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Morbimortality with a packaging technique in prostate surgery

Original Article

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SUMMARY

Introduction. *Prostatic hyperplasia is considered the most common benign tumor in man, causing a rapid evolution in medical and surgical treatment modalities; transurethral endoscopic approach is the goal standard in prostates smaller than 70 grams; above that weight, open surgery is preferred.. Our objective was to determine morbidity and mortality in postoperative patients with prostatic hyperplasia with a new technique of packaging and unpackaging in prostates greater than 70 grams.*

Methods. *A clinical trial was conducted in 16 patients scheduled for prostatectomy, which were divided into two groups: Group A (n = 7) with the packaging technique and Group B (n = 9) as a control group (without packaging). Post-operative bleeding, number of transfused globular packets, surgical time, concomitant diseases, hospital stay, complications and weight of the gland were measured. The statistical analysis was performed by means of the chi square test for the qualitative variables and the Student's T test.*

Results. *There was no statistical difference in the T test for the variables of surgical bleeding as well as hemoglobin before and after surgery. The average weight of the prostate in group I was 130.7 grams and in group II 117 grams; greater frequency of comorbid diseases in group 2 was found. There was no surgical mortality.*

Conclusions*. Transoperative bleeding was more favorable in the control group in terms of lower requirement of globular packages and minor surgical bleeding. No morbidity or postoperative mortality was recorded with the packaging technique. Comorbid diseases had no influence on results.*

Keywords. *Morbidity and mortality, prostatectomy*

INTRODUCTION

Benign Prostatic Hypertrophy (BPH) is the most frequent disease in elderly men; 90% of men over 80 have histological lesions[7]. Individuals with BPH have irritative and obstructive symptoms, collectively called low urinary symptoms. Patients at the beginning may be asymptomatic but as prostate growth progresses may refer tenesmus, intermittency, frequency, urgency, decrease in the size of the urinary stream, effort to urinate, nocturia, urinary incontinence, frequent urinary infections, hematuria or urinary retention.[1-4]

In the General Hospital of Veracruz, BPH is the second most frequent cause of consultation in urology, second only to urinary tract infections; medical therapy continues to be the first line of treatment to reduce obstructive urinary symptoms and thus have adequate control of the disease and the continuation of their quality of life; there is a group of patients who do not respond to medical treatment or have complications such as urinary retention, recurrent urinary tract infections, hematuria or renal failure, where surgical therapy is indicated.[5-8]

Although new modalities of minimally invasive surgical treatment have been developed[1], open prostatectomy remains part of the surgical options, especially in patients with prostates greater than 70 g[2]; however, in this type of surgery there are complications such as significant bleeding in the surgical bed, which causes patients to have to re-operate and pack, increasing morbidity and mortality.[3, 9,10]

The aim of the present study was to determine the morbidity and mortality in postoperative patients with prostatic hyperplasia with a new technique of packaging and unpacking in prostates greater than 70 grams.

METHODS

A clinical trial was conducted in 16 patients from the Urology Department of the General Hospital of Veracruz, with prior authorization from the local Research and informed consent committee. The patients were selected by simple random sampling at the beginning of the study.

The inclusion criteria were: international prostate symptoms score (IPSS) moderate / severe with a prostate volume greater than 70 g, in addition to having one of the following minor criteria: failure to medical treatment, age over 50 years, history of acute retention of urine with foley catheter to transurethral derivation or by cystostomy, unilateral or bilateral hydronephrosis secondary to prostate growth, history of frequent episodes of infection, hematuria due to prostatic hyperplasia, bladder lithiasis or renal failure post-renal type. The criteria for non-inclusion were that he did not want to have surgery, no relatives or responsible persons for the authorization of the surgical procedure and postoperative care, a history of known coagulopathies and previous surgery for open prostatectomy.

Patients who met two major criteria and a minor criterion were included. The participants were randomly selected; then laboratory and cabinet studies were performed (blood count, TP, TPT, group and Rh, blood chemistry, urinalysis, prostate specific antigen, electrocardiogram, bladder ultrasound and chest x-ray) for its preoperative assessment by the departments of internal medicine and anesthesiology. Twenty-four hours after the operation, a control blood count was performed.

