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Ayurvedic Surgical Perspectives in the Management of Bladder Calculus: A Case Report

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ABSTRACT:
Bladder calculus, known as *Ashmari* in Ayurveda, is a significant urological disorder that has been described extensively in ancient texts. Acharya Sushruta, the pioneer of *Ayurvedic* surgery, detailed the pathophysiology, classification, and treatment of *Ashmari*, emphasizing the use of *Sastra Karma* (surgical methods) for its management. The aim of the study is to discuss the *Ayurvedic* principles of bladder stone treatment and their integration with modern surgical procedures, specifically suprapubic cyst lithotomy. In this case report, a 60 years old male patient came to *Shalya Tantra* OPD with complaints of pain at lower abdomen associated with burning micturition, straining during urination, dribbling and urgency for last one year. On general examination tenderness in the suprapubic region. The abdomen distention (on/off) due to urinary retention. On local examination tenderness was present in the suprapubic region, which exacerbated by palpation or percussion. The patient had difficulty in initiating or maintaining urination. USG Abdomen, was suggestive of urinary bladder calculus with changes of chronic cystitis. So this urinary bladder calculus was treated with Suprapubic cystolithotomy under Spinal anesthesia. Post-operative care using herbal formulations such as *Gokshuradi Guggulu* (1 gm TDS) play a crucial role in ensuring proper recovery and minimizing recurrence. The study highlights the potential of integrating *Ayurvedic* principles with modern surgical advancements to enhance patient outcomes. Further research and clinical trials are recommended to validate the effectiveness of *Ayurvedic* interventions in post-surgical care and stone recurrence prevention.

KEY WORDS: *Ashmari*, Bladder Calculus, *Sastra Karma,* Suprapubic Cystolithotomy.

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INTRODUCTION:

Bladder calculi, commonly known as urinary bladder stones, have been a medical concern since ancient times. Various civilizations, including the Egyptians, Greeks, and Indians, documented their occurrence and developed surgical and medicinal interventions for treatment.[1] Ayurveda, the ancient Indian system of medicine, describes bladder stones under the term *Ashmari* and attributes their formation to an imbalance in the *doshas*, particularly *Kapha* and *Vata*.

Acharya Sushruta, regarded as the father of surgery, provided an extensive account of bladder stone aetiology, classification, and management in his text, *Sushruta Samhita*. His approach to treatment included a combination of surgical intervention (*Sastra Karma*), herbal formulations, dietary regulations, and lifestyle modifications to prevent recurrence.[2] The principles of *Chhedana* (incision) and *Bhedana* (excision) described by him closely resemble modern surgical techniques used for stone removal. [3]

Until the 20th century, bladder stones were among the most prevalent disorders, particularly in economically disadvantaged populations and among children and adolescents. The decline in their incidence is primarily attributed to improvements in nutrition and dietary habits. However, due to a lack of health awareness, inadequate healthcare infrastructure, and limited research facilities, bladder calculi remain a significant health concern in developing regions such as India.[4]

Bladder stones can be classified into two types: primary and secondary. Primary stones occur without any underlying urinary tract pathology and are often associated with nutritional deficiencies, particularly of vitamins A and B6, magnesium, and phosphate. Secondary bladder stones develop due to urinary stasis caused by conditions such as prostatic enlargement, urethral strictures, bladder diverticula, and chronic infections. Predisposing factors may include foreign bodies in the bladder, including surgical materials, ureteral stents, and catheters. The clinical presentation varies, ranging from asymptomatic cases to symptoms such as suprapubic discomfort, haematuria, dysuria, urinary frequency, and intermittent urinary stream obstruction.[5]

Modern treatment options for bladder calculi include minimally invasive techniques such as endoscopic lithotripsy. However, in cases where these methods are not feasible, suprapubic cystolithotomy remains a widely employed surgical approach. While modern advancements in surgical techniques have significantly improved patient outcomes, Ayurveda offers a holistic approach that includes post-operative care, dietary modifications, and herbal treatments aimed at preventing recurrence and enhancing urinary health.

