Case Report

Transurethral Electroevaporization for Giant Prostatic Hyperplasia: Report of a Case

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Summary: Although open simple prostatectomy remains the reference standard for the treatment of excessively large or giant prostatic hyperplasia, advances in technology and techniques have facilitated safe transurethral management of select cases. We report a case undergoing removal over 200 g of prostatic adenoma by three transurethral electrovaporization (TVP) sessions and discuss its feasibility in clinical use.

Key words prostate, hyperplasia, electrovaporization

INTRODUCTION

When the prostate is too large to be removed endoscopically, open enucleation is necessary. Although "too large" is a subjective determination that varies with the surgeon’s experience in performing transurethral resection of the prostate (TURP), glands over 100 g are usually indicated for open enucleation [1]. Moreover, giant prostatic hyperplasia weighing over 200 g is rare. To our knowledge, all cases of giant prostatic hyperplasia reported in the literature have received open simple prostatectomy [2,3]. Improvements in surgical technology and techniques allow transurethral resection of too large glands in appropriate patients. We report a case undergoing removal of a 205 g prostatic adenoma by three TVP sessions and discuss its feasibility in a clinical use.

CASE REPORT

A 76-year-old man presented with obstructive urinary symptoms increasing over a 10-year period. On digital rectal examination, the prostate was grossly enlarged, but felt benign. Serum prostate specific antigen was 7.2 ng/ml. Excretory urogram demonstrated normal upper tract with a huge shadow-defect in the cystgram (Fig. 1). Transrectal ultrasound (TRUS) demonstrated a large, homogeneous tumor of the prostate and the gland volume was calculated based on three-dimensional magnetic resonance imaging (MRI) was 219 ml (Fig 2A). Histological examination using transrectal sextant biopsies demonstrated stromal hyperplasia without evidence of malignancy. The treatment options of open prostatectomy and transurethral surgery were discussed with patient, who chose to undergo multiple sessions of TVP.

Standard transurethral resection (TUR) equipment was used, including a continuous flow 26 Fr resectoscope (Storz, Turtlingen, Germany) and the Force FX electrosurgical generator (Valleylab, Boulder, CO, USA) with loop-shaped vapor-cut electrodes (Storz, Turtlingen, Germany) used as the vaporizing electrode. The power of the electrosurgical unit was set at 200 to 260 W pure cutting mode for vaporization and at 80 W for coagulation. The surgical technique for TVP is essentially the same as that for TURP. Vaporization was done by video endoscopy using 3% D-sorbitol as the irrigation fluid, with the patient under epidural anesthesia. The patient underwent 3 TVP sessions at 2 or 3 weeks intervals using the Nesbit technique [4] that is divided

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Abbreviations: MRI, magnetic resonance imaging; TRUS, transrectal ultrasound; TUR, transurethral resection; TURP, transurethral resection of the prostate; TVP, transurethral electrovaporization.
into three stages. During first TVP (Fig. 2B), the base of the gland was removed to improve urinary flow. The middle of the gland was removed during the second TVP and the apex of the prostate was removed at the third TVP (Fig. 2C). At the end of each procedure, a 20 Fr 3-way catheter was placed for overnight saline irrigation. No traction was applied. Surgical duration and weight of resected prostatic tissue in each procedure were 105 min., 110 min. and 120 min., and 50 g, 75 g, and 80 g, respectively. Total weight of resected prostatic tissue was 205 g and histological examination demonstrated a predominance of stromal hyperplasia with a smaller amount of glandular hyperplasia. Catheter removals after three sessions were performed within 3 days. Hemoglobin decreased during the procedures to 1 mg/dl, 0.1 mg/dl and 0.3 mg/dl, respectively. There were no transfusions necessary during any of the three procedures. One month after the final TVP, the patient had no obstructive symptoms, from 28 to 3 scoring points on the International Prostate Symptom Score system and from 5 to 32.3 ml/sec for maximum flow rate in an uroflowmetry.

**DISCUSSION**

Autopsy data indicate that anatomic or microscopic evidence of benign prostatic hyperplasia is present in approximately 80% of men aged 70 to 80 years old, while prostate sizes greater than 100 g are uncommon and occur in only 4% of men over 70 years of age. The term giant prostatic hyperplasia was first described by Kawamura et al. [1] in the Japanese literature and was defined as exceeding 200 g with 22 cases being reviewed. Another criteria was proposed by Fishman et al. [2] who defined giant prostatic hyperplasia as prostate glands larger than 500 g since such specimens have been reported in only 11 cases world wide. The largest specimen

*Fig. 1. An excretory urogram showed normal upper tract with a huge shadow-defect on the cystogram.*

*Fig. 2. MRI. A, T1-weighted image on the sagittal plane obtained before therapy showed a very large prostate calculated as 219 ml based on three-dimensional MRI. B, T1-weighted image on the sagittal plane showed that the base of the gland was removed after first TVP session. C, T2-weighted image on the sagittal plane shows a huge cavity after 3 TVP sessions.*
reported was a 2410 g adenoma removed through open prostatectomy [4]. Open prostatectomy has previously been recommended for removal of such very large adenomas. However, moderate to severe blood loss is associated with removal of large specimens, requiring blood transfusions. The results of TVP are encouraging and comparable to those of TURP, and TVP prevents TUR syndrome by reducing irrigant absorption and provides better hemostasis. The disadvantage of TVP using the initial roller-bar electrode was that it is more time consuming than TURP and the thermal energy can damage structures close to the prostate [5,6]. However, for larger prostate glands, using the loop-type electrode that looks like a standard TUR loop could minimize blood loss and decrease the surgical duration, because of the large cross-section of loop, ease of manipulation, and greater durability compared to the rollerbar electrode. Of course, the ability to resect too large prostates requires careful consideration of technique, available instrumentation and risk. We confirmed preoperatively that a resectoscope could reach the base of prostate, and planned three TVP sessions for the present case because of our expected maximum resection volume of prostate in each procedure is about 80 g. We also mentioned to avoid a long duration of procedure because of both risks of TUR syndrome and bleeding.

Our experience shows that multiple sessions of TVP successfully removed a 205 g prostate gland without requiring blood transfusion and without open prostatectomy. However, multiple sessions of TVP for giant prostatic hyperplasia needed a longer hospitalization and high cost. Additional developments in surgical technology and techniques are still required to compare and contrast the risks and benefits of this procedure for excessively large or giant prostatic hyperplasia.

REFERENCES