SHORT REPORT

Incidental prostate cancer: a 23-year review of a tertiary care hospital

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Abstract

Prostate cancer is the second most commonly diagnosed malignancy in men worldwide. The prevalence has been increasing with significant differences between regions. This study assesses the prevalence of incidental prostate cancer detected in specimens removed during bladder outlet obstruction operation.

A retrospective analysis of the records of patients who had either endoscopic or open prostatectomy from January 1998 to December 2021 was conducted. The variables analysed were age, procedure, date of surgery, and Gleason score.

A total of 2,842 patients underwent surgery on the prostate gland during the study period. Most of the patients, i.e. 2,733 (96.2%), were pathologically diagnosed with benign prostatic hyperplasia, while only 110 (3.9%) had prostate cancer.

The frequency of incidental prostate cancer following surgery for bladder outlet obstruction has decreased over the last two decades at our centre, possibly because of an increase in PSA testing.

Keywords: Prostatic neoplasms, Prostatectomy, Transurethral Resection of the prostate, Prostate-specific antigen testing.

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Introduction

Prostate cancer is the second most commonly diagnosed malignancy in men worldwide.[1] The prevalence has been increasing worldwide with significant differences between regions. Australia and USA have the highest reported prevalence, while Asia has the lowest.[2] Black Caucasian men are at a higher risk of developing this malignancy compared to white and Asian men.[1] Age and family history are the most important risk factors. [3]

The diagnosis is based on the histopathological assessment of the biopsy specimen. Suspicion is raised by an elevated Prostate-specific antigen (PSA), abnormal digital rectal examination, and abnormal imaging. The role of PSA in the diagnosis of early asymptomatic prostate cancer is an unresolved issue. Contrasting data and recommendations regarding the use of PSA testing as a screening tool based on its impact on cancer-related mortality are available.[4, 5]

The presentation of early prostate cancer is often asymptomatic and difficult to differentiate from benign prostate hyperplasia. Patients who undergo surgery for bladder outlet obstruction caused by a suspected benign prostate run the risk of an incidental diagnosis of prostate cancer. Although such incidental diagnosis has little impact on the staging of prostate cancer, it alters the possible treatment options. For example, after Transurethral Resection of the Prostate (TURP) brachytherapy is often impossible and the morbidity of radical prostatectomy increases.[6] It is, therefore, preferred to rule out the possibility of asymptomatic prostate cancer before embarking on surgical treatment of benign prostatic hyperplasia, i.e. TURP or simple prostatectomy.

The possibility of prostate cancer is ruled out based on the assessment of serum PSA and digital rectal examination. Any abnormality in these two parameters is confirmed with prostatic biopsy either by the transrectal or transperineal route.

At Sindh Institute of Urology and Transplantation Karachi, PSA was not routinely used before surgery of the prostate gland during the first decade of the century, however, it became a norm over time. This study aims to assess the prevalence of incidental prostate cancer on histopathological examination of the specimen removed as part of surgery of the prostate gland, i.e. transurethral resection of the prostate or simple prostatectomy.

Methods and Results

This is a retrospective analysis of patients' records from January 1998 to December 2021. All patients who underwent either transurethral resection of the prostate or open simple prostatectomy for the treatment of an

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enlarged prostate were included in the study. The variables collected included the patient's age, operative procedure, date of surgery, histopathology, and Gleason score. The study protocol was reviewed and approved by the hospital's ethical committee. During the initial part of the study period, prostate-specific antigen testing was not routinely performed. However, the testing was included in the assessment of patients later on. The decision to perform a prostate biopsy before surgery was taken based on a high level of PSA (> 4ng/ml), high PSA density (> 0.15), and an abnormal digital rectal examination.

The data analysis was performed using SPSS version 20 (SPSS: An IBM Company, IBM Corporation, Armonk, NY, USA). The qualitative variables were reported as frequency while quantitative variables were shown as mean and standard deviation. The Pearson correlation test is used to test for association between qualitative variables and the independent t-test was used for quantitative variables. P-value <0.05 was considered significant.