This article explores the *Ayurvedic* perspective on bladder stone management, comparing traditional surgical techniques with contemporary medical practices. It highlights the relevance of *Sastra Karma* in modern surgical interventions and discusses the potential benefits of integrating *Ayurvedic* principles into urological treatments to improve patient recovery and long-term health outcomes.

Principle of Acharya Sushruta's *Sastra Karma*

Acharya Sushruta has given principal of *Asta viddha sastra karma* i.e. *Chhedana, Bhedana, Lekhana, Vedhana, Eshana, Aharana Visravana* and *Sivana*. [6] *Sastra Karma* plays a vital role in the management of *Ashmari*, particularly in cases where conservative treatment fails. According to *Sushruta*, surgical removal of bladder stones follows specific principles to ensure effective treatment while minimizing complications. The key surgical interventions include: *Chhedana* (Incision), *Bhedana* (Excision), *Esana* (Probing), *Aharya* (Extraction). These procedures align closely with modern techniques such as suprapubic cystolithotomy, demonstrating Ayurveda's advanced surgical knowledge.

CASE HISTORY:

A 60 years old male patient came to *Shalya Tantra* OPD with complaints of pain at lower abdomen associated with burning micturition, straining during urination and urgency for last one year. Dribbling type of urination since one year.

Past History

S/H/O- Open hemorrhoidectomy 15 year back.

S/H/O- Appendectomy 12 year back.

Investigations:

In urine analysis yellow and turbid urine, pus

cells and red blood cells present. X-ray KUB (Figure 2) showed a stone in the bladder. USG Abdomen (Figure 1) was suggestive of urinary bladder calculus with changes of chronic cystitis and mild prostatic enlargement**.** So, patient was admitted in *Shalya Tantra* IPD for further management.

Methodology:

Pre-operative: Informed written consent of patient and his relatives was taken prior to procedure with explained prognosis and result. Injection Tetanus Toxoid 0.5 ml intramuscular was given and Inj. Xylocaine intra-dermal sensitivity test was done. Patient was kept NBM (Nil by mouth) for 6 hours prior to surgery. Part preparation was done and glycerine enema was given 2 hours prior to surgery.

All preoperative measures like part preparation, pre-operative medications and pre-operative fluids etc. were adopted as per routine case of abdominal surgery.

Operative: Patient was taken to operation theatre with stable vitals. Spinal anesthesia given using inj. Ropivacaine 10mg in sitting position followed by supine position. Painting done with 10% betadine solution followed by draping with sterile cut-sheet. Foleys catheter inserted and bladder distension done with normal saline through the catheter. Then Pfannenstiel incision (Figure 3) was made with blade no 15 and layer by layer dissection done. Small nick was made over the anterior rectus sheath and it was divided to both sides. Pyramidalis muscles was identified. Anterior rectus sheath then separated from rectus abdominis muscles for making upper and lower flaps. Dissection undergone up to deeper planes and reached urinary bladder. The bladder was seen as a white, shiny, fish belly appearance. Two stay sutures applied at anterior surface of bladder with vicryl 1-0. Vertical incision made at tenting point of bladder and urine inside the bladder removed using suction. Then searching for stone inside the bladder was done and it was removed with stone holding forceps (Figure 4, 5 & 6). The stab wound was closed with continuous locking full thickness suture with vicryl 1-0. Double suturing of the bladder done, first full thickness followed by sero-muscular layer. Bladder was again distended to ensure that it was properly closed and also checking for any leakage. Then Mallecot drain was placed at the recto-pubic space and layer by layer closure done. Proper haemostasias was achieved and wound was packed with gauze pieces soaked with betadine solution.

