

## Histopathological Spectrum of Various Prostatic Lesions in TURP Specimens: A Retrospective Study

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### Abstract:

**Background:** In adult men, benign prostatic hyperplasia (BPH) and prostate cancer are major causes of morbidity and death. Other prostatic lesions include inflammatory conditions and lesions in situ. TURP is required to detect these abnormalities, particularly prostatic cancer.

The purpose of this study was to assess the histomorphological spectrum of distinct prostatic lesions in TURP tissues.

**Materials and Procedures:** A total of 85 TURP specimens were investigated during a two-year period, from April 2018 to March 2020. The cases were examined in terms of their entire history, clinical examination, and histological results. The diagnostic criteria were modified from World Health Organization (WHO) recommendations.

**Result:** Over a 2-year period, 85 prostate TURP tissues were analyzed, with 81 instances of benign lesions (95.2%) and 4 cases of malignant lesions (4.8%). Among the benign lesions were 54 instances of benign prostatic hyperplasia (BPH), 24 cases of BPH with prostatitis, and 2 cases of granulomatous prostatitis.

**Conclusion:** TURP is important in the diagnosis of prostatic abnormalities. The benign lesions outnumber the malignant ones. The modified Gleason score is used to grade prostate cancer because it is straightforward and accurate.

**Keywords:** Benign prostatic hyperplasia, prostatic intraepithelial neoplasia, prostatic cancer, rural hospital.

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### Introduction

The majority of instances of prostatic disease are caused by benign prostatic hyperplasia (BPH), followed by prostatic adenocarcinoma. With prostate carcinoma being the second most prevalent cancer diagnosed in males, a thorough examination of an adult man with prostatic hyperplasia becomes critical [1].

Diverse prostatic lesions appear with similar clinical symptoms; nonetheless, identification is critical since their therapy and prognosis are highly diverse [2]. Prostatic cancer accounts for around 5% of all male cancers [3, 4]. Transurethral resection of the prostate (TURP) is the most often done surgical operation in clinical practice; it assists in the early detection of premalignant lesions and incidental prostate cancer, which may enhance patient outcomes [5]. Because benign and malignant lesions have comparable clinical presentations, histopathological examination is

important in the diagnosis and therapy of prostate lesions. As a result, prostatic specimens have become a considerable burden for a pathologist, and Tran's urethral resection prostate (TURP) specimens and prostatic biopsies often provide a diagnostic difficulty to practicing pathologists. The current investigation was conducted in order to examine different histological abnormalities of the prostate and to categorize patients with prostatic cancer into a new prognostic grade group (PGG) and updated Gleason score.

### Aims

1. To evaluate the histopathological spectrum of various prostatic lesions in TURP specimens.
2. To grade prostatic tumours according to microscopic grading system.

### Materials and Methods

Transurethral resection of the prostate (TURP) cases with histological diagnoses obtained from April 2018 to March 2019 was evaluated in the histopathology lab, Department of Pathology, at a private medical college in Bengaluru Rural. A hospital-based, retrospective investigation was conducted. The research was conducted with the approval of the institutional ethical review board.

The specimens were immediately immersed in 10% formalin for 24 hours. The gross characteristics of the specimens were observed. Transurethral resection specimens weighing 12 g or fewer were presented whole, often in 6 to 8 cassettes. Specimens weighing more than 12g are submitted with the first 12g (6-8 cassettes) and 1 cassette for every extra 5g of residual tissue. In general, random chips were submitted; but, according to College of American Pathologists (CAP) rules, those chips that were harder or had a yellow or orange-yellow look were submitted preferentially.

The blocks were cut into 3-5 micron thick pieces using a conventional microtome, and the sections were stained with hematoxylin and eosin. Light microscopy was used to analyze the sections. Glands and stromal hyperplasia were used as diagnostic criteria for benign prostatic hyperplasia (BPH). The glandular component consists of nodules of tiny and large acini bordered by basal and secretory cells, whereas the stromal component often contains both fibrous and smooth muscle parts. Prostatitis, prostatic intraepithelial neoplasia (PIN), and adenocarcinoma were adopted from World Health Organization (WHO) standards.

