

Simplified retropubic prostatectomy technique: faster and not more hemorrhagic

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Aim. To report the technical feasibility of performing modified open prostatectomy.

Methods. From July 2004 to May 2007, 103 patients suffering from benign prostatic hyperplasia were operated with this technique. We only used two wide transverse stay sutures at the anterior prostate surface and performed capsulotomy with electrocautery. We did not use the incision of endopelvic fascia, control of lateral pedicles or the transection of puboprostatic ligament. We analyzed the preoperative, operative and post operative data of these patients, prospectively.

Results. The mean prostatic weight was 86g (range: 65-195). The mean operative time was 43 minutes (range: 36-52). The mean catheterization time was 5 days (range: 4-8). The mean hospital stay was 4 days (rang: 3-7). The mean decrease in the hemoglobin level from before to one day after the surgery was 1.3 g/dL. The estimated mean bleeding during the surgery was 423cc (range: 200-800cc). Post-operatively, 9 patients (8.7%) had mild urge incontinence.

Conclusion. Our modified retropubic prostatectomy is a simple and efficient technique that can significantly reduce the operation time. In comparison to other techniques; we had no more significant bleedings and further decreases in hemoglobin level during the procedure.

Key words: Prostate - Prostatic hyperplasia - Prostatectomy.

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BPH is the most common benign tumor of men and its prevalence increases with age, reaching 90% by the ninth decade.¹ Since 1990, many from benign prostatic hyperplasia (BPH) treatment options including open prostatectomy, TUR-P, TUIP, medical treatment, laser ablation, laparoscopic prostatectomy have been introduced. Although open prostatectomy was the first treatment for this disease, it still has a major role in treating this disease. The reason is that this procedure has the lowest failure rate amongst different operations² and it does not need special equipment.

Currently, TUR-P is the gold standard treatment for BPH, but for large glands, no best alternative treatment has been introduced. Simple adenectomy for large adenoma is actually the most common and used technique (14% to 32% of total invasive procedures) for BPH in Europe.³ In this study, we have introduced a new technique for open prostatectomy that is faster, easier and more trainable than other techniques. The complications of this technique such as bleeding are not significantly more than others.

Materials and methods

Between July 2004 and May 2007, we conducted a prospective trial including 103 men (mean age: 72.4 years, range: 56-93) who had open prostatectomy.

The indications for surgery were urinary retention in 46 (44/6%), severe lower urinary tract symptoms in 51 (49.5%), severe gross hematuria in 3 (2.9%) and bladder stone in 3 (2.9%) patients.

Preoperative evaluations included DRE, complete blood count, blood urea nitrogen, creatinine, serum PSA level, and ultrasonography.

Our exclusion criteria were previous prostate surgery and/or suspected prostate cancer or any comorbidities that might have influenced blood loss or transfusion rates.

Operative and postoperative evaluations included: operation time, blood loss, hemoglobin levels before surgery and on the first post operative day, catheterization time, hospital stay, operative complications, and prostate weight. Bleeding during surgery was estimated from the weight of the surgical sponge, subtracting the amount of saline solution poured into the surgical field from the quantity of liquid remaining in the suction collecting battle.⁴ All our patients continued bladder irrigation with normal saline solution through a three way 22 Fr urethral catheter until hematuria stopped (mean time 12 hours).

The mean time of urethral catheter removal was 5 days (range: 4-8 days) after the surgery. The patients were discharged on the mean time of 4 days (range: 3-8 days). The patients were followed one year after the surgery and their true incontinence, erectile dysfunction and bladder neck stricture were assessed.

Technique

Under spinal or epidural anesthesia, the patient is placed in supine position. The bladder is drained with a 22 Fr foley catheter. A lower midline incision is made from the umbilicus to the pubic symphysis. To access and expose the space of retzius, a self-retaining balfour retractor is placed in the incision

site and widens it with a well padded, malleable blade and the bladder displaces posteriorly and superiorly. The anterior surface of the bladder and the prostate are exposed. The preprostatic adipose tissue is totally electrofulgurate and removed with a sharp and blunt dissection until the capsule of the prostate is cleaned and the dorsal vein complex and puboprostatic ligament are exposed. Before proceeding with enucleation, only a partial control of the dorsal vein complex is enough. The incision of the endopelvic fascia, the transection of puboprosatic ligament and the control of lateral pedicles are unnecessary.

