1110-5704
African Journal of Urology

Vol. 11, No. 4, 2005
287-291

SCHEDULING TUNNELING TURP IN CARCINOMA OF THE PROSTATE

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Objective Some patients with obstructing carcinoma of the prostate may fail to resume spontaneous voiding following bilateral orchidectomy. This group of patients would require an additional procedure in the form of limited transurethral resection of the prostate gland (tunneling TURP) to be able to resume spontaneous voiding. The objective of this study was to compare performing simultaneous tunneling TURP and bilateral orchidectomy on one hand with deferring channel TURP for at least one month after bilateral orchidectomy in cases where the patient has failed to resume spontaneous voiding on the other.

Patients and Methods Forty-seven patients with obstructing carcinoma of the prostate were studied. Group I consisted of 22 patients who had simultaneous bilateral orchidectomy and tunneling TURP of the prostate, while Group II consisted of 25 patients who had tunneling TURP at least one month after bilateral orchidectomy. The groups were compared with regard to the ease of operation and postoperative management.

Results Intra-operative bleeding, the need for repeated cleaning of the resection loop, the operating time and the hospital stay were significantly less in Group-II patients compared to Group I.

Conclusion The results suggest that tunneling TURP when performed at least one month after bilateral orchidectomy allows enough time for a significant reduction of tissue friability, tissue adhesion to the resection loop, tumor circulation, intra-operative bleeding, operating time and postoperative hospital stay.

Key Words prostate cancer, orchidectomy, tunneling TURP

INTRODUCTION

Carcinoma of the prostate gland is the most common cancer afflicting the male sex in our population[1] and may present with both obstructive and irritative urinary symptoms. Some of these patients may require urethral catheter drainage of urine at one time or another during the course of their illness, occasionally because of disturbing urinary frequency, but mainly because of bladder outlet obstruction. The management of carcinoma of the prostate when it is detected early involves radical prostatectomy which aims at curing the patient of the disease.[2,3] However, when the patient presents late, hormonal manipulation aimed at reducing the circulating levels of androgens in the serum becomes the preferred method of management.[4,5]. Following hormonal manipulation, some of the patients on catheter drainage resume voiding of urine spontaneously when the catheter is removed, while others, despite a good response, are still unable to resume spontaneous voiding following a trial removal of the urethral catheter. This may lead to prolonged urethral catheterization[6]. Such patients would therefore require an additional procedure in the form of a limited transurethral resection of the prostate gland (tunneling TURP) to create an adequate channel in order to enable them to resume normal voiding. Due to the unpredictability of the time needed to resume spontaneous voiding and the desire on the part of the surgeon to spare the patient a second anesthesia, the surgeon may decide to perform the hormonal manipulation (such as orchidectomy) and tunneling TURP at the same time. This combined approach, however, comes with its own peculiar problems during the operative procedure of tunneling TURP. This study was therefore undertaken to compare tunneling TURP done simultaneously

with bilateral orchidectomy on one hand with tunneling TURP performed at least one month after bilateral orchidectomy in patients who failed to resume spontaneous voiding after repeated trials of removal of the urethral catheter with hormonal manipulation on the other.

PATIENTS AND METHODS

Over a 9-year period (March 1995 to February 2004), 47 patients with histologically confirmed carcinoma of the prostate on catheter drainage for acute or chronic urinary retention were studied. The procedures of bilateral orchidectomy and tunneling TURP were explained to each patient and informed consent was obtained. The patients were randomly assigned to two groups: Group 1 consisted of 22 patients (mean age: 72 ± 7 years) who had simultaneous tunneling TURP and bilateral simple orchidectomy, while Group 2 consisted of 25 patients (mean age: 74 ± 5 years) who had an initial bilateral simple orchidectomy followed at least one month later by tunneling TURP.

Both groups were compared with respect to patient age, the presence of co-morbid states, the duration of symptoms before surgery, the duration of preoperative urethral catheterization, pre and post operative packed cell volumes (PCV), the operation time for tunneling TURP, the amount of bleeding during tunneling TURP as assessed by visual estimation of the number and ferocity of the arterial bleeding points requiring diathermy coagulation, prostatic tissue friability and tissue adhesion to the loop electrode during resection necessitating repeated cleaning of the loop electrode between tissue resections, the weight of the resected prostatic tissue and the postoperative hospital stay.