A new grading system was developed in combination with the Gleason system for prostate cancer, taking into account the glandular differentiation and growth pattern of tumor cells in relation to stroma. Gleason's score is calculated by

adding the primary tumor pattern to the next most frequent pattern. The World Health Organization (WHO) has approved this new grading system for the 2016 edition of Pathology and Genetics, Tumours of the Urinary System, and Male Genital Organs.

The four grades of prostate adenocarcinoma were assigned: Only individual separate well-formed glands in Grade 1 (Gleason score 6). Grade Group 2 (Gleason score 3+4=7), having a higher proportion of well-formed glands and a lower proportion of poorly-formed/fused/cribriform glands. Grade Group 3 (Gleason score 4+3=7), having a higher proportion of poorly formed/fused/cribriform glands and a lower proportion of well-formed glands. Only poorly-formed/fused/cribriform glands or mostly well-formed glands with a smaller component of missing glands or predominantly lacking glands with a lesser component of well-formed glands in Grade Group 4 (Gleason score 8). Grade 5 (Gleason scores 9–10), no gland development (or necrosis) with or without poorly-formed/fused/cribriform glands.

### Results

A total of 85 TURP specimens were obtained for histological investigation. All prostatic specimens were generally classed as benign (81%) or malignant (5%). The majority of the patients (87%) in the current research were between the ages of 50 and 80, with a mean age of 68.3 years.

The youngest instance analyzed was 39 years old, while the oldest case was 92 years old. The majority of the 81 benign instances were 51-80 years old, with a mean age of 67.8 years, while the most of the 4 malignant lesions were 61-100 years old, with a mean age of 68.2 years. (Table 1).

**Table 1: Age wise distribution**

Age	Benign	Malignant	Total
31-40	1		1
41-50	5	-	5
51-60	15	-	15
61-70	29	1	30
71-80	27	2	29
81-90	4	-	4
91-100	-	1	1
	81	4	85

Nodular hyperplasia with prostatitis 24 (28.2%) and granulomatous prostatitis 2 (2.3%) were detected among the benign lesions. In four patients (4.7%), prostate cancer was discovered. (Table 2).

**Table 2: Diagnosis**

Diagnosis	Number
Nodular hyperplasia	55
Nodular hyperplasia with prostatitis	24
Granulomatous prostatitis	2
Adenocarcinoma	4

**Table 3: Glandular findings**

Glandular findings	31-40	41-50	51-60	61-70	71-80	81-90	Total
Corpora amylacea		1	2	8	7	2	20(23.5%)
Basal cell hyperplasia			3	1			4(4.7%)
Von Brunn nests		1		7	2		10(11.7%)
Metaplasia-squamous				5	7		12(14.1%)
Cystically dilated glands		3	15	23	19	3	63(74%)
Epithelial hyperplasia	1						1(1.1%)
Foci of PIN				1			1(1.1%)

**Table 4: Stromal findings**

Stromal findings	31-40	41-50	51-60	61-70	71-80	81-90	90-100	Total
Hyperplasia	-	1	1	2	1	1	-	7(8.2%)
Granuloma	-	-	-	1	-	-	-	1(1.1%)
Chronic inflammation	-	-	-	24	-	-	-	24(28.2%)
Acute inflammation	-	-	1	-	-	-	-	1(1.1%)
Myxoid change	-	-	0	4	4	-	-	8(9.4%)
Tumor cells	-	-	-	-	1	-	-	1(1.1%)
Suppurative foci	-	-	-	-	1	-	-	1(1.1%)
Congested blood vessels	-	-	1	-	5	-	-	6(7%)

**Table 5: Gleason score**

Number of cases	Gleason score	Grade group
2	5+4=9	V
1	3+3=6	I
1	4+3=7	III

BPH was characterized microscopically by glandular and fibromuscular component growth; these glands were bordered by two layers of cells consisting of inner columnar and outer cuboidal to flattened epithelium. There was also corpora amylacea, basal cell hyperplasia, Von Brunn nests, metaplasia, cystically dilated glands, and epithelial hyperplasia. There was one incidence of BPH with focal PIN-1.

