

# Comparison of sono-urethrography and retrograde urethrography in evaluation of urethral strictures

Vinod Narayanrao Chaudhari<sup>1</sup>, Anil Baliram Bonde<sup>2\*</sup>

<sup>1</sup>Associate Professor, <sup>2</sup>Assistant Professor, Department of Radiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, Maharashtra.

Email: [anil\\_bonde@rediffmail.com](mailto:anil_bonde@rediffmail.com)

## Abstract

**Background:** Urethral stricture disease represents a significant part of the workload of the urologist **Aims and Objective:** To study Sono-Urethrography And Retrograde Urethrography In Evaluation Of Urethral Strictures. **Methodology:** This was Cross-sectional study carried out at Radiology department at Tertiary health care center in the Patients with urethra strictures during one year January 2015 –January 2016. Sixty one patients referred for retrograde urethrography were selected. Those with symptoms suggestive of acute urethritis were excluded, while patients with recent instrumentation procedure were postponed for a week. Informed consent regarding the procedures to be performed was taken from all patients. The patients underwent RGU followed by SUG 3-4 days later, on their subsequent visit to collect the RGU report. Kappa statistics are used to See Agreement between Sono- Urethrography and Retrograde Urethrography tests. **Result:** The majority of the patients were from the age group of >60 -24.59% followed by 50-60-21.31%;40-50-19.67%;30-40-16.39%;20-30-9.83%;10-20-8.19%. The majority of the Patients were Male i.e. 72.13% as compared to Females 27.87%. There was varigrade Sensitivities and Specificities; PPV and NPPV of Sono-Urethrography Test with respect to Retrograde Urethrography Test but overall for all urethral pathologies Sensitivity was 98.95 % and Specificity was 92.21% and PPV was 76.88% and NPPV was 97.87 and Agreement by Kappa Statistics were Very good as k=0.88. **Conclusion:** Conclusion: Compared with retrograde urethrography, sonourethrography is equally efficacious in detecting urethral strictures. **Key Word:** Sono- Urethrography, Retrograde Urethrography, Urethral Strictures.

## \*Address for Correspondence:

Dr. Anil Baliram Bonde, Assistant Professor, Department of Radiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, Maharashtra.

Email: [drvinodchaudhari@yahoo.co.in](mailto:drvinodchaudhari@yahoo.co.in)

Received Date: 12/04/2019 Revised Date: 26/05/2019 Accepted Date: 07/07/2019

DOI: <https://doi.org/10.26611/10081116>

## Access this article online

Quick Response Code:



Website:

[www.medpulse.in](http://www.medpulse.in)

Accessed Date:  
11 July 2019

## INTRODUCTION

Urethral stricture disease represents a significant part of the workload of the urologi<sup>1</sup>. Its management remains a challenge to both the urologist and the patients. Thoughtful and satisfactory preoperative evaluation remains important to achieving reasonable outcome. The

appropriate choice of treatment modality for anterior urethral stricture depends largely on preoperative imaging and endoscopic techniques. The gold standard imaging technique is the retrograde urethrography (RUG) and micturating cystourethrography (MCUG)<sup>2,3</sup> Both techniques give two dimensional images and do not detect spongiofibrosis. They also expose patients to ionizing radiation. In the last decade, the evaluation of anterior urethral stricture with sonourethrography (SUG) has made tremendous advances. Ultrasound of the anterior urethra offers a three-dimensional study without exposure to radiation; it also accurately defines the length of stricture and detects spongiofibrosis<sup>4,5,6,7</sup>

## AIMS AND OBJECTIVES

To study Sono- Urethrography And Retrograde Urethrography In Evaluation Of Urethral Strictures.

**How to cite this article:** Vinod Narayanrao Chaudhari, Anil Baliram Bonde. Comparison of sono-urethrography and retrograde urethrography in evaluation of urethral strictures. *MedPulse – International Journal of Radiology*. July 2019; 11(1): 26-28. <http://www.medpulse.in/Radio%20Diagnosis/>

## METHODOLOGY

This was Cross-sectional study carried out at Radiology department at Tertiary health carecenter in the Patients with urethra strictures during one year January 2105 – January 2016. Sixty one patients referred for retrograde urethrography were selected. Those with symptoms suggestive of acute urethritis were excluded, while patients with recent instrumentation procedure were postponed for a week. Informed consent regarding the procedures to be performed was taken from all patients. The patients underwent RGU followed by SUG 3-4 days later, on their subsequent visit to collect the RGU report. Kappa statistics are used to See Agreement between Sono- Urethrography andRetrograde Urethrography tests.

## RESULT

**Table 1 :** Age wise distribution of the Patients

Age	No.	Percentage
10-20	5	8.19%
20-30	6	9.83%
30-40	10	16.39%
40-50	12	19.67%
50-60	13	21.31%
>60	15	24.59%
Total	61	100.00%

The majority of the patients were from the age group of >60 -24.59% followed by 50-60-21.31%; 40-50-19.67%;30-40-16.39%;20-30-9.83%;10-20-8.19%.

**Table 2:** Gender wise distribution of the Patients

Sex	No.	Percentage (%)
Male	44	72.13%
Female	17	27.87%
Total	61	100.00%

The majority of the Patients were Male i.e. 72.13% as compared to Females 27.87%.