Two groups were formed: group A (n = 7), the experimental group, where the packaging technique was performed and group B (n = 9), which is the control group, where conventional surgery was performed (suprapubic prostatectomy). For the statistical analysis, the chi square test was performed for the qualitative variables and the paired and unpaired T test with the statistical program SPS version 15 (correlation and regression test).

The surgical technique used will be described below: Under anesthesia with epidural block and the operating table placed in position of slight hyperextension, the patient was placed in a discrete Trendelenburg position, trichotomy was performed in the suprapubic área. A infraumbilical incision of 10 cm in length was made, dissecting the subcutaneous cellular tissue and the fascia of the rectus muscle; the rectus muscles were digitally separated, trying not to cause lesions in the epigastric vessels. The bladder was partially released from both sides without seeing the obturator fossa. The bladder was incised longitudinally from the peritoneal

reflection until it reached 1 cm from the bladder neck. Deaver medium and long spacers were placed in cephalad position and both sides of the bladder to obtain a complete visualization of bladder mucosa, prostate and urinary meatus. A semicircular incision was made in the posterior part of the bladder neck with electrocautery to avoid tears of the mucosa towards the meatus; With the index finger introduced into the prostatic urethra, pressure was applied to separate the urethra and the anterior commissure of the prostate, creating a plane between the adenoma and the prostatic capsule.

The adenoma was enucleated by a circular sweeping motion with the finger; The urethra at the level of the apex of the prostate can be separated by digital clamping or using metzenbaum scissors. Once the prostatic adenoma or parts of the prostate adenoma were removed, the bed was checked to verify there were no remaining adenomatous tissue. For hemostasis, transfictive points were given in the bladder neck according to the clock hands at 5 and 7 hours, using 3-0 vicryl with T-10 needle. It is advisable to put two long Allis forceps in these areas of the bladder neck to facilitate the placement of the points; even if there was no active bleeding, these points were placed and checked that there wass no tearing of the bladder mucosa at the level of the neck. A 22-way Foley catheter number 22 was introduced by urethral route, and immediately the packing was placed in the prostatic fossa, using one end of the sterile bandage of 5 cm in width and having a length of 5 meters; previously it was introduced in a 20 cm long flexible tube (figure 1) with a diameter of 30 Fr. This bandage was introduced into the prostate bed with a dissecting forceps until the space generated by the prostatic extraction was completely filled (figure 2).). The balloon of the three-way probe was inflated with 30 ml and traction was made; the flexible tube was slid so that it was below the balloon of the probe. To prevent the tube from being removed inadvertently, it was fastened to the fascia with silk but being knotted in the skin; at the end of the surgery, the remnant of the bandage was cut and a urine collection bag was connected.