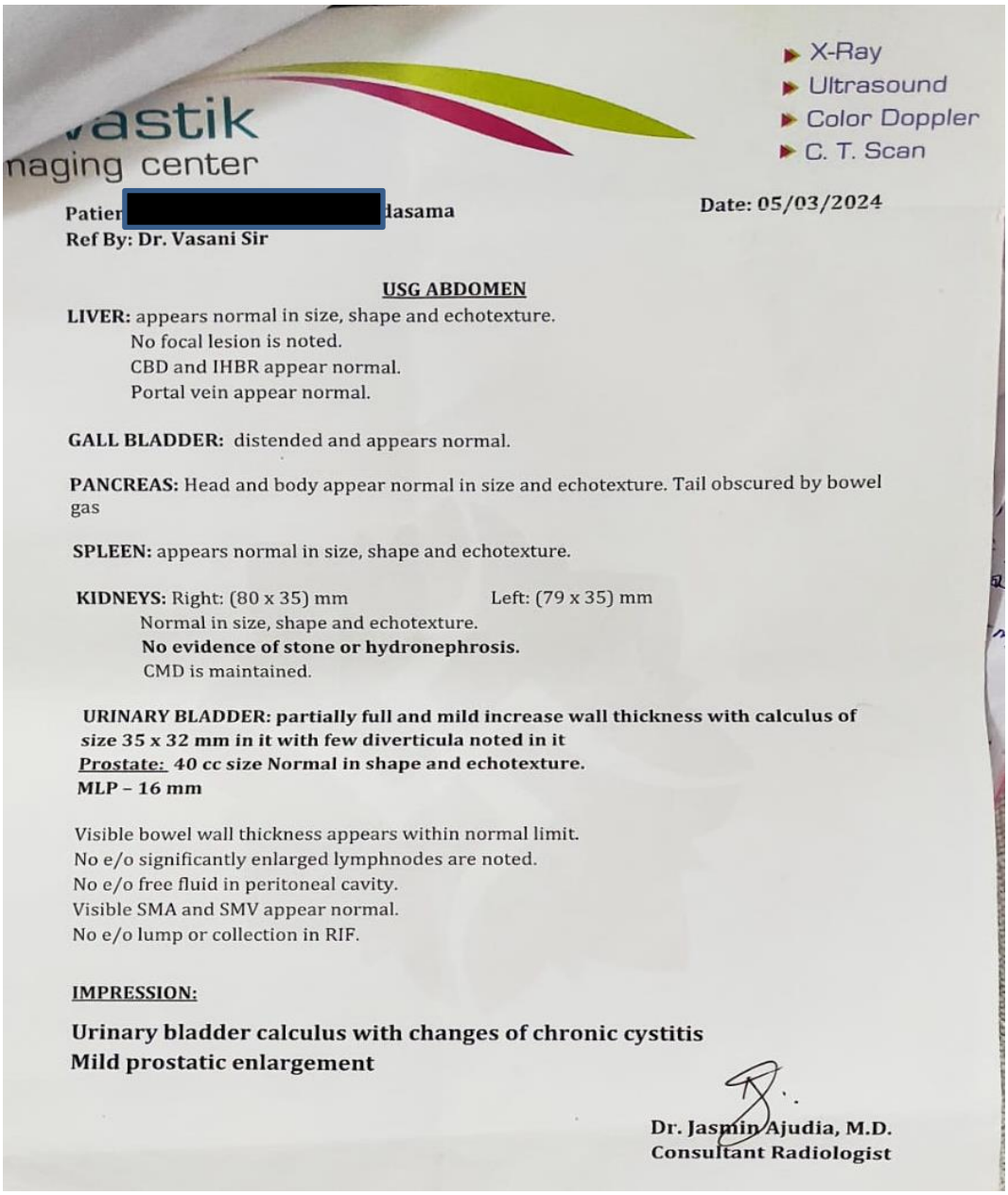
Post-Operative: Head low given until sensation was restored. Nil by mouth status continued till bowel sound was audible. Oral antibiotics (Tab. Cefixime 200mg BD) given for five days. Appropriate analgesic and antacids were also given as per needed. Aseptic dressing with betadine ointment and orally 1gm *Gokshuradi Guggulu* thrice in a day with lukewarm water after meal for two months. Suture was removed after 10 days and Mallecot drain was removed after 14th days. The whole timeline is shown in Table No. 1.

Follow up: On the post-operative 30th day, wound was completely healed and there was no any complication noted.

