Relation between anamnestic-clinical and urodynamic assessment.*

Anamnesis	Urodynamic diagnosis		
	Stress inc. n. 68	Urge inc. n. 21	Mixed inc. n. 13
Stress inc. n. 75	66	3	6
Urge inc. n. 18	0	16	2
Mixed inc. n. 9	2	2	5

The analysis of tab. 2 allows us to verify the close connection between typical symptoms, such as frequency, dysury, nicturia and urge incontinence and the "urge incontinence" syndrome: in order to be confirmed, the documentation of detrusorial involuntary contractions always requires a cystomanometry.

The anamnestic habit, compatible with stress urinary incontinence is, however, less closely connected with urodynamic diagnosis than stress incontinence. We noted in fact, in 12% of the patients, in a cystomanometric phase, an involuntary activity of the detrusor partially or completely responsible for this pathology.

The analysis of the cases anamnestically interesting for mixed incontinence is more complex and the urodynamic confirmation was reached for 55% of them. We can then fix the relative nonconfidence of the anamnestic screening in the case of female urinary incontinence on the non effectuation of urodynamic analysis which undoubtedly causes greater therapeutic failures, but it must be maintained as a reference examination in the cure of incontinent patients even if it disagres with anamnestic data. The urodynamic evaluation represents a reference analysis even if there is disagreement between the clinical and instrumental examination. Its use is absolutely necessary for risk groups, particularly as to the relapsed ones and the women with doubtful anamnesis.

In consideration of the urodynamic and clinical assessment, our Clinic in Padua has for many years been using the therapeutic protocol for urinary incontinence. It is shown on tab. 3.

The use of such a protocol has assured us satisfactory results which can be compared with those shown in world Literature ([3, 4]).

Our incidence in the persistence or relapse of urinary incontinence after operation is about 11% of cases (11/102). This unsuccessful percentage represents those patients on whom we particularly concentrate our attention in order to focus the causes of the failure and thus to reduce its incidence. The analysis of this group of patients has allowed us to focus some clinical-anamnestic risk elements which are shown in tab. 4.

The relapse of urinary incontinence is shown above all in patients with a higher level of parity, with a higher ratio between

Table 3. – *Urinary incontinence: surgical protocol.*

Stress incontinence:		Burch colposuspension
	– I degree prolapse	Burch colposuspension
	– II degree prolapse	Colpohyst.+Ant. colpoplasty
	– III degree prolapse	Colpohyst.+Ant. colpoplasty
	– Cystocele	Anterior colpoplasty
	– Fibromatosis	Laparohyst.+Colposuspension
Mixed incontinence:	– idem + pharmacologic	Therapy
Urge incontinence:		Pharmacologic therapy
	– With prolapse	Colpohyst.+Ant. colpoplasty+ Pharmacologic therapy

Table 4. – *Peristence or relapse of urinary incontinence: risk factors.*

Age
Weigh
Parity
Menopause/Operation Interval
Symptomatology/Operation Interval
Previous pelvic surgery
Concomitant pathologies

weigh and height, with pictures of considerable obesity, with a higher average age and a longer interval between the menopause and the treatment (tab. 5) ([4]).

Table 5. – *Principal anamnestic data of cases of persisting urinary incontinence.*

Weight	76.5 kg
Height	166.6 cm
Parity	4.6
Interval menopause/operation	20.5 years

From a strictly urodynamic point of view, the patients at high risk for persistence or relapse are those in whom we cannot note a deficit of transmission ratio of abdominal pressure onto the urethra, those who show a low urethral closure pressure, those who display at videourodynamic hypomobility of the vesico-urethral junction, and those in whom detrusorial unstable contractions are present. This last aspect brings us directly to the anatomic-clinical situation of association between pelvic statics deficit and urinary incontinence ([5]).

If, on the one hand we have been able to document a transmissive deficit to the urethra in all the cases examined with a microtransducer catheter, on the other hand we have noted in this group a higher incidence of detrusorial instability. This condition is most likely related either to the geriatric age of the patients, or to an anatomic trigger action of the dislocated pelvic organs.

It represent, however, a certain risk factor for persistence: in our case series considering 16 cases surgically treated, the operation could not re-establish continence in 6 patients (37.5%).

It is interesting to note how, in some cases of deficit of pelvic statics without anamnestic evidence of urinary incontinence, a transmissive deficit to the urethra has been equally present in a percentage of 39% of these situations. In virtue of these considerations, we consider treatment of incontinence justifiable, even if unascertainable, when it is associated with prolapse in all cases in which we can note a transmissive deficit to the urethra, even if we cannot affirm that it must have

obligatorily a clinical manifestation in the post-operatory ([6]).

The role of urodynamics is then essential in the diagnostic evaluation of the patient affected by urinary incontinence and/or conditions of deficit of pelvic statics.

From a urodynamic point of view, the necessary awareness before surgery is, to us, represented by the documentation of urethralvesical dislocation, by the knowledge of an eventual associated detrusorial pathology, by the quality of the inner urethral mechanism and by the deficit of the transmission ratio of abdominal pressure on the urethra ([7]).