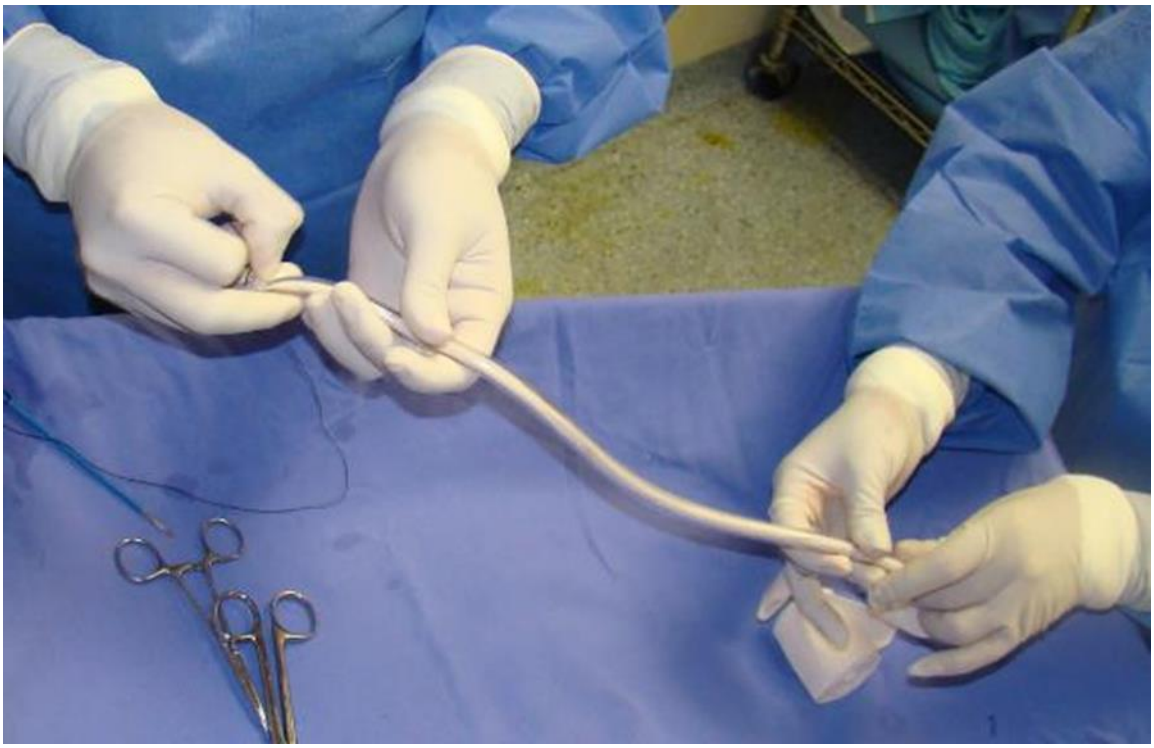

Figure 1. Passing the bandage through the flexible tube, before the extraction of the prostate. Source: Own file.

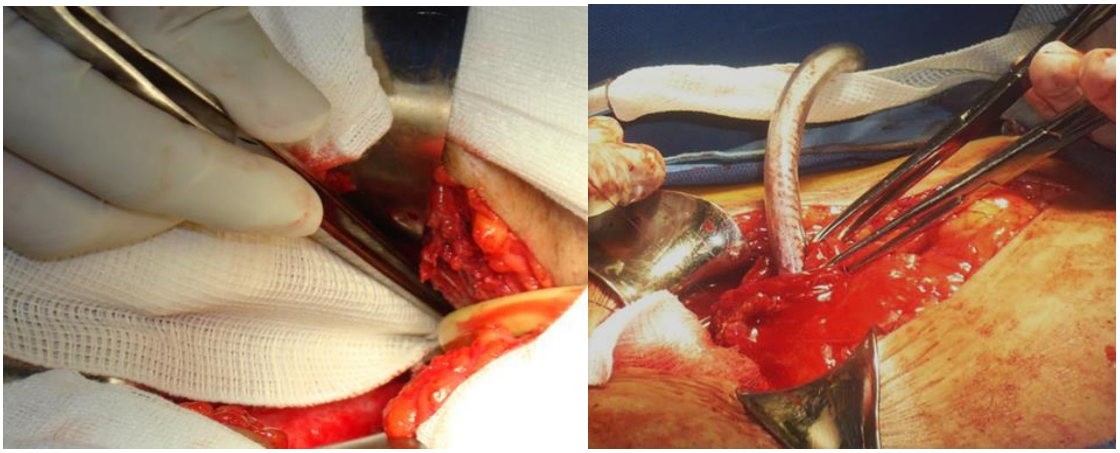

Figure 2. On the left side, placement of the bandage in the prostatic bed. On the right side, fixing the flexible tube with the bandage inside. Source: Own file

A cystostomy was left with a Foley number 18 two-way probe that is externalized by counter-opening. The bladder was closed by planes with 3-0 vicryl in continuous suture for the mucosa and 2-0 vicryl for the muscular layer. A closed drain with aspiration to the cystostomy site is always left. The bladder was irrigated through the three-way probe to investigate the presence of leakage. The muscular plane was approached with catgut or vicryl of 2-0, the fascia was closed with simple points of vicryl of 1, the subcutaneous cellular tissue was faced with simple catgut 3-0 and the skin was closed with dermalon 2-0 vs metallic staples. The closed drainage and the two-way Foley catheter were fixed to skin with

2-0 silk. Finally, the wound was covered with gauze and micropore fabric. The epidural block was not removed until after unpacking.

