Minimally invasive surgical therapies (MIST) in BPH

Mr Junaid Masood MSc (Urol), FRCS(Urol)
Consultant urological surgeon

BPH (benign prostate hyperplasia)

CHRONIC condition requiring long term management
Affects 30% aged 50-59
Affects 80% aged 70-79

Significant impact on men’s health

- Poor flow
- hesitancy
- straining to pass urine
- incomplete emptying
- nocturia
- storage symptoms (frequency, nocturia, urgency)

Medical Therapies

1. Lifestyle therapies (caffeine, alcohol, fluids)
2. Alpha blockers (Tamsulosin, alfuzosin). **NB sexual side effects**
3. 5 Alpha reductase inhibitors (Finasteride and dutasteride). **NB sexual side effects**
4. Natural therapies (Saw palmetto, lycopene, selenium)

Surgery for BPH: What's the dilemma

Better outcome: IPSS, Qmax, durability but MORE risk

VS

Modest outcome but LESS risk

What risks are patients most worried about?

What would make a MIST successful

- Efficacy- **Does it work?**
- Durability – **Does the effect last?**
- Low risk of morbidity(incontinence, ED, SUI etc..) **Compared to medical therapy and standard techniques**
- Outpatient setting
- Local anesthesia
- rapid recovery
- No/short catheter time

Standard therapies

1. TURP (bipolar, monopolar)
2. Laser prostate surgery (greenlight, HOLEP, ThuLEP)
3. TUIP (Transurethral incision of prostate/BNI)

Improvements following TURP

- IPSS 23 TO 7 (severe to mild) 0-7 mild, 8-19 moderate , 20-35 severe
- QOL 5.2 to 3.6
- Qmax increases 10mls/s
- PVR decreased by close to 100mls

BUT

Retrograde ejaculation 75% (up to 95%)

Poor erections up to 10% (up to 20% was traditionally quoted)

Bleeding needing transfusion or re-operation 2- 10%

Need for reoperation 2- 10%

MIST Therapies

1. Thermo-ablative therapies
2. Mechanical
3. Prostate artery embolization
4. Intra prostatic injections

Thermo-ablative strategies

1. TUMT (Transurethral microwave therapy)
2. TUVP (Transurethral electro-vaporisation of prostate)
3. TUNA. (Transurethral needle ablation of prostate)
4. REZUM (convective water vapor therapy)
5. AQUABLATION

Mechanical

1. UROLIFT
2. TIND
3. INTRAPROSTATIC STENTS

TUMT

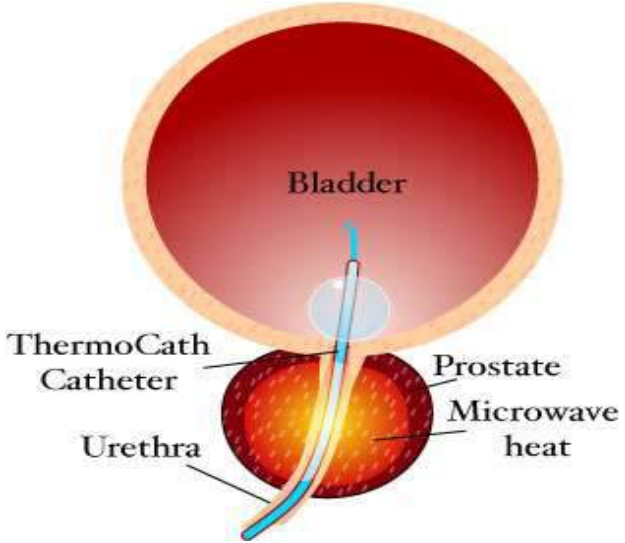
Microwave radiation heat generation to produce coagulative necrosis in prostate tissue in targeted areas
Outpatient procedure

Improves symptoms IPSS 65% (77% TURP)

F/R improves 70% (TURP 119%)

Improved sexual function, less hospital stay,
less hematuria,
Retrograde Ejaculation 21%