Incidental prostate cancer is defined as cancer diagnosed from the tissue obtained from prostate surgery performed to relieve lower urinary tract symptoms caused by an enlarged prostate. On TNM staging, such cancers are classified as cT1a-b.[4] Most centres across the world use diagnostic protocols to rule out cancer of the prostate before embarking on bladder outlet obstruction surgery. These include a detailed history, clinical examination, and serum testing for tumour markers. An abnormal digital rectal examination, raised prostate-specific antigen, or abnormal magnetic resonance imaging increases the suspicion of an underlying malignancy. In such situations, a needle core biopsy of the prostate either through the transrectal or transperineal route is performed preoperatively.[4]

In this study, the overall frequency of incidental prostate cancer in the entire patient cohort was 3.9% (110/2842). There is a great variation in the literature; the reported frequency of such cases ranges from 1.4 to 16.7%.[7] A possible explanation is a disparity in diagnostic protocols used to clinically diagnose prostate cancer. Since the diagnostic yield of DRE alone is low, there is a greater chance of missing cancer when PSA testing is not used. [8]

On stratification according to age, the frequency of IPC was seen rising successively with age from 0.63% (1/157) in < 50 years to 6.2 % (31/497) in those 71 to 80 years old. The difference was statistically significant (p-value 0.007).

The year-by-year analysis of data revealed a decreasing

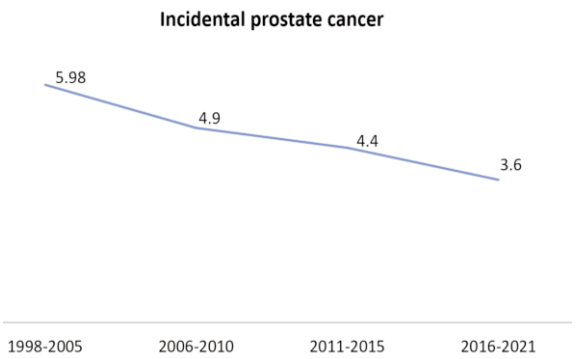

Figure: Frequency of Incidental Prostate Cancer with respect to time.

frequency of IPC over the entire study period (Figure 1). This can be explained by the increasing use of PSA testing over the last two decades which ultimately translated into a lower frequency of undetected prostate cancer. Studies across the world have shown a similar fall in IPC frequency with the use of PSA testing.[9, 10]

On stratification according to the operative procedure, 9(4.8%) of simple prostatectomy patients and 101(3.7%) of TURP patients had incidental prostate. The difference was not statistically significant (p-=0.471). The higher frequency of the former could be explained by greater tissue available for analysis after simple prostatectomy compared to transurethral surgery. Another consideration is the type of tissue removed, i.e. transurethral surgery removes only the periurethral tissue, while most of cancer lies in the peripheral zone.

The grade of IPC based on ISUP grading was observed to

Table-1: Descriptive statistics.

Category	N (%)
Age (mean) years	68.74 ± 9.87
Age (years)	
< 50	157 (5.5%)
51-60	851 (29.9%)
61-70	1225 (43.1%)
71-80	497 (17.5%)
> 80	112 (3.95)
Type of procedure	
Transurethral resection of the prostate	2655 (93.4%)
Simple prostatectomy	187 (6.5%)
Histopathology	
Adenocarcinoma prostate	110 (3.9%)
Benign Prostatic hyperplasia	2732 (96.2%)
ISUP* Grade	
1	22 (20.9%)
2	19 (17.2%)
3	17 (15.4%)
4	16 (14.5%)
5	31 (28.1%)

* International Society of urological pathology

be > 3 in 58.1% (64/110) of the cases (Table 1). This is an important finding considering that most high-grade cancers are clinically significant. As mentioned above, the diagnosis of malignancy made after bladder outlet obstruction surgery limits the oncological treatment options.

The emerging diagnostic pathways for prostate cancer detection have shown promise to further decrease the frequency of IPC. The PRIMOS trial has shown multi-parametric MRI to be more accurate in making a diagnosis of malignancy of the prostate.[4] However, the limited availability and high cost of imaging remain a significant challenge to its widespread use.

Conclusion

The frequency of incidental prostate cancer following surgery of presumed benign prostatic enlargement has decreased over the last two decades at Sindh Institute of Urology and Transplantation, Karachi. Most of these cancers were high-grade and, therefore, more likely to be clinically significant. The possibility of undetected malignancy should be addressed before embarking upon prostatic surgery for lower urinary tract symptoms by using prostate-specific antigen testing, clinical examination and imaging.

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