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# Histopathological Study of Prostatic Lesions (TURP) at Tertiary Care Centre

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**Abstract:** ***Introduction: Diseases of prostate gland are important source of morbidity and mortality in male patients. The spectrum of diseases consists of inflammatory conditions, nodular hyperplasia, malignancy etc. The risk of diseases increases with age. Prostate biopsy is essentially a test which detects cancer and other benign conditions of the prostate. Aims and Objective: To study various histopathological patterns in TURP, including benign prostatic hyperplasia (BPH), prostatitis (identifying type and grade of inflammation), and incidental detection of carcinoma prostate and confirmation of diagnosis of clinically suspected carcinoma with application of modified Gleason system for grading. Materials and Methods: Total 100cases of transurethral resection of prostate (TURP). The received biopsies were fixed in 10% neutral buffered formalin and routine paraffin processing followed by haematoxylin and eosin staining was done. Slides of the tissues were retrieved and slides reviewed. All the specimens were analysed with following parameters: age of patient, histopathological pattern and final diagnosis. Results: In total 100 cases of present study, the most common age group presenting prostatic lesions was 61 - 70 years. The youngest patient presented at age of 41 years and oldest was of 86 years of age. In our study, among various histopathological patterns, BPH was the most common finding and reported 5 cases of adenocarcinoma of prostate with application of modified Gleason grading system. Conclusion: Among the histological patterns of prostatic lesions, BPH is predominant type. It is necessary to study all prostate biopsy [Transurethral resection of prostate (TURP) ] in order to identify premalignant lesions, proliferative activity, and grade of inflammation. Histopathological diagnosis and grading is gold standard for the final diagnosis and have a definitive role in the management of prostatic carcinoma.***

**Keywords:** Transurethral resection of prostate (TURP), Benign prostatic hyperplasia (BPH), Prostate Carcinoma

## 1. Introduction

In normal adult prostate is a pear - shaped glandular organ that weighs up to 20gms [1]. It is a retroperitoneal organ encircling the neck of bladder and urethra. It is an exocrine gland and forms a significant component of seminal fluid. In adult, prostatic parenchyma can be divided into four biologically and anatomically distinct zones or regions: peripheral, central, transitional and periurethral zones. Histologically it consists of glands lined by basal cuboidal cells and inner secretory columnar cells (double layered) [1]. Most of the patients present with complaints related to micturition and incontinence. Of the diseases which affects the prostate, the most frequently encountered in clinical practice are Benign Prostatic Hyperplasia, Carcinoma of prostate and prostatitis [2].

Benign prostatic hyperplasia is the most common benign prostatic disease in men older than age 50 years and shows remarkable racial and geographical variations in incidence and mortality [3]. The incidence of this disease is only 8% during the 4th decade, but it reaches 50% in the 5th decade and 75% in the 8th decade [1].

BPH is not premalignant lesion for the prostatic cancer but it may be related to prostate cancer arising in transition zone (Difenbach *et al*., 2002) [4].

In India, prostate cancers constitute about 5% of all cancers in male [5, 6]. Screening of prostatic lesions constitute estimation of Serum Prostate Specific antigen (S. PSA), digital rectal examination, and transrectal ultrasound, but biopsy remains the gold standard tool for final diagnosis. Prior to the PSA era, up to 27% of prostate cancers were detected incidentally at the time of TURP [7]. The modified Gleason's system appears better to predict progression - free survival after radical prostatectomy than the original Gleason's system.

## 2. Materials and Method

The present study was conducted in the Department of Pathology, B. J. Medical College and Civil hospital, Ahmedabad from January 2021 to November 2021. A total of 100 cases of lesions of prostate were evaluated. The gross specimens received were of transurethral resection of prostate (TURP) chips. The received specimens were fixed in 10% neutral buffered formalin solution and routine

paraffin processing followed by haematoxylin and eosin staining was done. All the specimens were analysed according to age, medical history, histopathological pattern and final diagnosis. Thorough examination of slides were done under light microscope. Various lesions of prostate were listed, diagnosed according to various histopathological patterns and were classified with reference to age. Following histopathologic assessment, the tumours were classified according to WHO classification, and histologic grading was done using modified Gleason's system.

## 3. Observation and Results

Atotal of 100 cases of TURP chips specimen were studied. The TURP specimens were in the form of multiple pieces, grey tan to grey pink in colour and soft to firm in consistency.

All prostatic (TURP) specimens were broadly classified into benign 95 (95%) and malignant 5 (5%). Maximum cases of BPH 42 (44.21%) were seen in the 61 - 70 years age group [Table 1]. Cases of BPH only were 43 (45.26%). Cases with co - existing chronic prostatitis were 5 (5.26%) [Figure 2], that with acute prostatitis were 2 (2.10%) [Figure 3],

Cases with acute on chronic prostatitis 2 (2.10%) with non specific prostatitis 40 (42.10%), BPH with prostatic infarct 2 (2.10%) and BPH with squamous metaplasia 1 (1.05%) [Figure 4].

