

# ROLE OF ULTRASONOGRAPHY IN PRE-OPERATIVE ASSESSMENT OF PROSTATIC HYPERPLASIA

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## ABSTRACT

**Objectives:** To assess the role of ultrasonography (USG) in the preoperative evaluation of prostatic size and determine the therapeutic option for prostatic hyperplasia.

**Materials And Methods:** This study was carried out at District Headquarter Teaching hospital Dera Ismail Khan from January 2000 to December 2002. Total 209 cases of enlarged prostate were admitted to the ward. Pre operative assessment with ultrasonography was done and results compared with operative findings. Different tools like per rectal digital examination, per abdominal/ rectal ultrasonographic studies and cystoscopic examination combined with blood analysis (urea, creatinine and serum acid phosphatase) were also used to evaluate the size of prostate and status of urinary tract.

**Results:** Peak age incidence was in the 7<sup>th</sup> decade while very few patients were below 50 and above 80 years. Most of the patients presented with history of less than five years. Main presenting symptoms were prostatism or chronic retention of urine. From preoperative evaluation, it was concluded that the size of prostate corresponds to duration of symptoms. The size of prostate on ultrasound was in the range of 40-70 G in patients having history of 1-5 years duration and more than 70 G with history of more than 5 years. Operative findings correspond to preoperative assessment with very small difference (less than 10%) and confirmed accuracy of the evaluation.

**Conclusion:** Preoperative evaluation of prostate with the help of USG is safe, reliable, reproducible and less time consuming.

**Key words:** Prostatic hyperplasia, , Preoperative evaluation and Ultrasonography.

## INTRODUCTION

Benign Prostatic hyperplasia is the commonest cause of urinary problems in elderly male affecting the quality of life<sup>1</sup>. Most of the patients have nocturnal frequency, urgency, hesitancy and poor flow of micturation<sup>2,3</sup>. 10% of patients will need surgical intervention at some stage<sup>4</sup>. Modalities of treatment include medical treatment like alpha blockers and fenesterides for small prostate with mild symptoms and surgical treatment like Transurethral incision of prostate (TUIP), Transurethral resection of prostate (TURP), open prostatectomy for symptomatic prostates of moderate to large size, laser ablation, thermotherapy, use of urethral stents and ballooning for poor risk patients<sup>5</sup>. Frequently adopted procedures are Transurethral resection of prostate (TURP) or open prostatectomy<sup>1</sup>. To decide the proper procedure, proper assessment of prostatic size and its effects on the urinary tract is mandatory. Different tools like per rectal digital examination, per abdominal/per rectal ultrasonic assessment of prostate, cystoscopic examination and excretory urography are employed to evaluate the size of prostate, residual urine and status of urinary tract.

This study was carried out to determine the role of ultrasound in the preoperative assessment of prostate size, residual urine, correlate the data with operative findings and get final opinion on the importance

of USG in benign prostatic hyperplasia and to look for any malignancy<sup>6</sup>.

## PATIENTS AND METHODS

This study was carried out at District Head Quarter Teaching hospital Dera Ismail Khan from January 2000 to December 2002. Total 209 cases of enlarged prostate were admitted. Duration and severity of symptoms noted. Per rectal digital examination done to assess the size and texture of prostate and any abnormality found, was noted. A request for ultrasound examination was sent to evaluate the size and consistency of prostate, post-voidal residual urine volume, bladder wall thickness and status of ureters and kidneys.

The results of per abdominal/per rectal ultrasound examination were tabulated. In selected cases, cystoscopy or excretory urography was done. Urine analysis, blood chemistry was done to work out the functions of kidneys. Prostate specific Antigen (PSA), X Rays, bone scan and per rectal prostatic biopsy were done in selected cases.

All the removed specimens of prostate at operation were compared with the preoperative findings on ultrasound. Six out of nine cases of carcinoma prostate confirmed on histopathology of the removed specimen were picked by USG.

