

FREQUENCY OF INCIDENTAL PROSTATE CANCER IN PATIENTS WITH CLINICALLY BENIGN ENLARGED PROSTATE GLAND

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ABSTRACT

Objective: To determine the frequency of incidental prostate cancer (IPC) in patients with clinically benign enlarged prostate gland and to assess its association with baseline characteristics.

Study Design: Descriptive cross-sectional study.

Place and Duration of Study: Department of Urology, Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro, from March to August, 2025.

Methodology: In all, 71 cases with a diagnosis of clinically benign prostatic hyperplasia, PSA < 4 ng/ml and post-void residual urine >100 ml in age group of 45–80 years were selected by consecutive non-probability sampling technique. Each patient had been operated by TURP (Transurethral Resection of Prostate). Incidental prostate cancer was diagnosed if carcinoma was found on histopathology without any clinical suspicion of malignancy prior to surgery. SPSS software version 26 was used for analysis and significance of results was decided at $p \leq 0.05$ using Chi square test.

Results: The mean age of patients was 61.41 ± 10.54 years and mean PSA level was 2.47 ± 0.75 ng/ml. Majority of patients were from urban areas (54.9%) and belonged to the middle socioeconomic group (46.5%). Incidental prostate cancer was detected in 8 patients (11.3%), while 63 (88.7%) had benign histology. No statistically significant association was observed between IPC and age ($p=0.958$), PSA level ($p=0.542$), residential status ($p=0.527$), or socioeconomic status ($p=0.054$).

Conclusion: Incidental prostate cancer was found in 11.3% of patients with clinically benign enlarged prostate glands.

KEYWORDS: Incidental prostate cancer, benign prostatic hyperplasia, TURP, PSA, histopathology.

Introduction

Prostate cancer is amongst the most prevalent cancers diagnosed in elderly men, being the second largest contributor to cancer fatalities across the globe, accounting for an estimated 125,000 new cases and 41,000 deaths every year (1). Late presentation is a common problem for this condition, usually culminating in late diagnosis when the cancer has progressed to an irreversible stage. Age, genetics, smoking, and excessive consumption of dietary fat are some known risk factors for prostate cancer (2).

IPC is classified as a carcinoma discovered incidentally through histopathology following surgery for what was thought to be a case of BPH, with no clinical indication of any tumor at the time of the procedure (3). Even with significant improvements in preoperative evaluation via PSA measurement and multiparametric MRI, IPC continues to occur in patients undergoing surgical treatment, such as TURP, for bladder obstruction due to BPH (4,5).

TURP is still the gold standard surgical procedure for BPH and mainly consists of resection of transitional zone of the prostate in which the possibility of tumors can be detected by chance. Diagnosis of prostate cancer is made traditionally by Digital Rectal Examination, but sensitivity is very low because only about 20 to 40 percent of the cases are diagnosed (6). Incidence rate of Prostate Cancer also differs according to geographic location as in Asian nations incidence rate is less than 5 per 100,000 population while in western nations, it exceeds 100 per 100,000 population (7,8). The incidence rate of prostate cancer is also rising in Pakistan with an increase of almost 60 percent (9).

Past local studies have reported incidence rates of prostate cancer in 10% to 16% of patients who underwent surgical intervention in relation to their enlarged prostates which were clinically found to be benign (10,11). Local literature about the condition is limited especially in tertiary hospitals. It is critical to ascertain the prevalence of incidentally identified cancers because they tend to be asymptomatic and thus difficult to diagnose. In this regard, the current

research was planned in order to identify the frequency of incidence of incidental prostate cancers in patients with clinically benign prostates presenting in a tertiary hospital setting.

METHODOLOGY

The current descriptive cross-sectional study was conducted in the Department of Urology at LUMHS, Jamshoro during a span of six months, which includes March to August, 2025. The current study was approved by the Institutional Ethical Review Committee (IERC) with reference no. [LUMHS-REC/624] and dated February 11, 2025. The current study recruited a total of 71 patients using the non-probability consecutive sampling technique, calculated using WHO sample size calculator with 10% prevalence, 7% margin of error, and 95% confidence level.

