TURP: efficacy and complication

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**Indication**

- Recurrent urinary tract infection (UTI) caused by bladder outlet obstruction
- Recurrent episodes of urinary retention
- Bladder calculi
- Recurrent hematuria caused by bladder outlet obstruction
- Renal insufficiency caused by BPH
- Patient preference
- Failure of medical treatment
TURP

- Monopolar (M-TURP) and bipolar (B-TURP)
- M-TURP perform in glycine
- Energy travel through glycine the body to reach skin pad
- B-TURP perform in normal saline.
- The energy does not travel through the body
- Bipolar circuitry is completed locally.
- Energy is confined between an active (resection loop) and a passive pole situated on the resectoscope tip or the sheath
Efficacy

- analysis of 20 contemporary RCTs with a maximum follow-up of 5 years,
- Qmax improvement (+162%)
- a significant reduction in IPSS (-70%), QoL score (-69%)
- PVR (-77%)
- TURP delivers durable outcomes as shown by studies with a follow-up of 8-22 years.


Efficacy

- The overall re-treatment rates (re-TURP, urethrotomy and bladder neck incision) were 5.8%, 12.3%, and 14.7%, at 1, 5, and 8 years of follow-up.
- Incidence of re-TURP was 2.9%, 5.8% and 7.4%.


Intraoperative Complication

- Bleeding
- TUR syndrome
- Extravasation
- UO injury
Bleeding

Arterial bleeding
- preoperative infection
- urinary retention
- congested gland.

Venous Bleeding
- capsular perforation
- venous sinusoid
Management

- Bleeding require blood transfusion is 2%
- Mauermeyer approach
  - vessels at 5 and 7 o’clock are controlled early
- Nesbit technique
  - aims to first reach the capsule at the 11 and 1 o’clock positions.
- Both approaches indicates no major difference in literature
- Withhold of antiplatelet/ anti-coagulant
- in critical cases, the balloon can be blocked in the bladder (60-80 cc) and put under traction to compress the fossa.
- recto-digital control with compression
TUR syndrome

- 0.8% in recent literature
- Pulmonary oedema + cerebral oedema + hyponatraemia
- Dilutional hyponatremia
- serum sodium <125 mEq/l
- pre-operative hyponatraemia
- resection time >60 mins
- >45g resected (mean is 22g)
- bleeding+/capsular perforation/venous sinus
- high irrigant pressure (increasing from 60cm to 70cm, doubles absorption)
- patient age
TUR syndrome

- mental confusion
- Nausea
- vomiting
- Hypertension
- bradycardia,
- visual disturbances
TUR syndrome

- patient selection (>100cc = open)
- normal Na+ pre-operatively
- keep resection time < 1 hour
- good haemostasis
- avoid excessive hydrostatic pressure (<60cm)
- avoid excessively rapid fluid infusion
- bipolar (TURIS/Gyrus) for large glands
- Stop operation if capsule perforation
TUR syndrome

- early recognition and prompt treatment
- ABC
- ECG
- Stop resection as soon as bleeding points coagulated
- monitoring in HDU or ICU
- Warming blanket
- Check electrolytes immediately and daily
- Restrict oral fluid intake
- Give frusemide 40mg IV
- Give hypertonic saline (1.8%, 3% or 5%) if cerebral oedema present and needs urgent correction
  - Raise by <12mmol/L per day to avoid CPM
Extravasation

- capsule is injured
- the bladder neck is divided
- irrigation fluid is extra-retroperitoneal in most instances.
- Conservative with CBD
- Need open repair if extravasation persistent
UO injury

- large mid-lobes are resected
- ureteral orifice is difficult to identify.
- DJ-stent may be indicated
Sphincteric injury

- Injury usually occurs ventrally (at 12 o’clock)
- Increased risk of sphincteric injury if the veru has already been resected.
- The exact location of the external sphincter should be checked repeatedly.
- Particularly during apical paracollicular resection.
Post-operative complication

- Clot retention
- UTI
- Urine retention
- Incontinence
- Urethral stricture
- Bladder neck contraction
- Retrograde ejaculation
- Erectile dysfunction
Clot retention

- Recurrent or persistent bleeding results clot formations
- require evacuation or even reintervention (1.3-5%)
- if the irrigation fluid does not clear in the recovery room, immediate reintervention with clot evacuation and bleeder coagulation is required
- In refractory bleeding, transfemoral superselective embolization might require
UTI

- Recent literature reported infection rate is 1.7% to 4.0%
- Preoperative bacteuria
- Longer duration of the procedure (>70 min.)
- Preoperative stay longer than two days
- Pre-op CBD
- Treat UTI pre-operatively as indicated
- Pre-op antibiotic prophylasis
Urine retention