DISCUSSION

On the grounds of our experience we think that the first operation is the most important, and that the keys for success, particularly for upperpubic approach, are represented by:

a) adequate mobilization of plans;

b) site of the suspension;

c) solidity of the anchorage.

Our ideal patient, consequently, should be characterized by:

1) hypermobility of urethro-vesical junction;

2) transmissive deficit of abdominal pressure to the urethra;

3) good closure urethral pressure.

On the contrary, the risk patient is the one characterized by:

1) absence of transmissive deficit;

2) hypomobility of urethro-vesical junction;

3) poor closure urethral pressure;

4) presence of involuntary detrusorial contractions.

In these conditions the urodynamic analysis represents, furthermore, an extremely valid documentation for the complete and correst information of the patient ([8]).

The study we undertook on vesico-urethral function in women affected by abdomino-pelvic masses, in originated the supposition that several pathologies of the genital organs could involve functional alterations in the lower urinary tract.

This, also on the analogy of utero-vaginal prolapse cases, in which we have documented the highest incidence of detrusorial instability and sphincteric deficit as regards to control group.

At the moment the results of this study have not confirmed our initial hypothesis. In fact we have not documented, using urodynamic investigation, any peculiar condition that presents a different incidence statistically significant as regards to a control group without gynaecological pathologies.

On the contrary the study carried out before and after radical surgery in patients affected by cervicocarcinoma has given interesting and speculative hints ([9]).

The preoperative urodynamic assessment has shown a normal vesico-urethral function in 51 cases (89.4%).

In six cases (10.5%) an involuntary detrusorial activity was demonstrated and five patients were affected by stress incontinence.

In two cases bladder voiding occurred by abdominal straining without any demonstrable detrusor contraction; four cases (7.0%), with urinary habits and bladder capacity (700-800 ml.) characteristic of the so-called "cameloid or lazy" bladder, were identified, but voiding efficiency was normal and these conditions were not regarded as abnormal.

The post-operative evaluation pointed to a modified vesico-urethral function in 30 cases (52.6%). 27 patients showed an almost complete loss of bladder sensation and the disappearance of detrusor contractility, turning from a sustained detrusor voiding to a bladder voiding, carried out exclusively by abdominal straining.

In I case we have reported the appearance of urinary stress incontinence and in 2 cases the presence of detrusor instability which was not shown in the pre-operative evaluation.

The post-operative electromucographic evaluation has shown alterations in the sphincteral function in 14 cases (24.5%): we have noted, in fact, the presence of sphincteral uncoordination, characterized by a loss of the ability to release the striated muscolature of the sphincteral apparatus during micturition.

Consequently, during the contraction phase of the detrusory muscle, the releasing reflex of the external urethral sphincas abnormal.

The corresponding electromyographic tracing was therefore characterized by a sustained increase in the sphincteric activity, reaching spasticity either during the filling-up stage of the bladder and/or during the following stage. Thus the physiological mechanism of micturition was profoundly changed, drawing a picture of functional obstruction. Clinically, this is manifested in upperpubic pain and pathological micturition which was laboured. difficult and characterized by the presence of a relatively high level of post-minctional residue.

The etiopathogenic hypothesis of such anomalies must be attributed certainly, to anatomical and functional damage caused to the peripheral innervation of the lower urinary tract. Particularly interesting and impressive is the function of pelvic ganglia which are found in the connective tissue of the pelvis and in the thickness of the detrusor muscle, and the well-known symphatic-parasymphatic interaction inside the ganglia. It is probable that in the new post-surgical situation some mechanism of modulation between sym and parasymphatic may be involved.

This consists of a modulation in the intensity and duration of the presynaptic motor impulse.

In gynaecological oncology, the evaluation of the pre-operative vesico-urethral function has been shown to be very important, since it allows us to see any possible dysfunction already existing, and it prevents these dysfunctions being attributed to the surgery.

Furthermore it allows us to identify the " At risk " situations, such as the " infrequent voiding syndrome " or anything else that can support major post-Wertheim urinary problems.

The post-operative evaluations confirmed that in most of the cases (undoubtely with some exceptions) the motor and sensitive denervation following radical hysterectomy is partial and the involvement of the vesico-urethral function is essentially mild.

Micturitional habits surely change, due to the reduction or disappearance of the bladder sensation and the detrusor hypoacontractility. Bladder voiding changes from a detrusor activity to an abdominal phenomenon. These interestings hints do not grant us any real possible approach of proved effectiveness to the patients.

Therefore, a contribution to the major dysfunctions seems mainly to be caused by post-operative overdistension and decompensation of a partially denervated detrusor.

This can be minimized by a strict scheduled micturition program and by the patients awareness of her new way of voiding. Our clinical experience is based even on modalities of pharmacological treatment with gangliosides, of physiotherapeutic treatment, and by means of vaginal electrostimulation. It can thus be avoided that a patient, cured of the neoplasia, has to face debilitating problems relating to micturition.

It is obvious that all surgery must be personalized to accord with each patient in order to protect, as far as possible, the anatomic integraty of the nervous structures in the small pelvis.

Work is in progress for identifing better the pre-operative " at risk " situa-

tions, to outlining better the functional post-operative injury, and to relating it to the extension of surgical dissection.

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