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The International Continence Society (ICS) report on the terminology for male lower urinary tract surgery

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Abstract

Introduction: In the development of terminology of the lower urinary tract (LUT), due to its increasing complexity, the terminology for male LUT surgery needs to be updated using a male-specific approach and via a clinically-based consensus report.

Methods: This report combines the input of members of the Standardization Committee of the International Continence Society in a Working Group with recognized experts in the field, assisted by many external referees. Appropriate core clinical categories and a subclassification were developed to give a numeric coding to each definition. An extensive process of 14 rounds of internal and external review was developed to exhaustively examine each definition, with decision-making by collective opinion (consensus).

Results: A Terminology Report for male LUT and pelvic floor surgery, encompassing 149 separate definitions/descriptors, has been developed. It is clinically-based with the most common diagnoses defined. Clarity and user-friendliness have been key aims to make it interpretable by practitioners and trainees in male LUT surgery. Figures have not been included to avoid any preference or bias towards a specific procedure.

Conclusions: A consensus-based Terminology Report for male LUT surgery has been produced aimed at being a significant aid to clinical practice and a stimulus for research.

KEYWORDS

lower urinary tract dysfunction, male surgery, terminology

On behalf of the Standardization Steering Committees ICS and the ICS Working Group on the Terminology for Male Lower Urinary Tract Surgery

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1 | INTRODUCTION

The surgical procedures for the lower urinary tract (LUT) vary widely in indications. Even surgeries intended for the treatment of oncological and stone diseases have functional implications that can lead to the need for additional surgeries. Prostate surgeries and other therapies applied to prostate disease have been subject to recent developments and multiple variations with local preferences in technical details and terminologies.

Some procedures have their rationale and origins decades ago, with subtle differences among them. Traditional names and definitions were adopted long before current standardization approaches, leading to historical, conceptual, and practical puzzles and misunderstandings. For many years, a number of different terms have been used to describe surgical procedures even within the same surgical teams in a hospital.

With a plethora of new techniques being introduced the terminology for standardization of names for surgical procedures is becoming more important to facilitate clear communication amongst professionals. Most of these procedures are undertaken by urologists who have their own jargon with imprecise but widely accepted terms. However, nowadays, LUT dysfunctions are treated by various other professionals, so a standardized terminology is required for effective communication and research. Invasive procedures may have a diagnostic or therapeutic intention and often, the same procedure can aim both objectives simultaneously.

No document is available to standardize these terms in a comprehensive methodology encompassing open, laparoscopic and robotic, endoscopic surgeries, and minimally invasive therapeutic options. In general, LUT male surgery classification can be based on etiologies: oncologic, stone disease, and functional procedures. The latter is the focus of this report.

The International Continence Society (ICS) has provided leadership in terminology for LUT dysfunction over decades employing combined or generic reports.

The current report acknowledges that a male-specific terminology for invasive LUT procedures is required for surgical procedures in functional urology. It is envisaged that this report will result in

(i) greater coherency and user-friendliness,
(ii) greater specificity of surgical procedures,
(iii) more accurate communication for clinical and research purposes.

Hence, in a functional and anatomical classification it will be divided into the following sections:

I. urethra
II. prostate
III. badder neck
IV. bladder
V. urinary diversions and reconstructions
VI. vesico-ureteric junction and ureter

Some procedures involving the lower ureter will also be discussed as they happen to have an effect on LUT (dys)function.

The document reviews old but still existing procedures and also the latest approaches with clear worldwide acceptance. Historical practices and methods are defined for the sake of completeness and also because patients may present persistent complaints following historical treatments. Regular updates will be needed and considered in the initial document structure. The report is definitional with additional explanation when judged necessary.

The description of the procedure will be limited to the relevance of terms and expressions. Whenever possible, aliases and synonyms will be commented, and an historical explanation will be given. for example, Millin's prostatectomy versus retropubic transcapsular prostate adenomectomy. Terminology is aligned with previous ICS definitions.

TABLE 1 Total, new, and changed definitions (compared with previous male-inclusive Reports)[1,2]

Section	New definitions/ descriptors	Changed definitions/ descriptors	Total
I. Urethra	29	0	29
II. Prostate	36	0	36
III. Bladder Neck	5	0	5
IV. Bladder	23	0	23
V. Urinary Diversion/reconstruction	34	0	34
VI. Vesicoureteric junction/ureter	22	0	22

Origin: Where a term's existing definition (from one of multiple sources used) is deemed appropriate, that definition will be included and duly referenced. A large number of terms in male LUT invasive procedures, because of their long-term use, have now become generic, as apparent by their listing in medical dictionaries (Table 1).

Able to provide explanations: Where a specific explanation is deemed appropriate to explain a change from earlier definitions or to qualify the current definition, this will be included as an addendum to this paper (*Footnote [FN] 1,2,3....)*. Wherever possible, evidence-based medical principles will be followed.

2 | SECTION I: URETHRA PROCEDURES

2.1 | Urethral assessment or enlargement

2.1.1 | Urethral calibration

Measurement of the diameter of the (distal) urethral lumen with special urethral sounds. ***NEW***

2.1.2 | Urethral dilatation

Distension of a stenotic segment with semi-rigid, rigid dilators, or balloon distention. ***NEW***

2.1.3 | Urethroscopy

Endoscopic visualization of the inner wall of the urethra (mucosa), usually done with a flexible or rigid cystoscope. ***NEW***

2.1.4 | Meatotomy

Incision of the meatus to enlarge the distal urethra to the caliber of the urethral lumen. ***NEW***

2.1.5 | Meatal skin flap technique

After meatotomy, a flap is mobilized from the prepuce or distal penile skin and sutured to the edge of the opened *fossa navicularis*. ***NEW***

Graft technique

After meatotomy, skin, buccal mucosa, or any other suitable tissue is used as a free patch or a tube and sutured into the edge of the fossa navicularis or to substitute the urethra at this level. ***NEW***

2.1.6 | Meatoplasty

Reconstruction of the meatal segment of the urethra for cosmetic or functional purpose**.** ***NEW***

2.2 | Urethral incision

2.2.1 | Urethrotomy

Incision of an urethral stricture.