We reported 5 cases of adenocarcinoma prostate with modified Gleason Grading system. Histopathology of biopsy received showed only single, separate, much more variable glands, closely packed but irregularly separated, ragged and poorly defined edge (Gleason's grade 3) [Figure 5]. Second most predominating pattern was fused glandular, cribriform pattern and hypernephroid (Gleason's grade 4). The most common score obtained was 7 in 2 cases out of the total 5 adenocarcinoma cases. [Table 3]. The most common predominant grades observed in this study were grade 3 and grade 4 [Table 4].

**Table 1:** Age wise distribution of cases

| Age (years) | Benign | Malignant |
|---|---|---|
| 41 - 50 | 8 (8.42%) | 1 (20%) |
| 51 - 60 | 12 (12.63%) | 1 (20%) |
| 61 - 70 | 42 (44.21%) | 2 (40%) |
| 71 - 80 | 28 (29.47%) | 1 (20%) |
| 81 - 90 | 5 (5.26%) | 1 (20%) |
| Total | 95 | 5 |

**Table 2:** Distribution of Histopathological lesions

| Histopathological pattern In present study | Number of cases | Percentage (%) |
|---|---|---|
| BPH alone | 43 | (45.26%) |
| BPH with acute prostatitis | 2 | (2.10%) |
| BPH with chronic prostatitis | 5 | (5.26%) |
| BPH with acute on chronic prostatitis | 2 | (2.10%) |
| BPH with nonspecific prostatitis | 40 | (42.10%) |
| BPH with squamous metaplasia | 1 | (1.05%) |
| BPH with infarct | 2 | (2.10%) |

**Table 3:** Distribution of cases according to Gleason's score

| Gleason's score | Number of cases | Percentage (%) |
|---|---|---|
| 6 | 1 | 20% |
| 7 | 2 | 40% |
| 8 | 1 | 20% |
| 9 | 1 | 20% |
| 10 | - | - |
| Total | 5 | ~100% |

**Table 4:** Distribution of cases according to Gleason's grade

| Gleason's grade | Number of cases | Percentage (%) |
|---|---|---|
| 1 | - | - |
| 2 | 1 | 20% |
| 3 | 2 | 40% |
| 4 | 2 | 40% |
| 5 | - | - |
| Total | 5 | ~100% |

## 4. Discussion

A study of 100 cases of prostate (TURP) biopsy was received, results were noted and comparison with other studies was undertaken as follows:

**Age**

Lesions of prostate are extremely common over the age of 50 years. The clinical incidence of this disease is only 8% during the 4th decade, but it reaches 50% in the 5th decade and 75%in the 8th decade [1].

In present study, age group affected with prostatic pathology was 40 - 90 years. Maximum cases of BPH 42 (38.9%) were seen in the 61 - 70 years age group similar to Matapurkar *et al*. [8]. Malignant lesions were encountered predominantly in age group 61 - 70 years that are similar to Sharma *et al*. [9].

**Benign and Malignant**

BPH and adenocarcinoma are the two most common conditions affecting prostate gland. In present study malignant cases were 5 (5%), benign cases were 95 (95%), the predominant lesion was BPH only 42 (44.21%) similar to Neha Angurana's study [10] (50.5%) followed by BPH with nonspecific prostatitis 38 (40%), and prostatic adenocarcinoma (5%).

**Microscopy & Histopathological Patterns**

**Benign Prostatic Hyperplasia:** There is hyperplasia of glandular and stromal tissue with papillary buds, infolding and cysts. In glandular - stromal pattern, proliferating glands and fibro muscular stroma were roughly in equal proportions. While in stromal pattern, the sections showed more stromal elements than glands. Pure stromal hyperplasia with nodule formation was first reported by Reischauer in 1925 [11]. Deming *et al*. [12] confirmed it and further regarded the glandular element of prostatic nodule as an event to the stromal stimulus to epithelial proliferation within adjacent ducts. The earliest change is the stromal proliferation which contains more smooth muscle and less elastic tissue than the normal stroma, followed by hyperplasia of the glandular component. The glands are dilated or even cystic and often contain corpora amylacea which is sometimes calcified. The epithelium ranges from

flat to columnar. The cytoplasm is pale and nucleoli are inconspicuous. A continuous basal cell layer is present [11]. In present study, glandular - stromal pattern of hyperplasia (75%) was the most frequent histological pattern which was observed. Stromal pattern of hyperplasia (2%) was less common. Our study was in agreement with study done by Zeenath Begum, Abdul Hakeem Attar, Mandakini B. Tengli, Mohammed Mateen Ahmed (8%) in respect that glandular - stromal hyperplasia was most commonly noted [13].

