CLINICAL CASE

Surgical technique of bipolar enucleation of the prostate with the TUEB electrode loop: experience of a first case


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Received 1 October 2014; accepted 9 November 2014

KEYWORDS
Enucleation of the prostate; TUEB; Bipolar energy

Abstract
Background: Lower urinary tract symptomatology secondary to benign prostatic hyperplasia is one of the most common pathologies in men, and transurethral resection of the prostate is the technique of choice for its surgical management. Transurethral enucleation of the prostate with bipolar energy (TUEB) is a novel technique with adequate results for the treatment of these patients.

Aims: To describe the TUEB technique of prostate enucleation.

Methods: A man in the sixth decade of life presented with severe lower urinary tract symptoms for which surgical treatment was indicated. Prostate volume was measured. Bipolar electrosurgical equipment with 120 W coagulation energy and 220 W cutting energy was placed over a 26 Fr continuous flow resectoscope; irrigation was carried out with saline solution and a morcellation unit connected to a suction pump was used for extracting the enucleated tissue.

Results: The left prostate lobe and verumontanum were identified. Coagulation energy was applied at the 5 o’clock radius and mechanical enucleation was begun, separating the planes through coagulation with the three-lobe technique.

Discussion: Among the new techniques currently available for the surgical treatment of prostate hyperplasia, transurethral resection is the treatment of choice. However, laser enucleation of the prostate is a novel procedure that has shown good long-term clinical results. Enucleation of
Introduction

For many years, transurethral resection of the prostate has been the treatment of choice for lower urinary tract symptomatology secondary to prostate enlargement.1

Transurethral resection of the prostate is associated with significant morbidity, especially in patients with large prostates, blood disorders, or those undergoing anticoagulation.2

There are several complications related to this procedure, such as postoperative bleeding that can require blood transfusion, urinary incontinence, retrograde ejaculation, longer time with catheter in place, and longer hospital stay, which have led to the proposals of new techniques to replace conventional transurethral resection of the prostate.

The abovementioned begs the question as to whether a reduced use of transurethral resection of the prostate is based on scientific evidence or is a product of aggressive commercialization of the new surgical techniques.1 Before including any new therapy in our surgical armamentarium, it must have a documented, significant, evidence-based advantage over TURP. In the past, there have been numerous techniques that did not meet these criteria. Morbidity was often moved from the intraoperative to the postoperative period, and high treatment failure rates became evident during prolonged follow-up periods.4,5 Therefore, in addition to initial clinical results that are promising, long-term
follow-up data on these techniques are obligatory. Current results of random controlled trials and prospective studies with solid methodologies suggest that some of the proposed procedures have the potential of replacing TURP; they include transurethral resection of the prostate with bipolar energy, vaporization of the prostate with bipolar energy, Holmium laser prostate enucleation, and KTP laser vaporization of the prostate. There are studies that confirm the adequate results of these techniques, as well as their diverse costs.6

The aim of our study was to describe the surgical technique of enucleation of the prostate with bipolar energy with the TUEB electrode loop in one patient and to report the postoperative results.

Methods

A man in the sixth decade of life was undergoing medical treatment in our service for lower urinary tract symptomatology and he presented with acute urinary retention. A urethral catheter was placed, and with its attempted removal, the patient had another episode of acute urinary retention. His prostate-specific antigen value was 4 ng/ml and the digital rectal examination result was unsuspicious. His International Prostate Specific Score (IPSS) was a severe 27 and so he underwent prostate volume measurement through transrectal ultrasound of the prostate that revealed a total volume of 70 cc and 45 cc in the transitional zone. Urine culture was negative, a preoperative study profile was carried out, and a prior uroflowmetry had a Qmax of 4 ml/s and residual urine of 400 ml, with a urinary volume > 95%.

The patient was given a peridural block and placed in the lithotomy position. Cystoscopy was initially carried out to evaluate the length of the urethra and afterwards the entire bladder was evaluated, looking for suspicious lesions. The meatuses were first identified, and then the verumontanum. Bipolar electro surgical equipment was used with 120 W coagulation energy and 220 W cutting energy. The equipment was placed over a 26 Fr continuous flow resectoscope (Olympus®) and the bipolar TUEB electrode loop. Three-liter bags of physiologic saline solution were used for the irrigation system; they were situated 50 cm above the bladder and connected to the external sheath of the resectoscope through a Y-shaped tube and the fluid came out through a continuous flow system connection.