Blind urethrotomy

(without visual guidance): Opening of the stricture with the use of a special instrument (Otis urethrotome) to perform the incision without direct visualization. ***NEW***

Endoscopic urethrotomy

(direct vision): Opening of the stricture with a cold incision (Sachse urethrotome using mechanical effect) or energy (LASER) under urethroscopy. ***NEW***

2.3 | Transurethral resection of the urethra

Mono- or bipolar electric ablation of intraluminal tissue of the penile or bulbar urethra using a resectoscope and a resection loop or LASER, mostly done for urethral tumors. ***NEW***

2.4 | Sphincterotomy

Transurethral incision of the external urethral sphincter with a mono- or bipolar electric hook or a LASER in patients with fibrotic sphincter stenosis or patients with detrusor-sphincter-dyssynergia. ***NEW***

2.5 | Urethroplasty

Open surgical reconstruction of the posterior (proximal to the external urethral sphincter) or anterior (distal to the external urethral sphincter) urethra. This involves

incision/removal or substitution of the strictured part of the urethral segment followed by urethral reconstruction. ***NEW***

2.5.1 | End-to-end repair

Open surgery for reconstruction of the urethra. After excision of the fibrotic urethral segment, the healthy proximal and distal urethra ends are reconnected by a primary tension-free anastomosis. ***NEW***

2.5.2 | Substitution urethroplasty

Open surgery usually done for the reconstruction of bulbar urethral strictures with a stricture length ≥1.5 cm or penile urethral strictures. After incision of the fibrotic urethral segment, tissue from another part of the body, for example, buccal mucosa, lingual mucosa, or skin (graft/local flap/free flap—see below) are used to cover the incised area. The tissue may be placed dorsally/ventrally or combined (ventral and dorsal grafts). Substitution urethroplasty may be accomplished as a single-stage or as part of a multi (usually two-) stage procedure. ***NEW***

Urethroplasty with graft
The use of free graft for urethral reconstruction usually in urethral stricture disease, in any part of the urethra. ***NEW***

Urethroplasty with flap
The use of flaps for urethral reconstruction of penile urethra stricture disease, local rotational flaps such as preputial skin or local genital skin (e.g., Orandi flap). Flaps are often used in recurrent urethral stricture disease involving the penile urethra and navicular fossa. ***NEW***

Staged urethroplasty
Usully two stage but occasionally additional stages are required in the treatment of urethral stricture. FN 1***NEW***

2.6 | Perineal urethrostomy

Surgical creation of a neomeatus in the perineum. FN 2***NEW***

2.7 | Sling surgery

A synthetic, biological, or composite sling placed ventrally of the urethra to treat stress urinary incontinence. ***NEW*** *(sling already defined)*

2.7.1 | Reposition sling

The sling pulls in and up the bulbous urethra. ***NEW***

2.7.2 | Compressive sling

The sling compresses the urethra against the pubis. ***NEW***

Adjustable slings
The pressure on the urethra can be readjusted over time. ***NEW***

Non-adjustable slings
These cannot be adjusted once inserted in place. ***NEW***

2.8 | Artificial urinary sphincter

Use of a prosthetic device, encircling the urethra which creates occlusion to restore continence. The cuff can be placed in the bulbar uretra or in the bladder neck to restore continence.[3,4] There are a number of different devices available using two or three components with different techniques of implantation. ***NEW***

2.9 | Bulking agents

Endoscopic injection of inert substance into proximal urethral wall to achieve continence by coaptation. ***NEW***

2.10 | Botulinum toxin to external sphincter

Endoscopic injection of toxin into the external sphincter complex. ***NEW***

2.11 | Urethral diverticulectomy

Excision of a pseudo diverticulum (out-pocketing) of urethral mucosa. ***NEW***

2.12 | Urethral prosthesis or stent

Placement of a temporary or permanent synthetic tube splint device in a stenotic urethral segment to avoid restenosis of the urethra or to keep the external sphincter open in detrusor-external sphincter dyssynergia.[5,6] ***NEW***

2.13 | Urethral fistulectomy

Excision of a fistulous segment between the urethral lumen and the exit of the fistula (skin, bowel) and repair/reconstruction of the fistula openings. ***NEW***

3 | SECTION II: PROSTATE PROCEDURES

Partial removal of the prostate (transition zone) for the treatment of benign diseases (e.g., benign prostatic obstruction) or complete removal of the prostate and adjacent tissues for the treatment of malignant diseases (e.g., prostate cancer). The routes to the prostate may be through the urethra, abdomen (transperitoneal), retropubic space (extraperitoneal), perineum or vessels (arteries). The systematics of prostate operations is shown in Figure 1.

3.1 | Transurethral procedures of the prostate

Various prostate operations through the urethra to widen the proximal prostatic urethra by removal or compression of the transition zone. Tissue removal may be immediate or delayed. ***NEW***

3.1.1 | Transurethral procedures with immediate tissue ablation

Transurethral operations with removal of prostate tissue during the operation using different energy sources (electric current, LASERs,[7] or highly focused waterjet) and tissue removal techniques (fragmented, en bloc, or by vaporization), with or without suprapubic trocar to aid bladder irrigation. The resection is limited to the proximal prostatic urethra (resection margin: verumontanum). [FN 3] ***NEW***

3.1.2 | Transurethral resection procedures

Usually done in small to intermediate volume prostates but can be dependent on the experience and resection speed of the operating surgeon.

Transurethral resection of the prostate (TURP)
Fragmented prostate tissue removal using a resection loop and monopolar (m-TURP) or bipolar electric current (b-TURP).[8] ***NEW***

Holmium LASER resection of the prostate (HoLRP). Fragmented prostate tissue removal by using the pulsed 2140 nm wavelength holmium LASER. ***NEW***

Thulium LASER resection of the prostate (ThuRP or TmLRP). Fragmented prostate tissue removal by using the continuous wave thulium LASER with a wavelength between 1940 and 2013 nm. ***NEW***

Aquablation of the prostate. Robot-assisted, fragmented prostate tissue removal by using a powerful waterjet stream (hydrodissection) under transrectal ultrasound control of the prostate.[9] ***NEW***

3.1.3 | Transurethral vaporization procedures

Usually done in small to intermediate volume prostates ($\leq$80 cm^3).

Bipolar transurethral electrovaporization of the prostate (B-TUVP)
Prostate tissue removal by vaporization using high-frequency bipolar electric current.[10] ***NEW***

"GreenLight" LASER vaporization of the prostate (GreenLight-VAP). Prostate tissue removal by vaporization using the 532 nm wavelength KTP (kalium [potassium] titanyl phosphate) or LBO (lithium borat) LASER.[11] ***NEW***

Holmium LASER vaporization of the prostate (HoLAP). Prostate tissue removal by vaporization using the pulsed 2140 nm wavelength holmium LASER. ***NEW***

Thulium LASER vaporization of the prostate (ThuVAP). Prostate tissue removal by vaporization using the continuous wave thulium LASER with a wavelength between 1940 and 2013 nm. ***NEW***

Diode LASER vaporization of prostate (D-VAP). Prostate tissue removal by vaporization using the diode LASER with a wavelength of 940, 980, 1318, or 1470 nm (depending of the used semiconductor).[8] ***NEW***

3.1.4 | Transurethral vaporesection procedures

Usually done in small to intermediate volume prostates ($\leq$80 cm^3).

