



## Research Article

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### EVALUATION OF BASTI THERAPY IN POST PROSTATECTOMY ATONIC BLADDER: AN ULTRASONOGRAPHICAL STUDY

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#### ABSTRACT

The aim of this study was to evaluate the effect of Ayurvedic therapy in voiding dysfunction with special reference to post prostatectomy atonic bladder. In this study, 30 men with post prostatectomy (both open and Transurethral Resection of the Prostate) poor detrusor contractility with altered bladder wall thickness were registered in this study. Registered patients were divided into two groups. Trial group patients were treated with alternate Anuvasan basti and Asthapan basti following specific regime of basti therapy for 21days while control group patients were treated with Trazocin (5mg) for 21days. Bladder wall thickness and post voidal residual volume of urine was used as assessment parameter. Ayurvedic therapy had better effect over Post Voidal Residual Volume of urine in Post prostatectomy atonic bladder as compared to that of standard anti-microbial therapy but significant change in bladder thickness was not seen in this study in both groups. Ayurvedic therapy has significant effect over Post Voidal Residual Volume of urine in Post prostatectomy atonic bladder.

**Keywords:** Post prostatectomy atonic bladder, Basti, Apana Vayu, Benign prostatic hyperplasia.

#### INTRODUCTION

Benign prostatic hyperplasia is a major affliction associated with aging of men which results in bladder dysfunctions and it finally leads to deterioration of quality of life. As a result of the chronic functional bladder outflow obstruction, there is a gradual deterioration in detrusor contractility and emptying efficiency. Post micturition residual urine and bladder capacity progressively increase with time, eventually developing into a large, floppy bladder with very inefficient emptying. The resultant large volume of post micturition residual urines predispose to various symptoms. Published reports state that obstructive dysfunction in men secondary to BPH is characterized by increased bladder wall thickness, decreased compliance and detrusor denervation<sup>1</sup>. Post prostatectomy atonic bladder is a relative or absolute under activity of detrusor muscle of bladder because of secondary changes that occurs due to Benign prostatic hyperplasia and does not regain detrusor contractility power after prostatectomy either suprapubic or Transurethral Resection of the Prostate. 20-25% patients undergoing prostatectomy are sufferer of this problem<sup>2</sup>. Presently no effective treatment is known which can help in regression of bladder thickness and can lower post voidal residual volume of urine. Due to limitations in present medical and surgical therapy for post prostatectomy atonic bladder, there is need of alternate treatment for this ailment. Keeping this mind this study was started to explore new therapy regime based on Ayurvedic principles. According to Ayurveda body physiology is maintained by Tridosha Theory i.e. Vata, Pitta and Kapha<sup>3</sup>. Likewise the functions of the Mutravahasrotas (urinary system) are also regulated by Apanavayu one among the five types of Vayu<sup>4</sup>. Obviously any derangement of Apana Vayu leads to the pathology of

the urinary system<sup>5</sup>. So, the treatment principle is to correct the vitiated Apana Vayu, therapy attaining the normal physiology of the system. This controls the symptoms of the Mutravaha Shrotas (Urinary system). Due to importance of Apana Vayu in production of urological ailments, Basti therapy was planned for this disease. Lot of research work was done in Department of Shalya Tantra, Faculty of Ayurveda, Institute of Medical Sciences, Varanasi, U.P., India on urinary disorders which suggests that Basti therapy improves detrusor tonicity but no work has been done on post prostatectomy atonic bladder. So considering this, an attempt has been made to evaluate effect of Basti therapy on detrusor tonicity especially in Post Prostatectomy atonic bladder on more advanced and sophisticated parameters, like cystometry, pressure flow studies, nomograms, Electromyography etc. The study was specifically planed only on cases of post prostatectomy detrusor under activity or total are flexia of detrusor muscle. This paper deals with evaluation of effect of Basti therapy on ultrasono-graphical findings in Post prostatectomy atonic bladder compared to that of standard treatment.

#### MATERIAL AND METHODS

In this study, 30 men with post prostatectomy (both open and Transurethral Resection of the Prostate) poor detrusor contractility but with otherwise normal clinical findings and abnormal cystometric and uroflowmetry data, reduced detrusor pressure were registered. For this study, exclusion criteria were traumatic spinal cord injury, transverse myelitis, demyelinating disease, any disease producing significant spinal cord destruction, mechanical obstruction due to malignancy of prostate or bladder or urethra, urinary, diabetes mellitus, overt neuropathies, any other condition or any drug treatment possibly affecting

bladder function. Detail clinical history, physical examination, digital rectal examination, urodynamics, abdominal ultrasound was done in all the 30 patients. Trial group patients were treated with alternate Anuvasan basti and Asthapan basti following specific regime of basti therapy for 21days (Table 1) while control group patients were treated with Trazocin (5mg) for 21days. Narayan tail was prepared Ayurvedic pharmy, Banaras

Hindu University Varanasi, U.P., India As described in Yogratnakar Vatvyadhi adhaya and Dashamula Kashaya was prepared fresh as per Sushruta Samhita. Bladder wall thickness and post voidal residual volume of urine was used as assessment parameter. Assessment was done before and after treatment in both the groups. Statistical analysis was done by paired and unpaired 't'-test using SPSS software.

