



## RESEARCH ARTICLE

### A PROSPECTIVE STUDY TO EVALUATE THE SAFETY AND EFFICACY OF A SINGLE INSTILLATION OF POVIDONE IODINE UNDER FLUOROSCOPY GUIDANCE FOR THE TREATMENT OF CHYLURIA

<sup>1</sup>Jay Bhanushali and <sup>2,\*</sup>Ojas Vijayanand Potdar

<sup>1</sup>Senior Resident-3 in Urology, Grant Medical College and J.J. group of hospitals, Mumbai

<sup>2</sup>Assistant Professor in Urology, Grant Medical College and J.J. group of hospitals, Mumbai

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##### \*Corresponding author:

Ojas Vijayanand Potdar

#### ABSTRACT

**Introduction:** Chyluria is a medical condition defined as presence of chyle in urine, resulting in a milky-white appearance of urine. The etiology of chyluria can be infective, traumatic and idiopathic. **Materials and methods:** A prospective study was carried out at a tertiary care centre over a period of 2 years from April 2021 to April 2023 where patients with age between 18-70 years with urine examination positive for chylomicrons were enrolled into the study. A total of 32 patients with chyluria underwent renal pelvic instillation sclerotherapy (RPIS). **Results:** A total of 23 patients showed an immediate disappearance of milky urine after procedure. 8 patients with bilateral chylous efflux showed clearance after treatment on the other side. 1 patient with bilateral chylous efflux had treatment failure during left sided sclerotherapy after successful treatment on right side a month prior. Recurrence was observed in 2 patients at 6 monthly follow up. One patient with recurrence had bilateral disease while another had unilateral disease. Patients with treatment failure and recurrence were given sclerotherapy one more time. Both patients with recurrence responded to retreatment and the patient with treatment failure was planned for laparoscopic nephronolysis. **Conclusion:** RPIS using a single instillation of 0.2% povidone iodine is safe, effective, well-tolerated, inexpensive and minimally invasive method for the management of chyluria.

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## INTRODUCTION

Chyluria is a medical condition defined as presence of chyle in urine, resulting in a milky-white appearance of urine. The Etiology of chyluria can be infective, traumatic and idiopathic. The pathophysiology of chyluria is usually presence of abnormal communications between intestinal lymphatics and the lymphatics of the urinary system. Management of chyluria includes conservative methods, endoscopic sclerotherapy, surgical lymphatic disconnection, and microsurgery. Conservative treatments are high fluid intake, low-fat diet, high-protein diet, and antifilarial drugs such as diethylcarbamazine. Endoscopic sclerotherapy is one of the promising management strategies used to manage chyluria after failure of conservative treatments. Renal pelvic instillation sclerotherapy (RPIS) is a minimally invasive endoscopic sclerotherapy used frequently to treat chyluria. Although previous studies have established similar efficacy of povidone iodine and silver nitrate in the management of patients with chyluria, the lack of randomized clinical trials assessing safety and efficacy of different sclerosants is a major hurdle in

providing a clear evidence, regarding superiority of the single dose of povidone iodine instillation in RPIS. The present study aimed to evaluate the safety and efficacy of single dose of 0.2% povidone iodine instillation in the management of patients with chyluria.

## MATERIALS AND METHODS

### Inclusion criteria

Patients aged between 18-70 years  
Patients with a positive Urine for chylomicron test .

### Exclusion criteria

Patients who were Allergic to iodine  
Patients with a prior history of urological surgery/ invasive treatment for chyluria.

Duration of the study was 2 years from April 2021 to April 2023. The study included a total of 32 patients with chyluria. All patients were given high fat diet one day prior to sclerotherapy. RGP with urografin (76%) (diatrizoate meglumine diatrizoate sodium) was done in all patients to confirm the pyelo-lymphatic connections prior to sclerotherapy. The sclerosing solution was prepared by using 10ml of 5% povidone iodine solution diluted with 40ml distilled water. 20 ml of this solution was instilled on the side having pyelolymphatic fistula using a ureteric catheter. The sclerosing solution was kept in the system for 5 minutes and the ureteric catheter was then withdrawn. Unilateral instillation was required in 23 cases, of which 14 were on the right side and 9 on left. 9 patients had bilateral chylous efflux and sclerotherapy was performed on one side followed by the other side after one month. Follow up was done at 1 week, 3 months, 6 months and 1 year.

