

Amplatz sheath (usually 16- 18fr for infants, 18-24 for older children) is then passed over the dilator to maintain the track. The Amplatz sheath is to be kept in position by the assistant. A nephroscope is then passed through the sheath and stone visualized. Fragmentation and retrieval techniques are similar to those for ureteric stones.

Complications

- Significant hemorrhage
- Inadvertent puncture of pleura.
- Inadvertent puncture of abdominal viscera.
- Significant macroscopic hematuria.

SPECIAL SITUATIONS

Stones after surgery for ano rectal malformations

Boys who have undergone surgery for ano-rectal malformations and present with lower urinary tract stones should be carefully evaluated to exclude stone in a urethral diverticulum. The diverticulum results from elongation of a remnant of the recto-urinary fistula which is a component of ano-rectal malformation. The senior author has treated such a case in a nine year old boy who presented with multiple "vesical" stones. He had undergone a pull through for high imperforate anus at one year of age. Plain film showed multiple faceted stones immediately behind and below the pubic symphysis (bladder stones show above the pubic symphysis). Retrograde urethrogram revealed a large urethral diverticulum from the posterior urethra and filled with multiple stones. The diverticulum was excised through a posterior sagittal approach. The catch point in this case was that the stones were multiple (bladder stones are single) and on X-ray they appeared below the bladder.

Urethral stones after reconstruction for hypospadias and epispadias

A combination of stricture and stasis can predispose to stone formation in the urethra. A major contributor in the past was hair bearing skin used in the reconstruction. The stones may be multiple and often quite large at presentation. They almost invariably require open surgery unless picked up early when endoscopic removal is feasible.

Often the hair bearing skin has to be replaced with buccal mucosa or non hair bearing skin. Skin from inner thigh is often used for staged reconstruction in failed cases of hypospadias. The senior author uses split thickness graft from the thigh so that the hair follicles are left behind in the lower layers of dermis and the grafted skin becomes hair free.

Vesical stone after bladder augmentation

Bladder augmentation is often required for exstrophy or neurogenic bladder. Most cases will also have a Mitrofanoff stoma and a closed bladder neck. The incorporated intestinal segments produce mucus which is a good nidus for stone formation. This, coupled with chronic infection (secondary to repeated catheterization) and metabolic alterations leads to large stone formation. They require open surgery. Recurrence is common unless an effective preventive strategy is adopted. Regular washouts with citrate solution, timely drainage by catheterizing the Mitrofanoff stoma and regular follow up is the key to prevention.

RECOMMENDED READING

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6. Husmann DA, Milliner DS, Segura JW. Uretropelvic Junction obstruction with concurrent renal pelvic calculi in the pediatric patient; A long- term follow up. *J Urol* 1996; 156: 741-3.
7. Segura JW, Preminger GM, Assimos DG et al. Ureteral Stones Clinical Guidelines Panel summary report on the management of ureteral calculi. *The American Urological Association*. *J Urol* 1997; 158: 1915-21.
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9. Smith L, Segura J. *Urolithiasis*. Philadelphia: WB Saunders, 1990:1327-52.
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DRUG PROFILE

Moxonidine

Moxonidine (4 chloro – N (4,5-dihydro-1, H-imidazol-2-yl)-6 – methoxy-2 methylpyrimidin-5 amine) is a selective antihypertensive and acts on imidazoline-1-1 and alpha-2 receptor against that reduces arterial pressure by inhibiting sympathetic activity, this reducing peripheral vascular resistance. **Pharmacokinetics:** About 90% of the oral dose is absorbed from the gastrointestinal tract bioavailability is about 89%, food does not affect absorption, peak plasma concentration (C_{max}) 1.526 ng /mL is reached 0.66 hours (T_{max}) after oral intake. It crosses the blood brain barrier, only 7% of the drug is bound to plasma proteins. The elimination half life (T_{1/2}) is approximately 1.85 hours and Kel is 0.386 l / hr., half life is increased in renal insufficiency. Only 10 to 20% of the administered dose is metabolised. 90% of the dose gets excreted in the urine within 24 hours, mainly in the unchanged form, only 1% of the dose was excreted in the feces. Maximum antihypertensive effect is observed 2 to 4 hours after the peak plasma concentration is reached and the effect persists for several hours after the drug disappears from the blood. Compared to the older central acting antihypertensives, moxonidine binds with much greater affinity to the imidazoline 1 receptor than to the α₂ – receptor. In contrast, clonidine binds to both receptors with equal affinity. In addition, moxonidine may also promote sodium excretion, improve insulin resistance and glucose tolerance and protect against hypertensive target organ damage, such as kidney disease and cardiac hypertrophy. **Indication:** The drug is indicated in the treatment of mild to moderate essential hypertension. **Contraindications:** Moxonidine is contraindicated in heart failure, in patients with bradycardia, heart block, severe liver disease or renal impairment (glomerular filtration rate < 30 ml / minute) and in people over 75 years of age. Caution must be exercised in patients with a history of unstable angina, severe coronary artery disease, angioneurotic oedema, intermittent claudication, raynaud's syndrome, Parkinson's syndrome, epilepsy, glaucoma. **Dosage and Administration:** The usual starting dose is 0.2 mg tablet given once daily, which may be titrated up to 0.6 mg in two divided doses, Blood pressure should be observed for three weeks before increasing the dose. A single dose should not exceed 0.4 mg and no more than 0.6 mg per day should be given. In case of mild to moderate renal dysfunction, a single dose should not exceed 0.2 mg and no more than 0.4 mg per day should be given. **Drug Interactions:** Administration with beta blockers causes greater reduction of blood pressure, followed by strong rebound phenomenon when these drugs are stopped. Alcohol, sedatives and anesthesia in combination, can increase its antihypertensive effect. **Precautions:** Since this drug may induce drowsiness, reduction of attention, concentration and ability of reflexive motion etc. patients should be cautioned against engaging in machinery activities, requiring alertness such as while driving. **Use in elderly:** Elderly patients may be very sensitive to the initial dose. Similarly caution should be observed during pregnancy, lactation etc. it is not recommended in children below 16 years. **Adverse Reactions:** At the beginning of the treatment, there may be weakness, fatigue, nausea and headache. Occasionally, dizziness asthenia and insomnia may occur. Gastrointestinal discomfort and individual skin allergies are rare. Rebound hypertension is not a major problem if used alone.