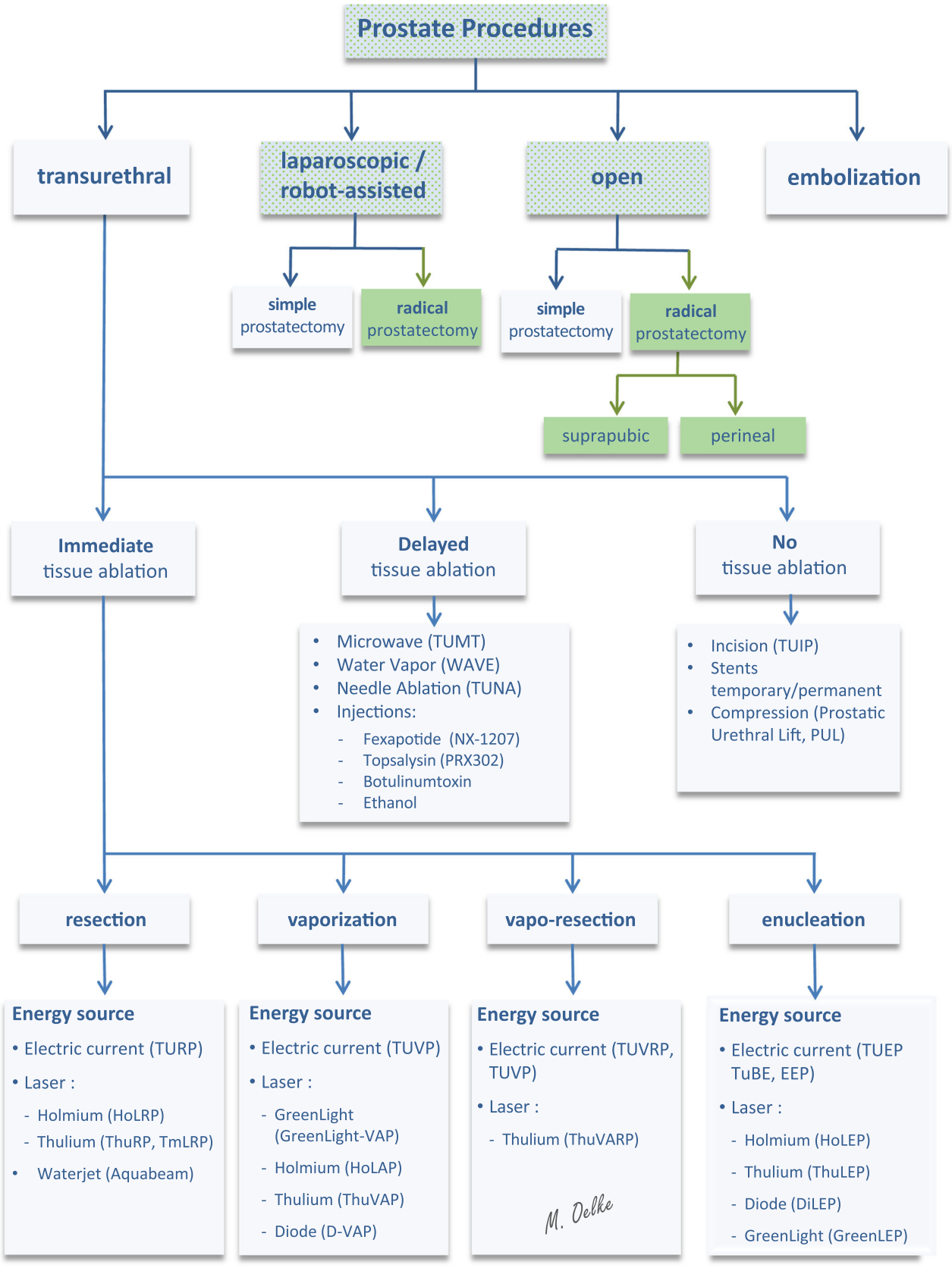

FIGURE 1 Classification of prostate operations for benign (blue) or malignant diseases (green). Abbreviations and systematics are explained in the text

Transurethral vaporesection of prostate (TUVRP, TUVP)
Fragmented prostate tissue removal by electric resection and simultaneous vaporization using a broad resection loop (combination of TURP and b-TUVP). ***NEW***

Thulium vaporesection of the prostate (ThuVARP). Fragmented prostate tissue removal by resection and simultaneous vaporization using the continuous wave Thulium LASER with a wavelength between 1940 and 2013 nm. ***NEW***

3.1.5 | Transurethral enucleation procedures

Usually done in large volume prostates (>80 cm^3) but can also be done in small or intermediate volume prostates.

Transurethral enucleation of prostate (TUEP, TUBE, or EEP)
En bloc removal of the transition zone by using monopolar or bipolar electric current and specifically designed hooks or loops to approach the surgical capsule and blunt peeling of the prostatic adenoma with the shaft of the resectoscope afterwards. ***NEW***

Holmium LASER enucleation of the prostate (HoLEP). En bloc removal of the transition zone and separation of the tissue between the adenoma and surgical capsule by using the pulsed 2100 nm wavelength holmium LASER.[12,13] ***NEW***

Thulium LASER enucleation of the prostate (ThuLEP). En bloc removal of transition zone by using the thulium LASER with a wavelength between 1940 and 2013 nm to approach the surgical capsule and blunt peeling of the prostatic adenoma. The thulium LASER vapo-enucleation (ThuVEP) technique is identical.[14] ***NEW***

Diode LASER enucleation of prostate (DiLEP). En bloc removal of transition zone by using the diode LASER with a wavelength of 940, 980, 1318, or 1470 nm (depending of the used semiconductor) to approach the surgical capsule and blunt peeling of the prostatic adenoma with the shaft of the resectoscope.[15] ***NEW***

"GreenLight" LASER enucleation of the prostate (GreenLEP). En bloc removal of the transition zone using the 532 nm wavelength KTP (kalium [potassium] titanyl phosphate) or LBO (lithium borat) LASER to approach the surgical capsule and blunt peeling of the prostatic adenoma with the shaft of the resectoscope. ***NEW***

3.1.6 | Transurethral procedures with delayed tissue removal

Transurethral prostate operations using different energy sources or molecules which cause tissue damage during the operation and delayed desquamation (sloughing) of prostatic tissue during the next weeks or months, thereby reducing benign prostatic obstruction over time. FN 4 ***NEW***

Transurethral microwave therapy (TUMT)
Destruction and secondary ablation of prostate tissue by transurethral delivery of high-energy microwaves through an intraurethral antenna. Tissue is destroyed by being heated up to temperatures above cytotoxic thresholds (>45°) causing coagulation necrosis.[16] ***NEW***

Convective water vapor energy (WAVE) ablation of the prostate
Destruction and secondary ablation of tissue by transurethral application of water vapor thermal energy injected into the prostate by needles.[17] ***NEW***

NX-1207 injections of the prostate
Destruction and secondary ablation of prostate tissue by transurethral (or transrectal) injection of fexapotide triflutate (NX-1207).[18] FN 5 ***NEW***

PRX302 injections of the prostate
Destruction and secondary ablation of prostate tissue by transurethral (or transrectal) injection of topsalysin (PRX302).[19] FN 6 ***NEW***

Transurethral needle ablation of the prostate (TUNA)
Destruction and secondary ablation of prostate tissue by insertion of needles into the prostate and application of radiofrequency thermal energy causing a coagulation necrosis.[20] FN 7 ***NEW***

Botulinum toxin injections of the prostate
Destruction and secondary ablation of prostate tissue by transurethral (transrectal, transperineal) injection of 100–300 U onabotulinumtoxinA (Botox) or 300–600 U abobotulinumtoxinA (Dysport).[21] FN 8 ***NEW***

Ethanol injections of the prostate
Destruction and secondary ablation of prostate tissue by transurethral injection of dehydrated 95–98% ethanol.[22,23] FN 9 ***NEW***