## RESULTS

Majority of the patients presented in the 7<sup>th</sup> decade of life (68.16%), very few patients below age of 50 years (1.91%) and above 80 years (2.87%). Prostatism i.e. frequency, hesitancy, urgency and flow obstruction, was the main presenting symptom in 118 (56.49 %) cases, while 63 cases (30.16%) presented to emergency department as acute retention. Only 28 (13.35%) cases presented as chronic retention (Table I)

Duration of symptoms at the time of presentation varied from 1-10 years. In majority of cases (87.56%), duration of symptoms was less than 5 years

and only in 12.44% of cases it was more than five years. Preoperative evaluation suggests that patients who present earlier i.e. less than 1 year (24.88%), have smaller prostate with minimal residual urine. However, number of cases presenting late i.e. 1-5 years (62.67%), was higher and weight of prostate was more. The size of prostate increased with increase in duration of symptoms. In 12.44% of cases the size of prostate was more than 70 G and residual urine more than 200 ml (Table II).

The most important aspect of the study is the comparison of preoperative assessment and operative findings. Cases having history of less than one year and prostate 30-40 G, were not operated and

**Table I: Shows age distribution and presentation of cases.**

S. No.	Age of patient	Number	Presentation	Number
1	>50 Years	4(01.91%)	Acute Retention	63(30.16%)
2	50 -59	30(14.15%)	Prostatism	118(56.49%)
3	60 - 69	142(68.16%)	Chronic retention	28(13.35%)
4	70-79	27(12.91%)	—	—
5	Above 80	6(02.87%)	—	—
	Total	209(100%)	—	209(100 %)

**Table-II: Shows relation between size of prostate and duration of symptoms.**

S.No.	Duration of symptoms	Prostate size on USG	Residual urine	Number of cases
1	< 1 year	30-40 grams	Nil	10 (4.78%)
2	< 1 year	40-50 grams	20-40 ML	42(20.10 %)
3	1-5 years	50-60 grams	50-100 ML	86(41.14 %)
4	1-5 years	60-70 grams	100-200 ML	45(21.53 %)
5	>5 years	> 70 grams	>200 ML	26(12.44 %)
	Total	—	—	209(100 %)

**Table- III: Comparison of pre-operative with post-operative size.**

S. No.	Pre op size	Number	Post op Weight	Number	Difference
1	30-40 G	10	Not operated	10	—
2	40-50-G	42	40-50-G	45	7.14%
3	50-60 G	86	50-60 G	82	4.65 %
4	60-70 G	45	60-70 G	48	6.66 %
5	>70 G	26	>70 G	24	7.69 %

managed with medicine. In operated cases, preoperative findings are confirmed to be accurate at operation. The difference in pre operative column and postoperative column was very little (average 6.53%) indicating that the Ultrasonographic studies, especially for prostate, were accurate at the hands of USG operator (Table III).

## DISCUSSION

In our study peak age incidence was in the 7<sup>th</sup> decade while very few patients were below 50 and above 80 years. Most of the patients presented with history of less than five years. Main presenting symptoms were of Prostatism and in few cases, chronic retention of urine was the presenting symptom. Pre-operative evaluation findings suggest that the prostatic size corresponds to duration of symptoms. The size of prostate on ultrasound was in the range of 40-70 G in patients having history of 1-5 years duration and more than 70 G with history of more than 5 years<sup>7</sup>. Operative findings, with very small difference (less than 10%), confirm the accuracy of the evaluation.

Benign prostatic hyperplasia is disease of male after 50 years of age and proper assessment is necessary for treatment. However being progressive disease, the ultimate treatment option will depend upon the stage of presentation. To decide about the treatment option, proper history and evaluation of prostate size is necessary. Results of the study, ultrasound examination compared with operative specimen show more than 90% accuracy regarding size of prostate. The correlation between size of prostate and duration of symptoms is direct, the longer the history, the larger the size of prostate. Per abdominal ultrasound give reliable information about the size, texture and especially the median lobe projecting into the bladder. The results of different studies show that this non-invasive evaluation of prostate with the help of ultrasound is safe, accurate<sup>5</sup>, reliable<sup>8</sup>, appropriate<sup>9</sup> and best predictor<sup>10</sup>. Bladder wall thickness and post void residual urine are accurately measured and also show a direct relation with the size of prostate and extent of obstruction. Combined with per rectal probe examination, can get information about any suspicious focus. Cases with mild prostatic symptoms and small size prostate on USG respond well to medical treatment. The significance of ultrasound in measuring the size of prostate is vital to decide about the choice of treatment.

## CONCLUSION

Evaluation of prostate with the help of ultrasound is safe, accurate, reliable, reproducible and easy to perform. It gives good assessment of gross pathology of urinary tract. It is also very helpful in deciding the choice of treatment.

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