

Haemostasis in Freyer's Prostatectomy by Rectal Mucosa Reposition Technique

V.V. Shahapurkar, N. Khare, A. Deshmukh,

Jawaharlal Nehru Medical College, Sawangi (Meghe), Wardha (Maharashtra), India

Correspondence to: Dr. Nishant Khare, Email: agyay@indiatimes.com

Background: This study was an attempt to develop a technique by which complete haemostasis can be achieved on table by reposition of the rectal mucosa in the prostatic fossa and applying traction to the Foley's catheter.

Patients and Methods: A total of 170 cases of BPH were operated by Freyer's Suprapubic Trans-vesicle prostatectomy. All 170 patients presented with symptomatic BPH. They were all admitted and treated as in-patients. During Surgery, prostate was supported with a finger passed rectally and enucleation of prostate was done. After enucleation of prostate in addition to the index finger, middle finger was inserted and the rectum was pulled caudally. This helped to exert minimal pressure over the venous plexus. A Foley's catheter three way size 22 – 24 was placed in the bladder and the bladder mucosa repositioned below the balloon posteriorly, by the finger. The balloon was inflated to 60 ml of normal saline and kept at the bladder neck and traction applied to the catheter. No suprapubic and retropubic drains were kept. Study of intraoperative blood loss was calculated by weight of sponges pre- and post-operatively soaked with blood. This gave the amount of loss in the sponge (1gm = 1ml)³ to which the amount of blood in the suction bottle was added. Study of post operative blood loss was done by collecting the urine for 24hrs and calculating the urine hemoglobin by photoelectric calorimeter by sinemethaemoglobin method.

Results: Four (4%) out of 170 patients developed wound infection. All the patients in the study group had blood loss ranging from 10 to 50 ml. The average blood loss was 18.9 ml which is significantly lower than that in other studies.

Conclusion: The balloon pressure traction technique is an effective method of achieving haemostasis and avoids blood transfusion in almost all of the patients thus treated.

Introduction

Benign prostatic hyperplasia (BPH) is the most common benign tumor in men and its incidence is age-related¹. Surgery for BPH has evolved from the days of perineal approach to the currently popular transurethral resection. Until 20-25 years ago, while open surgery was the most common approach, in the late 1970s, the development of endoscopes gradually reduced open surgical operations.² The ratio of open surgery to endoscopic resection has large variations among different countries and even among various areas of a vast country like India. TURP though considered the gold standard now is still out of reach of a vast majority of rural population due to unavailability of expertise or equipments. The rate of complications has come down heavily but still complete hemostasis remains an enigma. History elucidates the continuous attempts done to achieve complete haemostasis. This is because the prostate is deeply situated in the pelvis and its blood supply comes from the deeper planes. This study is an attempt to develop a technique by which complete haemostasis can be achieved on table by giving traction to the Foley's catheter thereby compressing the venous plexus and the avulsed prostatic arteries at the bladder neck by the inflated balloon. This technique is an innovation in the open prostatectomy which can be widely practiced in the rural areas.

Patients and Methods

The present study was conducted from June 2005 to October 2007, in the patients of Benign prostatic hyperplasia (BPH) admitted in the surgery ward at AVBR hospital, Sawangi, after the approval from the Ethical Committee of the above institute and with legal consent of patients. The procedure was carried out under the supervision of a senior surgeon. A total of 170 cases of

BPH were operated by Freyer's Suprapubic Trans-vesicle prostatectomy All 170 patients presented with symptomatic BPH. They were all admitted and treated as in-patients. Detailed clinical history of each patient was recorded and AUA symptom score was calculated. All patients were subjected to thorough clinical examination. Renal function tests, serum electrolytes, Urine culture and antibiotic sensitivity was done for all the patients. X ray KUB and USG KUB was done and prostate size and post void residual urine was calculated. Serum PSA was done only if Digital Rectal Examination was suspicious. Patients with carcinoma prostate were excluded from the study.

After making the bladder full with normal saline by per urethral catheter, a suprapubic midline incision was taken and abdomen opened in layers. Bladder was opened with a stab knife. Prostate was supported with a finger passed per rectally and enucleation of prostate was done. After enucleation of prostate in addition to the index finger, middle finger was inserted and the rectum was pulled caudally. This helps to exert minimal pressure over the venous plexus. A 22 – 24 size three way foley's catheter was placed in the bladder and the bladder mucosa repositioned below the balloon posteriorly, by the finger. The balloon was inflated to 60 ml of normal saline and kept at the bladder neck and slight traction applied to the catheter². while on table presence of clear urine was confirmed and bladder closed primarily in two layers. No suprapubic and retropubic drains were kept in place. Four out of 170 patients (4%) developed wound infection. Irrigation is started as a precautionary measure and wound is closed in layers. Traction is removed after 24 to 48 hours and balloon deflated gradually. Foley's is removed on 5th to 7th post operative day and the patient is discharged after suture removal on 10th day.

Intraoperative blood loss was calculated by weighing of sponges pre and post operatively by weighing the blood-soaked sponges. This gave the amount of loss in the sponge (1gm = 1ml)³ to which the amount of blood in the suction bottle was added. Study of post operative blood loss was done by collecting the urine for 24hrs and calculating the urine hemoglobin by photoelectric calorimeter by sinemethhaemoglobin method. Post operative blood loss was calculated by the formula⁴ below:

Post operative blood loss = Hb % Urine / Hb% Patient x volume of urine (24 hrs

Results

Table 1: Blood Loss.

Blood loss in cc	Study Group
10-50 cc	170
>50 cc	-
Average blood loss	18.9 ml

The blood loss was calculated by above formula for all the patients. Mean amount of postoperative blood loss was 18.9 ml. All the patients had blood loss in the range of 10 to 50 ml. None of the patient had blood loss greater than 50 ml.