In the case of unpacking, its performance was assessed 48 hours after surgery in the patient's bed with the following steps:

- Administration of analgesia with epidural block.
- Asepsy and antisepsis of the surgical wound.
- Increase irrigation leakage of the three-way Foley catheter with cold solutions 10 to 20 minutes before the procedure.
- Deflation of the balloon of the transurethral catheter, without removing the Foley catheter.
- Remove the lock of the bandage, pulling it in the cephalad direction and up with the right hand since the left hand stops the flexible tube; Continue this maneuver until the entire bandage is removed (figure 3).
- Inflation of the bladder balloon of the three-way Foley catheter and decrease in irrigation drip.
- Covering with dressing and micropore fabric from the outlet site of the tube and the surgical wound
- Absolute rest of the patient for the next eight hours. Assessment of patient discharge for the next 24 hours, with the three-way transurethral Foley catheter.

Figure 3. Removal of the packaging with the bandage on the patient's bed.
Source: Own file.

RESULTS

A clinical trial was conducted in 16 patients. The average age in group A was 70.57 ± 4.29 years and in group B 73.77 ± 6.8 years. The average trans-surgical bleeding in group A was 1155.71 ± 856.87 ml and in group B 750 ± 308.2 ml, statistically not significant. The average number of blood products transfused was 1.14 ± 1.21 globular packets in group A and 0.88 ± 0.92 globular packets in group B (Table 1).

VARIABLES	Group A (n = 7)	Group B (n = 9)	p
Transurgical bleeding (ml)	1155.71 ± 856.87	750 ± 308.2	0.1982
HB pre QX (g/dl)	13.34 gr ± 1.82	13.68 ± 1.8	0.7168
HB post QX (g/dl)	9.65 ± 1.76	10.58 ± 2.2	0.3820
Transfused blood products	1.142 ± 1.21	0.88 ± 0.92	0.2062
Prostate Specific Antigen (ng-ml)	6.8 ± 2.84	11.65 ± 8.4	0.1627

Table 1. Variables associated with trans-surgical bleeding of prostatectomy compared with the modified technique.

The surgical time was very similar in both groups, with a mean of 130.7 minutes for group A and 135 minutes for group B. The average weight of the prostate in group A was 130.71 ± 49.52 g and in group B, 117.66 ± 44.39 g (difference not significant). The average hospital stay was 6 days in group A and 5.66 days in group B. The average days of packaging was 3 days (Table 2). In both groups, a patient was intervened again due to postoperative bleeding, both with 75 years of age and transurethral Foley catheter to stay; the patient of group A had more than 180 days of catheter to stay, hemoglobin (Hb) preoperatively of 13.8 g / dl, with weight of the prostate of 230 g and postoperative bleeding of 2250 ml. The patient in group B had 24 days of Foley catheter to stay, preoperative Hb of 12.4 g / dl, weight of the prostate of 136 g and postoperative bleeding of 800 ml.

VARIABLES	Group A (n = 7)	Group B (n = 9)	p
Surgical time (minutes)	130.71 ± 24.74	135.55 ± 27.09	0.1982
Prostate weight (g)	131.70 ± 49.52	117.66 ± 44.39	0.1962
Hospital stay (days)	6 ± 1.52	5.66 ±1.73	0.5877
Number of days of packing	3 ±0.5	-	
Re-surgery	1	1	

Table 2. Variables associated with postoperative evolution.

In both groups, the average Hb value before the surgical event ranged from 13 g / dl; after the surgical procedure, the mean value in group A was 9.65 g / dl and that of group B was 10.5 g / dl. In no group were deaths or morbidities associated with the surgical procedure such as infection of the surgical wound, urinary incontinence, vesico-cutaneous fistulas or postoperative hernias. The most frequent associated comorbidities were diabetes mellitus and systemic arterial hypertension in group B and one patient with COPD in group A; in no group there were patients with obesity, dyslipidemia, cerebrovascular disease or heart disease (Table 3). The pathology report was Benign Prostatic Hyperplasia in both groups as well as chronic prostatitis in three patients in group A (42%) and four in group B (44%). Only one patient in the control group had a 3 cm diameter bladder stone.

