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THE TRS CLASSIFICATION SCHEME TO CATEGORIZE AND QUANTIFY BLADDER DYSFUNCTION ON URODYNAMIC FINDINGS

Hypothesis / aims of study
Urodynamic (URD) testing is used to assess lower urinary tract dysfunction. However, most results are descriptive in nature and do not provide an adequate means to communicate or categorize the data. Similar to the TNM classification used for cancers, we propose a simple classification scheme measuring bladder tone (T), reflex excitability (R), and sensitivity (S) to categorize and quantify results of URDs.

Study design, materials and methods
We prospectively analyzed the bladder dysfunction in 121 patients with pelvic pain or lower urinary tract symptoms. Using clinical and URD findings, each patient was grouped into one of five main descriptive categories based on International Continence Society definitions: detrusor overactivity (DO), stress incontinence (SI), mixed DO and SI, detrusor underactivity (DU), and pelvic pain (PP). We then used the TRS system to classify the URD findings and compared the differences in each descriptive category. The classification scheme is shown in the table.

Results
Of the 121 patients, 31 had SI with normal bladder function, 30 had DO, 47 had mixed DO and SI, 11 had DU, and 2 had PP. In comparing DO to SI, DO patients had a higher mean T (0.15 vs. 0.02, respectively), R (1.27 vs. 0.23, respectively), and S (1.73 vs. 0.64, respectively). Mixed DO and SI patients had mean T, R, and S values which fell in between DO and SI patients (0.04, 0.72, 1.11, respectively). DU patients had a lower mean T, R, and S than all other groups (0.02, 0.18, -0.55, respectively), and PP patients had a higher mean S than all other groups (2.5). ANOVA analysis showed statistically significant differences in all of these comparisons ($p < 0.05$).

Interpretation of results
Under the TRS scheme, patients with SI had normal bladder tone, reflex excitability and sensitivity and had values close to $T_0R_0S_0$. Patients with DO had bladder dysfunction, with higher T, R and S scores. Under our scheme, these patients would have a score of $T_1R_1S_1$, on average. Patients with DU had a poorly functioning bladder with poor contractility and sensation. Hence, their score tended to be $T_0R_{-1}S_{-1}$, on average. Lastly, those patients with pelvic pain had normal bladder function, except for increased sensitivity. Their score, on average, was $T_0R_0S_3$.

Concluding message
The TRS scheme provides a simple, uniform method to categorize and quantify bladder dysfunction found on URD testing specifically along the relevant variables of tone, reflex excitability, and sensitivity.

Table – TRS Classification Scheme for URD findings

Value	Definition
Tone (T)	Change in pressure/change in volume prior to voiding
T3	Rise above baseline between 0-100 cc
T2	Rise above baseline between 101-200 cc
T1	Rise above baseline greater than 200 cc
T0	No rise above baseline until contraction occurs
Reflex excitability (R)	Volume at which an involuntary contraction occurs
R3	Less than 100 cc
R2	101 – 200 cc

R1	Greater than 200 cc
R0	Normal contraction between 300-500cc
R-1	No contraction
Sensitivity (S)	Volume at which there is a noxious urge to void
S3	Less than 100 cc
S2	100 – 200 cc
S1	200 – 300 cc
S0	300 – 500 cc; Normal sensation
S-1	Greater than 500 cc or no sensation to void