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Case Report

Ayurveda Section

Conservative Ayurvedic Management of a Mid-ureteric Calculus with Grade-2 Hydronephrosis: A Case Report

ABINASH KAR[1], NEHA KUMARI[2], AMIT KUMAR RAI[3], SUJATA YADAV[4]

ABSTRACT

Ureterolithiasis is a common urological disorder characterised by the formation of calculi within the ureters. Despite significant advancements in surgical and endourological interventions, high recurrence rates, postoperative discomfort, and the potential for complications highlight the need for safe, effective, and non-invasive treatment approaches. In Ayurveda, *Ashmari* (urinary calculi) is classified among the *Ashtamahagada* (eight extremely challenging diseases) and is managed through a holistic combination of herbal medications, dietary regulation, and lifestyle modification that aim to achieve *Ashmari-bhedana* (lithotriptic), *Mutrala* (diuretic), and *Shoolahara* (analgesic) effects. In this case report, a 28-year-old male diagnosed with a mid-ureteric calculus measuring 7.2 mm, a size generally considered suitable for surgical intervention, was successfully managed with conservative Ayurvedic treatment. The patient has a history of recurrent calculus formation and a past surgical history for calculus removal. An Ayurvedic therapeutic regimen comprising *Gokshuradi Guggulu*, *Sweta Parpati*, *Sukumara Ghrita*, *Varunadi Kashaya*, and Kumaryasava was administered for 10 weeks, accompanied by strict dietary and lifestyle guidance focusing on adequate hydration, avoidance of lithogenic foods, and adherence to light, easily digestible meals. The patient experienced complete symptomatic relief, with no painful episodes, urinary obstruction, or adverse effects. Follow-up ultrasonography revealed complete clearance of the calculus and normal urinary parameters. This case suggests a potential role of the Ayurvedic approach in the management of ureteric calculi of significant size; however, the findings are limited to a single case and should be interpreted with caution.

Keywords: Case report, *Gokshuradi Guggulu, Mutrashmari*, Ureterolithiasis, *Varunadi Kashaya*

CASE REPORT

A 28-year-old male, a businessman by profession, presented to the Kayachikitsa OPD with complaints of pain and burning sensation during micturition, with increased frequency for the past seven days. He had been experiencing pain in the flank region, radiating towards the lower abdomen, for the past four weeks. There was no history of prior use of Non-steroidal Anti-Inflammatory Drugs (NSAIDs), α-blockers, or any other relevant medications for the current condition. His fluid intake was found to be inadequate due to occupational factors, with no precise quantification available. There was no history suggestive of hyperparathyroidism, gout, or any other metabolic disorder. However, he had a surgical history of right ureteric calculus managed via Retrograde Intrarenal Surgery (RIRS) one year ago. According to the individual, the calculus was identified as a uric acid stone. The patient reported nausea, constipation, and burning micturition. Urine output was reportedly reduced, likely secondary to inadequate fluid intake.

The patient had good appetite, regular sleep, and a mixed diet, with occasional alcohol intake. His father had a history of type 2 diabetes mellitus. The individual presented in fair general condition. Pallor, icterus, clubbing, oedema, and cyanosis were absent. Vital signs were stable, with a pulse rate of 74/min, blood pressure of 128/86 mmHg, SpO_2 of 98%, respiratory rate of 21/min, BMI 24 kg/m2, and body temperature of 98.6°F. Systemic examination revealed clear bilateral lung fields with no adventitious sounds. The cardiovascular assessment revealed normal heart sounds without murmurs. The gastrointestinal examination indicated a soft abdomen with no guarding, rigidity or organomegaly. Genitourinary assessment noted mild tenderness in the left costovertebral angle. Further, the patient was conscious, oriented, and without any focal neurological deficits. The ultrasonography of the abdomen revealed a 7.2 mm left mid-ureteric calculus along with grade 2 hydronephrosis. He was diagnosed with *Ashmari*, and an Ayurvedic regimen was planned as per his clinical condition.

The conventional medicine expert recommended surgical intervention for the patient's clinical condition. Seeking to avoid another surgery, the patient opted for Ayurvedic management and visited the Ayurvedic Hospital. He remained under treatment until March 2025, with a total intervention period of 10 weeks, and was subsequently followed-up. The details of therapeutic interventions are provided in [Table/Fig-1]. The patient was also advised to follow strict dietary and lifestyle guidance focusing on adequate hydration, avoidance of lithogenic foods, and adherence to light, easily digestible meals. The suggested diet and lifestyle are outlined in Supplementary [Table/Fig-1]. The timeline of clinical outcomes is provided in [Table/Fig-2].