Subjects with age ranging between 45 and 80 years old, having enlarged prostate gland on clinical examination, PSA of less than 4 ng/ml, and post-voiding residual volume of over 100ml by ultrasound were recruited for the research. Subjects who had any previous surgery to their prostate glands, having a history of malignancy of the prostate, having any abnormality found during the digital rectal examination, and having previous surgery to the prostate glands were excluded from the research.

The informed consent was obtained after which the demographic information of age, PSA levels, residential status, and social economic status was collected. All the subjects went through physical examination and some baseline tests such as full blood count, blood sugar, renal function tests, serum electrolyte levels, and determination of PSA levels. All patients were subjected to transurethral resection of the prostate (TURP) done by an experienced consultant urologist having over five years of experience. The specimens obtained after TURP were subjected to histopathological evaluation to rule out incidental carcinoma. Incidental prostate cancer is defined as the presence of carcinoma on histopathological evaluation of prostate tissues obtained after transurethral resection of prostate in a patient without any suspicion of having prostate cancer before undergoing surgery with PSA value greater than 2.5 ng/ml before surgery.

Data were analyzed by using statistical software package for social sciences version 26. The normality of quantitative data including age and PSA was tested by applying the Shapiro-Wilk test. Since the data is normally distributed, the quantitative data were reported as mean \pm SD. The categorical data including residential status, socioeconomic status, and outcome were reported as frequencies and percentages. Effect modifier control was achieved by stratifying for age, PSA levels, residential status, and socioeconomic status, followed by testing using chi-square/Fisher's Exact Test with significance level <0.05 .

RESULTS

The sample size for this study comprised 71 patients having benign enlarged prostate glands. The average age of the patients was 61.41 ± 10.54 years, whereas the average PSA serum level was 2.47 ± 0.75 ng/ml. When considering the place of residence, 39 (54.9%) patients lived in urban locations while 32 (45.1%) patients were from rural locations. With regard to socioeconomic status, the patient distribution was 28 patients (39.4%) for the low SES, 33 patients (46.5%) for the medium SES, and 10 patients (14.1%) for the high SES group (**Table 1**).

Incidental prostate cancer (IPC) was detected in 8 patients, yielding a frequency of 11.3%, while 63 patients (88.7%) had no evidence of malignancy on histopathology (**Table 2**).

Furthermore, the relationship between IPC and demographic parameters was studied. While IPC was common amongst older people, there was no significant relationship between age groups and IPC ($p = 0.958$). Furthermore, PSA levels were not significantly associated with IPC ($p = 0.542$); five cases (62.5%) were seen in individuals with PSA <2.5 ng/ml and three cases (37.5%) in individuals with PSA >2.5 ng/ml. As regards residence status, there was no statistically significant relationship between urban and rural residence status and IPC; four cases each of both were found, yielding a p-value of 0.527. Likewise, socioeconomic status showed no statistically significant relationship with IPC. However, a larger number of patients belonged to the lower SES, with four cases, followed by upper SES, which had three cases, and middle SES, which had one case ($p = 0.054$) (**Table 3**).

Table1. Baseline Data of the patients (n=71)

Baseline Data	(mean \pm sd)/n(%)
Age (Years)	61.41 + 10.54
PSA (ng/ml),	2.47 + 0.75
Residential status	
• Urban	39 (54.9%)
• Rural	32 (45.1%)
Socioeconomic status	
• Low	28 (39.4%)
• Middle	33 (46.5%)
• High	10 (14.1%)

Table 2. Frequency of incidental prostate cancer in patients with clinically benign enlarged prostate gland

Incidental prostate cancer	n (%)
Yes	8 (11.3%)
No	63 (88.7%)

Table 3. Comparison of frequency of incidental prostate cancer with respect to the baseline data of the patients (n=71)

Baseline Data	IPC		P-value
	Yes (n=8)	No (n=63)	
Age (Years) • 45-60 • 61-70 • 71-80	03 03 02	27 22 14	0.958
PSA (ng/ml) • ≤2.5 • >2.5	05 03	36 27	0.542
Residential status • Urban • Rural	04 04	35 28	0.527
Socioeconomic status • Low • Middle • High	04 01 03	24 32 07	0.054