## RESULTS

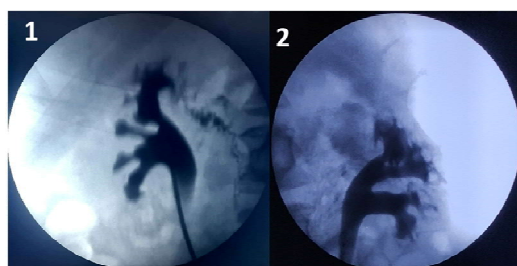
A total of 23 patients showed an immediate disappearance of milky urine after procedure. 8 patients with bilateral chylous efflux showed clearance after treatment on the other side. 1 patient with bilateral chylous efflux had treatment failure during left sided sclerotherapy after successful treatment on right side a month prior. Recurrence was observed in 2 patients at 6 monthly follow up. One patients with recurrence had bilateral disease while another had unilateral disease. Patients with treatment failure and recurrence were given sclerotherapy one more time. Both patients with recurrence responded to retreatment and the patient with treatment failure was planned for laparoscopic nephronolysis. All patients with mild clinical symptoms had unilateral pyelolymphatic fistulae. 4 patients with moderate symptoms and all 5 patients with severe symptoms had bilateral pyelolymphatic fistulae. The Patient with treatment failure had severe symptoms and bilateral efflux. Post procedure failure was seen on left side, while right side was treated successfully a month prior.

Of the 2 patients with recurrence, 1 had bilateral and 1 had unilateral pyelo-lymphatic fistulae on RGP with both having severe symptoms pre treatment. A total of 8 patients experienced Complications post procedure.

Pain -6  
Fever - 3  
Hematuria/clots -2

Complications were either Calvin Dindo Grade 1 or 2 and were managed conservatively.

### Retrograde pyelography showing pyelolymphatic connection



1 Right RGP with pyelolymphatic fistula at the upper pole  
2 Left RGP with Pyelolymphatic fistulae in multiple poles

| Parameters          | Total |
|---------------------|-------|
| • Age (years), mean | 43    |
| • Sex               |       |
| ➤ Male              | 18    |
| ➤ Female            | 14    |
| • Unilateral        | 23    |
| • Bilateral         | 9     |
| • 1 year follow up  |       |
| ➤ Symptom free      | 29    |
| ➤ Failure           | 1     |
| ➤ Recurrence        | 2     |
| • Grading.          |       |
| ➤ Mild              | 16    |
| ➤ Moderate          | 11    |
| ➤ Severe            | 5     |

All 9 patients with bilateral chylous efflux showed clearance after treatment on other side. Variability in sex and age showed no statistically significant difference in treatment results. Recurrence was not observed however one patient had treatment failure. The longest follow-up was 1 year and the shortest was 6 months.

## DISCUSSION

Our overall observations demonstrated that single dose of 0.2% povidone iodine was effective in causing immediate disappearance of milky urine after procedure in 96.88% patients and a recurrence free rate of 90.63% at 1 year follow up. There are several previous studies that established the efficacy and safety of different sclerosant agents for treatment of chyluria. These include 0.5% silver nitrate solution, povidone iodine in various concentrations upto 5%, 50% dextrose, 3% hypertonic saline, 10%–25% potassium iodide, and contrast media used in radiology. Currently, the use of povidone iodine is considered superior due to minimal complication rates. Dalela et al demonstrated that silver nitrate was effective in 80% cases but with significant side effects such as ureteric stricture, acute renal failure and even death.<sup>1</sup> Goel et al demonstrated that 0.2% povidone iodine and 1% silver nitrate had similar efficacy.<sup>2</sup> Ramana et al demonstrated 88% success rate with 0.2 % povidone iodine with multiple instillations given 8 hourly for 3 days.<sup>3</sup> A recently published study by Purkait et al demonstrated higher chance of treatment failure and recurrence in patients with higher clinical grade of disease which is consistent with our study results. However it also suggested a higher number of instillations (>3) was associated with better success rate.<sup>4</sup> Seleem et al demonstrated similar success rate of single (85.2%) vs multiple instillations (88.9%) of 0.2% povidone iodine and 76% urografin.<sup>5</sup>

## CONCLUSION

RPIS using a single instillation of 0.2% povidone iodine is safe, effective, well-tolerated, inexpensive and minimally invasive method for the management of chyluria. Single sitting with use of povidone iodine is better than multiple sittings.

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