Follow-up and outcome

During the course of treatment, a significant reduction in left flank pain (as measured by the VAS score) was observed, along with a marked improvement in symptoms such as burning micturition, nausea, and constipation, as presented in [Table/Fig-2]. He occasionally experienced mild pain in the urethral region during

S. No.	Ayurveda interventions	Dosage, Frequency, Timing of administration, and Anupana	Duration
1.	Gokshuradi Guggulu	500 mg BD with lukewarm water after lunch and dinner	2 months and 9 days
2.	Sweta Parpati	250 mg with 50 mL of normal water after lunch and dinner	
3.	Sukumara Ghrita	10 mL BD, one hour before meals (morning and evening), followed by intake of lukewarm water	
4.	Varunadi Kashaya	40 mL BD, one hour before lunch and dinner	
5.	Kumaryasava	20 mL BD with equal water after lunch and dinner	

[Table/Fig-1]: Details of Ayurvedic therapeutic regimen.
* All Ayurvedic formulations used in this case except Varunadi Kashaya were procured from Indian Medicines Pharmaceutical Corporation Limited (IMPCL), a Government of India undertaking under the Ministry of Ayush, and manufactured in accordance with Good Manufacturing Practices (GMP).

S. No.	Symptoms	Baseline	Week 3	Week 6	Week 8	Week 10
1.	Pain in the flank region (assessed through VAS)	7	4	1	0	0
2.	Burning micturition	Present	Present	Present	Absent	Absent
3.	Nausea	Present	Present	Absent	Absent	Absent
4.	Constipation	Present	Present	Present	Present	Absent

[Table/Fig-2]: Details of clinical features.

micturition, which may suggest passage of the calculus. However, there was no reported episode of severe acute colicky pain. The passage of the calculus was not directly observed by him, so it was not retrieved for analysis. Further, serial ultrasonographic assessments demonstrated complete resolution of the ureteric calculus and associated grade 2 hydronephrosis. The chronology of these USG findings is provided in [Table/Fig-3].

Date	USG Findings	Remarks
On baseline	A 7.2 mm calculus is noted in the mid left ureter with associated grade 2 hydronephrosis	Suggestive of obstructive uropathy
After 5 weeks and 5 days	A 5.3 mm calculus is seen in the distal left ureter with associated grade 1 hydronephrosis	Partial obstruction
After next 4 weeks and 5 days	No calculus or hydronephrosis seen	Resolved

[Table/Fig-3]: Details of the USG findings during the treatment.

Compliance with both medication and dietary recommendations were monitored through regular follow-up interactions, during which the patient consistently reported good adherence throughout the intervention period. Moreover, no adverse events were reported by the individual during the treatment period. He was followed up for one year, with no recurrence of pain or symptoms. However, due to clinical improvement and absence of symptoms, the individual declined repeat ultrasonography.

Additionally, urinalysis examination suggested resolution of RBCs in the urine following the prescribed Ayurvedic treatment. Moreover, kidney function tests remained unaltered during the treatment. The details are presented in [Table/Fig-4].

Parameters	Findings on baseline	Findings after 10 weeks
Urine Examination		
Red blood cells	5-7/hpf	Nil
Pus cells	2-3/hpf	0–1/hpf
Epithelial cells	1-2/hpf	0-1/hpf
Cast	Nil	Nil
pH	5.7	5.7
Crystal	Nil	Nil
Yeast and bacteria	Nil	Nil
Glucose	Negative	Negative
Protein	Negative	Negative
Kidney Function Test		
Sr. Urea	20.52 mg/dL	20.13 mg/dL
Sr. Creatinine	0.67 mg/dL	0.68 mg/dL
Sr. Uric acid	5.7 mg/dL	5.7 mg/dL
Sr. Sodium	139 mmol/L	134 mmol/L
Sr. Potassium	94 mmol/L	95.2 mmol/L

[Table/Fig-4]: Details of laboratory investigations.