- Reported 4.5% rate
- Mainly due to primary detrusor failure
- The indication for re-TURP should be posed with great caution
- If spontaneous voiding is not regained, a UDS should be performed.
- In case of detrusor failure, the chance of spontaneous voiding after a well-done primary TURP following a second TURP is minimal, and the patient should be carefully advised about the situation
Incontinence

- Early incontinence: 30-40% of patients
- Late iatrogenic stress incontinence occurs in fewer than 0.5%
- Early incontinence is usually urge incontinence
- Irritative symptoms from fossa healing and associated UTI
- Detrusor instability caused by long-lasting BPH
- Symptomatic treatment - antimuscalinic
Incontinence

- Incontinence that persists longer than six months requires complete investigation
- Cystoscopy
- Urodynamic evaluation
Causes of incontinence

- sphincter incompetence (30%)
- detrusor instability (20%)
- mixed incontinence (30%)
Incontinence

- Depending on endoscopic and urodynamic findings
- Conservative treatment with pelvic floor exercise combined with TRUS-biofeedback and electrostimulation might be indicated.
- Surgical intervention - slings, bulking agents, artificial urinary sphincter
- The verumontanum should be repeatedly checked during surgery especially during apical resection
- Particular care is necessary when the verumontanum is not visible
Urethral stricture

- The rate of urethral stricture is 3.8% in the literature.
- Meatal strictures usually occur because of an inappropriate relationship between the size of the instrument and the diameter of the urethral meatus.
- Bulbar strictures occur because insufficient isolation by the lubricant causes the monopolar current to leak.
- The gel should be applied carefully in the urethra and along the shaft of the resectoscope.
- The lubricant must be reapplied in cases of longer resection time.
- High cutting current should be avoided.
- An internal urethrotomy must be performed before TURP if there are pre-existing meatal or urethral strictures.
Bladder neck contracture

- Reported rate is 4.5%
- usually after smaller glands (<30 g) are treated. Therefore, the
- indication for TURP in cases of smaller glands should be taken very seriously. A prophylactic bladder
- Bladder neck incision is the treatment
Retrograde ejaculation

- retrograde ejaculation occurs in the majority of patients (53-75%).
- Retrograde ejaculation might be avoided if the tissue around the veru montanum is spared during resection.
- More importantly for younger patients, the indication for TURP should be taken seriously versus medical treatment or a transurethral incision of the prostate.
Erectile dysfunction

- Controversial issue in TURP
- Theoretically, HF-generated current close to the capsule may damage the neurovascular bundles.
- The rate of impotence varies from 3.4 to 32% in the literature
Erectile dysfunction

- Veterans Affairs cooperative study group that compared TURP with watchful waiting.
- After a follow-up of almost three years the proportion of patients who deterioration of sexual performance was 19% in TURP vs. 21% in watchful waiting.
- 3% in each group reported improvement.
B-TURP

- Bipolar TURP (B-TURP) allows performance in normal saline.
- The energy does not travel through the body to reach a skin pad.
- Bipolar circuitry is completed locally
- Energy is confined between an active (resection loop) and a passive pole situated on the resectoscope tip (“true” bipolar systems) or the sheath (“quasi-” bipolar systems).
- B-TURP requires less energy/voltage because there is a smaller amount of interpolated tissue.
B-TURP

- Energy from the loop is transmitted to the saline solution, resulting in excitation of sodium ions to form plasma
- molecules are then easily cleaved under relatively low voltage enabling resection.
- During coagulation, heat dissipates within vessel walls, creating a sealing coagulum and collagen shrinkage.
B-TURP

- Meta-analyses concluded that no clinically relevant differences exist in short-term (up to 12 months) efficacy (IPSS, QoL score and Qmax).
- No differences exist in short-term (up to 12 months) urethral stricture and bladder neck contracture rates.
- B-TURP is preferable due to a more favourable perioperative safety profile (elimination of TUR-syndrome; lower clot retention/blood transfusion rates; shorter irrigation, catheterisation, and possibly hospitalisation times).
- RCT showed no differences in overall sexual function, quantified with IIEF-15 between B-TURP and M-TURP at 12 months of follow-up (erection, orgasmic function, sexual desire, intercourse satisfaction, overall satisfaction).
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<th>Recommendations</th>
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<tr>
<td>M-TURP is the current surgical standard procedure for men with prostate sizes of 30-80 mL and bothersome moderate-to-severe LUTS secondary of BPO. M-TURP provides subjective and objective improvement rates superior to medical or minimally invasive treatments.</td>
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<td>The morbidity of M-TURP is higher than for drugs or other minimally invasive procedures.</td>
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<td>B-TURP achieves short- and mid-term results comparable with M-TURP.</td>
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<td>B-TURP has a more favourable peri-operative safety profile compared with M-TURP.</td>
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<td>TUIP is the surgical therapy of choice for men with prostate sizes &lt; 30 mL, without a middle lobe, and bothersome moderate-to-severe LUTS secondary to BPO.</td>
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