

# FREQUENCY OF INCIDENTALLY DIAGNOSED PROSTATE CARCINOMA IN TRANSURETHRALLY RESECTED PROSTATE SPECIMENS

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## ABSTRACT

**Objectives:** To determine the frequency of incidentally diagnosed carcinoma prostate in prostatic specimens removed by transurethral approach for benign prostatic hyperplasia.

**Methodology:** This was a retrospective study conducted from January 2011 to December 2015 on 450 specimens of transurethral prostatectomy performed for benign prostate hyperplasia. Specimens were handled in histopathology department of Lady Reading Hospital Peshawar. All consecutive transurethral prostatectomy specimens received from Lady Reading Hospital or outside, were included in the study. Patients with elevated prostate specific antigen, abnormal digital rectal examination and already diagnosed prostate cancer were excluded. Total weight of specimens, presence of prostatic carcinoma in the tissue, Gleason's scores and volume of the cancer in percentage were recorded. Hematoxylin and Eosin stains were used for staining purpose.

**Results:** A total of 450 specimens were received. Mean age of the patients was  $55 \pm 8$  years ranging from 43-85 years. Out of these 450 specimens 8 specimens (1.8%) were found incidentally to have prostatic cancer. Gleason score ranged from 6 to 7. Six specimens had T1a while two had T1b cancer. Age of all of the patients having incidental cancer was above 60 years.

**Conclusion:** Incidental prostate cancer continues to be present in transurethral specimens specifically of elderly patients. Therefore specimens of such patients should be dealt with care both grossly and microscopically.

**Key Words:** Incidental prostate cancer, transurethral resection of prostate, Benign prostatic hyperplasia

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## INTRODUCTION

Transurethral resection of the prostate (TURP) is considered as standard surgical treatment modality for treating benign prostatic hyperplasia (BPH). The reported incidence of incidental carcinoma prostate is 5-13%<sup>1</sup>. Besides BPH, other commonly encountered pathologic conditions in prostate are prostatic cancer and prostatitis. Prostatic cancer is the 2<sup>nd</sup> most commonly diagnosed cancer in the world and the 6<sup>th</sup> leading cause of death due to cancer in males<sup>2</sup>. Etiology of this cancer is not known<sup>3</sup>.

Incidental prostate cancer (IPC) is defined as that cancer of prostate which is not evident clinically by palpation or identified by imaging. IPC of stage T1a and T1b are diagnosed by histologic study of the prostatic chips removed by TURP. T1a is that stage of prostatic

cancer in which 5% or less of the resected tissue is involved by the cancer, whereas T1b is that stage in which more than 5% of the resected tissue is involved<sup>3,4</sup>. Before prostate specific antigen (PSA) was used for screening of prostatic cancer, rate of incidental prostatic cancer was high i.e. up to 27% at the time of TURP. Nowadays due to increased use of PSA for screening of prostatic cancer the incidence of incidental prostatic cancer in TURP specimens is low<sup>4</sup>. Some of these low volume T1a and T1b tumors may not cause a rise in serum PSA level, therefore prostatic malignancies in small quantity ranging from 3 to 16% are still diagnosed in prostatic chips removed by TURP for BPH<sup>5,6</sup>.

This study was done to determine the frequency of incidental carcinoma prostate in prostatic biopsy specimens removed otherwise for benign pathology. Moreover it was also aimed to produce awareness both in

patients as well as health professionals not to rely completely on the screening tests like serum PSA, radiologic and sonologic studies but to render all such specimens to histopathological evaluation for confirmation. If any of these specimens contains an incidental carcinoma, then the patient should be kept under active supervision and evaluation for any spread and to treat him well in time.

**METHODOLOGY**

This was a retrospective study conducted on 450 consecutive TURP specimens at histopathology section of the Department of Pathology, Lady Reading Hospital, Peshawar. Its duration spread over five years starting from 1st January 2011 to 31st December 2015. Laboratory request forms and histopathology reports of TURP specimens were retrieved from the record and were analyzed for presence or absence of incidental prostate cancer in them. Identity of the patients was not revealed. All the patients operated at LRH or elsewhere by TURP for the treatment of signs and symptoms of benign prostatic hyperplasia (BPH) but their specimens being processed in the Department of Pathology of LRH were included in the study. Patients with elevated prostate specific antigen (PSA), findings on digital rectal examination (DRE) and with already diagnosed prostatic cancer prior to TURP were excluded from the study. Total weight of TURP specimens was recorded. Presence of prostatic carcinoma in the chips, Gleason’s scores and percentage of total specimen showing cancer were noted after studying the Hematoxylin and Eosin stained sections, under the microscope by a histopathologist.

Regarding processing of the TURP chips, standard protocol was followed. Up to 10 grams of tissue chips were embedded in up to 4 cassettes as such. In specimens weighing more than 10 grams, initial 10 grams of tissue grossly suspicious for any pathology were embedded in 4 cassettes. For the remaining tissue in

such cases, additional cassettes, each accommodating 2 grams of chips per each additional 10 grams of the specimen were used. Similarly in case of incidental carcinoma prostate in any specimen, all remaining chips of that specimen were submitted for histopathologic evaluation as per guidelines of the College of American Pathologists (CAP).