3.1.7 | Transurethral procedures without tissue removal

Immediate relief of benign prostatic obstruction by incision or compression of prostatic tissue without tissue removal. Minimally-invasive procedures aim to reduce morbidity compared with operations with immediate tissue removal (see Section 1.1). ***NEW***

Transurethral incision of the prostate (TUIP)
Diathermic incision of the transition zone at the 5 and 7 o'clock positions until the prostate capsule from the ureteral orifices until the verumontanum. TUIP works best in small volume prostates ($\leq$30 cm^3). Some surgeons incise unilaterally to reduce the risk of retrograde ejaculation. ***NEW***

Prostatic stents
Transurethral implantation of metallic prostate stents of different shapes and materials. Prostate stents may be implanted temporarily (removable) or permanently (non-removable). The latest development is the iTIND system made out of nitinol which is transurethrally inserted into the prostatic urethra where it expands and incises the prostatic tissue at the 5 and 7 o'clock positions, similar to TUIP. The iTind device is removed 5 days later.[24] FN 10***NEW***

Prostatic urethral lift (PUL)
Transurethral implantation of small anchors (made of nitinol, stainless steel, and a polyester suture) through the entire anterior prostate which compress prostatic tissue against the anatomic prostate capsule to widen the proximal anterior prostatic urethra. PUL works best in small to intermediate volume prostates ($\leq$60–80 cm^3).[25] ***NEW***

3.2 | Open or laparoscopic/robot-assisted procedures of the prostate

3.2.1 | Suprapubic open prostatectomy (prostate adenomectomy, open enucleation of prostate)

Removal of the prostatic adenoma (transitional zone) after lower abdominal wall incision, either through the bladder (Freyer; Hryntschak)[26,27,28] or anterior prostatic capsule (Millin). These operations are usually done in large volume prostates (>80 cm^3). FN 11***NEW***

3.2.2 | Laparoscopic/robot-assisted adenomectomy (enucleation of prostate)

Extraperitoneal or transperitoneal enucleation of prostate with laparoscopic or robotic armamentarium. The enucleation of the prostate adenoma is similar to open enucleation of the prostate and can be done by the transvesical (Freyer; Hryntschak) or transcapsular approach (Millin). These operations are usually done in large volume prostates (>80 cm^3). ***NEW***

Open suprapubic radical prostatectomy
Radical removal of the entire prostate and seminal vesicles via an open, extraperitoneal approach for the treatment of prostate cancer. ***NEW***

Open perineal radical prostatectomy
Radical removal of the entire prostate and seminal vesicles via a perineal approach for the treatment of prostate cancer. ***NEW***

Laparoscopic radical prostatectomy (LRP) or robot-assisted radical prostatectomy (RARP)
Radical removal of the entire prostate and seminal vesicales via a minimally-invasive abdominal extraperitoneal or transperitoneal or even transperineal approach by using trocars and laparoscopic armamentarium for the treatment of prostate cancer. ***NEW***

3.3 | Prostatic artery embolization (PAE)

Destruction and secondary ablation of prostate tissue by uni- or bilateral embolization of prostatic arteries with microspheres. Tissue damage is done during the operation but desquamation (sloughing) of prostatic tissue occurs only during the next weeks or months, thereby reducing benign prostatic obstruction over time. PAE belongs to the secondary ablative procedures, is performed in local anesthesia and is a minimally-invasive procedure which aims to reduce morbidity compared to operations with immediate tissue removal (see Section 1.1).[29] ***NEW***

4 | SECTION III: BLADDER NECK PROCEDURES

Widening of the bladder neck with the intent of relieving bladder outlet obstruction, usually caused by primary bladder neck hypertrophy or secondary neck stenosis.[1]

4.1 | Endoscopic bladder neck incision

Transurethral incisions of bladder neck tissue at the 5 and/or 7 o'clock positions using a metal hook with electric current or a LASER beam. An additional incision can be made at the 12 o'clock position if the bladder neck is still incompletely opened. Some surgeons only incise unilaterally to reduce the risk of retrograde ejaculation. ***NEW***

4.2 | Endoscopic bladder neck resection

Transurethral resection of bladder neck tissue using a metal loop with electric current. ***NEW***

4.3 | Open/laparoscopic/robot-assisted bladder neck incision with Y–V plasty

Complete incision through the anterior bladder neck tissue in Y-shape and resuturing the tissue in V-shape after open or laparoscopic approach of the retropubic space.[2] ***NEW***

4.4 | Open/laparoscopic/robot-assisted bladder neck resection

Complete removal of the entire bladder neck via an open or laparoscopic approach and reconnection of the prostatic urethra to the bladder. ***NEW***

4.5 | Botulinum toxin to bladder neck

This involves injection of botulinum toxin mixed with normal saline to the bladder neck for relief of functional obstruction. FN 12 ***NEW***

5 | SECTION IV: BLADDER PROCEDURES

5.1 | Urethrocystoscopy

Direct visualization of the inner wall (mucosa) of urethra and bladder. It implies a form of endoscopic method. ***NEW***

5.1.1 | Flexible urethrocystoscopy

Direct visualization of the bladder and urethra using a hand operated flexible scope, a thumb lever allows the scope to be deflected as required to visualize the entire bladder. Can be performed under local or general anaesthesia predominantly for diagnostic purposes or can be combined with tissue ablation. ***NEW***

5.1.2 | Rigid urethrocystoscopy

Direct visualization of the bladder and urethra using a rod-lens telescope optical system as well as a rigid sheath. Usually performed under local, regional, or general anaesthesia for diagnostic or therapeutic purposes. ***NEW***

5.2 | Transurethral bladder biopsy

Removal of sample of bladder tissue or lesion by the endoscopic, transurethral route, by means of mechanical or diathermic instrument with diagnostic intent. ***NEW***

5.3 | Transurethral resection of the bladder

Removal of bladder tissue or lesion by endoscopic transurethral route with both, diagnostic and therapeutic intent. Different energy sources can be used (electric energy, LASER). ***NEW***

5.4 | Cystodiathermy

Selective cauterization of areas of the bladder using different energy sources through an endoscope with therapeutic intent. ***NEW***

5.5 | Bladder distension

Infusion of fluid usually saline, under anaesthesia with the intent to stretch or distend the bladder walls in excess of usual physiological capacity. ***NEW***

5.6 | Bladder wall injections

Injection of a pharmaceutical agent into the bladder wall (to the suburothelial space or detrusor), using a needle inserted through the endoscope. ***NEW***

5.7 | Bladder instillations

This involves instillation of a chemical substance via a urethral catheter mostly under local anaesthesia. Usually there are multiple instillations spread over a period of

time. EMDA treatment (electromotive drug administration) aims to increase drug concentration in the vesical wall by iontophoresis and electrophoresis to overcome the urothelial barrier. ***NEW***

5.8 | Cystectomy

Removal of the urinary bladder using a transabdominal open/laparoscopic/robot-assisted approach. Cystectomies are most frequently done for the treatment of bladder cancer but can also be a valid option for treatment resistant bladder pain syndromes or small capacity bladder where minimally invasive treatments have failed. ***NEW***