Table-1: Timeline for *Ayurvedic* Medicines

Date	Procedure	Prescribed Medications
24/12/2024	Patient visited *Shalya Tantra* OPD, USG done	Orally 1gm *Gokshuradi Guggulu* thrice in a day with lukewarm water after meal
25/12/2024	Patient admitted in IPD for further management Haematological and bio-chemical investigations- Normal.	Orally 1gm *Gokshuradi Guggulu* thrice in a day with lukewarm water after meal

26/12/2024	Suprapubic cystolithotomy done under SA.	○ Orally 1gm *Gokshuradi Guggulu* thrice in a day with lukewarm water after meal ○ Orally 1gm *Kanchnar Guggulu* thrice in a day with lukewarm water after meal after NBM breakout. ○ *Varunadi Kwath* 20 ml given BD before meal
09/01/2025	Mallcot catheter removed after 14th days.	○ Orally 1gm *Gokshuradi Guggulu* thrice in a day with lukewarm water after meal ○ Orally 1gm *Kanchnar Guggulu* thrice in a day with lukewarm water after meal. ○ *Varunadi Kwath* 20 ml given BD before meal
*allopathic medicines given as per standard operative protocol as per surgeon advised.		



vastik
naging center

- X-Ray
- Ultrasound
- Color Doppler
- C. T. Scan

Patien[redacted]lasama Date: 05/03/2024
Ref By: Dr. Vasani Sir

USG ABDOMEN

LIVER: appears normal in size, shape and echotexture.
No focal lesion is noted.
CBD and IHBR appear normal.
Portal vein appear normal.

GALL BLADDER: distended and appears normal.

PANCREAS: Head and body appear normal in size and echotexture. Tail obscured by bowel gas

SPLEEN: appears normal in size, shape and echotexture.

KIDNEYS: Right: (80 x 35) mm Left: (79 x 35) mm
Normal in size, shape and echotexture.
No evidence of stone or hydronephrosis.
CMD is maintained.

URINARY BLADDER: partially full and mild increase wall thickness with calculus of size 35 x 32 mm in it with few diverticula noted in it
Prostate: 40 cc size Normal in shape and echotexture.
MLP – 16 mm

Visible bowel wall thickness appears within normal limit.
No e/o significantly enlarged lymphnodes are noted.
No e/o free fluid in peritoneal cavity.
Visible SMA and SMV appear normal.
No e/o lump or collection in RIF.

IMPRESSION:

Urinary bladder calculus with changes of chronic cystitis
Mild prostatic enlargement

Dr. Jasmin Ajudia, M.D.
Consultant Radiologist

Figure: 1. USG ABDOMEN (05/03/24)

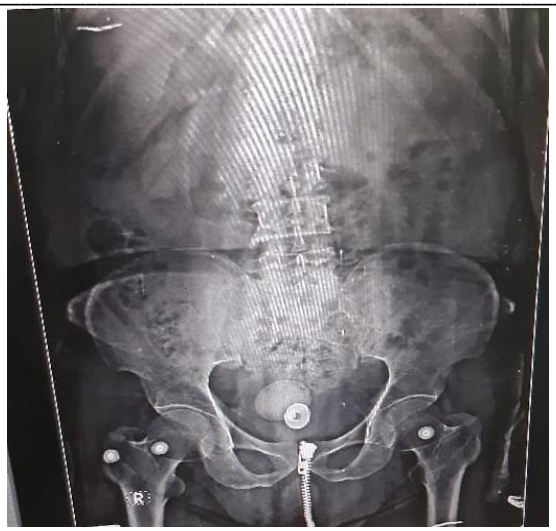


Figure: 2. X-ray KUB (24/12/24)

