

Pelvic Physical Therapy Distance Journal Club

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The role of transperineal ultrasound in the evaluation of stress urinary incontinence cases.

Turkoglu A, Coskun ADE, Arinkan SA et al. Int Braz J Urol 2022;48:70-7.

Doi:10.1590/S1677-5538.IBJU.2020.1100.

Introduction: 2 mechanisms to measure for SUI are: 1. urethral hyper mobility and 2. intrinsic sphincter deficit. Fascia gives support for urethra. Poor support contributes to SUI due to prohibition of urethral compression. Assessment of bladder neck mobility is part of the eval of SUI. Q tip test is most commonly accepted method for such. Transperineal US has been introduced for eval of mobility of bladder neck and proximal urethra. Limited number of studies look at rotational angles. Most look at degree of urethral angle, post urethrovesical angle and Bladder neck descent. Limited studies about rotational angles. No studies found that compare VAS pain scale for Q tip test vs. US.

Aim/Primary Aim:

1. To evaluate the use of transperineal US for diagnosis of SIU by comparing: a = urethral angle, B = posterior urethrovesicle angle, BND = Bladder neck descent at rest and with Valsalva for continent Women vs Women with SUI and
2. To investigate the correlation of rotational angles with Q tip test and relative patient comfort with each test.

Definitions: 1. **Q-tip test:** to assess bladder neck mobility, use Qtip, inserted into urethra to measure the change angle formed by urethral position at rest and with Valsalva. (NOT same as Cotton Swab test formerly called Q-tip test for vestibular tissue sensitivity). Significant if angle exceeds 16* for this study. Other reports use 20*. (sensitivity 80%, specificity 98%).

2. **SUI:** Involuntary loss of urine with increased IAP. (on effort such as cough or sneeze). Bladder pressure exceeds urethral closure pressure which leads to leakage.

3. **Urethral hyper mobility:** excess mobility of urethra due to either a. Intrinsic sphincter deficiency or b. Poor fascial support of urethra which contributes to decreased compression of urethra. (May have new ICS term).

4. **BND = Bladder neck descent.** Cut off point for dx of SIU is 11.2 mm (90% sensitivity 98% specificity.) May be called Bladder base displacement acc to ICS??

5. **a= urethral angle**
B = posterior vesicle angle
Ra = R alpha = change of urethral angle at rest and with valsalva
RB = R beta

Study Design/Study Format: Prospective observational study. Single observer for US. Different observer for Q tip test.

Method: Patients completed UDI-6, OAB -V8,

Positioned in lithotomy. Comfortably filled bladder 150-200 cc and checked with trans abdominal US volume formula.

Used vaginal probe/transperineal US at pubic symphysis for saggital view (Dietz, et al), to view symphysis pubis, bladder and urethra.

Angle between proximal urethra axis and long axis of syphysis pubic (a angle) and angle btw proximal urethra and posterior bladder wall (B angle) were measured.

Then patient was asked to perform Valsalva via instruction "Push and cough". New angles were recorded and printed out. Differences in angles at rest and Valsalva were recorded as Ra and RB.

Q tip test: different observer from US. Its were asked to rate their discomfort for the 2 methods using 1-10 VAS.

Outcome measures: Urethral angle (a), posterior urethrovesical angle (B), at rest and Valsalva (Ra), (RB) and BND. Second, relationship btw rotational angles Ra & RB, and Q tip test results and pain scores of the tests performed.

Stats done (see study).

Subjects: 100 women, aged 46.83 +/- 8.32 years old.

2 groups: 50 women with SUI, scheduled for surgery.

50 healthy women continent, volunteers from Gyn clinic without UI sx.

Exclusions: completed SUI, pregnant, puerperants, OAB >8, POP beyond hymen, post void residual 150cc, voiding difficulty, UTI, post coital incont. DM, Neurological disease, under age 18, genitourinary surgery, infection, malignancy, drugs for UI.

Results: (see Table 1)

*No signify difference btw its BMI, age, parity, educational status, labor, birth, menopause.

UDI: significant difference existed in UDI btw control and SUI groups.

Angles a & B at rest: no signif difference btw. Control and SUI group. (Interesting that those with UI were not different)

Position of a and B angles after Valsalva: Higher for SUI group. (Urethra was further away from pubic symphysis and Beta Angle = straighter bladder neck.)

Change of angles after Valsalva: Ra and RB : significantly higher for SUI group.

BND: significantly higher for SUI group.

VAS : lower for US.

Cut off points: Ra in dx of SIU more than 16* is best measurement . (80% sensitive, 98% specificity).

BND of more than 11.2mm (90% sensi. 98% specific.) is independent predictor of UI Values with 200mL in bladder. Other studies have different cut off presumable bec. Of different volume in bladder.

Discussion:

To dx SUI, UDI and OAB are used. Urodynamics tests are controversial with uncomplicated SUI. A Reliable and cost effective test is needed.

Hypermobility urethra rotates more posterior-inferiorly and Bladder neck moves lower during Valsalva.

Weakness of this study: non-standardized bladder fullness, probe localization, OR intensity of Valsalva resulting in no consensus about cut off values for SIU with differential diagnosis.

Conclusion/Summary: US is reliable, practical and non invasive method of evaluation of SUI.

Clinical Application- Perineal pelvic floor US is used to scan pelvic floor structures using a transducer placed against the perineum to assess structures at rest, with contraction and with bearing down. PT could record results and use them to help with diagnosis.

Also helps PT with understanding test results.

Lastly, helps with patient education, test result interpretation and what to expect with upcoming tests.

There are different ways to measure, different angles per ICS. More research needs to be done.

List discussion questions -

1. Has anyone placed US tests on patients for SUI? Did they understand the test?
2. What is typical test you receive with SUI clients?
3. What are your thoughts on use of transperineal US for dx tool?

Other References:

ICS report on the terminology for pelvic floor muscle assessment Frawley, H, Shelly, B et al, 2021. NeuroUrology and Urodynamics, 2021; 40:1217-1260.

https://www.physio-pedia.com/Q-tip_Test