DISCUSSION

Ureterolithiasis is commonly associated with acute colicky pain and may resolve spontaneously depending on stone size and location. Calculi ≤5 mm have a high likelihood of spontaneous passage, whereas stones >7 mm, particularly in the mid ureter, have a significantly lower expulsion rate and often require intervention. In the present case, the calculus measured 7.2 mm and was located in the mid ureter, where the luminal diameter is relatively narrow, making spontaneous passage less predictable [1]. Despite advances in endourological and percutaneous techniques, urolithiasis continues to show high recurrence rates. In Ayurvedic literature, this condition is described as *Ashmari*, characterised by calculus formation in the urinary tract [2]. It is classified among the *Ashtamahagada* (eight major diseases) [3]. Classical management, as described by Acharya Sushruta, includes *Ghrita* (Medicated clarified butter), *Kshara* (alkali formulations), *Ksheera* (milk processed with medicinal herbs), *Kashaya* (herbal decoctions), and *Uttara Basti* (medicated enema through urethra), with surgery reserved as a last option when conservative measures fail [4]. Although Ayurvedic interventions have shown efficacy in renal calculi, evidence in ureterolithiasis remains limited, particularly in cases where surgical management is typically indicated. In the present case of a 7.2 mm calculus located in the mid left ureter, the therapeutic goals were to facilitate disintegration of calculus and its smooth expulsion, and relieve associated hydronephrosis to minimise the risk of renal impairment. Accordingly, a comprehensive Ayurvedic regimen, including *Varunadi Kashaya*, *Gokshuradi Guggulu, Sweta Parpati, Sukumara Ghrita,* and *Kumaryasava*, was planned to address these objectives.

Varunadi Kashaya, a classical polyherbal decoction containing *Varuna* (*Crataeva nurvala*), *Gokshura* (*Tribulus terrestris*), *Pashanabheda* (*Bergenia ligulata*), and *Yavakshara*, is traditionally indicated in urolithiasis and may facilitate calculus expulsion through diuretic and lithotriptic actions [5]. Its therapeutic effect may involve modulation of lithogenic metabolic and urinary factors. Experimental evidence suggests that *C. nurvala* reduces hepatic glycolate oxidase activity, thereby decreasing endogenous oxalate synthesis, along with reducing deposition of calculus-forming constituents, partially correcting abnormal urinary excretion of crystalline components, and restoration of urinary magnesium levels, which inhibit calcium oxalate crystallisation [6]. *Gokshura* (*T. terrestris*), also present in *Gokshuradi Guggulu*, has anti-urolithic, diuretic, antispasmodic, and anti-inflammatory actions, which may reduce urinary stasis, relieve ureteric spasm, and facilitate calculus transit, while also inhibiting crystal nucleation, growth, and aggregation and protecting urothelial cells from crystal-induced oxidative injury [7]. *Pashanabheda* (*B. ligulata*), attributed to its active constituent bergenin, demonstrates anti-urolithic, antioxidant, and anti-inflammatory effects, including inhibition of crystal aggregation and protection against crystal-induced injury in renal epithelial cells [8]. *Yavakshara*, an alkaline preparation, exhibits diuretic and anti-inflammatory properties and may help reduce crystal persistence by altering urinary milieu [9]. Collectively, these mechanisms may contribute to reduction in calculus burden, limit further growth, and support spontaneous calculus expulsion.

Gokshuradi Guggulu is a classical Ayurvedic polyherbal formulation indicated for managing dysuria, burning micturition, and urolithiasis, with reported diuretic, lithotriptic, anti-inflammatory, and analgesic properties [10]. A few case reports have also suggested its potential role in the management of renal calculi [11,12]. Its effects in this case may be attributed to the therapeutic properties of its constituents, including *Gokshura* (*Tribulus terrestris*), *Guggulu* (*Commiphora wightii*), *Pippali* (*Piper longum*), and *Maricha* (*Piper nigrum*), which exhibit anti-inflammatory and antioxidant activities, as oxidative stress and inflammation are significant in the pathogenesis of urolithiasis [13-15]. *Sukumara Ghrita and Kumaryasava* are classical Ayurvedic formulations containing *Punarnava* (*Boerhavia diffusa*) and *Gokshura* (*Tribulus terrestris*), which exhibit diuretic, lithotriptic, antioxidant, and anti-

inflammatory properties that may facilitate calculus expulsion and alleviate dysuria and burning micturition [7,16]. Ureteric stones typically present with colicky pain due to obstruction and ureteric spasm, which in Ayurvedic terms corresponds to vitiation of *Apana Vata*. *Sukumara Ghrita,* a lipid-based formulation, may help reduce spasmodic pain and support smooth passage of the calculus. The use of medicated *Ghrita* in *Ashmari* has also been described by Acharya Sushruta [4]. Furthermore, the presence of *Trinapanchamoola* (a group of diuretic herbs) may enhance urinary flow, thereby supporting gradual calculus expulsion [17].

