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A CASE STUDY OF LARGE VESICAL CALCULUS

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INTRODUCTION

Vesical calculus, or bladder stones, can either travel to the bladder via the ureter and enlarge there or form directly in the bladder due to urinary stasis and infection. This condition affects individuals of all ages, with males being more commonly affected than females. The most frequent symptom is an increased need to urinate, as standing causes the stone to contact the trigone of the bladder, triggering the urge to micturate. At night, when lying down, the stone may fall off the trigone, alleviating this frequent urge.

Bladder stones can also cause suprapubic pain after urination, often referred to the tip of the penis or labia majora, and this pain is exacerbated by physical activities such as running or jolting. Haematuria, or blood in the urine at the end of micturition, is another common symptom, resulting from the abrasion of the vascular trigone, which worsens with exercise. Additionally, sudden interruption of urine flow due to the stone blocking the urethral meatus, followed by the continuation of flow upon changing posture, is not uncommon.

Aetiology

Primary: Stone which develops in sterile urine. They develops in the absence of bladder pathology. These also include renal stones which have migrated to the bladder.

Secondary: Stone develops in the presence of infection and stasis dur to obstruction to the urinary flow. They develop secondary to bladder pathology.

Four types of calculus

a) Oxalate stone – Size moderate, size uneven ,mulberry stone is dark brown or black because of incorporation of blood pigmented
b) Uric acid stones - Round to oval, smooth, pale yellow, not opaque to X – rays. They are primary stones.
c) Cystine: Radio – Opaque due to high sulphur content.
d) Triple phosphate: These stones consist of ammonium, magnesium and calcium phosphates.

They occur in urine infected with urea – splitting organisms. sometimes, they grow rapidly. the nucleus of the stone can be made of bacteria, desquamated epithelium or a foreign body. dirty white in colour, Acute retention of urine due to the calculus obstructing in the internal meatus. suprapubic cystolithotomy can be done when stone is too big, too hard to crush or too soft. Transitional cell Ca – 90 %, Squmaous cell carcinoma-5-10%, Adenocarcinoma- 2%. In this case study- Diagnosis of Large Vesical Calculus 6.5 cm impacted in urinary bladder.

Signs and Symptoms

- **Changes in urine colour:** Urine may appear cloudy or dark, or there may be visible blood in the urine.
- **Frequent need to urinate:** There is a persistent feeling of needing to urinate, even shortly after urinating.
- **Pain:** Commonly, there is pain or burning during urination. Pain may also be felt intermittently in the lower abdomen. Men may experience pain in the penis or testicles.
- **Stopping and Starting:** Difficulty in initiating the flow of urine, even with a strong urge to urinate, and the urine stream may stop and start intermittently (Urinary intermittency).
- **Urinary tract infections (UTIs):** Bladder stones can cause UTIs, which are characterized by frequent, painful urination, as well as cloudy and foul-smelling urine.

Causes

- **Neurogenic bladder:** Damage to the nerves connecting the bladder and the nervous system, such as from a stroke or spinal injury, can prevent the bladder from fully emptying, leading to bladder calculi.
- **Prostate enlargement:** An enlarged prostate can exert pressure on the urethra, disrupting urine flow and leaving residual urine in the bladder.

- **Medical devices:** Bladder stones can form around catheters or other medical devices that migrate to the bladder.
- **Bladder inflammation:** Infections such as UTIs or treatments like radiation therapy can cause bladder enlargement and inflammation.
- **Kidney stones:** Kidney stones that are too large to pass may migrate down the ureters and remain in the bladder, leading to bladder obstruction and the formation of bladder stones.
- **Bladder diverticula:** Pouches can form within the bladder that grow large in size, they can hold the urine and prevent the bladder from being emptied.
- **Cystocele:** In women the bladder wall can become weak and drop down to the vagina this can affect the flow of urine from the bladder.

Risk factors

- **Age and Gender:** Bladder stones are more common in males above 50 years of age compared to females.
- **Paralysis:** Individuals with severe spinal injuries and loss of muscle control in the pelvic region, including the detrusor muscle, may be unable to empty their bladder completely, increasing the risk of stone formation.
- **Bladder outlet obstruction:** Conditions that block the flow of urine from the bladder to the outside world, such as an enlarged prostate, are common causes of bladder stones.
- **Bladder augmentation surgery:** This type of surgery, often performed to treat urinary incontinence in women, can sometimes lead to the development of bladder stones.

Complications

- **Chronic bladder dysfunction:** This involves frequent, painful, and uncomfortable urination, which can eventually lead to a complete blockage of urine outflow from the body.
- **Urinary Tract Infections (UTIs):** Repeated urinary tract infections can contribute to the formation of bladder stones.

MATERIAL AND METHOD

Name – xyz Age – 88 year, sex – male, weight– 52 kg, religion – Hindu.

AIMS

To study the surgical management of large vesical calculus.

OBJECTIVES

To investigate and analyse the surgical techniques and outcomes in the management of large vesical.

Main Complaints and Duration

Dribbling micturition (Since 1 month)

Urinary incontinence (Since 1 month)

Swelling at B/L inguinal region (since 4 years)

No pain at swelling site

Diagnosis

Physical examination: On examination of the loin region and lower abdomen fell the bladder if enlarged.

Urine analysis: A urine sample test for signs of blood, bacteria and crystalized minerals.

Computerized tomography, X-ray images to build up the detailed information of internal organs and the size of bladder stone or calculi.

The treatment modalities for vesical calculus include

1. **Lithotripsy:** A non-invasive procedure that uses shock waves to break up stones into smaller pieces that can be passed through the urinary tract.
2. **Percutaneous suprapubic litholapaxy:** A minimally invasive surgical procedure in which a small incision is made above the pubic bone to directly access and remove bladder stones.
3. **Cystoscopy laser lithotripsy:** A procedure where a cystoscope (A thin tube with a camera) is inserted through the urethra into the bladder. A laser is then used to fragment the stones into smaller pieces that can be passed naturally or removed.