High retreatment rates (22%) within 2 years



TUVP

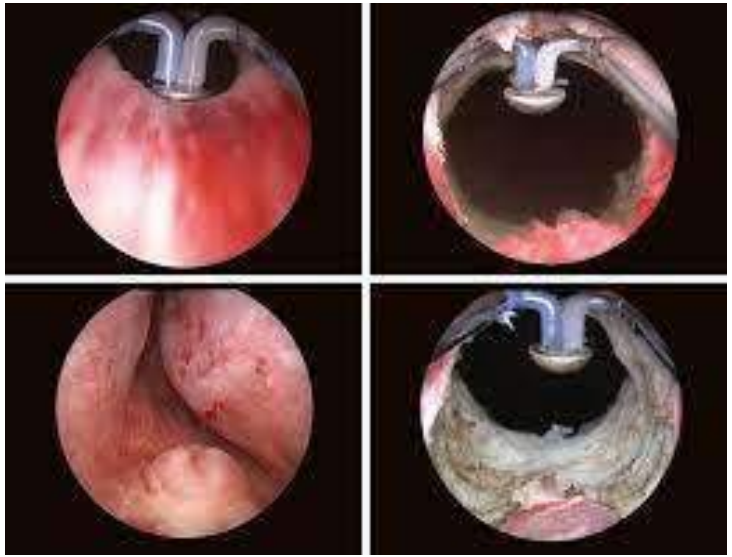
Utilizes heat from monopolar or bipolar high voltage electrical current causing tissue ablation

Symptomatic benefits comparable to TURP

Significant improvement in IPSS and F/R

Less complications

Higher failure rate vs TURP



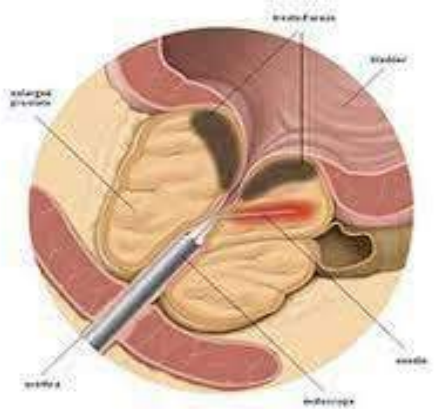
TUNA

A radiofrequency signal passed between 2 electrodes placed in the target prostate tissue causing thermal energy and coagulative necrosis (cell death caused by ischemia)

Improvement in IPSS and F/R at 1 year (significantly less than TURP)

Favorable morbidity profile vs TURP

21% retreatment rate over 5 years



REZUM

Relies on water vapor to deliver energy

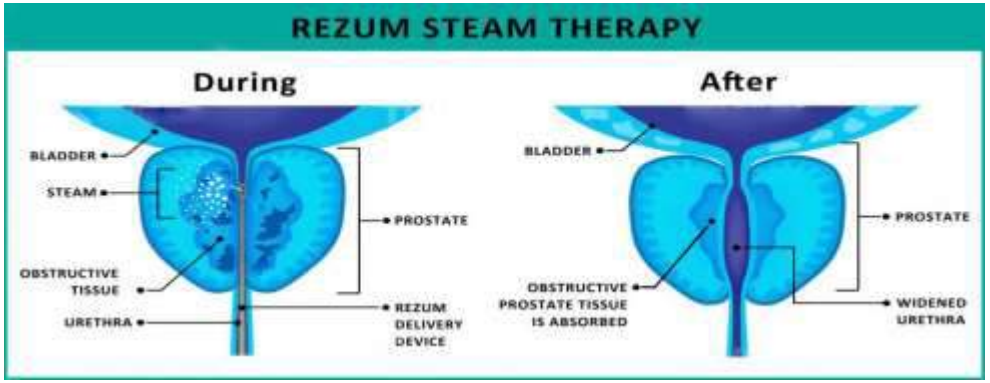
Convective thermal energy travels through interstitium of transitional zone of prostate, disrupting cell membranes with instant cell death and necrosis

LA- outpatient setting

Delivered via a cystoscope

Low risk of sexual dysfunction

Catheter post op- 1 week



Significant reduction in IPSS sustained at 1 year in 50% and increase in F/R

Retreatment rate 10% at 4 years

Aquablation

More novel technique, involves robot assisted hydrodissection of prostate tissue with high velocity saline under transrectal ultrasound guidance

No heat required unless electrocautery for hemostasis

Needs GA

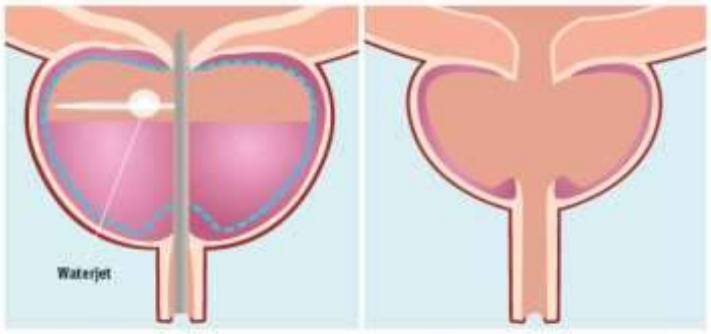
Not office based

6 month post procedure: IPSS 23.1 to 8.6

Q Max 8.6 mls/s to 18.6mls/s

PVR from 91mls to 30mls

PROMISING



Urolift/ PUL (prostatic urethral lift)

