Turkish Continence Society
ICS Recognised Urodynamics Certification Course

VIDEOURODYNAMICS

Dr. Tufan Tarcan

Videourodynamics (VUDS)

- Standard multichannel urodynamic tests
  - Some pathognomonic findings in patients may be misdiagnosed
- Videourodynamics
  - Radiologic imaging

  +
  - Urodynamic evaluation
- Enhances differential diagnosis
- However;
  - Cost
  - Risk of ionizing radiation

Indications

- VUR
- Anatomic variations of bladder
  - Trabeculation, cellule, diverticulum
  - Filling defects
- Voiding dynamics in patients with POP
- Bladder neck function and coordination during voiding
- Urethral pathology
  - Stricture
  - Diverticulum
- DESD
- Dysfunctional voiding / pelvic floor dysfunction
- Fistulas
- İncontinence

EAU Neurourology Guidelines (2016 March)

Recommendations for urodynamics and uro-neurophysiology

Recommendations	LE	GR
The recording of a bladder diary is advisable.	3	A
Non-invasive testing is mandatory before invasive urodynamics is planned.	4	A
Urodynamic investigation is necessary to detect and specify lower urinary tract (dys-)function and same session repeat measurement is crucial in clinical decision making.	1b	A
Video-urodynamics is the gold standard for invasive urodynamics in neuro-urological patients. If this is not available, then a filling cystometry continuing into a pressure flow study should be performed.	4	A
A physiological filling rate and body-warm saline should be used.	4	A
Specific uro-neurophysiological tests are elective procedures.	4	C

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KONTİNANS DERNEĞİ 2003

ICS

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Video-urodynamics combines filling cystometry and pressure flow studies with radiological imaging. Currently, videourodynamics is considered to provide the most comprehensive information for evaluating neuro-urological disorders.

Level of Evidence (LoE)

Table 1: Level of evidence*	
Level	**Type of evidence**
1a	Evidence obtained from meta-analysis of randomised trials
1b	Evidence obtained from at least one randomised trial
2a	Evidence obtained from one well-designed controlled study without randomisation
2b	Evidence obtained from at least one other type of well-designed quasi-experimental study
3	Evidence obtained from well-designed non-experimental studies, such as comparative studies, correlation studies and case reports
4	Evidence obtained from expert committee reports or opinions or clinical experience of respected authorities

**Modified from CEMB (1).*

Grade of Recommendation (GoR)

Table 2: Grade of recommendation*	
Grade	**Nature of recommendations**
A	Based on clinical studies of good quality and consistency addressing the specific recommendations and including at least one randomised trial
B	Based on well-conducted clinical studies, but without randomised clinical trials
C	Made despite the absence of directly applicable clinical studies of good quality

**Modified from CEMB (1).*

AUA/SUFU Guideline

- Neurogenic Bladder

neurological conditions with or without symptoms and as part of ongoing follow-up when appropriate, in patients with other neurologic disease and elevated PVR or in patients with persistent symptoms. (*Recommendation*, Evidence Strength: *Grade C)*

12. When available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics) in patients with relevant neurologic disease at risk for neurogenic bladder, in patients with other neurologic disease and elevated PVR or in patients with urinary symptoms. (*Recommendation*; Evidence Strength: *Grade C*)

13. Clinicians should perform electromyography (EMG) in combination with CMG with or without PFS in patients with

AUA/SUFU Guideline

- Neurogenic Bladder

Grade A (high quality; high certainty)

Grade B (moderate quality; moderate certainty)

Grade C (low quality; low certainty)

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AUA/SUFU Guideline

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Table 2: AUA Nomenclature
Linking Statement Type to Evidence Strength

Standard: Directive statement that an action should (benefits outweigh risks/burdens) or should not (risks/burdens outweigh benefits) be taken based on Grade A or B evidence

Recommendation: Directive statement that an action should (benefits outweigh risks/burdens) or should not (risks/burdens outweigh benefits) be taken based on Grade C evidence

Option: Non-directive statement that leaves the decision regarding an action up to the individual clinician and patient because the balance between benefits and risks/burdens appears equal or appears uncertain based on Grade A, B, or C evidence

Clinical Principle: a statement about a component of clinical care that is widely agreed upon by urologists or other clinicians for which there may or may not be evidence in the medical literature

Expert Opinion: a statement, chieved by consensus of the Panel, that is based on members' clinical training, experience, knowledge, and judgment for which there is no evidence

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AUA/SUFU Guideline

- LUTS

Evidence Quality: *Grade C*)

19. Clinicians may perform videourodynamics in properly selected patients to localize the level of obstruction, particularly for the diagnosis of primary bladder neck obstruction. *(Expert Opinion)*

AUA/SUFU Guideline

- LUTS

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Equipments

- Multichannel urodynamics

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- Multichannel urodynamics
- C armed fluoroscopy

Equipments

- Multichannel urodynamics
- C armed fluoroscopy
- Contrast media

Equipments

- Multichannel urodynamics
- C armed fluoroscopy
- Contrast media
- Fluoroscopy table

Images

- Before filling
- During filling
- While valsalva maneuver
- During voiding
- After voiding

International Commission on Radiological Protection (ICRP)

Limits

- Radiation workers
  - The average of consecutive five years → 20 mSV
  - Yearly maximum → 50 mSv

- Normal population
  - In a year → 1 mSv

Int Urogynecol J (2013) 24:1547–1551
DOI 10.1007/s00192-013-2062-6

ORIGINAL ARTICLE

Radiation exposure during videourodynamics in women

Ilias Giarenis · Jonathan Phillips · Heleni Mastoroudes · Sushma Srikrishna · Dudley Robinson · Cornelius Lewis · Linda Cardozo

Table 1 Primary indications for videourodynamics (VUDS)

Indication	*n* (%)
Urinary incontinence	106 (40.15)
Pelvic organ prolapse[a]	76 (28.79)
Previous continence surgery	30 (11.36)
Recurrent urinary tract infection	29 (10.98)
Neurogenic bladder	11 (4.17)
Voiding difficulties	9 (3.41)

[a]Pelvic Organ Prolapse Quantification (POPQ) stage≥2

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Table 2 VUDS findings (n=264)

Findings	n
Urodynamic stress incontinence	101
Idiopathic detrusor overactivity	79
Neurogenic detrusor overactivity	10
Bladder diverticulum	7
Dysfunctional voiding	7
Vesicoureteric reflux	4
Bladder hernia	3
Detrusor sphincter dyssynergia	3
Urethral diverticulum	2
Urethral stricture	2
Vesicovaginal fistula	2

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Table 4 Organ absorbed dose for women with normal range BMI ($n=100$)

Organ	Total mean absorbed dose, mGy (SD)
Bladder	1.57 (0.79)
Uterus	1.39 (0.69)
Ovaries	0.90 (0.46)
Colon	0.70 (0.36)
Kidneys	0.50 (0.27)
Bone marrow	0.30 (0.16)
Skeleton	0.28 (0.14)
Liver	0.09 (0.05)

mGy milligray

Limitations of the VUDS

- Some patients are unable to void during VUDS
  - Due to a catheter in the urethra
  - Physical and psychological anxiety
  - Unsuitable voiding environment
  - Voiding position not suitable with normal
  - Crowded staff during the test

To Whom Should We Do

- Neurogenic voiding dysfunctions
- Bladder outlet obstruction
- Congenital genitourinary anomalies
- Patients underwent genitourinary reconstruction