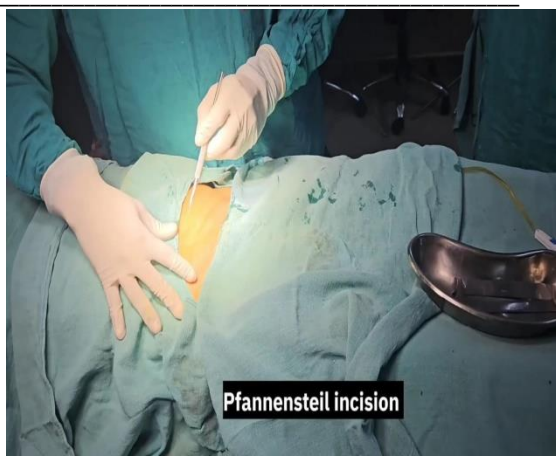


Figure: 3. Pre-Operative

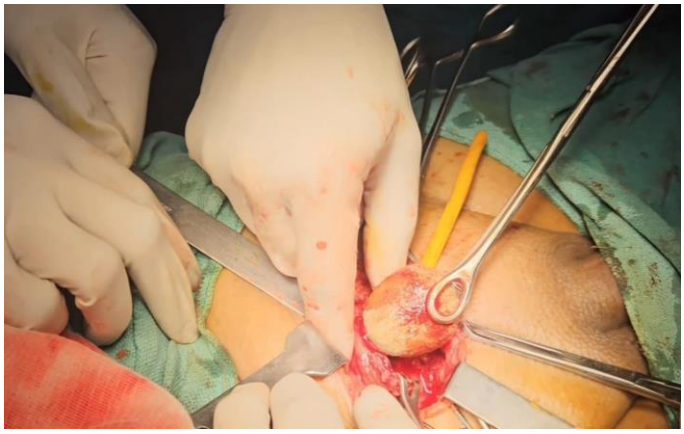


Figure: 4. During Operative Procedure

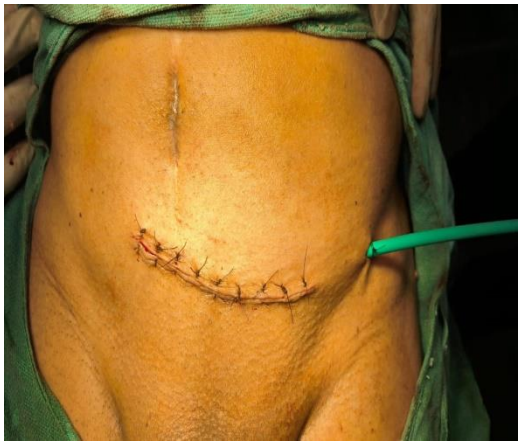


Figure: 5. Wound Closure

Figure: 6. Stone

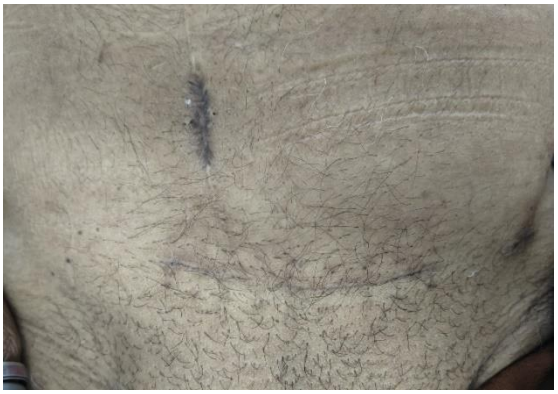


Figure: 7. Post-Operative day-30

DISCUSSION:

The case of bladder calculus management discussed in this study highlights the importance of integrating *Ayurvedic* principles with modern surgical interventions. Bladder stones have been recognized since ancient times, and Ayurveda provides a structured approach to their diagnosis and treatment. Acharya Sushruta, often referred to as the "Father of Surgery", described various surgical methods, including *Sastra Karma* (surgical procedures) for removing urinary stones, known as *Ashmari.*

Ayurvedic **Perspective on Bladder Calculus**

In Ayurveda, bladder calculus is referred to as *Ashmari*, a serious and painful condition resulting from an imbalance in the three *doshas*, particularly *Vata* and *Kapha*, leading to urinary obstruction and stone formation. Sushruta Samhita describes different types of *Ashmari* based on the predominant *dosha* involved, each requiring specific treatment strategies. Ayurveda categorizes *Ashmari* into four types based on doshic predominance - *Vataja, Pittaja, Kaphaja*, and *Shukraja*. [7] The formation of bladder stones is primarily due to stagnation of urine (*Mutravrodha*) caused by an aggravated *Kapha dosha*, which leads to the crystallization of minerals and stone formation. The classical treatment includes *Mutrala Dravyas, Basti Karma, Kshara Karma, Sastra Karma* and *Pathya-Apathya***.**