Placement of multiple non absorbable monofilament sutures into prostatic urethra through to lateral lobes whilst kept under traction establishing a larger caliber channel

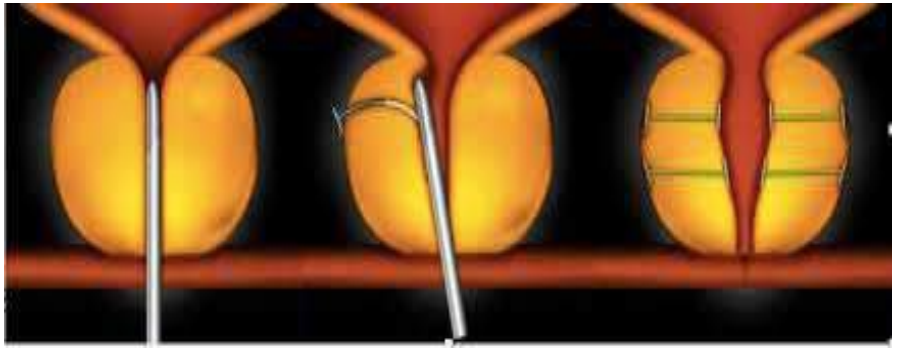
No cutting, heating or removing tissue

Local

Outpatient procedure

Earlier discharge

Earlier return to pre-operative activities



Qmax improvement 4mls/s

IPSS scores improved by 10 points

Sexual and ejaculatory function preserved

TIND (Temporary Implanted Nitinol Device)

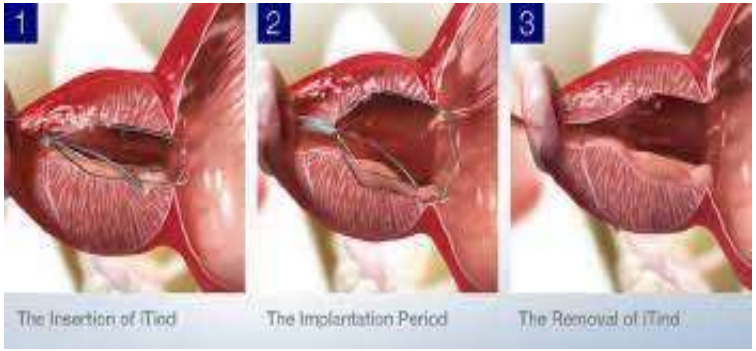
Under LA can be placed for 5 days

Gentle pressure on the tissue and localized ischemia aims to reshape the tissue of the prostatic urethra and bladder neck

No sexual dysfunction

No catheter

Durability in question



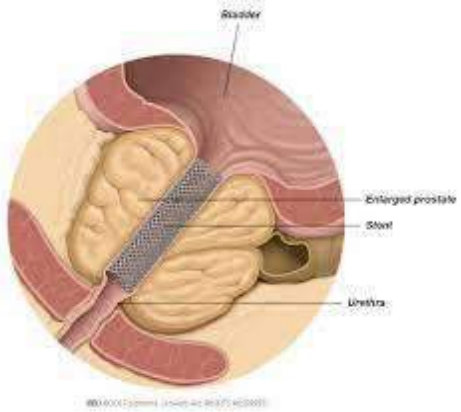
Prostatic stents

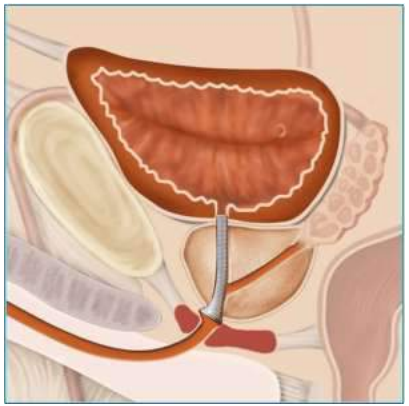
1. Allium

2. Memokath

Sexual function maintained but

Issues with durability
Stent migration
Stent pain
Recurrent Infection





PAE (prostatic artery embolization)

Local/sedation Outpatient procedure

Highly selective injection of an embolic agent into the prostatic arteries performed by interventional radiology

Promising results with efficacy demonstrated at 3 years but TURP results in significantly better IPSS and QOL scores

Significant possible complications

- bladder ischemia from inadvertent embolization
- penile ischemia
- hematuria
- urinary retention

Take home messages

- TURP/ HoLEP are GOLD STANDARD for symptom relief
- MIST Therapies inferior for symptom relief
- MIST therapies better for prevention of sexual dysfunction
- Selection of appropriate treatment based on
  - patient factors
  - severity of symptoms
  - prostate size
  - patient preferences