VARIABLES	Group A (n = 7)	Group B (n = 9)	p
Diabetes Mellitus	0	2	NS
Systemic Arterial hypertension	1	3	NS
Chronic Obstructive Pulmonar Disease (COPD)	1	0	NS

Tabla 3. Frequency of associated comorbidities.

DISCUSSION

The surgical time of the packaging group did not have a significant increase in relation to the control group (130.7 vs 135.5 minutes); although these surgical times are prolonged in comparison with other institutions (average time of 50-80 min) [11,12] they are performed by personnel of the urological specialty; in our institution, this surgery is supported by residents in the area of general surgery, undergraduate interns and students of the last year of the medical career.

In terms of intraoperative bleeding, the anesthesiologist calculates the losses and bases it on the content of the aspirator by subtracting the bladder urine volume existing in the bladder, as well as the evaluation of soaked gauze and compresses; therefore, it is an approximate measurement of transoperative bleeding; it is reported that approximately 15% of patients require blood transfusions [6]; In our study, more than 50% of the patients underwent transfusion; in the packaging group, postoperative bleeding was 1155 ml on average vs 750 ml in the control group, but without statistical significance. One of the most important and high-risk transoperative complications in open prostate surgery is massive bleeding; there are reports that vary from 100 ml to 2000 ml, when the bleeding is abundant and can not be controlled; one of the indications to inhibit bleeding is to pack the prostate bed and in a second time to complete the procedure, as mentioned by trauma surgeons under the term of damage control [13,14,15]; the purpose is to interrupt the deadly cascade of physiological events caused by bleeding, which can culminate with the patient's death and medico-legal demands. In our study, the bleeding calculated in the transoperative period is similar to that reported in the literature and no patient required support from the intensive care unit. The Packaging Group had an average bleeding of 1155.7 ml, with an average prostate weight of 130.7 g; the control group had an average bleeding of 750 ml, with an average prostate weight of 117.6 g.

In traditional packing techniques, the placement of one or more compresses in the prostatic bed and bladder is used for a second surgical event. But there is no consensus about how many probes should be left, if they are two or three ways, the caliber used and the days of packaging [14, 16]; in many cases, the decision depends on the evolution of the patient. This lack of information can be interpreted for its analysis as a surgical complication, lack of skill, sense of failure, or apathy of not publishing "something negative" that can give guidelines to medical-legal problems. In our study we detailed the packaging technique that can be feasible in hospital units, finding the advantage that it is easily reproducible; the unpacking is done in the patient's bed reducing the surgical morbidity and mortality of a second intervention and finally the decrease in hospital expenses.

In patients older than 80 years, there are new studies in which comorbidities [35-37] do not influence mortality, making it possible to estimate mortality for an open prostatectomy of less than 1% [12, 13,17]. The comorbid diseases that were presented were considered as an anesthetic risk ASA II, (controlled

systemic disease), where diabetes mellitus and systemic arterial hypertension prevailed in the control group, without presenting acute hemodynamic or metabolic decompensation events in the postoperative period. . We did not have any deaths in this study, considering a follow-up of up to 20 months; at that time, we have not found urinary incontinence or postoperative stenosis or postincisional hernias.

We did not observe any statistical significance in this study in the parameters evaluated as comorbid diseases, hospital stay, globular package requirements; it could not be determined if this packing technique reduces the need to re-operate patients with a prostate greater than 70 g.

We hope this study will lead to new articles with a larger number of patients; however, it is "threatened" by new technologies in the management of benign prostatic hyperplasia such as laser vaporization and Holmium laser resection / enucleation, which have low morbidity and results comparable to open prostatectomy; these procedures are intended to be the new standards of surgical treatment in prostatic hyperplasia [17,18] regardless of prostate size, but with the limitation of a long learning curve, new complications, large investments and expensive maintenance.

CONCLUSIONS

Based on the findings found in this study, we can list the following conclusions:

- The transoperative bleeding was in favor of the control group in terms of lower requirement of globular packages and minor surgical bleeding.
- No morbidity or postoperative mortality was recorded with the packaging technique.
- The comorbid diseases did not influence outcome.
- It is recommended to increase the number of cases to give more statistical power.

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