Due to its alkalising properties, *Sweta Parpati* is indicated in Ayurveda to relieve burning micturition and dysuria present in various urinary disorders, including urolithiasis. Its alkaline nature not only supports the dissolution and elimination of urinary concretions but also helps prevent bacterial proliferation within the urinary tract [18].

Relief of hydronephrosis in this case may be attributed to gradual passage of calculus, leading to resolution of ureteric obstruction and restoration of normal urinary flow. Reduction in ureteric spasm and inflammation may have further improved luminal patency, thereby facilitating decompression of the collecting system.

The individual was advised comprehensive dietary and lifestyle modifications aimed at preventing recurrence and supporting renal health. *Kulatha Dal* (*Dolichos biflorus*) was recommended due to its litholytic and diuretic properties documented in Ayurvedic literature. Adequate fluid intake was emphasised to promote diuresis, dilute urinary solutes, and reduce the risk of further calculus formation. Dietary restrictions included limiting high-protein, calcium-rich, and oxalate-rich foods to reduce urinary calcium, uric acid, and oxalate load. Sodium intake was also restricted, as excess salt increases urinary calcium excretion. The inclusion of fibre-rich fruits and vegetables, providing potassium and magnesium, was encouraged to help maintain a urinary environment less conducive to stone formation. Additionally, the individual was advised to avoid prolonged urinary retention and maintain regular voiding habits to prevent urinary stasis. Regular physical activity was also recommended to support overall renal function.

The gradual reduction in stone size from 7.2 mm to 5.3 mm over approximately 40 days, followed by complete resolution, may indicate progressive distal migration and eventual spontaneous expulsion of the calculus. Although spontaneous passage of ureteric stones within this size range has been reported, the likelihood is relatively lower for mid-ureteric calculi measuring >7 mm. Therefore, the possibility of natural disease progression contributing to the outcome cannot be entirely excluded. However, the simultaneous improvement in clinical symptoms, reduction in hydronephrosis, and temporal association with the instituted Ayurvedic interventions and hydration measures suggest that the treatment regimen may have played a supportive role in facilitating stone transit and relieving ureteric obstruction. The successful outcome in this case may have been influenced by individual patient factors, including preserved renal function, moderate stone burden, good treatment adherence, and early-stage disease, which may limit generalisability to all patients with ureterolithiasis. The favourable non-surgical resolution of a >7 mm ureteric calculus in this case is noteworthy but should be interpreted with caution. Further validation of these outcomes through well-designed randomised controlled trials is required. Key limitations include the absence of CT scan findings, CRP values, serum calcium and serum phosphate and urine culture assessment, lack of calculus composition analysis, and no metabolic evaluation, which limit assessment of calculus aetiology and recurrence risk.

CONCLUSION(S)

This case report demonstrates the resolution of a 7.2 mm left mid-ureteric calculus, accompanied by grade 2 hydronephrosis, following 10 weeks of Ayurvedic intervention, with relief from flank pain, and burning micturition. The findings suggest that Ayurvedic management may effectively address ureteric obstruction, associated infection, and secondary hydronephrosis with no reported adverse effects. These outcomes support the therapeutic potential of holistic Ayurvedic management in addressing ureterolithiasis and their associated complications.

Patient's perspective: After having undergone a surgical procedure earlier for similar complaints, I chose Ayurvedic management during the recurrence of symptoms. Throughout the treatment, I experienced noticeable improvement without the need for further surgical intervention.

Authors' contribution: AK: Data collection, Validation, Writing- original draft. NK: Data collection, Validation. AKR: Visualisation, Writing - original draft, Writing - review and editing. SY: Conceptualisation, Supervision. All authors read and approved the final draft of the manuscript.

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PARTICULARS OF CONTRIBUTORS:
1. MD Scholar, Department of Kayachikitsa, Ayurvedic and Unani Tibbia College and Hospital, New Delhi, India.
2. MD Scholar, Department of Kayachikitsa, Ayurvedic and Unani Tibbia College and Hospital, New Delhi, India.
3. Assistant Professor, Department of Kayachikitsa, Ayurvedic and Unani Tibbia College and Hospital, New Delhi, India.
4. Head and Professor, Department of Kayachikitsa, Ayurvedic and Unani Tibbia College and Hospital, New Delhi, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Abinash Kar,
MD Scholar, Department of Kayachikitsa, Ayurvedic and Unani Tibbia College and Hospital, Ajmal Khan Road, Karol Bagh, New Delhi-110005, India.
E-mail: drabinash1997@gmail.com

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