Tunneling TURP was performed under caudal block regional anesthesia as previously described.[7,8] The patients were not sedated. A 24F single channel resectoscope was used. Resection was commenced at 7 o'clock, then at 5 o'clock, then the middle lobe, followed by the lateral lobes and finally the anterior lobe, until a channel considered adequate to allow spontaneous voiding had been created. No serious effort was made at achieving total resection of all resectable tissue as would have been the case in patients with benign prostatic enlargement undergoing TURP. Hemostasis was secured until the effluent of the irrigation fluid from the bladder was totally free of any visible trace of blood. In Group I, bilateral orchidectomy was then performed under local anesthetic infiltration with 1% Xylocaine with adrenaline. The duration of the procedure was documented.

Table 1: *Co-Morbid Conditions in 11 Patients*

Associated Conditions	Group 1	Group 2
Diabetes mellitus (controlled)	3	1
Cataract	-	2
Stroke	1	1
Hypertension	-	3
Total	4	7

Postoperatively, the patients resumed oral intake as soon as they wished and were discharged on antibiotics after they had voided at least once[7,8]. The choice of antibiotics was guided by the result of the patient's preoperative urine culture. The patients were instructed to phone or return to the hospital immediately if they had hematuria, otherwise to return for follow-up and the removal of sutures for the orchidectomy patients after one week. Three of the patients who had poorly differentiated adenocarcinoma of the prostate were in addition referred for radiotherapy. All those who voided spontaneously following hormonal manipulation were excluded from the study.

The results were analyzed using the SPSS 8.0 for windows package.

RESULTS

Co-morbid conditions were found in four patients in Group 1 and seven patients in Group 2 (Table 1).

The duration of urethral catheterization prior to tunneling TURP for Group 1 ranged from three weeks to six months with a mean of nine weeks and was significantly shorter than for Group 2 in whom it ranged from one month to 19 months with a mean of seven months.

The mean operative time for tunneling TURP in Group 1 was 75 minutes (range 55 to 110 minutes). This was significantly longer than the mean operative time for tunneling TURP time in Group 2 of 48 minutes (range 35 to 65 minutes) ($p<0.005$).

There was an average of 3.1 bleeders per chip of prostatic tissue resected in patients of Group 1 who bled significantly more, compared to 0.4 bleeders per chip in Group 2l ($p<0.005$), but there was no correlation between the length of urethral catheterization and the number of bleeders per chip of prostatic tissue resected ($p>0.05$).

The prostatic tissue was very friable and adhered to the loop in Group-1 patients necessitating loop cleaning after every 3-4 chips resected, while loop cleaning was only occasionally required in Group-2 patients.

The weight of the resected prostatic tissue in Group 1 (mean: 7.8 ± 2.9, range: 4-10 gm) was significantly less than that from Group 2 (mean: 23.8 ± 19.4, range: 3-40 gm) ($p=0.0006$).

The mean preoperative PCV in Group 1 (35.2 ± 1.7) was not significantly different from the mean postoperative PCV (34.7 ± 1.1) ($p=0.89$). Similarly, the mean preoperative PCV in Group 2 was not significantly different from the mean postoperative value (38.3 ± 4.5 vs. 37.9 ± 2.8) ($p=0.82$).

Eighteen patients of Group 1 (82%) were placed on continuous catheter drainage overnight and were discharged catheter-free on the day after the operation. The remaining four patients in Group 1 did not require postoperative urethral catheterization and were discharged the same day. Of the 25 patients in Group 2, none required postoperative urethral catheter drainage and all were discharged on the same day soon after the operation.

