

Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring you **"NU Rounds"** which contains latest and interesting news in the field of Urology.

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Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,

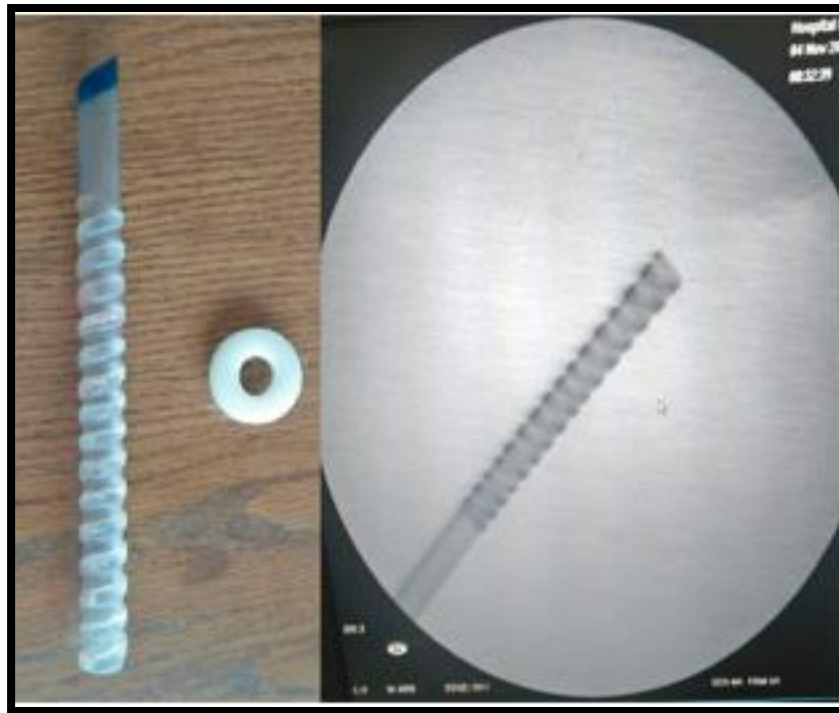
Medical Team, Micro Labs Ltd

Comparative study between a new screwed Amplatz sheath and the ordinary one in percutaneous nephrolithotomy

Introduction

In the forties of the last century, Rupel and Brown were the beginners to launch stone removal through nephrostomy tube. In the seventies of the same century, Fernstrom and Johansson described the detailed method in dealing with renal calculi and its extraction. Shock wave lithotripsy utilisation led to a decline in Percutaneous nephrolithotomy procedures. Percutaneous nephrolithotomy uses were reloaded again due to better understanding of Percutaneous nephrolithotomy indications, refinement of its instruments and also its higher success rate than Shock wave lithotripsy. Percutaneous nephrolithotomy now is the mainstay in treatment algorithm of renal calculi larger than 2 cm or Shock wave lithotripsy refractory calculi. Percutaneous management of renal calculi is safe and tolerable, however, it has its own complications as any surgery. On available literatures, Percutaneous nephrolithotomy showed a wide range of complication rates up to 30%. However, most of these complications are minors. Creation and maintenance of a stable tract is the main step of a successful Percutaneous nephrolithotomy procedure with least operative morbidity. Unstable tract may lead to increase of operative time, need for second look (redo) or even failure to achieve treatment goal. The goal of our research is to compare tract stability of our new screwed Amplatz sheath with ordinary one in Percutaneous nephrolithotomy and its role in improving outcome and decreasing complications as primary end point. Also the radiation time and operative time were considered the secondary end point.

The new screwed sheath with external nut



Objective:

To compare the results of using new screwed Amplatz sheath with results of the conventional Amplatz sheath regarding success and complications during percutaneous nephrolithotomy.

Methods:

One hundred patients aged more than 18 years with renal calculi more than 2 cm with guy's score 1 were randomly stratified by closed envelope in group A (50 patients) with using conventional sheath and group B (50 patients) with new screwed sheath. Morbid obese patients and patients with contraindication for percutaneous nephrolithotomy were excluded from the study.

Results:

No significant differences between both groups regarding patients demographic and stone demographic. Operative time and fluoroscopy time were significantly lower in group B rather

than group A. Tract stability was in favour of group B as no tract loss recorded while in group A, 5 cases were recorded.

Intraoperative data and complications

	Group A (n = 50)	Group B (n = 50)	T	P
Number of punctures	1.10 ± 0.303	1.04 ± 0.198	1.17	0.060
Mean ± SD	1–2	1–2		
Range				
Puncture site				
Lower	33 (66%)	39 (78%)	2.214	0.331
Lower & middle	5 (10%)	2 (4%)		
Middle	12 (24%)	9 (18%)		
Operative time (min)	82.32 ± 4.26	59.36 ± 8.44	17.17	0.000
Mean ± SD	74–89	45–80		
Range				
Fluoroscopy time (min)	3.31 ± 0.941	1.49 ± 0.478	12.17	0.000
Mean ± SD	2–6.5	1–3		
Range				
Aborted procedure due to failed access				
No	44 (88%)	48 (96%)	2.84	0.242
Yes	4 (8%)	2 (4%)		
Track loss				
No	45 (90%)	50 (100%)	5.26	0.022
Yes	5 (10%)	0		
Sheath reposition				
No	45 (90%)	50 (100%)	5.26	0.022