- ***Sastra Karma*** **(Surgical Methods):** Sushruta emphasized the removal of stones through *Bhedana* (surgical excision) when other treatments fail. The principles of *Chhedana* (incision) and *Bhedana* (excision) were employed to extract stones effectively.[8] The key surgical interventions include following *sastra karma* (surgical steps):
  - ***Chhedana*** **(Incision):** This involves making a precise incision to access the bladder and extract the calculus.
  - ***Bhedana*** **(Excision):** Used to remove the stone completely while ensuring minimal trauma to surrounding tissues.
  - ***Esana*** **(Probing):** A probing technique to locate and assess the size and position of the stone before extraction.
  - ***Grahan*** **(Catch):** Before removing the calculus, it should be catch properly and should not be broken.
  - ***Ahrya*** **(Extraction):** A method used to carefully remove the stone using appropriate surgical instruments.
  - ***Dahan karma*** **for** ***Rakta Sthambhan*** **(Cauterization & Coagulation of bleeder):** To stop the bleeder and achieve a haemostatic condition Dahan Karma (Cauterization) should be done.
  - ***Sivan*** **(Suture):** Closure of the layer by layer of muscles, fascia and skin was done which promotes to wound heal.
- ***Kshara Karma*** **(Alkaline Therapy):** The use of herbal alkalizing agents to dissolve stones naturally. [9]
- ***Mutrala Dravyas*** **(Diuretic Herbs):** Herbs such as *Gokshura* (Tribulus terrestris), *Pashanbheda* (Bergenia ligulata), and *Varuna* (Crataeva nurvala) are traditionally used to facilitate urine flow and prevent stone formation.[10]
- ***Basti Karma*** **(Enema Therapy):** Medicated enemas are recommended for chronic cases of urinary obstruction to cleanse the urinary tract. [11]
- ***Pathya-Apathya*** **(Dietary and Lifestyle Modifications):** Ayurveda emphasizes avoiding excessive intake of heavy, sweet, and dairy-based foods that aggravate *Kapha* and contribute to stone formation. Instead, a diet rich in barley, horse gram, and light-to-digest foods is recommended.

Integration with Modern Surgical Principals

The case study demonstrates the effectiveness of suprapubic cystolithotomy, a modern surgical procedure, in treating

large bladder calculi. While this approach aligns with Sushruta's principles of surgical stone removal, it incorporates advancements in anaesthesia, aseptic techniques, and post-operative care, improving patient outcomes.

Some **key similarities** between Sushruta's surgical techniques and modern practices include:

1. **Pre-operative Measures:** Importance to preparation for the operative procedures like instruments sterilization, instruments trolley and surgically fitness of the patients is given in both the sciences.
2. **Surgical Precision:** The use of *Tikshna Shastra* (sharp surgical instruments) in Ayurveda resembles modern surgical tools, ensuring minimal tissue trauma. *Prakshalan* with *Kashaya*, (painting of pre-operative site), *Chhedana* (Incision), *Bhedana* (Excision), *Esana* (Probing), *Grahan* (Catch), *Aharya* (Extraction), *Dahan karma* for *Rakta Sthambhan* (coagulation of bleeder), *Sivan* (Suture) are the major surgical steps done during the operative procedures.
3. **Post-operative Care:** Sushruta suggested wound management with different kind of *Lepa* (herbal pastes), similar to modern antiseptic techniques. In this case, post-operative care included the use of *Gokshuradi Guggulu*, and *Varunadi Kwath* aiding urinary tract health and *Kanchnar Guggulu* for the pain management.

CONCLUSION:

The successful treatment of bladder calculus through suprapubic cystolithotomy reinforces the relevance of surgical principles outlined in ancient Ayurveda. The integration of *Ayurvedic Sastra Karma* with modern surgical advancements presents a comprehensive approach to managing urinary tract disorders. Further studies and clinical research can explore the synergistic potential of Ayurveda and contemporary medicine in surgical care, ultimately benefiting patient health outcomes.

Notes on patient consent:

Written Informed Consent was taken from the patient before starting the treatment protocol as well as prior to publication of the case details and pictures without disclosing the personal identity.

Limitation of study:

As this is a single case report, it requires more work on such cases for further scientific validation.

Conflict of interest: The author declares that there is no conflict of interest.

Guarantor*:* The corresponding author is the guarantor of this article and its contents.

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