DISCUSSIONS

Incidental prostate cancer (IPC) is a term used to describe the identification of cancer by histopathological assessment of tissue removed for suspected benign prostatic hypertrophy. Although prostate-specific antigen (PSA) screening and improved radiographic investigations have become common practice, incidental prostate cancer still continues to be a significant issue globally. In the current study, IPC was found in 11.3% of patients who had undergone surgical intervention for enlarged, seemingly benign prostate glands. The results indicate that a significant number of patients with seemingly benign conditions may actually be suffering from an underlying malignancy.

The frequency noted in this study is consistent with studies conducted in other countries including Pakistan. According to the reports by Naeem et al., the IPC frequency was 10.0% in 241 patients who underwent TURP for clinically benign prostatic hyperplasia in Peshawar. Meanwhile, Janjua et al. noted an incidence of 10.7% among 2,386 TURP specimens in their retrospective study conducted in Karachi. Additionally, Khan et al. noted the incidence of incidental carcinoma at about 9% of the cases where transurethral prostate resection was conducted. This is consistent with the results obtained from the current study in which the frequency was 11.3%.¹²⁻¹⁴

In addition, recent findings in Pakistan provide additional support for the persistent problem of IPC. In a study by Javed et al., the authors found that incidental prostate cancer is significant in patients who had undergone transurethral resection of prostate for benign prostatic hyperplasia and that it is important to do a histopathological analysis of excised specimens.¹⁵ Likewise, findings in similar studies from tertiary hospitals in Pakistan show a consistent incidence of incidental prostate cancer.¹⁶

The mean age of patients in the study was 61.41±10.54 years. Age is a proven risk factor for developing prostate cancer and the prevalence of incidental prostate carcinoma in our study population was higher among individuals aged more than 60 years. However, no significant relationship was found between age category and incidence of IPC (P=0.958). This could be due to small sample size and low number of positive cancers recorded. Several studies have proven an increase in the incidence of incidental prostate cancers with increasing age because of genetic changes associated with aging.^{11,12,17}

Nevertheless, serum PSA level is still the most common marker of prostate cancer; nevertheless, it is characterized by poor specificity since high PSA concentration may be observed in cases of benign prostatic hyperplasia or urinary retention. In the present research, no correlation between serum PSA levels and incidental prostate cancer was revealed (p = 0.542). Nevertheless, most cases of incidental prostate cancer were detected in individuals with PSA concentrations less than 2.5 ng/ml. Naeem et al. also observed similar findings, which showed that incidental cancers were found even in patients with moderate PSA level and clinical findings of digital rectal examination being

benign.¹¹ Moreover, recent literature has shown that many incidental cancers remain undiagnosed pre-operatively due to the location of the lesions in the transition zone, resulting in insignificant PSA elevation.¹⁶ IPC incidence rates between 4% and 17% have been found in different research conducted internationally. The variation in incidence rate could be due to difference in screening strategy used and health care system prevailing. However, the rate of occurrence obtained in this study lies within the range that has been identified worldwide and is very close to recent data of Pakistan.^{12,16-18}

There are some limitations to the current study. First, due to the small sample size and the use of a single center, it may be difficult for the study's results to be generalized and may also make it hard to establish relationships between the characteristics at baseline and IPC. However, it is important to note that the prevalence found here is almost consistent with other larger studies in Pakistan.^{11,12,15}

CONCLUSION

Incidental prostate cancer was found in 11.3% of patients undergoing surgery for clinically benign enlarged prostate glands, which is an alarming rate of occurrence of the malignant condition in such cases. It was also discovered that there was no significant relationship between incidental prostate cancer and age, PSA levels, residence and socio-economic status. The study highlights that clinically benign presentation and low PSA levels do not reliably exclude underlying carcinoma. Therefore, routine histopathological examination of all prostatic tissue obtained during surgical management of BPH remains essential for early and accurate detection of incidental malignancy.

Conflict of Interest: Nil

Financial Assistance: Nil

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