**Prostatitis:** It shows inflammatory changes within the prostate glands.

**Acute Prostatitis:** There are neutrophils within acini and throughout stroma, intraductal desquamated cellular debris and stromal edema. In present study, 2.10% cases of acute prostatitis were observed, and 2.10%cases acute on chronic prostatis observed.

**Chronic Prostatitis:** Chronic prostatitis is more common and typically involves the prostate in peri - glandular distribution and contains an admixture of plasma cells, lymphocytes and histiocytes. In present study BPH with chronic prostatitis was observed in 5.26 % cases. which was also observed by Dr. Ashish Joshee, Dr. Kaushal C. L. Sharma in their study [14].

**Types of Metaplasia:** Squamous metaplasia can be seen at the periphery of infarcts after TUR, as a result of hormonal manipulation, or sometimes with no obvious predisposing cause. In present study BPH with squamous metaplasia was observed in 1 (1.05%) case.

**Carcinoma Prostate:** Hormonal factors play important role in the development of prostatic carcinoma. A meta - analysis of previously published articles on hormonal predictors of prostate cancers conclude that men whose total testosterone levels are in the highest quartile are at 2.34 times more likely to develop prostate cancer [15].5 - 10% of prostatic carcinoma have a genetic link.

The precursor of prostatic adenocarcinoma has histopathological findings: Prostatic Intraepithelial Neoplasia (PIN) and Atypical Small Acinar Proliferation (ASAP).

Adenocarcinoma accounted for 5% of the cases in our study. Maximum number of cases were reported in 7th decade which is similar to studies conducted by Sharma *et al*. [9] and Matapurkar *et al*. [8].

Adenocarcinomas are classified taking into account the morphological appearance of glandular cells and the glandular pattern. In present study cases showed Gleason's grade 3 (80%) and 4 (20%).

PIN is the currently preferred term for a process involving prostatic ducts and acini, which has also been described as ductal - acinar dysplasia. While originally divided into different grades, only high - grade PIN is diagnosed and reported.

In our study, we didn't reported case of PIN. The reported incidence of PIN is 2.3 - 5.5% in TURP specimens in other studies [17 - 19].

**Prostatic infarcts**, in which there is distortion of blood supply or venous drainage resulting from mechanical compression may be the contributing factor (20). Serum Prostate specific antigen and prostatic acid phosphatase levels are elevated. We had 2 (2.10%) cases of BPH with infarction. Milord et al (20) and Moore (21) reported prostatic infarcts in 0.07% and 25% cases of BPH respectively.

## 5. Conclusion

From above study, we conclude that prostatic lesions are more common in age group of 61 - 70 years. Benign conditions are more common than malignant conditions. Among the histological types of prostatic lesions, BPH is predominant type, followed by BPH with prostatitis. Efforts should be made to apply modified Gleason's system in case of adenocarcinoma of prostate to improve management. Histopathological diagnosis and grading play an important role in the management of prostatic cancer.