Discussion

McGill and Belfield described Suprapubic transvesical partial enucleation of the prostate in the late 1800s. Fuller and Frayer popularized the technique of complete enucleation of the gland. However, haemostasis in this procedure was far from satisfactory as the bleeders are not directly visible. The concept of control of postoperative hemorrhage by separation of the bladder neck from the prostate fossa was presented by Lower and Harris using non-absorbable bladder neck

suture.⁵ Hryntschak modified and popularized this technique in 1951. Dela Pena and Alcina⁵ proposed separation of the bladder cavity from the prostate fossa using a removable purse-string suture in 1962. Malement popularized the removable partition suture, which is recommended only in cases of excessive bleeding in textbooks⁶⁻⁷. The average blood loss in our study was 18.9 ml. All the patients in the study group had blood loss ranging from 10 to 50 ml. In our study, as a matter of institutional policy, 2 patient required blood transfusion as the hemoglobin was less than 9 gm% preoperatively. Naninga and O'Coner⁸ in their study noted blood loss of more than 100ml in just 15% patients of cases treated with balloon pressure traction technique which is little more in comparison with our study.

Condie et al⁹ reported 1% blood transfusion rate which is comparable with our study. Sheen and Quinlan¹⁰ used early suture control at 3 O'clock and 9 O'clock for achieving hemostasis. They reported a mean blood loss of 841 ml in their study. This is significantly higher than our study. This shows that Foley's pressure traction technique achieves better hemostasis than direct suture control. Similarly, Moon¹¹ reported a blood transfusion rate of 83.3% in patients undergoing Freyer's Prostatectomy when standard technique was used. This is significantly higher than our study.

Table 2. Comparison of Blood Loss.

Study Group	Blood loss (ml)
Sheen and Quinlan ¹⁰	841
Present study	18.9

Ceylan¹² reported a significant blood loss rate of only 3.2% in his study. He had used both sutures at 3'o clock and 9'o clock position as well as traction at the bladder neck to achieve haemostasis. As a corollary, it can thus be inferred that while suture technique alone is ineffective in achieving haemostasis, traction at the bladder neck achieves haemostasis. Traction at the bladder neck also has the advantage of allowing normal involution of the prostatic fossa and thus aids in ensuring complete haemostasis which is a significant advantage over the technique of keeping inflated balloon in the prostatic fossa, wherein this normal involution is hampered and rebound hemorrhage is common. Goodyear and Beard¹³ have shown by means of serial postoperative urethrogram that the prostatic fossa, like the uterus, contracts to 50% of its size within few minutes, to 25% in 6 to 12 hours and gradually it contracts completely. This is an important mechanism for achieving haemostasis postoperatively.

In contrast to packing of prostatic fossa which interferes with this normal involuntary response, the Foley's balloon pressure traction technique not only allows the normal contraction of prostatic fossa but rather aids it.

Conclusion

The Rectal Mucosa Reposition technique with Foley's balloon traction is an effective method of achieving haemostasis and avoids blood transfusion in almost all of the patients thus treated. It is an acceptable option with a high degree of safety and efficacy in areas where the TUR-P equipment or the surgical expertise is lacking and out of reach of rural population.

References

1. Presti JC. Neoplasms of the prostate gland. In: Smith's general Urology. Edited by Tanagha EA, Mc Annich JW. International edition: McGraw-Hill, 2000; 399-421

2. Mearini E, Marzi M, Mearini L, Zucchi A, Porena M. Open prostatectomy in benign prostatic hyperplasia: 10-Year experience in Italy. *Eur Urol* 1998; 34: 480-5
3. David E, Neal, Kelly JD. The Prostate and Seminal Vesicle In : Bailey and Love Short Practice Of Surgery. Russell RCG, Williams NS, Bulstrode CJK (Eds) 24th Edition.2004 : 1370-1387.
4. Bruce A.W, Zorab J, Still B: Blood loss in Prostatic surgery. *Br. J. Urol.* 1960;32, 422
5. Stutzman RE, Walsh PC. Suprapubic and retropubik prostatectomy, 6th ed. Edited P.C. Walsh, A.B.Retik,T.a.Stamey, and E.D. Vaughan, Jr.Philadelphia W.B.Saunders Co. 1992;2851-63
6. Meier DE, Tarpley JL, Obioha O. The outcome of suprapubic prostatectomy: a contemporary series in the developing world. *Urology* 1995; 46(1):40-4
7. Han M, Alfort HJ, Partin AW. Retropubic and suprapubic open prostatectomy. In Campbell's Urology. P.C.Walsh, A.B.Retik,E.D.Vaughan, A.J.Wein.Jr (Eds). Philadelphia: Saunders Co. 2002;1423-34
8. Naninga JB, Vicent J, O Conor Jr: suprapubic prostactomy: A review. *J.Urol.* 1972; 108-453,454.
9. Condie JD, Cutherell L, Mian A. Suprapubic prostatectomy for benign prostatic hyperplasia in rural Asia: 200 Consecutive cases. *Urology* 1999;54: 1012-6
10. Shaheen A,Quinlan D. Feasibility of open simple prostatectomy with early vascular control. *BJU* 93 (3): 349–52.
11. Moon HJ, Kim CK, Yoon JB. Clinical study of prostatectomy. *Korean J Urol.*1970; (2): 57-62.
12. Ceylan K. Open Prostatectomy-The Results of a series of 320 cases in rural area. *Eur J Med* 2006(3); 1:11-5.
13. Goodyear, W.A.; Beard, D.E.: Blood loss in Prostatectomy. *J.Urol* 1949; 62:849.