5.9 | Partial cystectomy

A segment of urinary bladder (e.g., bladder dome) is excised. ***NEW***

5.9.1 | Supratrigonal cystectomy

The entire bladder except the trigone and bladder neck is excised. ***NEW***

5.9.2 | Total cystectomy

The entirety of the organ (urinary bladder) is removed. Usually for benign conditions. ***NEW***

5.9.3 | Radical cystectomy

The entirety of the urinary bladder is removed along with adjacent organs or structures (prostate/seminal vesicles). ***NEW***

5.10 | Bladder diverticulectomy

Excision of a bladder pseudodiverticulum using a transvesical or extra vesical approach, by abdominal open, laparoscopic or robotic assisted techniques. ***NEW***

5.11 | Bladder psoas-hitch

Fixation of bladder wall to the psoas muscle aponeurosis with the intent of reducing tension of a ureter to bladder anastomosis in case of shortened/strictured distal ureter.[30] ***NEW***

5.12 | Boari flap

Use of a segment of bladder wall to create a tube, wich is then anastomosed to the remaining ureter with the intent of substituting the terminal ureter in case of shortened/strictured distal ureter.[30] ***NEW***

5.13 | Cystolithotomy

Surgical removal of a bladder stone through the abdomen and the bladder wall. ***NEW***

5.13.1 | Percutaneous cystolithotripsy/cystolitholapaxy

Minimally invasive fragmentation of the bladder stone by ultrasonic or pneumatic lithotripsy or LASER and removal of the stone fragments via a thin suprapubic channel and an abdominal access sheath. ***NEW***

5.13.2 | Transurethral cystolithotripsy/cystolitholapaxy

Fragmentation of a bladder stone via the transurethral route with urethral removal of fragments. Different energy sources can be used, from direct mechanical to LASER impulses. ***NEW***

5.13.3 | Open, laparoscopic, or robot-assisted bladder stone removal

Complete removal of a bladder stone (without fragmentation) by a suprapubic open or laparoscopic or robotic approach. ***NEW***

5.14 | Fistula repair

Excision and closure of an abnormal passage between two epithelial surfaces.

5.14.1 | Vesico-cutaneous fistula repair

Excision of a fistula between bladder and skin. ***NEW***

5.14.2 | Enterovesical fistula repair

Excisison of a fistula between the bladder and an intestinal segment, usually with reconstruction of the intestinal tube and bladder wall. ***NEW***

5.14.3 | Rectourethral fistula repair

Excision of a fistula between the rectum and (prostatic) urethra, often associated with prostatectomy and temporary artificial anus. ***NEW***

5.15 | Cystorrhaphy

Suture of a laceration, injury, or rupture in the urinary bladder. ***NEW***

6 | SECTION V: URINARY DIVERSIONS AND RECONSTRUCTIONS

Urinary diversion is any surgical procedure that alters the usual passage of urine from the kidneys. It may or may not involve the addition of bowel into the urinary tract, either to reroute the urine or replace/augment the native urinary tract. All urinary diversions and reconstructions can be done as an open procedure, laparoscopically, or robot-assisted. ***NEW***

6.1 | Incontinent diversion

Rerouting of the urine from the urinary bladder, with or without removal of all or part of the urinary bladder. Reconstruction often involves addition of an isolated intestinal segment (stomach/small intestine/colon). Egress of urine is cutaneous and requires containment. Common incontinent diversions include ileal/colonic conduits, ileovesicostomy and ureterostomy. ***NEW***

6.1.1 | Ileal conduit

A rerouting of the urine from the ureters through an isolated segment of terminal ileum to a premarked site on the skin. It is in most parts of the world the most common diversion performed after cystectomy. ***NEW***

6.1.2 | Sigmoid or colon conduit

A segment of sigmoid or colon is used for the urinary diversion where the ileum cannot be used or its appearance as a stoma onto healthy skin in the usual position is not possible. It is usually performed in cases of pelvic irradiation, regional enteritis, or short bowel syndrome. ***NEW***

6.1.3 | Vesicostomy

A method of creating a communication between the bladder and the skin. This procedure is indicated in children with vesicourethral dysfunction (myelomeningocele, posterior urethral valve) who are unable to void or cannot catheterize through the urethra. ***NEW***

6.1.4 | Ileovesicostomy

A communication from the bladder through an isolated segment the ileum to the skin. This method is typically employed with high spinal lesion patients who cannot perform intermittent catheterization. ***NEW***

6.1.5 | Cutaneous ureterostomy

Direct anastomosis of the ureter to the skin. Can be loop or end cutaneous ureterostomy. ***NEW***

6.2 | Continent urinary diversion

Re-routing of the urine from the urinary bladder. Reconstruction usually involves an isolated intestinal segment (stomach/small intestine/colon). Continence mechanisms may utilize existing sphincters (anal, urethral or ileocaecal valve) or be created by tunneling a bowel segment through the bladder/neobladder which requires catheterization. Egress of urine can therefore be via the anus (ureterosigmoidostomy) via the urethra (neobladder) or via a continent catheterisable channel (e.g. Mitrofanoff, Kock pouch, Mainz I). ***NEW***

6.2.1 | Orthotopic

Reconstructed bladder reservoir (entirely or partially constructed from bowel; usually terminal ileum) anastomosed to

the native urethra, usually utilizing the urethral sphincter as a continence mechanism. Diversion may be supratrigonal or total substitution—See 3.2 for more details on bladder substitution reconstructions. [31]***NEW***

6.2.2 | Heterotopic

Reconstructed urine storage organ (neobladder), which is attached directly the to ureter(s). Created entirely from bowel (usually terminal ileum), this neobladder resides outside the pelvis, and requires a catheterisable continent channel to the skin. ***NEW***

Ileal reservoir
This neo-bladder is made entirely of ileum. It is opened at the anti-mesenteric border and stitched back in a de-tubularised manner. ***NEW***

Ileocaecal reservoir
This neo-bladder is constructed from terminal ileum and caecum incorporating the ileo-caecal valve. Again, this isolated piece is de-tubularized to be stitched back together to decrease the peristalsis and increase capacity of the reservoir. ***NEW***

Pouches using large bowel

Indiana pouch. Utilizes a segment of terminal ileum, caecum, and ascending colon. The ureteric implantation along the tinae coli and plication sutures of the ileal stoma conduit for improvement of continence. ***NEW***

Charleston pouch. Utilizes the same bowel segments of Indiana pouch with the addition of the appendix as the cutaneous catheterisable stoma. ***NEW***

Mainz II pouch. Also known as sigma-rectum pouch. Hence the pouch is created from a segment of rectum and sigmoid colon. The Mainz-II can also be utilized to convert a uretero-sigmoidostomy or colonic conduit. ***NEW***

Lundiana pouch. Utilizes the ileocaecal segment with an instussuscepted ileal nipple, including the ileocaecal valve as efferent segment. ***NEW***

Small bowel pouches

Studer pouch. Utilizes a segment of terminal ileum of approximately 54 cm length 25 cm proximal from the ileocaecal valve. The ureteric implantation site is located at the proximal end of a closed ileum segment (chimney usually at the right side with a length of 14 cm), whereas the rest of the ileum is opened at the anti-mesenteric border and stitched back to a plate which is then formed to a neobladder and anastomized to the urethra. ***NEW***