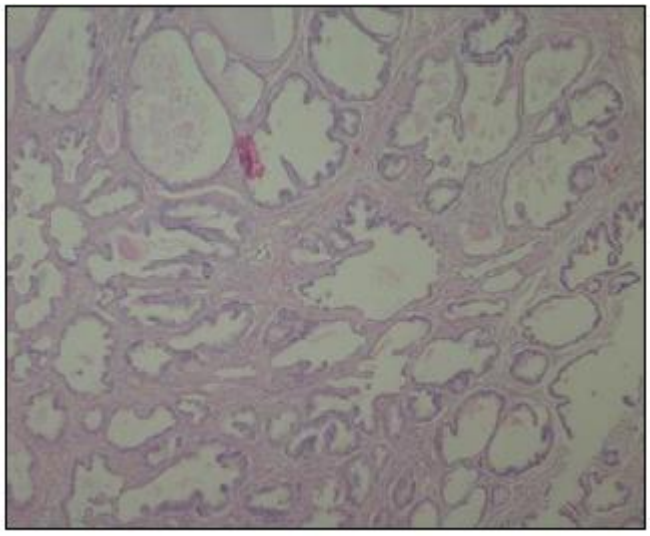

**Figure 1:** Benign prostatic hyperplasia (H&E stain) (10x)

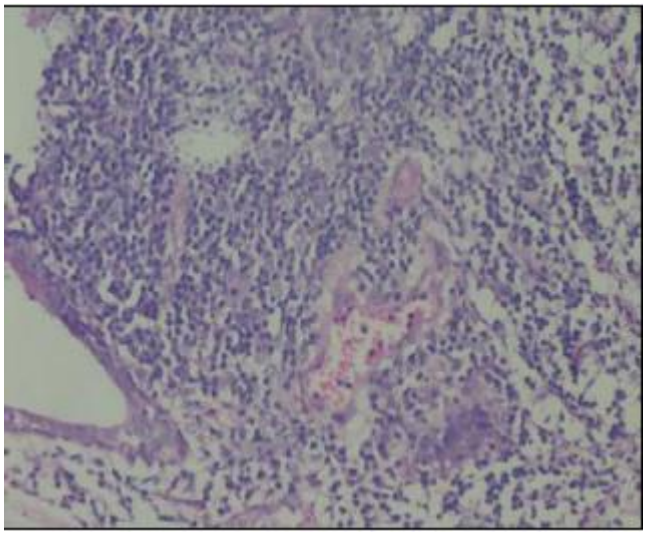

**Figure 2:** Chronic prostatitis (H & E stain) (20x)

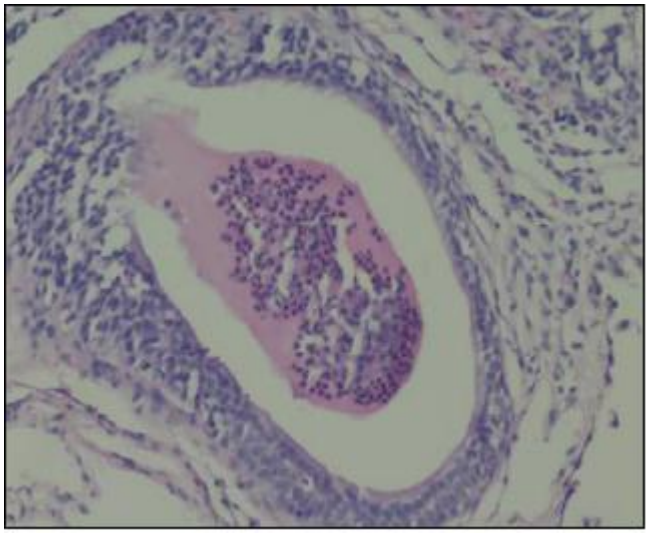

**Figure 3:** Acute prostatitis (H&E stain) (20x)

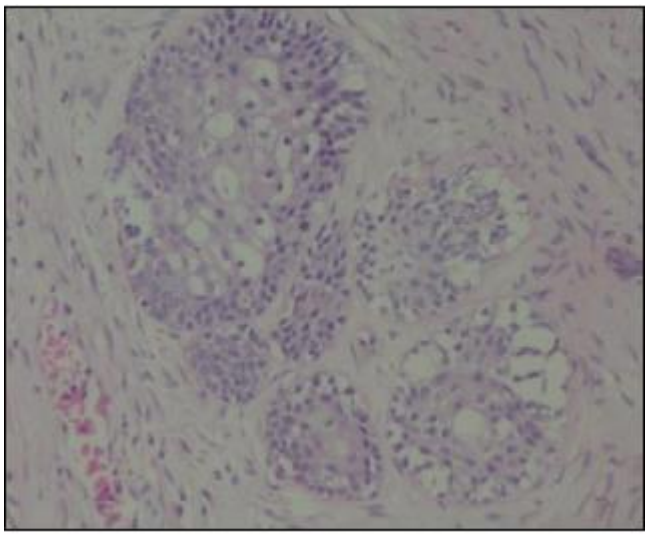

**Figure 4:** Squamous Metaplasia (H&E stain) (20x)

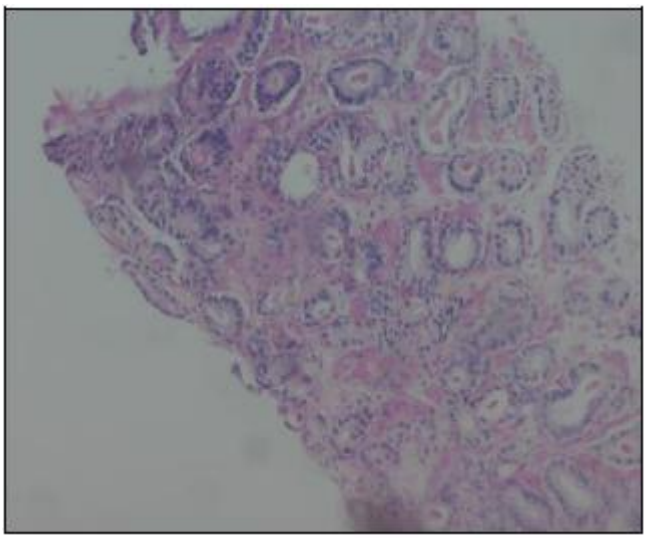

**Figure 5:** Adenocarcinoma of prostate Gleason's Grade (3+3) (H&E stain) (10x)

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