**Table 1: Schedule of Basti Karma adopted trial group patients**

| Duration   | Therapy          | Medication                           | Dose        |
|--|------------------|--------------------------------------|-------------|
| 1 to 3 <sup>rd</sup> day (3 days)  | Kosthashudhhi    | Shatshakara Churna                   | 3-6gms HS.  |
| 4 <sup>th</sup> Days 24 <sup>th</sup> days (21 days)   | Sthanika snehan  | Narayan taila                        | QS          |
| 4 <sup>th</sup> days 24 <sup>th</sup> day (21 days)  | Sthanika swedana | Dashamula kashaya                    | QS          |
| First day and alternatively up to 18 <sup>th</sup> day. And on 19 <sup>th</sup> 20 <sup>th</sup> and 21 <sup>st</sup> day. | Anuvasana basti  | Narayana taila                       | 100ml       |
| 2 <sup>nd</sup> day and then alternatively up to 18 <sup>th</sup> day.   | Asthapana basti  | Dashamula kashaya and Narayana taila | 200ml, 50ml |

**Table 2: Incidence of bladder wall thickness pre and post therapy in both groups**

| Bladder wall thickness (mm) | Trial Group (n=15) |               |           |               | Control Group (n=15) |               |           |               |
|-----------------------------|--------------------|---------------|-----------|---------------|----------------------|---------------|-----------|---------------|
|                             | BT                 |               | AT        |               | BT                   |               | AT        |               |
|                             | No                 | %             | No        | %             | No                   | %             | No        | %             |
| 0.5-1.0                     | 00                 | 0.00          | 01        | 06.67         | 01                   | 06.67         | 00        | 0.00          |
| 1.1-2.0                     | 05                 | 33.33         | 06        | 40.00         | 04                   | 26.67         | 03        | 20.00         |
| 2.1-3.0                     | 08                 | 66.66         | 06        | 40.00         | 06                   | 40.00         | 07        | 46.67         |
| 3.1-4.00                    | 02                 | 13.33         | 02        | 13.33         | 04                   | 26.67         | 05        | 33.33         |
| <b>Total</b>                | <b>15</b>          | <b>100.00</b> | <b>15</b> | <b>100.00</b> | <b>15</b>            | <b>100.00</b> | <b>15</b> | <b>100.00</b> |

BT: Before Treatment; AT: After Treatment

**Table 3: Effect of therapy on bladder wall thickness in both groups**

| Group   | Bladder wall thickness Mean ± SD (mm) |           | Within the Groups Comparison Paired t test BT-AT | Between groups comparison unpaired t test BT – AT |
|---------|---------------------------------------|-----------|--|---|
|         | BT                                    | AT        |  |   |
| Trial   | 2.25±0.71                             | 2.29±0.73 | 0.04±0.036<br>t =0.43<br>p>0.05                  | t = 0.79<br>p>0.05                                |
| Control | 2.53±0.78                             | 2.52±0.83 | 0.01±0.481<br>t =0.11<br>p>0.05                  |   |

**Table 4: Incidence of Post Voidal Residual Volume of urine before and after treatment in both groups**

| Post Voidal Residual Volume (ml) | Trial Group (n=15) |               |           |               | Control Group (n=15) |               |           |               |
|----------------------------------|--------------------|---------------|-----------|---------------|----------------------|---------------|-----------|---------------|
|                                  | BT                 |               | AT        |               | BT                   |               | AT        |               |
|                                  | No                 | %             | No        | %             | No                   | %             | No        | %             |
| <50                              | 01                 | 6.67          | 04        | 26.67         | 00                   | 0.00          | 01        | 6.67          |
| 51-100                           | 06                 | 40.00         | 09        | 60.00         | 04                   | 26.67         | 03        | 20.00         |
| 101-150                          | 06                 | 40.00         | 02        | 13.33         | 05                   | 33.33         | 06        | 40.00         |
| 151-200                          | 03                 | 20.00         | 00        | 0.00          | 06                   | 40.00         | 05        | 33.33         |
| <b>Total</b>                     | <b>15</b>          | <b>100.00</b> | <b>15</b> | <b>100.00</b> | <b>15</b>            | <b>100.00</b> | <b>15</b> | <b>100.00</b> |

**Table 5: Effect of therapy on Post Voidal Residual Volume of urine in both groups**

| Group   | Mean ± SD (ml) |             | Within the Groups Comparison Paired t test; BT-AT | Between groups comparison unpaired t test BT – AT |
|---------|----------------|-------------|---|---|
|         | BT             | AT          |   |   |
| Trial   | 42.47±28.25    | 24.13±0.27  | 18.20±20.54<br>t =3.43; p<0.05                    | t = 0.76; p>0.05                                  |
| Control | 55.33±32.64    | 64.73±31.83 | -9.40±27.74<br>t =-1.31; p>0.05                   |   |