Mansoura pouch. Construction of a detubularized W-shaped ileal reservoir in which two serous lined troughs and two tapered ileal segments are used, one for reflux prevention and the other as a continent outlet. ***NEW***

6.3 | Cystoplasty

A reconstructive procedure involving the addition of a detubularized bowel segment usually to the native bladder. The bladder is bivalved (as a clam) and the isolated piece of bowel is interposed between with the intention of increasing capacity, reducing bladder pressure or treating refractory detrusor overactivity. The outlet of this may be the native urethra (utilizing the intrinsic continence of the external urethral sphincter) or a created abdominal stoma (emptied via catheterization. ***NEW***

6.3.1 | Ileocystoplasty

The piece of bowel used is terminal ileum at least 30 cm from ileo-caecal junction. ***NEW***

6.3.2 | Gastrocystoplasty

An isolated piece of stomach is utilized to fashion an augmented bladder. ***NEW***

6.3.3 | Colocystoplasty

Generally, sigmoid colon is used. ***NEW***

6.3.4 | Ureterocystoplasty

The ureter is used to bridge the gap in a clammed bladder. This is only used if there is a mega ureter post severe long-standing dilatation of the upper tract with the ipsilateral non functioning kidney that will be removed at the same time or previously has been removed. This is mainly utilized in pediatric population. ***NEW***

6.3.5 | Bladder auto-augmentation

Removal or incision of a portion of the detrusor leaving behind the exposed mucosa which bulges out, with the aim of reducing bladder pressures. ***NEW***

6.4 | Supratrigonal/substitutional reconstruction

If an adequate reservoir capacity cannot be obtained using a bowel patch, then a substitution procedure is required. This reconstruction can include the trigone of the native urinary tract or consist of a reservoir created entirely from autologous tissue. These are described separately below. ***NEW***

6.4.1 | Supratrigonal

The dome of the bladder is excised leaving the trigonal plate/bladder base, with attached ureters, to the native urethra. A reservoir (created from an isolated bowel segment) is then fashioned and anastomosed to the trigone. Although a number of bowel segments can be utilized, distal ileum is most commonly selected for reconstruction. A continent catheterisable stoma (usually catheterized via the anterior abdominal wall) can also be used in addition to this reconstructive technique. This technique usually spares the nerves maintaining sexual function. ***NEW***

6.4.2 | Substitutional

This reconstruction does not utilize any part of the native bladder. Following cystectomy, a reservoir is constructed from bowel (usually terminal ileum) and the ureters are anastomosed to this, that is, orthotopic neobladder. The reservoir is then, in turn, anastomosed to the native urethra. ***NEW***

6.5 | Continent stoma

6.5.1 | Appendicovesicostomy (Mitrofanoff)

Use of an isolated appendix on a vascularized pedicle as a catheterizable route of access to the bladder from the skin as an alternative to the urethra. ***NEW***

6.5.2 | Yang–Monti catheterizable channel

A variant of the Mitrofanoff procedure in which a short segment of bowel is reconfigured into a long tube positioned between bladder and skin to permit intermittent catheterization. ***NEW***

6.5.3 | Stapled continent conduit (Bejany and Politano)

A continent colonic urinary reservoir with a tapered distal ileal segment with a gastrointestinal anastomosis stapler with a catheterizable abdominal stoma. ***NEW***

6.5.4 | The gastroileal reservoir (Lockhart)

A continent urinary diversion where segment of stomach and proximal ileum is used to construct the reservoir. ***NEW***

6.6 | Continent heterotopic urinary diversion

6.6.1 | Ureterosigmoidostomy—Sigma rectum pouch (Mainz pouch II)

Modification that involves detubularizing the rectosigmoid colon and reconfiguring the detubularized segment into a spherical shape, while maintaining bowel continuity.[32] ***NEW***

6.7 | Suprapubic catheter

This involves insertion of a catheter via suprapubic route.

6.7.1 | Seldinger technique

The catheter is inserted into the bladder from the suprapubic route by seldinger technique through a specially designed kit. After ensuring the bladder is full a needle is inserted from suprapubic skin directly into the bladder. Once aspiration of urine is confirmed the tract is dilated with a trocar and the catheter is inserted via a specially designed sheath. This process can be aided by

direct endoscopic visualization or under ultrasound guidance. ***NEW***

6.7.2 | Open/laparoscopic/robot-assisted technique

This involves insertion of a catheter into bladder via the suprapubic route under direct visualization of the bladder puncture. This entails incising skin, subcutaneous tissues, and sheath of the anterior abdominal wall. It is ensured the bladder is as full as possible and under direct vision the catheter is inserted into the bladder. ***NEW***

6.7.3 | Button cystostomy

This procedure involves insertion of a gastrostomy button normally used for enteral nutrition into the bladder, using a endoscopic technique. Button cystostomy results in a continent device that permits urine drainage by suprabucic route, as well as suprapubic catheter, resulting more cosmetically acceptable, with less obstacles for sports activities, swimming, improving quality of life especially in children and young adults. ***NEW***

7 | SECTION VI: VESICO-URETERIC JUNCTION AND URETER PROCEDURES

7.1 | Vesicoureteric junction operations

7.1.1 | Ureteral reimplants

Ureteroneocystostomy
Direct reimplantation of the ureter into the bladder, primarily for disease involving the lower third portion of the ureter. ***NEW***

Intravesical *(Politano–Leadbetter) technique.* A ureteroneocystostomy in which the ureter is excised from its attachment to the bladder and reattached intravesically in a more medial and superior position with a new submucosal tunnel.[33] ***NEW***

Extravesical (Lich–Gregoir) techniques. An ureteroneocystostomy where the ureter is mobilized extravesically along the course of the ureter and the detrusor and then divided in the direction of the ureter. The ureter is then anastomosed to the bladder mucosa and the divided detrusor sutured to cover the ureter, creating a submucosal ureteral tunnel.[34] ***NEW***

Ureteral advancement (Glenn–Anderson) reimplantation technique. The submucosal tunnel is made from the original ureteral meatus to the bladder neck—with or without incision of detrusor proximally from the original ureteral orifice—allowing the ureter to follow its natural course without the risk of folding or obstruction of the ureter.[35] ***NEW***

Cross-trigonal (Cohen) technique. A submucosal ureteral tunnel is created transtrigonally, allowing the new ureteral orifice to be created around the contralateral ureteral orifice. ***NEW***

Intra–extra vesical technique (Paquin). A type of ureteroneocystostomy in which the ureter is excised from its attachment to the bladder and reattached in a more posteromedial position. ***NEW***

7.1.2 | Ureterocele incision/resection

This involves endoscopic resection/incision of the ureterocele. ***NEW***

7.1.3 | STING (subtrigonal injection of inert substance) procedure

This entails injection of an inert substance via endoscopic technique at the vesico-uretric junction to treat reflux. Teflon was initially used but other inert substances can be used alternatively. ***NEW***

7.1.4 | Ureter procedures

Ureteroscopy
Upper urinary tract endoscopy performed with a semi rigid or flexible endoscope passed through the urethra, bladder, and then directly into the upper urinary tract. ***NEW***