DISCUSSION

The two groups were age-matched. The duration of urethral catheterization prior to tunneling TURP was significantly longer in Group-2 patients who first had bilateral orchidectomy and came for a monthly change of their urethral catheters. After an old catheter was removed, the patients were given some hours to see if they could void spontaneously and were only re-catheterized if spontaneous voiding failed. This prolonged waiting for the resumption of spontaneous voiding inevitably translated to prolonged urethral catheterization with the possibility of associated complications.[6] However, the prolonged catheterization in this group of patients was not associated with a significant increase in intraoperative bleeding and did not translate to an overall prolongation of the operating time. The prostatic tissue was significantly less friable and less adhesive to the resection loops in Group 2 than in Group 1. This could be due to the fact that following bilateral orchidectomy or any other form of hormonal manipulation[9-11] the serum level of testosterone drops, leading to tumor shrinkage in hormone-responsive tumors, an increased cell-to-cell cohesion (less tissue friability, less tissue adhesion to the resection loop electrodes) and loss of neovascularity (less bleeding during the resection). The bleeders were therefore also significantly less in Group 2 than in Group 1. This culminated in less time being spent coagulating bleeders and cleaning the loop between tissue resections with the overall result that despite the fact that significantly more tissue was resected in Group 2, the procedure took significantly less time than in Group 1. In both groups, the postoperative PCV tended to be lower than the preoperative PCV, but the differences did not reach statistical significance. The method of assessing the number of bleeders during the procedure would appear to be a better representation of the events as they occurred, rather than using histological analysis of vessel density in the resected specimens, as described by Lissbrant et al.[12]

Since hemostasis was more easily and more satisfactorily achieved in Group-2 patients, they neither required postoperative urethral catheterization nor postoperative hospital admission and were therefore all discharged on the day of the operation.[7,8,13] The majority of Group-1 patients (82%), on the other hand, had to stay overnight on continuous urethral catheter drainage of urine before their discharge. All patients were catheter-free on discharge.

We conclude that performing simultaneous tunneling TURP and bilateral orchidectomy may prove to be a daunting experience because of increased prostatic tissue friability, tissue adhesion to the resection loop necessitating frequent loop cleaning and numerous ferocious bleeders as a result of neovascularization which characterizes tumor circulation.

On the other hand, waiting for months after bilateral orchidectomy or other forms of hormonal manipulation such as institution of LHRH agonist therapy before deciding to perform tunneling TURP will predispose the patient to the numerous preventable complications that may accompany prolonged urethral catheterization. The findings of this study would suggest that the optimum time to schedule tunneling TURP in a patient with carcinoma of the prostate on catheter drainage is about one month after bilateral orchidectomy or one month after the start of any other method of hormonal manipulation when the patient comes for change of catheter and is unable to void on removal of the catheter. This period will allow time for reduction of tissue friability, reduced tissue adhesion to the resection loop electrode and involution of the tumor circulation with resultant reduction of bleeding to the barest minimum during tunneling TURP.

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RESUME

La tunnellisation prostatique par TURP dans le carcinome de la prostate

Objectif : Quelques patients présentant un carcinome de la prostate obstructif ne peuvent pas reprendre une bonne vidange vésicale après orchidectomie bilatérale. Ce groupe de patients exigerait une résection transuréthrale limitée de la glande (tunnellisation par TURP) pour pouvoir reprendre une bonne vidange vésicale. L'objectif de cette étude est de comparer la TURP et orchidectomie bilatérale simultanée d'une part avec la TURP au moins un mois après orchidectomie bilatérale dans les cas où le patient n'a pas repris une miction de l'autre. **Patients et méthodes :** 47 patients présentant un carcinome de la prostate obstructif ont été étudiés. Le groupe 1 s'est composé de 22 patients qui ont eu une orchidectomie bilatérale et la TURP simultanées, alors que le groupe 2 s'est composé de 25 patients qui ont eu une TURP au moins un mois après orchidectomie bilatérale. Les groupes ont été comparés en ce qui concerne la facilité d'emploi et la prise en charge postopératoire. **Résultats**: Le saignement peropératoire, le besoin de nettoyage répété de l'anse de résection, le délai de reprise des fonctions et le séjour à l'hôpital étaient de manière significative moins importants chez les patients de groupe 2 comparés au groupe 1. **Conclusion :** Les résultats suggèrent que la TURP à minima une

fois exécutée au moins un mois après l'orchidectomie bilatérale accorde assez de temps pour une réduction significative de la friabilité des tissus, l'adhérence des tissus à l'anse de résection, la circulation tumorale, le saignement peropératoire, le délai de reprise des fonctions et le séjour postopératoire à l'hôpital.

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