Gleason’s grade depends on common morphological patterns scored from 1-5, 1 the most differentiated and 5 the least differentiated pattern. Gleason’s score is determined by addition of scores of the two most common morphological patterns (Primary or the most predominant and secondary or the second most prevalent). This Gleason’s score ranges from 2 (1+1) to 10 (5+5). When a tumor has only one histologic pattern, then score of that pattern is doubled to determine the combined Gleason’s score or Gleason’s sum. As the Gleason’s sum or score increases the differentiation of the tumor decreases and vice versa.

Data was collected for the variables like age of the patients and grade and stage of incidental carcinoma. Mean, standard deviation and range for the variable of age were derived by using Microsoft excel software. Grade and stage were presented in a tabulated form by applying descriptive statistics.

**RESULTS**

Specimens of 450 men (age range of 43–85 years, mean 55 ±8 years) were included in the study. During histopathologic evaluation of these 450 TURP specimens, 442 (98.2%) were confirmed to have BPH while in eight (1.8%) specimens prostatic cancer was found. Six out of these eight incidental cancers were of Gleason grade 6 while two were of Gleason grade 7. Out of these eight specimens, six had a tumor volume of less than 5% of the total resected chips (T1a cancer) while two had a tumor volume of more than 5% of the to-

**Table 1: Characteristics (age, grade, stage and management) of patients having Incidental prostate cancer (n=8)**

S.No	Patient Age	Gleason grade	Stage	Management
1	79	3+3 =6	T1a	AS
2	84	3+3 =6	T1a	AS
3	67	3+3 =6	T1a	AS
4	85	3+4 =7	T1b	RP
5	78	3+3 =6	T1a	AS
6	82	4+3 =7	T1b	RP
7	65	3+3 =6	T1a	AS
8	64	3+3 =6	T1a	AS

AS: active surveillance; RP: radical prostatectomy

tal resected specimens (T1b cancer). Six patients were managed with an active surveillance protocol while two patients were subjected to radical prostatectomy (Table 1). These two patients had no evidence of malignancy at last follow-up visit.

The mean weight of tissue resected by TURP was 11 grams (range 0.8–110 grams) and the mean percent of tissue submitted for histopathologic evaluation was 85%.

## DISCUSSION

There are several diagnostic tools including serum PSA, DRE and imaging modalities like transrectal ultrasonography which are helpful in picking cancer of prostate before TURP<sup>3,7</sup>. Among these diagnostic tools serum PSA level estimation is considered as a better predictor of prostate cancer<sup>3</sup>. In the present PSA era, different rates of incidental prostate cancer (IPC) have been reported by different studies but all of them have indicated, that the rate of finding IPC in TURP specimens has been reduced after availability of these pre-operative investigations<sup>8</sup>. Jones and colleagues<sup>9</sup> comparing the frequency of IPC among patients undergoing TURP in the pre-PSA and the PSA era have showed a drastic decrease in frequency of IPC from 14.9% in pre-PSA to 5.2% in PSA era, noting a significant drop especially in clinical stage T1b cancer. Another study conducted by Zigeuner and colleagues<sup>10</sup> has showed incidental prostate cancer to be 13% in pre PSA era while 6.4% in the PSA era. Apart from these two studies several other studies conducted in PSA era have shown IPC in 4–15%<sup>11–13</sup> and 4.8 to 16.7%<sup>14–17</sup> of patients undergoing TURP for their problem of BPH.

Contrary to the results of these mentioned studies, our study showed a lower frequency (8/450 or 1.8%) of IPC in specimens of TURP. There are 2 possible reasons for explaining this decrease. Firstly more of the patients in our study were younger as compared to those in other studies. The second reason may be that patients having increased PSA level before doing TURP were subjected to prostate biopsy for confirmation of cancer or otherwise and those having cancer were excluded from the study.

Out of these 8 (1.8%) patients of IPC in our study, only two had clinical stage T1b cancer. One of these two patients had cancer with Gleason grade 3+4=7 pattern while the other had a cancer of Gleason grade 4+3=7 pattern. Both of them underwent radical prostatectomy for complete removal of their remaining prostate. This detection rate in our study is slightly high as compared to 1.4% reported in a study conducted by Otto et al<sup>4</sup>. However, it is consistent with the overall decrease in incidental prostate cancer in the PSA era<sup>4</sup>. Reason of this slightly high incidence rate may be that instead of ran-

dom sampling technique we processed and examined maximum TURP chips of all the patients which may be associated with high detection rate in our study as compared to the referred one.

It is now evident that despite advances and improvement in diagnostic modalities for prediction of IPC before undergoing TURP, a few cases of IPC are still diagnosed in the TURP specimens mainly in patients of advanced age<sup>18</sup>. Due to this reason, specimens of TURP especially of patients having age more than 60 years should not be discarded and should be given proper attention during histologic evaluation. This practice will help in timely picking and treating any incidental cancer missed during pre-surgical evaluation of BPH cases.