Unilateral/bilateral retrograde pyelography
Evaluation of the ureter by injection contrast on either side and undertaking live fluoroscopy to delineate the anatomy of the ureter. ***NEW***

Endoluminal stents (ureteral stenting)
Threading a thin tubular catheter into segments of the ureter, either down into the bladder internally, or to an external collection system, through the skin (percutaneously), or through the bladder via a cystoscope. Stents consist of an elongated body portion and a retention module. ***NEW***

Ureterolysis
Mobilization and freeing of the ureter by surgical displacement of the ureters from the surrounding disease/adhesions, or from retroperitoneal fibrosis process with lateral/intraperitoneal transposition and/or omental wrapping of the involved ureter. ***NEW***

Ureterolithotomy
Open, laparoscopic or robot-assisted removal of a calculus lodged in the ureter through a direct incision of ureter over the calculus. ***NEW***

Endoureterotomy
Endoscopic incision of a benign ureteral lesion or ureteroenteric strictures. ***NEW***

Ureteroureterostomy
An end-to-end anastomosis of the segments of the same ureter, with excision of the intervening injured, tumor, or scarred ureter. Transperitoneal ureteroureterostomy is a special urinary reconstruction with side-to-end anastomosis of the injured ureter from one side across the peritoneal cavity under the mesentery of the intestine to the healthy ureter on the opposite side. ***NEW***

7.1.5 | Ureteroplasty

Any surgical reconstruction of the ureter. ***NEW***

Graft ureteroplasty
Use of buccal mucosa, preputial skin, and bladder mucosa to graft partially obliterated or defective ureter. ***NEW***

Flap ureteroplasty
Use of bladder mucosa or bowel to substitute partially obliterated or strictured ureter. ***NEW***

Ileal ureteric replacement
A segment of ileum is used to replace the damaged ureter. ***NEW***

7.1.6 | Anastomosis to a bowel segment

The Bricker technique
Spatulating and anastomosing each ureter to the serosa of the bowel segment separately. ***NEW***

Wallace I (66) surgical technique
Both ureters are spatulated to the same length. Their medial walls are anastomosed together, and the free edges of the newly conjoined ureters are then anastomosed to the proximal end of an open bowel segment. ***NEW***

Wallace II (69) technique
Head-to-tail anastomosis: Blood supply is protected by suturing the apex of one ureter to the end of the other. The posterior medial walls are sutured together, and then the ends and lateral walls are sutured to the bowel segment. ***NEW***

FOOTNOTES

FN 1: The first stage involves incising the penile urethra ventrally, excising the stricture segment comple tely and applying an inlay graft (often oral mucosa graft). A period of at least 4–6 months is required to allow adequate vascularization of the graft before the final stage of the repair requiring tubularisation of the graft. Occasionally an intermediate stage is required with additional graft inlay.

FN 2: The word boutonnière is frequently used as a synonym.

FN 3: LASER energy aims to reduce the intra- and postoperative blood loss, even in larger prostates. Different LASER wavelengths are available, producing an array of resection, thermal vaporization, or enucleation of prostatic tissue. Enucleation techniques are a combination of blunt dissection and judicious use of electric or LASER energy to separate the prostate adenoma from the underlying surgical capsule. The adenoma tissue is pushed into the bladder and has to be retrieved by morcellation/resection at the end of the procedure.

FN 4: These procedures are also known as secondary ablative procedures, are minimally-invasive and aim to reduce morbidity compared to operations with immediate tissue removal (see Section 3.1.1). These procedures are usually done in small to intermediate volume prostates ($\leq$60–80 cm^3).

FN 5: The procedure is currently under clinical evaluation.

FN 6: The procedure is currently under clinical evaluation.

FN 7: The procedure is not in routine use anymore in most parts of the world.

FN 8: The procedure is no longer recommended because of the poor outcome results

FN 9: The procedure is no longer recommended because of the poor outcome results.

FN 10: Elderly men with multiple comorbidities may be unfit to undergo surgical management of benign prostatic obstruction and, therefore, are only suitable for minimal-invasive procedures without anesthesia.

FN 11: While the term "simple prostatectomy" has been used synonymously for open adenomectomy or open enucleation of the prostate, it is misleading because only the hyperplastic adenomatous and not the entire prostate are removed. The nonhyperplastic peripheral and central prostatic zones as well as the anterior fibromuscular stroma are not removed and the prostatic capsule and seminal vesicles are also left in situ. In the era of prostatectomy for prostatic malignancy, use of the term "simple prostatectomy" should be discouraged to avoid confusion.

FN 12: This is still an experimental technique.

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This document was initiated at ICS Tokyo (BH, LA-M, RH—September 2016) and formalized in London (June 2017—LA-M, RH Co-Chairs). Working Group (WG) live meetings have been held in Florence (September 2017), Philadelphia (August 2018) and Gothenburg (September 2019). It has involved 14 rounds of full review, by coauthors, of an initial draft (LA-M, RH). Formal editing and formatting then occurred (December 2019, January 2020—MO, BH) to create Version 12. Following external review (four experts—Ricardo Pereira, Rui Almeida Pinto, Howard Goldman, and Tufan Tarcan). There have been a further two rounds to review the comments made. We thank the other colleagues who have provided comments on the website reviews. Sign-off has included Standardization Steering Committee (V14) and the ICS Board (V15). The document (V16) will be published in Neurourology and Urodynamics.

This document and all the ***NEW*** definitions will be uploaded to the ***ICS GLOSSARY*** (www.ics.org/glossary) where immediate electronic access to definitions and document download is available.

AREAS FOR FURTHER RESEARCH

As this document was prepared, some difficulties arose on classifying the latest advances on prostatic procedures as they belong to entirely new approaches.

