TRANSURETHRAL ENUCLEATION PROSTATE WITH PLASMAKINETIC ENERGY. A NEW TECHNIQUE OF ENUCLEATION

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Summary.- OBJECTIVES: We present a new technique of transurethral prostatic enucleation.

METHODS. We use an Olympus resectoscope with two electrodes; one has a button or “mushroom” shape to vaporize and enucleate, and the other one the shape of a conventional “cutting loop electrode” to resect.

With the button-shaped electrode, we vaporize transversally at the level of the veru montanum, extending the dissection towards the lateroapical lobes, looking for the capsular plane. Once it is found, we ascend vaporizing up to the 3 and 9 in the clock following the capsular plane. Subsequently, we vaporize longitudinally the anterior commissure and keep going down to join the previously vaporizatized area. Then enucleation is achieved by pushing the adenoma with the button-shaped electrode, from distal to proximal, at the capsular plane level. Before the enucleated lobe falls inside the bladder, we can proceed, with the help of the conventional cutting loop electrode, to its resection, which is very fast and bloodless. If there is middle lobe, enucleation is initiated with it, performing two lateral grooves lengthways down to the veru montanum.

RESULTS. We have carried out 45 procedures since October 2011, with excellent functional results. Prostate volumes range between 40-120 gr, with an operating time of 30-90 minutes. Hospital stay was 24-48 h. and the catheter is removed in 4-5 days. Blood transfusions were not needed in any case, and we have not recorded complications within this first year of follow-up.

CONCLUSIONS. This technique makes possible the enucleation of the adenoma with a good haemostasis control. It also provides a good visualization of the capsular plane. Vaporization of the prostatic tissue is similar to the use of other energy forces. We don’t need to use a “morcellator” to extract the enucleated prostatic tissue. It is an economical and easily reproducible procedure, with a short learning curve.

Keywords: Prostate enucleation. Plasmakinetic energy.

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Transurethral prostate enucleation was first described in 1998 by P. Gilling (1) using the holmium laser as a source of energy (HoLEP).

To delete the enucleated lobes, you need a “morcelator”, which is introduced into the bladder cavity with the help of a nephroscope. Conceptually, the idea of transurethral enucleation of prostatic hypertrophy tries to reproduce the prostatic adenomectomy open; that is why it is colloquially known as the “endoscopic Millin”.

However, the goodness of the concept of “transurethral enucleation” has not been followed by a large diffusion, as one could have expected. The reasons may be various:

1) Not many can afford the high cost of laser energy and the “morcelator”.

2) The technical difficulty to perform the procedure and, therefore, greater learning curve.

3) The fact that already exist a procedure such as TURP, quite widespread, which has the same purpose and which is still today the gold standard of endoscopic prostate surgery.

METHOD

We use a rotary Olympus resectoscope of continuous washing, which is provided with two easily interchangeable electrodes: a “button or mushroom”-shaped one, (Figure 1) that produces a vaporisation by releasing plasmakinetic energy when interacting with the saline solution, and another one in the shape of a cutting loop.

The same bipolar current generator Gyrus is used, with both a cutting pedal that vaporizes and another one for coagulation; you just have to modify the software to adapt the generator to this technique. This way we are able to carry out the enucleation by applying the bipolar or plasmakinetic power source, so widely spread.

We can eliminate the use of the “morcelator”, since the lobes, before being completely enucleated, are resected with the conventional cutting loop electrode, and extracted with any fragments extraction device (Ellick evacuator, Toomy syringe …), thus having anatomopathological samples to study it.
We have used the original design “TURis Plasma Vaporization” (transurethral prostatic vaporization in saline solution) from this commercial firm. Obviously, we have had to adapt it to perform our enucleation, which, in essence, have been carried out as described above, with very few modifications.

**Step 1**

We start the procedure by vaporizing, crosswise, the prostatic gland, keeping the button electrode at supramontanal level. We prolong the groove laterally towards the lateroapical lobes to meet the capsular plane (Figures 2, 3).

**Step 2**

If there is middle lobe, we first make two deep longitudinal incisions on each side, starting at the bladder neck to join them with the supramontanal incision (Figure 4).

