

## “SIMULATED OPERATIONS” ARE AS ACCURATE AS URODYNAMICS IN PATIENTS WITH STRESS URINARY INCONTINENCE

### Hypothesis / aims of study

1. To establish a correlation between the urodynamic parameter abdominal leak-point pressure (ALPP) with the simulated operations performed during physical examination in patients with SUI.
2. To compare the maneuvers of simulated operations with the result of the Q-tip test.
3. To correlate the pad test results with simulated operations.

### Study design, materials and methods

From May 2012 to September 2013, 69 women with SUI were enrolled in the study. All underwent simulated operations that consisted of four maneuvers during the physical examination. During the all maneuvers, the physician asked the to patient about her symptoms and looked for urinary leaks. For the maneuver 1, the index finger was applied unilaterally at the pubourethral ligament insertion on the inferior border of the pubis (paraurethral groove side) simulating the plication of the pubourethral ligament and then performing the stress test, that turns to negative when this ligament is loose. In the maneuver 2, a clamp was used to plicate the vaginal wall at the level of the midurethra, simulating the plication of the urethropelvic ligament and performing the stress test and patients stop leaking when this ligament is defective.

In the maneuver 3 the index finger is placed on the sub urethral portion of the mid-urethra, just supporting the urethra with no pressure applied, simulating a tension-free sling and the stress test is performed. If the patient stops leaking, hypermobility is the main component of her SUI condition.

The maneuver 4, the same as maneuver 3, but compressing the midurethra in patients whose maneuver 3 was not able to render them dry. This situation suggests intrinsic sphincter deficiency (ISD).

The Q-tip test for the evaluation of urethral mobility was performed as previously described, considering a rotation angle greater than or equal to 30° as representative of urethral hypermobility. One-hour pad test and multichannel urodynamics were performed as ICS standardization, with special interest in abdominal leak-point pressure (ALPP) results.

We compared the results of simulated operations with the value of PPE, Q-tip test and test pad.

### Results

Twenty-five out of 69 patients presented VLPP in the gray zone (>60 and <90 cm H<sub>2</sub>O) and was not included in the initial evaluation.

A total of 44 patients were analyzed regarding IDS and hypermobility criteria.

There were 14 patients with positive Q-tip test, all of them with ALPP > 90 cm H<sub>2</sub>O.

All but one patient were continent under non-compressive support at midurethra simulated operation (Maneuver 3), as showed in table 1.

Table 1 – Patients with positive Q-Tip test (> 30°) and ALPP > 90 cm H<sub>2</sub>O.

non compressive support at midurethra	N	%
Leakage	1	7,7%
Dry	12	92,3%
Total	13	100%

The mean value of the pad test in this group was 16g.

There were 30 patients with normal Q-Tip test and 6 out of this total presented ALPP < 60 cm H<sub>2</sub>O. All patients in this subset failed the non-compressive support at midurethra simulated operation (Maneuver 3) and all were dry under compressive support at the midurethra simulated operation (Maneuver 4), as showed in table 2.

Table 2 – PPE < 60cmH<sub>2</sub>O and Q-tip test < 30°.

	non compressive support	compressive support
Leakage	6	0
Dry	0	6
Total	6	100%

The mean value of the pad test in this group was significative higher, 25.8 g (p<0.05).

## Interpretation of results

Because several studies showed that the diagnosis of stress urinary incontinence based on history and physical examination may be inaccurate urodynamics have been recommended for more accurate evaluation of these patients (1).

Petros proposed maneuvers to be used with the stress test, called "Simulated operations" not only to improve the diagnosis of the defects of the urethral support but also to predict the outcome of surgical treatment, identifying patients ideal to tension-free slings and patients with IDS requiring different approaches. The "Simulated operations" aims to identify ligament specific defects in the urethral support structures, and represents a practical application of Integral Theory (2,3). They have been used to assess the contribution of a particular structure such as the (pubourethral ligaments, suburethral hammock, and mid urethral support and compression, allowing for identifying not only ligament specific defects but also patients with intrinsic sphincter deficiency (ISD) requiring approach others than tension-free slings.

Our results using multimodal diagnostic tools, demonstrate that it is possible to identify patients with predominant component of hypermobility and those with ISD using the Q-tip test associated with simulated operations. ALPP and pad test supported our findings. Further studies of patients in the gray zone (ALPP between 60-90 cm H2O) are ongoing.

## Concluding message

Intrinsic sphincter deficiency, is a complex condition that can not be defined by single tool or a number. This study showed that simulated operations presented a very good correlation with Q-tip test along with ALPP and pad test. Patients with IDS have significant higher values of pad-test, than patients with SUI due to urethral hypermobility.

Simulated operations are simple and accurate for the identification of patients with ISD when used along with the Q-tip test.

## References

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2. Petros PEP, Woodman PJ. The Integral Theory of continence, *Int Urogynecol J* 19:35-40, 2008.
3. Petros P. Changes in bladder neck geometry and closure pressure after midurethral anchoring suggest a musculoelastic mechanism activates closure, *Neurology and Urodynamics* 22:191-197, 2003.

## Disclosures

**Funding:** None **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Comitê de ética e pesquisa da Plataforma Brasil - Ministério da Saúde (aplicacao.saude.gov.br) (Brazil Platform Committee for Ethics and Research - Ministry of Health) **Helsinki:** Yes **Informed Consent:** Yes