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REFERENCES

1. Jonas U, Petri E, Hohenfellner R. Indication and value of bladder neck incision. *Urol Int*. 1979;34(4):260-265. https://doi.org/10.1159/000280271
2. Granieri MA, Weinberg AC, Sun JY, Stifelman MD, Zhao LC. Robotic Y-V Plasty for recalcitrant bladder neck contracture. *Urology*. 2018;117:163-165. https://doi.org/10.1016/j.urology.2018.04.017
3. Scott FB. The artificial urinary sphincter: review and progress. *Med Instrum*. 1988;22(4):174-181.
4. Hajivassiliou CA. The development and evolution of artificial urethral sphincters. *J Med Eng Technol*. 1998;22(4):154-159. https://doi.org/10.3109/03091909809032533
5. Chartier-Kastler EJ, Thomas L, Bussel B, Chancellor MB, Richard F, Denys P. A urethral stent for the treatment of detrusor-striated sphincter dyssynergia. *BJU Int*. 2000;86(1):52-57. https://doi.org/10.1046/j.1464-410X.2000.00720.x
6. Badlani GH, Press SM, Defalco A, Oesterling JE, Smith AD. Urolume endourethral prosthesis for the treatment of urethral stricture disease: long-term results of the North American multicenter urolume trial. *Urology*. 1995;45(5):846-856. https://doi.org/10.1016/S0090-4295(99)80093-4
7. Zhang X, Shen P, He Q, et al. Different lasers in the treatment of benign prostatic hyperplasia: a network meta-analysis. *Sci Rep*. 2016;6:23503. https://doi.org/10.1038/srep23503
8. Razzaghi MR, Mazloomfard MM, Mokhtarpour H, Moeini A. Diode laser (980 nm) vaporization in comparison with transurethral resection of the prostate for benign prostatic hyperplasia: Randomized clinical trial with 2-year follow-up. *Urology*. 2014;84(3):526-532. https://doi.org/10.1016/j.urology.2014.05.027
9. Gilling P, Anderson P, Tan A. Aquablation of the prostate for symptomatic benign prostatic hyperplasia: 1-year results. *J Urol*. 2017;197(6):1565-1572. https://doi.org/10.1016/j.juro.2017.01.056
10. Kaplan SA, Te AE. Transurethral electrovaporization of the prostate: a novel method for treating men with benign prostatic hyperplasia. *Urology*. 1995;45(4):566-572. https://doi.org/10.1016/S0090-4295(99)80044-2
11. Wosnitzer MS, Rutman MP. KTP/LBO laser vaporization of the prostate. *Urol Clin North Am*. 2009;36(4):471-483. https://doi.org/10.1016/j.ucl.2009.08.004
12. Gilling P. Holmium laser enucleation of the prostate (HoLEP). *BJU Int*. 2008;101(1):131-142. https://doi.org/10.1111/j.1464-410X.2007.07341.x
13. Elzayat EA, Habib EI, Elhilali MM. Holmium laser enucleation of the prostate: a size-independent new "gold standard". *Urology*. 2005;66(5 Supl.):108-113. https://doi.org/10.1016/j.urology.2005.06.006
14. Herrmann TRW, Bach T, Imkamp F, et al. Thulium laser enucleation of the prostate (ThuLEP): transurethral anatomical prostatectomy with LASER support. Introduction of a novel technique for the treatment of benign prostatic

obstruction. *World J Urol*. 2010;28(1):45-51. https://doi.org/10.1007/s00345-009-0503-0
15. Yang SS, Hsieh CH, Lee YS, Chang SJ. Diode laser (980 nm) enucleation of the prostate: a promising alternative to transurethral resection of the prostate. *Lasers Med Sci*. 2013;28(2):353-360. https://doi.org/10.1007/s10103-011-1046-3
16. Murayama K, Hisada KI. Transurethral microwave thermotherapy for benign prostatic hyperplasia. *Hinyokika Kiyo*. 2000;46(11):799-802.
17. Woo HH, Gonzalez RR. Perspective on the Rezūm® system: a minimally invasive treatment strategy for benign prostatic hyperplasia using convective radiofrequency water vapor thermal therapy. *Med Devices (Auckl)*. 2017;10:71-80. https://doi.org/10.2147/MDER.S135378
18. Lusuardi L, Kunit T. An evidence-based review of NX1207 and its potential in the treatment of benign prostatic hyperplasia. *Res Reports Urol*. 2014;6:67-70. https://doi.org/10.2147/rru.s46047
19. Elhilali MM, Pommerville P, Yocum RC, Merchant R, Roehrborn CG, Denmeade SR. Prospective, randomized, double-blind, vehicle controlled, multicenter phase IIb clinical trial of the pore forming protein PRX302 for targeted treatment of symptomatic benign prostatic hyperplasia. *J Urol*. 2013;189(4):1421-1426. https://doi.org/10.1016/j.juro.2012.11.003
20. Schulman CC, Zlotta AR. Transurethral needle ablation of the prostate for treatment of benign prostatic hyperplasia: early clinical experience. *Urology*. 1995;45(1):28-33. https://doi.org/10.1016/S0090-4295(95)96260-3
21. Chuang YC, Chancellor MB. The application of botulinum toxin in the prostate. *J Urol*. 2006;176(6 Pt 1):2375-2382. https://doi.org/10.1016/j.juro.2006.07.127
22. Goya N, Ishikawa N, Ito F, Kobayashi C, Tomizawa Y, Toma H. Transurethral ethanol injection therapy for prostatic hyperplasia: 3-year results. *J Urol*. 2004;172(3):1017-1020. https://doi.org/10.1097/01.ju.0000134884.18722.9c
23. Goya N, Ishikawa N, Ito F, et al. Ethanol injection therapy of the prostate for benign prostatic hyperplasia: preliminary report on application of a new technique. *J Urol*. 1999;162(3):383-386. https://doi.org/10.1016/S0022-5347(05)68565-5
24. Porpiglia F, Fiori C, Bertolo R, et al. 3-Year follow-up of temporary implantable nitinol device implantation for the treatment of benign prostatic obstruction. *BJU Int*. 2018;122(1):106-112. https://doi.org/10.1111/bju.14141
25. Roehrborn CG, Barkin J, Gange SN, et al. Five year results of the prospective randomized controlled prostatic urethral L.I.F.T. study. *Can J Urol*. 2017;24(3):8802-8813.
26. Freyer PJ. Total enucleation of the prostate for radical cure of enlargement of that organ: a further series of 119 cases of the operation. *Br Med J*. 1907;1(2410):551-555. https://doi.org/10.1136/bmj.1.2410.551
27. Millin T. Retropubic prostatectomy: a new extravesical technique. Report on 20 cases. *Lancet*. 1945;2(6380):693-696. https://doi.org/10.1016/S0140-6736(45)91030-0
28. Yuh B, Laungani R, Perlmutter A, et al. Robot-assisted Millin's retropubic prostatectomy: case series. *Can J Urol*. 2008;15(3):4101-4105.
29. Pisco JM, Pinheiro LC, Bilhim T, Duarte M, Mendes JR, Oliveira AG. Prostatic arterial embolization to treat benign prostatic hyperplasia. *J Vasc Interv Radiol*. 2011;22(1):11-19. https://doi.org/10.1016/j.jvir.2010.09.030
30. Stein R, Rubenwolf P, Ziesel C, Kamal MM, Thüroff JW. Psoas hitch and boari flap ureteroneocystostomy. *BJU Int*. 2013;112(1):137-155. https://doi.org/10.1111/bju.12103
31. Nagele U, Anastasiadis AG, Stenzl A, Kuczyk M. Radical cystectomy with orthotopic neobladder for invasive bladder cancer: a critical analysis of long-term oncological, functional, and quality of life results. *World J Urol*. 2012;30(6):725-732. https://doi.org/10.1007/s00345-011-0649-4
32. Fisch M, Wammack R, Hohenfellner R. The sigma rectum pouch (Mainz pouch II). *World J Urol*. 1996;14(2):68-72. https://doi.org/10.1007/BF00182560
33. Steffens J, Langen PH, Haben B, Hiebl R, Steffens L, Polsky MS. Politano-Leadbetter. *Urol Int*. 2000;65(1):9-14. https://doi.org/10.1159/000064827
34. Leblanc B, Williot P. Lich-Gregoir ureteroneocystostomy: experience of a North-American pediatric center. *Ann Chir*. 1995;49:685-688.
35. Glenn JF, Anderson E. Technical considerations in distal tunnel ureteral reimplantation. *J Urol*. 1978;119(2):194-198. https://doi.org/10.1016/S0022-5347(17)57432-7

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