Then we proceed with the enucleation of the lobe by pushing it in a cranial direction with the button-shaped electrode, this being more robust and allowing an easy separation following the capsular plane, as shown in step 1 (Figure 5). We carry on the procedure by luxating the lobe towards the bladder not allowing it to come off completely, but keeping it attached by fibers of the neck (Figure 6). Once at this point, the button-shaped terminal is replaced with the conventional cutting loop electrode, proceeding to the resection of the lobe, which is carried out in a fast and bloodless way, since, as we have been taking off the adenoma from its capsule, the blood vessels that would appear in the process were coagulating simultaneously (Figure 7).
If prostatic growth is only at the expense of two lateral lobes, we overlook step 2.

**Step 3**

Then we make a groove longitudinally, vaporizing from the neck towards the first incision joining them together and deepening so that we can visualize fibers of neck and prostatic capsule.

**Step 4**

Now we ascend vaporizing the prostate laterally starting at the groove made in the apex in the general direction of 9 and 3 in the clock (Figures 8, 9).

**Step 5**

Later we vaporize in depth and longitudinally the front prostatic commissure from the base to the apex, and, once there, we descend to meet the ascending grooves previously made (Figure 10).
Step 6

Each of the lobes is going to be enucleated now. We start at the apex pushing towards the bladder with the button-shaped electrode, which is more robust and which allows us to remove the adenoma from its capsule gradually and easily. This is carried out by traction of the adenoma and vaporization of the capsular accretions, and, by freeing them, allowing us this way to follow the correct plane of capsular cleavage. Blood vessels that appear during the removal will coagulate simultaneously (Figures 11, 12, 13).

Similarly, as we have already mentioned in step 2, before the enucleated lobe falls free inside the bladder, the button-shaped electrode is replaced by the conventional cutting loop electrode to proceed to a fast adenoma resection, allowing us to obtain samples for histopathological study, once extracted, in a conventional way.

RESULTS

We have carried out 45 procedures since October 2011, with excellent functional results. Enucleated prostate volumes range between 40-120 gr, with an operating time of 30-90 minutes. The hospital stay was 24-48 h., and the catheter is removed in 4-5 days. Blood transfusion has not been needed in any case, and we have not objectified complications (infections, irritant syndrome, progressive decrease of Qmax from the day of the operation, haematuria requiring re-admission in hospital...).
DISCUSSION

In essence, the technique has been maintained as described above; there have been few changes and is currently carried out using various source of laser energy (Holmium, KTP, multi diode...). In Spain, the following doctors have excelled in this technique: Dr. Alfonso Santos (2), Dr. O. Buisán (3), and Dr. J. Placer (4), (5), who, with an extensive casuistry, has systematized and published the results obtained with this technique, being now a reference of it.

To combine minimal invasiveness of endoscopic surgery with the conceptual results of the complete exeresis of the prostatic adenoma in open surgery –either transcapsular or transvesical- is the object. Transurethral enucleation prostate, regardless of the source of energy used to carry it out. We show that this is possible in an easier and more economical way, and that we obtain functional results that do not differ, in our experience, from those obtained with TURP.

Being sure that the path initiated by Peter Gilling was the best, and the fact of having a tool such as the previously described resectoscope, with which we can reproduce the technique of enucleation more cheaply and easily, encouraged us in October 2011 to start the new modality.

CONCLUSION

This new technique is:

- It is more economical, due to both the cost of the resectoscope, already available in many health centers, and the electrodes, as well as the power source: any other source of energy is more expensive. An additional saving advantage is that we do not need the use of a morcelator.

- It is easier. It does not require a long learning curve, provided that you already have experience in transurethral resection. It also provides good control of haemostasis and optimal visualization of the capsular plane.

- Vaporization is similar to laser.

- By not needing a morcelator, the procedure is simplified, and the risks associated with its use are also eliminated.

- The results obtained are very positive, with a high degree of satisfaction from patients and absence of complications in the short and medium term.

A detailed study with the results obtained in our series is currently being developed. With this we hope to contribute to a wider dissemination of the technique.

REFERENCES AND RECOMMENDED READINGS

(*of special interest, **of outstanding interest)