**Table3:** Sono-Urethrography Test Results with reference to Retrograde Urethrography Test

Character	SEN (%)	SPE (%)	PPV (%)	NPPV (%)	K-value	Agreement
Location of stricture	94.65	91.71	95.73	92.75	0.91	Very good
Number of strictures	98.62	91.62	96.63	92.68	0.89	Very good
Length of strictures	96.72	92.74	96.64	92.72	0.93	Very good
Diverticula	99	97	74.00	98	0.82	Very good
False passages	97	92	95.68	92.78	0.98	Very good
For all urethral pathologies	98.95	92.21	76.88	97.87	0.88	Very good

There was varigrade Sensitivities and Specificities ; PPV and NPPV of Sono- UrethrographyTest with respect to Retrograde Urethrography Testbut overall for all urethral pathologies Sensitivity was 98.95 % and Specificity was 92.21% and PPV was 76.88% and NPPV was 97.87 and Agreement by Kappa Statistics were Very good as k=0.88.

## DISCUSSION

imaging has an important role to play in the study of the stricture diseases of the male urethra since it can detect pathology not visible on urethroscopy.<sup>8</sup>Originally, RGU was performed using penile clamps and other devices. McCallum<sup>9</sup> popularized use of Foley’s catheter in the distal urethra to help retain contrast material after fi lling. Retrograde urethrography has been the standard imaging technique for the evaluation of male anterior urethra, which involves the use of radiation and contrast medium. It gives very limited information about periurethral strictures. Radiation is harmful especially to the gonads which are frequently exposed during these examinations. An ideal study should be able to indicate the type of surgical procedure suitable for the patient. This includes accurate determination of the site, length and diameter of strictures. Complete preoperative knowledge of complicating conditions like urethral calculi, fistulae, false tracts, diverticula and polyps facilitate favorable urethroplasty outcomes. For this study, the sonourethrographic imaging was performed with the

urethra distended by normal saline as a negative contrast agent. Bearcroft P.W.P. and Berman L.H<sup>13</sup> used radiographic contrast medium immediately after the contrast study. If no contrast study is to be performed it was replaced by normal saline. Initial studies described dorsal scanning approach to the penile urethra<sup>10,11,12</sup> moving ventrally for subscrotal and perineal views of the bulbar urethra. In our study we have found that The majority of the patients were from the age group of >60 -24.59% followed by 50-60-21.31%;40-50-19.67%;30-40-16.39%;20-30-9.83%;10-20-8.19%.The majority of the Patients were Male i.e. 72.13% as compared to Females 27.87%.There was varigrade Sensitivities and Specificities ; PPV and NPPV of Sono- Urethrography Test with respect to Retrograde Urethrography Test but overall for all urethral pathologies Sensitivity was 98.95 % and Specificity was 92.21% and PPV was 76.88% and NPPV was 97.87 and Agreement by Kappa Statistics were Very good as k=0.88

## REFERENCES

1. Sandler CM. Questions and answers. *AJ Roentgenol.* 1994; 163: 1263–1267.
2. McAninch JW, Lairing FC, Jeffrey B. Sonourethrography in the evaluation of urethral stricture A preliminary report. *J Urology.* 1988; 139: 294–297. [PubMed]
3. Steve BB. Urethral Stricture Evaluation and Management. *J Urol.* 1998; 157: 506–600.
4. Heyns CF, Steen Kamp. Treatment of male urethral strictures. *J. Urol.* 1998; 160: 356–358. [PubMed]
5. Peng MY, Parisky YR, Cornwell EE. Conventional cystourethrography in evaluation of urethral stricture. *AJRoentgenol.* 1999; 183: 1280–1289.
6. Morey AF, McAninch JW. Sonographic staging of anterior urethral strictures. *J Urol.* 2000; 163: 1070 – 1075. [PubMed]
7. Morey AF, McAninch JW. Ultrasound evaluation of the male urethra for assessment of urethral stricture. *J. Clin Ultrasound.* 1996; 24: 473 –479. [PubMed]
8. Pavlica P, Barozzi L, Menchi I. Imaging of male urethra. *EurRadiol.* 2003; 13 (7): 1583-96.
9. McCallum RW. The adult male urethra: normal anatomy, pathology, and method of urography. *RadiolClin North Am.* 1979; 17: 227-44.
10. McAninch JW, Laing FC, Jeffrey RB Jr. Sonourethrography in the evaluation of urethral strictures: a preliminary report. *J Urol.* 1988; 139: 294-97
11. Gluck CD, Bundy AL, Fine C, Kevin RL and Jerome PR. Sonographicurethrogram: comparison to roentgenographic techniques in 22 patients. *J Urol.* 1988; 140 (6): 1404-08.
12. Merkle W, Wagner W. Sonography of the distal male urethra-a new diagnostic procedure for urethral strictures: results of a retrospective study. *J Urol.* 1988;140: 1409-11
13. Bearcroft PW, Berman LH. Sonography in the evaluation of the male anterior urethra. *ClinRadiol.* 1994; 49 (9):621-28.

Source of Support: None Declared  
Conflict of Interest: None Declared