## CONCLUSION

Incidental prostate cancer continues to be present in transurethral specimens specifically of elderly patients. In spite of low rate (1.8%) of incidental prostate cancer in our study, all TURP specimens should be subjected to a histopathological review. We suggest that if two out of 100 patients as detected in the present study having no knowledge of their cancer are diagnosed and managed well before complications, it may reduce morbidity.

## REFERENCES

1. Sakamoto H, Matsumoto K, Hayakawa N, Maeda T, Sato A, Ninomiya A et al. Pre-operative parameters to predict incidental (T1a and T1b) prostate cancer. *Can Urol Assoc J* 2014; 8:815-20.
2. Begum Z, Attar AH, Tengli MB, Ahmad MM. Study of Various Histopathological Patterns in Turp Specimens and Incidental Detection of Carcinoma Prostate. *Ind J Pathol Oncol* 2015; 2:303-8.
3. Varghese J, Kuruvilla PM, Mehta N, Rathore SR, Babu M, Bansal D et al. Incidentally Detected Adenocarcinoma Prostate in Transurethral Resection of Prostate Specimens: a Hospital Based Study from India. *Asian Pac J Cancer Prev* 2016; 17:2255-8.
4. Otto B, Barbieri C, Lee R, Te AE, Kaplan SA, Robinson B et al. Incidental Prostate Cancer in Transurethral Resection of the Prostate Specimens in the Modern Era. *Adv Urol* 2014; 2014:1-4.
5. Rajab R, Fisher G, Kattan MW, Foster CS, Møller H, Oliver T et al. An improved prognostic model for stage T1a and T1b prostate cancer by assessments of cancer extent. *Mod Pathol* 2011; 24:58–63.
6. Simsir A, Akdogan B, Cal C, Baltaci S, Ozen H. Treatment of Incidental Prostate Cancer Diagnosed during BPH Surgery with Radical Prostatectomy: Appropriate or over Treatment? *J Cancer Therapy* 2012; 3:256-62.
7. Sakamoto H, Matsumoto K, Hayakawa N, Maeda T, Sato A, Ninomiya A et al. Preoperative parameters to predict

- incidental (T1a and T1b) prostate cancer. *Can Urol Assoc J* 2014; 8:e815-20.
8. Lee DH, Chung DY, Lee KS, Kim IK, Rha KH, Choi YD et al. Clinical Experiences of Incidental Prostate Cancer after Transurethral Resection of Prostate (TURP) According to Initial Treatment: A Study of a Korean High Volume Center. *Yonsei Med J* 2014; 55:78–83.
  9. Jones JS, Follis HW, Johnson JR. Probability of finding T1a and T1b (incidental) prostate cancer during TURP has decreased in the PSA era. *Prostate Cancer Prostatic Dis* 2009; 12:57–60.
  10. Perera M, Lawrentschuk N, Perera N, Bolton D, Clouston D. Incidental prostate cancer in transurethral resection of prostate specimens in men aged up to 65 years. *Prostate Int* 2016; 4:11–4.
  11. Jones JS, Follis HW, Johnson JR. Probability of finding T1a and T1b (incidental) prostate cancer during TURP has decreased in the PSA era. *Prostate Cancer Prostatic Dis* 2009; 12:57–60.
  12. Merrill RM, Wiggins CL. Incidental detection of population-based prostate cancer incidence rates through transurethral resection of the prostate. *Urol Oncol* 2002; 7:213-9.
  13. Martino P, Palazzo S, Battaglia M, Lucarelli G, Selvaggi FP. Incidental prostatic cancer: repeat TURP or biopsy? *Urol Int* 2004; 73:193-7.
  14. Voigt S, Huttig F, Koch R, Propping S, Propping C, Grimm MO et al. Risk factors for incidental prostate cancer who should not undergo vaporization of the prostate for benign prostate hyperplasia? *Prostate* 2011; 71:1325–31.
  15. Jones JS, Follis HW, Johnson JR. Probability of finding T1a and T1b (Incidental) prostate cancer during TURP has decreased in the PSA era. *Prostate Cancer Prostatic Dis* 2009; 12:57–60.
  16. Dellavedova T, Ponzano R, Racca L, Minuzzi F, Dominguez M. Prostate cancer as incidental finding in transurethral resection. *Arch Esp Urol* 2010; 63:855–61.
  17. Helfand BT, Anderson CB, Fought A, Kim DY, Vyas A, McVary KT. Postoperative PSA and PSA velocity identify presence of prostate cancer after various surgical interventions for benign prostatic hyperplasia. *Urology* 2009; 74:177–83.
  18. Froehner M, Buck LM, Koch R, Hakenberg OW, Wirth MP. Derivatives of prostate-specific antigen as predictors of incidental prostate cancer. *Br J Urol Int* 2009; 104:25–28.

#### CONTRIBUTORS

MAK conceived the idea, planned the study, and drafted the manuscript. HUS and MG helped acquisition of data and did statistical analysis. AQ critically revised the manuscript. All authors contributed significantly to the submitted manuscript.