## OBSERVATIONS AND RESULTS

### Bladder wall thickness

In trial group before treatment, 66.66% cases had bladder wall thickness 2.1-3.0mm, in 33.33% cases thickness was 1.1-2.0mm and in rest 13.33% cases it was 3.1-4.0mm. After treatment, in 40.00% cases bladder wall thickness was observed to be 2.1-3.0mm, in 40% cases it came in range of 1.1-2.0mm, in 6.67% 0.5-1.0mm and rest

13.33% cases it was in range 3.1-4.0mm. In control group 40.00% cases had bladder wall thickness 2.1-3.0mm, in 26.67% cases it was 1.1-2.0mm, in other 26.67% cases it was between 3.1-4.0mm and in rest 6.67% cases it was 0.5-1.0mm before treatment. After treatment in 20% cases bladder wall thickness was observed as 1.1-2.0mm, in 46.67% cases it became 2.1-3.0mm and in rest 33.33% cases it was found to be 3.1-4.0mm.

In trial group the mean bladder wall thickness before treatment was  $2.25 \pm 0.71$ mm which became  $2.29 \pm 0.73$ mm after treatment. This change was not found to be statistically significant. In control group the mean value of bladder wall thickness was  $2.53$ mm  $\pm 0.78$ mm before treatment and after treatment it became  $2.52 \pm 0.83$ mm. This change was also not statistically significant.

#### Post Voidal Residual Volume of Urine

Before treatment in trial group, in 40% cases Post Voidal Residual Volume was within 51-100ml, in another 40% cases it was within 101-150ml, in 20% cases it was in range of 151-200ml and in rest 6.67% cases Post Voidal Residual Volume was less than 50ml. After treatment in 60% cases, Post Voidal Residual Volume was within 51-100ml, in 26.67% cases it was less than 50ml and in rest 13.33% cases between 101-150ml. In control group, in 40% cases Post Voidal Residual Volume was found to be 151-200ml, in 33.33% cases between 101-150ml, and in rest 26.67% cases it was 51-100ml before treatment. After treatment, in 40% cases Post Voidal Residual Volume was observed as 101-150ml, in 33.33% cases it was seen as 151-200ml, in 20% cases it was between 51-100ml and in rest 6.67% cases less than 50ml. (Table 4)

On statistical comparison it was found that mean Post Voidal Residual Volume of urine in trial group before and after treatment was  $42.47 \pm 28.25$  and  $24.13 \pm 0.27$  respectively, while in control group it was  $55.33 \pm 32.64$  and  $64.73 \pm 31.83$  respectively. From above values it can be observed that mean Post Voidal Residual Volume of urine significantly reduced in trial groups after treatment compared to before treatment while in control group increase was seen in mean Post Voidal Residual Volume of urine after the treatment but it was statistically not significant. On Unpaired t test comparison, difference in mean of Post Voidal Residual Volume of urine between trial group and control group at corresponding timings was statistically not significant. (Table 5)

#### DISCUSSION

Normal bladder wall thickness when filled with approximately 250ml of urine is 1-2mm. Hypertrophy of bladder muscles can occur due to bladder outlet obstruction which can be measured by Ultra sonography. In this study, mean bladder wall thickness was measured before treatment and after treatment. Bladder thickness did not changed significantly in both groups. It may be due to the reason that hypertrophied muscle takes longer time to become normal and duration of treatment was only 21 days. For further evaluation of therapy on bladder wall thickness the duration of treatment should be longer. In a study, it was reported that normal men have Post Voidal Residual Volume less than 12ml<sup>6</sup>. Another study reported that 66% patient with BPH, had significant Post

Voidal Residual Volume<sup>7</sup>. Post Voidal Residual Volume of urine is present in post prostatectomy atonic bladder as the tone of detrusor muscle is reduced so some amount of urine does not come out and remains in bladder. Reduction in Post Voidal Residual Volume is an important tool for assessment of response of therapy. In the present study, in trial group the mean value of Post Voidal Residual Volume of urine before treatment was 42.47ml and after treatment it was observed to be 24.13ml. statistically significant increase in tone of detrusor muscle was observed due to Basti therapy which suggests that Basti therapy helped in complete emptying of bladder. In control group, increase in mean value of Post Voidal Residual Volume of urine was seen which suggests more deterioration in detrusor tone. In various earlier researches it has been proved that detrusor tonicity increases after Basti therapy and this fact was re-established by this study.

#### CONCLUSION

In nutshell it can be concluded that Ayurvedic therapy has better effect on Post Voidal Residual Volume of urine in Post prostatectomy atonic bladder as compared to that of standard anti-microbial therapy. But this study needs further evaluation on large number of patient to finally conclude this statement.

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