Enucleation is enucleation is enucleation is enucleation

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Abstract The latest update of the *EAU Guidelines on Management of Non-Neurogenic Male Lower Urinary Tract Symptoms, incl. Benign Prostatic Obstruction* in 2016 announced a novel acronym for transurethral Endoscopic Enucleation of the Prostate (EEP). This was inspired by a meta-analysis on randomized controlled trials on Holmium Laser Enucleation of the Prostate (HoLEP) and bipolar enucleation versus open simple prostatectomy. EEP codes for the common ground of both techniques: “anatomical enucleation.” Although study quality with regard to the availability of long-term randomized controlled trials is at the moment mostly available for HoLEP, and bipolar enucleation, the existing data of all other enucleating techniques that have been demonstrated to perform anatomical enucleation as well should also be summarized under the same term. This editorial is a call for embracing this acronym of EEP for all anatomical enucleating techniques in order to serve for the transition from the age of TURP and open prostatectomy toward the age of EEP.

Editorial,

The great merit of holmium laser enucleation of the prostate (HoLEP) is to have laid out the red carpet for transurethral endoscopic enucleation of the prostate. In the wake of HoLEP, which has entered the stage of the urological world by Gilling and Fraundorfer [1], transurethral bipolar/plasmakinetic enucleation of the prostate (Pkep)

followed in 2004 [2], then later in the end of the 2000s all other transurethral laser-based enucleation techniques: Tm:YAG Vapoenucleation (ThuVEP) [3], transurethral anatomical enucleation with Tm:YAG Support (ThuLEP) [4], diode laser enucleation of the prostate (DiLEP) [5] and finally Lithium-Borate “Greenlight” enucleation of the prostate (GreenLEP) [6] appeared on the market to finally replace open prostatectomy (OP) and TURP. It took Thulium:YAG as the challenger to initiate a discussion about the impact of laser in transurethral enucleation. The surgical twins “ThuVEP” and “ThuLEP” demonstrated the whole spectrum of laser action in enucleating techniques. ThuVEP focuses on the favorable vaporization effect of continuous-wave lasers to perform a fast, effective and safe enucleation, whereas ThuLEP focuses on almost blunt mechanical enucleation using the laser only for dissection of adhesences and mucosa. The latter on anatomy focusing approach was mimicked by other continuous-wave lasers (LBO/“Greenlight” and 980 nm diode laser) that had not been found suitable for enucleation at the initial point of the discussion [5, 6].

The most famous quotation from Gertrude Stein’s poem Sacred Emily “Rose is a rose is a rose is a rose.” is often interpreted as “things are what they are.” When reviewing all meta-analyses and structured reviews of the past 3 years, the energy source seems to be secondary and a result of resources and personal preference of a skilled surgeon, today [7]. The time has come to move from sophisticated marketing of a single energy source to the overarching principle of anatomical enucleation to focus all efforts to establish enucleation as the de facto standard treatment 32 years after Hiraoka [8] laid the cornerstone for all anatomical transurethral enucleation techniques of the prostate with his monopolar transurethral detachment prostatectomy technique (TUE).

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The latest update of the *EAU Guidelines on Management of Non-Neurogenic Male Lower Urinary Tract Symptoms (LUTS), incl. Benign Prostatic Obstruction (BPO)* in 2016 has proclaimed the acronym transurethral Endoscopic Enucleation of the Prostate (EEP) coding for the common ground of endoscopic enucleating techniques: “anatomical enucleation.” Two meta-analyses have focused on the comparison of HoLEP and bipolar enucleation versus open prostatectomy. Lin et al. [9] analyzed nine randomized controlled trials (RCTs) (four bipolar enucleation and five HoLEP) with regard to safety and effectivity. They could demonstrate that no significant differences between EEP and OP were observed in short- and intermediate-term functional outcomes. Perioperative parameters of hemostasis (irrigation time, catheterization time and length of hospital stay) were shorter with EEP. Blood transfusion was significantly less with EEP. No difference was seen in the rate of recatheterization, UTI, reintervention for clots and bleeding control, incidence of pneumonia and infarction, transient incontinence, bladder neck contracture, urethral stricture or recurrent adenoma. Li et al. [10] came to the same conclusion analyzing seven RCTs.

ThuVEP does mainly offer non-randomized studies that have been reviewed by Netsch et al. [11, 12] demonstrating ThuVEP to be a size-independent, safe, efficacious and durable procedure up to 60 months for the treatment of BPO in large prospective and retrospective series. The only RCT with a 12-month follow-up versus HoLEP so far by Hong et al. [13] showed no significant difference in perioperative and postoperative outcomes. Only surgical time appeared to be in favor of ThuVEP [14].

Kyriazis et al. [15] came to the same conclusion reviewing the data of ThuLEP. In the analyzed four studies including two RCTs versus TURP and versus HoLEP with a follow-up of 18 months at the maximum [13]. Feng et al. [15] could demonstrate in their RCT on ThuLEP versus bipolar enucleation that both treatments were both safe and efficient. When compared to bipolar enucleation, ThuLEP showed lower risk of hemorrhage and shorter catheter time.

It is to hope that Gilling’s concern raised in a comment in 2013 [16] that “commercial considerations rather than science will probably be the major determining factor” for the choice of a technique will not come to pass by the introduction of the new term “EEP” with its overarching principle of anatomical enucleation. I would rephrase the then valid title of his excellent review in 2008 [17] to “EEP is the best treatment for BPO refractory to medication.”

Compliance with ethical standards

Conflict of interest Thomas R. W. Herrmann declares Karl Storz GmbH, Honoraria, Financial Support for attending Symposia, Financial support for educational programs, Consultancy, Advisory, Royal-

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