To control the dorsal vein complex, a wide transverse 2/0 chromic suture is applied 2 cm distal to the bladder neck and is tied. The second wide transverse suture applied proximally at the bladder neck, parallel to the first suture and tied. Using electrocutery depends on the prostate size, a 2 to 5 cm transverse capsulotomy is performed between the first and the second suture until the adenoma is reached. During the capsulotomy, the hemorrhage of borders is cauterized, if necessary. Then, the adenoma is dissected from the capsular borders with scissors. And the gland gently enucleated with a digital dissection. If bladder neck stricture is present after the enucleation under direct vision, a wedge of bladder neck is removed with scissors, then, an allis clamp is used to secure the posterior LIP of the bladder neck at the 6 o'clock position and one single 0 chromic suture was used to trigonize the proximal prostatic bed. If hemorrhage persists, two 0 chromic suture at 5 and 7 o'clock position are used. A 3-way 22 Fr foley urethral catheter is placed in the bladder. In each corner of the capsulotomy, a figure of eight 0 chromic suture are placed. Transvers capsulotomy is closed with continuous sutures in 2 layers. The bladder is then irrigated with saline to ensure continued hemostasis and the capsular closure was tested for leakage. The balloon of foley filled with 45cc saline and mild traction is used for 4 hours. A small closed-suction drain is placed through a separate incision, lateral to the prostate and bladder. Saline bladder irrigation is maintained until

the urine becomes clear and the foley catheter was removed after 5 days.

Results

The mean age of our patients was 72.4 years (rang: 56 to 93 years). The preoperative mean haemoglobin level was 14.3 gr/dL (rang: 12.1 to 17.4). The mean operative time was 43 min (rang: 36 to 52 min). The mean adenoma weight was 110 g (range: 95 to 195 g).

The mean catheterization time was five days (range: 4-8 days). The mean hospital stay was four days, (range: 3-7 days). All 103 patients had little intraoperative and postoperative blood loss and minimal post operative discomfort (pain, bladder complaints). The mean decrease in haemoglobin level from before the surgery to one day after that was 1.3 g/dL (range 1-1.9 gr/dL). The estimated mean bleeding during the surgery was 423 cc (rang: 200 to 800 cc). No patients required blood transfusion, either intra or post operatively. All patients were out of bed on the next day. The mean bladder irrigation time was 18 hours (range: 12 to 28 hours). After catheter removal, mild urge incontinence was observed in 9 patients (8.7%), but it was totally subsided for one month after the surgery. We did not have true incontinence. During a one year follow up period, no major complications were observed in our patients.

Discussion

Open retropubic prostatectomy was first reported by Terrence Millin in 1945.⁵ Although open prostatectomy was the first treatment for this disease, it still has a major role in treating this disease. Bruskewitz *et al.*⁶ reported that open prostatectomy comprises 3% of the prostatectomies performed in the United States. Luacs⁷ and ahlstrand *et al.*⁸ reported that 14% and 12% of prostatectomies in France and Sweden, respectively, were open prostatectomy.

A recent analysis of Spanish series suggests an increase in the prevalence of open

prostatectomy and a parallel increase in the volume of the enucleated adenoma, leading to an increase in the rate of open prostatectomy from 18.8% in 1992 to 28/6% in 2002.⁹ Currently, TUR-P is the gold standard treatment for BPH, but for large glands, no best alternative treatment has been introduced. And the new technique of KTP laser enucleation has failed to gain widespread acceptance as the procedure remains challenging and the ablation of the enucleated tissue with the morcellator is cumbersome. Laser treatment is a technique in evolution performed only in few centers and although it presents a shorter catheterization time, it appears that the operative time (from 74 to 135 minutes for adenoma can weight between 40-83 g) is longer than the other conventional techniques.² For these reasons, open prostatectomy is still an alive treatment for BPH compared to the first report of this technique, many modifications have been devised to optimize the control of bleeding without considering other parameters, like operation time and lowering other complications, bladder neck stricture and incontinence as well as medical complications due to longer time of anesthesia.

Gregoir recommended a distal mass-transfixing suture at the prostatic apex to control the deep dorsal vein and the ascending branches of the penile dorsal artery and a single ligature of the lateral vesicoprostatic pedicle on each side to block the arterial blood flow and connections between the posterolateral and the anterior prostatic venous plexus.¹⁰

Walsh and Oesterling advanced Gregoir's principles using incising puboprostatic ligaments and a mass clamp ligature of the deep dorsal vein complex at a more distal level allows a more effective control of the ascending venous blood flow.¹¹

Srougi *et al.* suggested a very complex modified technique for bleeding control; it includes incision on each side of the endopelvic fascia, a double suture ligature of arterial and venous channels at the posterolateral aspect of the vesicoprostatic junction (at 4 and, 8 as well as 5 and 7 o'clock positions) as well as a series of three row of

deep homeostatic suture on the anterior surface of the prostate in order to block the ascending blood flow of deep dorsal vein branches. Also, they suggested the figure of eight sutures in each corner of the capsulotomy before enucleation is used to prevent the lateral laceration of capsulotomy during digital enucleation of the gland.⁴ This technique is very difficult for training and has a long learning curve.