CASE REPORT

Past history

No any surgical history

No any medical history

k/h/o – DM – II (since 1 month) - tab metformin 500 mg + glimipride 2 mg

HTN (since 4 years)- Tab nebivolol 5 mg 1 OD

Family history – No any family history

Physical examination

GC – Fair and afebrile P – 60/ min BP – 160 /80 mmhg

CVS - S1-S2 normal CNS – conscious and oriented

RS – AEBE clear P/A – soft

Bowel – passed Micturition – clear

General examination – no pallor, no icterus, no any lymphadenopathy

Local examination – Suprapubic tenderness noted

Investigations – HB 13.7 gm/dl, WBC 7740/ cumm, platelet – 2.5 lakh / cumm,

DLC – N -59 % L 29 % E 4.5 % M 3.6 % B 0.6%

BUL – 31 mg/dl

Sr creat – 1.12, HIV HBsAG – Negative

CECT Urography – Large calculus of size 5.6 cm x4.6cm seen in urinary bladder

Xray KUB

Treatment and Management

Conservative

Conservative treatment started with Inj Monocef 1gm iv BD, Inj. Amikacin 500 mg iv BD, inj Pan40mg iv OD and analgesics started and posted for Open Cystolithotomy.

Surgical pocedure

The term ‘cystotomy’ means opening the bladder and to close subsequently, whereas the term ‘cystotomy’ is applied when the bladder opening is not close, but used for drainage.

Indications

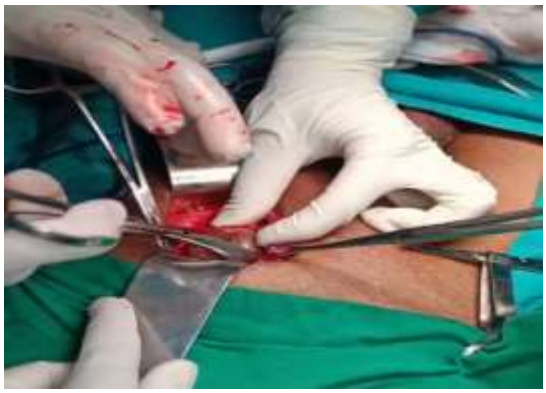
Indications - A) Suprapubic cystotomy is mainly indicated to remove vesical calculi. B) Suprapubic cystostomy is indicated to relieve the bladder of acute retention due to enlarged prostate, impassable stricture or extravasation of urine.

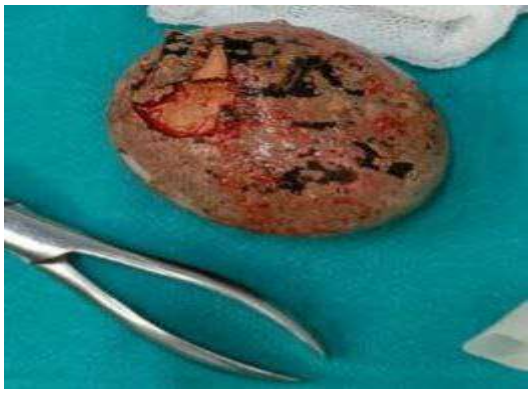
Suprapubic cystolithotomy

Anaesthesia - Spinal Anaesthesia, Position- Supine Position under all aseptic precautions, Painting draping done. Patient posted for Open suprapubic cystolithotomy.

Operative procedure

Urinary bladder filled with Normal saline 300ml through Foley's Catheter for distend-the bladder. Distension of the bladder ware simply lift the peritoneum from the lower part of the anterior abdominal wall and hence an extra- peritoneal approach to the bladder facilitated. After distending the bladder, the catheter clipped. Transverse Incision taken about 7-8 cm in length at suprapubic region. Dissection should be Skin Superficial fascia- Deep fascia- Anterior rectus sheath- Rectus abdominis muscle split Peritoneum lifted upward, Anterior bladder wall seen stay suture taken on anterior bladder wall at both side from midline then cm x cm large vesical calculus removed with the help of index finger. Haemostasis Achieved. Bladder wall repair in 2 layer. Corrugated drain kept in retropubic space of Retzius. Drain fixed with mersilk 1- O. Layerwise closure done. Skin closure done with ethilon 2-0. Postoperatively, the catheter is joined with a bag for close drainage of urine to prevent infection of the urinary tract. The drain is removed from the retropubic space after 3 days.





Follow Up

Post operative day 1st serosanguinus soakage about 3-4ml. Reduction of corrugated drain seen and drain removed on 3rd day. Intravenous antibiotics given inj. Monocef 1gm iv BD in 100 ml NS gradually WBC in normal range, fever decreased.

DISCUSSION

In the bladder calculus, Ultrasound lithotripsy-very safe, but only for small stones. Laser lithotripsy (Holmium laser) can break most large stones. Percutaneous suprapubic litholapaxy-using needle, guidance and metal dilators.

1) Litholapaxy: By introducing a cystoscopic lithotrite, stone is grasped firmly and broken. Small fragments of stone are evacuated by using evacuator.

Contraindications for litholapaxy

a) Urethra: Obstruction such as stricture, enlarged prostate.
b) Bladder: Cystitis, contracted bladder, carcinoma. Calculus size is too big so require Surgical intervention i.e.

2) Open Suprapubic cystolithotomy

CONCLUSION

In this study concludes that largest Vesical calculus of size 5.6 cm x4.6cm seen CT as well as in X-ray KUB.in postoperative period as we observed that significantly amount of urine in drain so we came to conclusion that the kidney function found normal.

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