The incision was begun at the radius of the 5 and 7 o’clock position in the direction of the verumontanum. The enucleation plane of both lateral lobes was then opened and continued until they were freed toward the bladder. And finally, the middle lobe was freed. Enucleation was performed. A morcellation unit with a mechanical handpiece was situated on top of a nephroscope for bladder insertion and was connected to a suction pump for extracting the enucleated tissue. Once this was done, the instruments were withdrawn. Twenty cubic centimeters of lubricating gel were applied and a 3-way catheter was put in place with continuous irrigation. Traction was placed at the penis, the patient was sent to the recovery room, and after 24 h the urethral catheter was removed. The patient was evaluated one month later through uroflowmetry, bladder-voiding ultrasound, the IPSS, and a review of the histopathologic report.

Results

Total surgery duration was 55 min, enucleation time was 30 min, and the quantity of morcellated tissue was 52 g. The prostate capsule was not perforated. Postoperative hospital stay was 24 h, there were no electrolyte alterations, the urethral catheter was left in place for one day, and there was no need for transfusion.

Tables 1 and 2 show the preoperative and postoperative characteristics of the patient. In the follow-up consultation, the patient presented with an IPSS of 3, residual volumes of 30 ml, and a Qmax of 19 ml/s. The histopathologic report was negative for prostate neoplasia.

Discussion

Lower urinary tract symptomatology secondary to benign prostatic hyperplasia is one of the most common pathologies managed by the urologist, and transurethral resection of the prostate has been the surgical treatment of choice for many years, but it is not exempt from significant morbidity. New techniques have emerged with less morbidity and better long-term results. One of the first proposals was Holmium laser enucleation of the prostate, and today it has results at 5 years;7,8 the functional results are as good as those of transurethral resection of the prostate, and IPSS reduction and Qmax are more pronounced with HoLEP than with TURP. Consequently HoLEP is the only endoscopic technique with confirmed superior efficacy to TURP. This is most likely secondary to the fact that it achieves prostate loculi similar to those of retropubic adenectomy.9 Therefore, if performed correctly, a maximum quantity of tissue is extracted, resulting in complete resolution of the

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<td>Characteristics</td>
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<td>Qmax</td>
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obstruction, as shown in a large number of studies. In addition, the substantial reduction of PSA > 80% after HoLEP is an indirect sign of its ablative capacities.

This being said, surgery duration is significantly greater, compared with TURP. Curiously, when comparing the tissue recovery rates (g/min) of HoLEP vs. TURP, there was no significant difference (0.52 g/min vs. 0.57 g/min) in the studies analyzed, suggesting that the two procedures are equally time-efficient. The mean length of time with indwelling catheter in place is 1.13 days, a shorter time than after TURP.

Potential intraoperative complications consist of capsule perforation (such as laser fiber cuts along the surgical capsule) and damage to the bladder mucosa (caused by the morcellation blades). The risk for relevant bleeding and the need for blood transfusion are also minimal. Based on our experience described above, our wish was to demonstrate the feasibility of bipolar energy enucleation of the prostate with the TUEB electrode loop as a technical alternative to HoLEP. This is an initial report on the surgical technique with urethral catheterization duration of one day, no important blood loss, and no need for transfusion.

We found the important advantage of less difficulty in passing from TURP to enucleation of the prostate with bipolar energy than to the HoLEP technique, in relation to the learning curve. Likewise, there was less difficulty in controlling intraoperative bleeding, because the electrode loop enabled adequate coagulation with no loss of visibility and it shortened the enucleation time.

To the best of our knowledge, this is the first report on bipolar enucleation of the prostate with the TUEB electrode loop performed on a patient that shows objective improvement in the IPSS, Qmax, and residual urine volume parameters. For this reason we believe that more comparative and long-term studies are needed in order to establish the clinical and urodynamic results, as well as to weigh the complications; the costs of this technique must also be compared with those of other procedures. In such a way, it will be possible to establish the true usefulness of this surgical procedure.

Conclusions

We conclude that enucleation of the prostate with bipolar energy and the TUEB electrode loop is a safe technique that offers patients adequate postoperative results.

Financial disclosure

No financial support was received in relation to this article.

Conflict of interest

The authors declare that there is no conflict of interest.

References