When microscopically benign prostatic acini or ducts are bordered by cytologically abnormal cells with stratification and modest nuclear enlargement, prostatic intraepithelial neoplasia (PIN) is diagnosed (Table 3). The lymphocytic infiltration in 24 instances of nodular hyperplasia with prostatitis was moderate to severe, with aggregate development. (Table 4)

The current investigation found four instances of prostatic adenocarcinoma, all of which had diverse development patterns and were graded using the new prognostic grading group (PGG) and updated Gleason score. Two instances had Gleason scores of 9 (grade group V), one had gleason scores of 4+3=7 (grade group III), and one had gleason scores of 6 (grade group I). (Table 5).

**Discussion:** A retrospective study of 100 cases of prostate biopsy was done, results were noted and comparison with other studies was undertaken as follows:

#### Age

The age group afflicted by prostatic pathology in the current research ranged from 39 to 92 years. Similar to Yadav et al. [6,] the 51-80 year age group had the highest number of instances of benign prostatic hyperplasia (BPH). Similar to Sharma et al. [5,] malignant lesions are more common in the age range 61-92 years.

#### Malignant and benign

BPH was the most frequent prostatic lesion in our investigation, accounting for 95% of the cases evaluated, which is consistent with earlier studies [7, 8, 9].

In accordance with Hamper et al. [10], cystically dilated glands were seen. In the current research, 24 (28.2%) of the subjects had benign prostatic hyperplasia (BPH) with co-existing chronic prostatitis. Chronic prostatitis is most typically seen in benign prostatic hyperplasia (BPH), as Joshee A et al. discovered in their research [11]. Granulomatous prostatitis (1.1%) was detected in the current investigation. Another research [12] found a 0.5% incidence of non-specific granulomatous prostatitis. In the current research, 4 (4.7%) of the men had benign prostatic hyperplasia (BPH) with basal cell hyperplasia.

#### Types of metaplasia

Squamous metaplasia may be detected around the periphery of infarcts, after TUR, as a consequence of hormonal treatment, or even when there is no evident predisposing factor. In the current research,

12 (14.1%) of the patients had benign prostatic hyperplasia (BPH) with squamous metaplasia, which corresponds to the incidence of prostatitis. Mittal et al. [13] and Garg et al. [14] found a substantially lower frequency of metaplasia of 3.24% and 0.82%, respectively, with a corresponding reduced incidence of prostatitis, indicating a role for inflammation in the genesis of metaplasia. A prevalent observation in our study's 24 BPH patients (28.2%) was the presence of isolated mainly stromal fragments with persistent inflammation.

#### PIN

In one example, PIN Foci of PIN was shown to represent a forerunner to invasive prostatic cancer.

#### Carcinoma prostate

Carcinoma prostate Adenocarcinoma was most prevalent among people in their seventh decade, and this incidence was greater in the current research compared to prior studies [5, 6, 11]. Prostatic adenocarcinoma is evaluated using the Modified Gleason's score (GS) and PGG, with Grade Grouping V being the most prevalent in this research.

#### Conclusion

Prostatic lesions, such as BPH and tumors, are a major cause of morbidity and death in adult men. Prostatic disorders become more common as people become older. The most prevalent benign prostatic lesion was BPH, while the most common histological subtype of prostatic malignancy was adenocarcinoma. A histopathological examination is required to diagnose cancer. Increased awareness of prostatic malignancy with age, as well as prompt mass screening for prostatic lesions, is indicated for early identification and mortality reduction.

Prostate diseases are a major cause of morbidity and death in male patients. Inflammatory disorders, nodular hyperplasia, cancer, and other illnesses are included in the disease spectrum. Disease risk rises with age. Malignant lesions are less prevalent than benign ones. BPH is the most common histological pattern of prostatic lesions. To detect pre-malignant lesions, proliferative activity, and the degree of inflammation, all prostate biopsies (TURP and needle core) must be studied. Histopathological diagnosis and grading are crucial in the treatment of prostate cancer. Because studies like ours are hospital-based rather than population-based, they may not be an accurate representation of the real incidence of prostatic cancer in society at large.

Non-neoplastic prostate lesions were more prevalent than neoplastic ones in this investigation. For prostatic cancer, a prognostic grade group should be used, which is a simpler and more reliable grade stratification method than the

modified Gleason Score. Finally, TURP chips should be properly scrutinized to rule out premalignant lesions and incidental cancer.

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