Because of the decrease in open prostatectomy rates in Western countries and the unavailability of enough cases for resident training, the simplification of modifications is important. If this complex technique (Srougi technique) is performed by a non smart surgeon, it would not only lead to a decrease in bleeding but also ends in an increase in bleeding because of the overmanipulation of the gland. Moreover the over manipulation of prostate lateral pedicles leads to an increase in erectile dysfunction and incontinence. Also, the median (range) blood loss during this surgery was 362 cc (50-700) that was significantly lower than our technique (420, 50-800).

One other modification was reported by Filiadis *et al.* This modification is based on the emphyment of the ligation of both the deep dorsal penile vein (DDPV) and the lateral vesicoprostatic pedicles before the enucleation of adenoma in retropubic adenectomy. The disadvantages of this modification are the prolongation of the operation time and the occurrence of stress incontinence attributed to a violation of external sphincter which may occur during DDPV ligation.¹²

Many patients with BPH disease are old and have a concurrent cardiovascular disease and other comorbidities. For these reason, the shortening of operating time is important to lower the complications. And also because of training problems and the long learning curve, modifications that lead to easier procedures are preferable. With a decrease in the operation time and a decrease in prostate manipulation during the surgery, bleeding and other complications are lowered. To overcome these problems, we introduced subtle changes to the simple retropu-

bic prostatectomy technique that would allow the following:

Shortening the operation time to 40 min, not increasing the bleeding because of not incising the endopelvic fascia and manipulating santorini plexus in addition to not increasing the erectile dysfunction and incontinence. In our technique, the cousterization of capsulotomy borders and rapid hemostasis after enucleation as well as use of traction lead to a decrease in bleeding and with a single hemostatic suture applied proximally around the deep dorsal vein, the potential risk of injury to the distal urethral sphincter complex is removed. We do not manipulate the endopelvic fascia and the lateral pedicle and this leads to overcoming the potential risk of incontinence and erectile dysfunction.

Conclusions

Our modified retropubic prostatectomy is a simple and efficient technique that can significantly reduce the operation time with no more bleeding.

Riassunto

Tecnica semplificata di prostatectomia retropubica: più rapida e non più emorragica

Obiettivo. Riportare la fattibilità tecnica della prostatectomia a cielo aperto modificata.

Metodi. Nel periodo compreso tra luglio 2004 e maggio 2007, 103 pazienti affetti da iperplasia della prostata benigna sono stati operati con questa tecnica. Abbiamo applicato soltanto due ampie suture trasverse sulla superficie anteriore della prostata e la capsulotomia è stata effettuata con elettrocoagulatore. Non si è proceduto all'incisione della fascia endopelvica, al controllo dei peduncoli laterali o alla transezione del legamento puboprostatico. Abbiamo analizzato in maniera prospettica i risultati preoperatori, operatori e postoperatori di tutti i pazienti.

Risultati. Il peso medio della prostata era 86 g (range: 65-195). Il tempo operatorio medio è stato di 43 minuti (range: 36-52). La durata media della cateterizzazione è stata di 5 giorni (range: 4-8). La degenza ospedaliera media è stata di 4 giorni (range: 3-7). La riduzione media dei livelli di emoglobina nel primo giorno postoperatorio rispetto ai valori preoperatori è stata di 1,3 g/dl. Il sanguinamento stimato medio durante l'intervento chirurgico è stato di 423 cc (range: 200-800 cc). Nel periodo postoperatorio, 9

pazienti (8,7%) avevano una urge incontinenza di grado lieve.

Conclusioni. La prostatectomia retropubica da noi modificata è una tecnica semplice ed efficace che può ridurre significativamente il tempo operatorio. Rispetto ad altre tecniche, non abbiamo avuto significative differenze relative al sanguinamento e ai successivi cali dei livelli di emoglobina durante l'intervento chirurgico.

Parole chiave: Prostata - Iperplasia prostatica - Prostatectomia.

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