Complications of percutaneous nephrolithotomy	Group A (n = 50)	Group B (n = 50)	χ^2	P
Intraoperative bleeding managed by nephrostomy tube and premature termination of procedure				
No	43 (86%)	48 (96%)	3.05	0.081
Yes	7 (14%)	2 (4%)		
Perioperative bleeding needs transfusion (15)				
No	46 (92%)	49 (98%)	1.89	0.169
Yes	4 (8%)	1 (2%)		
Pelvicalyceal system perforation				
No	44 (88%)	49 (98%)	3.84	0.050
Yes	6 (12%)	1 (2%)		
Postoperative complication grade 1–2 (fever and stent related)				
No	40 (80%)	39 (78%)	0.060	0.806
Yes	10 (20%)	11 (22%)		

In overall complications there were no significant differences between both groups. Bleeding was higher in group A (14%) than in group B (4%), but it was not statistically significant.

Success rates were 78% for group A and 88% for group B but it was not statistically significant.

Conclusion:

The screwed Amplatz sheath had showed less operative and fluoroscopy time. Also it enables urologists to have stable percutaneous nephrolithotomy tract. So it may be a promising tool to make PNL easier with higher success rate and lower complications.

Source: Abdelwahab K, El-Babouly IM, Mahmoud MM, Elderey MS. Comparative study between a new screwed Amplatz sheath and the ordinary one in percutaneous nephrolithotomy. World J Urol. 2021 Aug 29:1–7.

Onabotulinumtoxin A (Botox): A reasonable alternative for refractory neurogenic bladder dysfunction in children and young adults

Aim:

Effectiveness of Onabotulinumtoxin A (Botox) in children with neurogenic bladder (NGB) unresponsive to medical therapy to determine urodynamic parameters predictive of success.

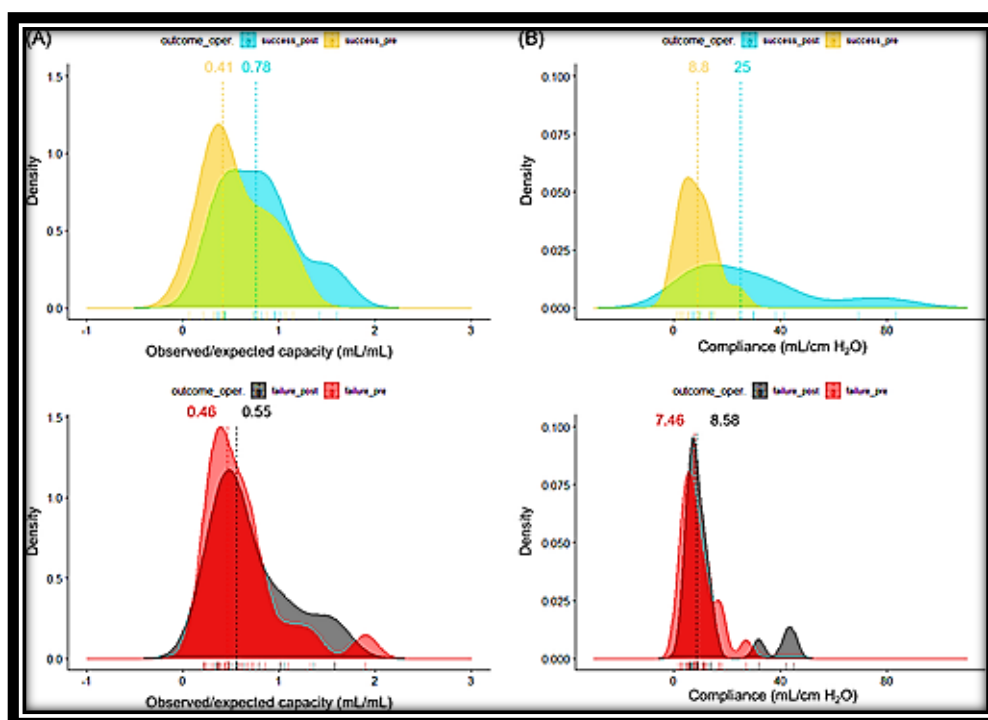
Methods

Children receiving Botox for refractory NGB, between 2008 and 2019, from a single academic center, were included in this study. Botox success was defined as improvement of incontinence and/or urodynamic parameters.

Results

Of 34 patients who received Botox, 13 (38.2%) had a positive response from their first injection, with improvement in capacity by a median of 35% of expected capacity for age compared to only a 9% increase in those who did not respond clinically. When patients were divided into groups by baseline urodynamic parameters, high-pressure ($P_{detmax} > 20$ cm H₂O) patients had significantly greater improvement in compliance compared with low-pressure patients ($p = 0.017$). Low compliance patients (<10 ml/cm H₂O) had a dramatic improvement of 3.08 ml/cm H₂O in their compliance compared with minimal change in the high compliance group ($p = 0.003$).

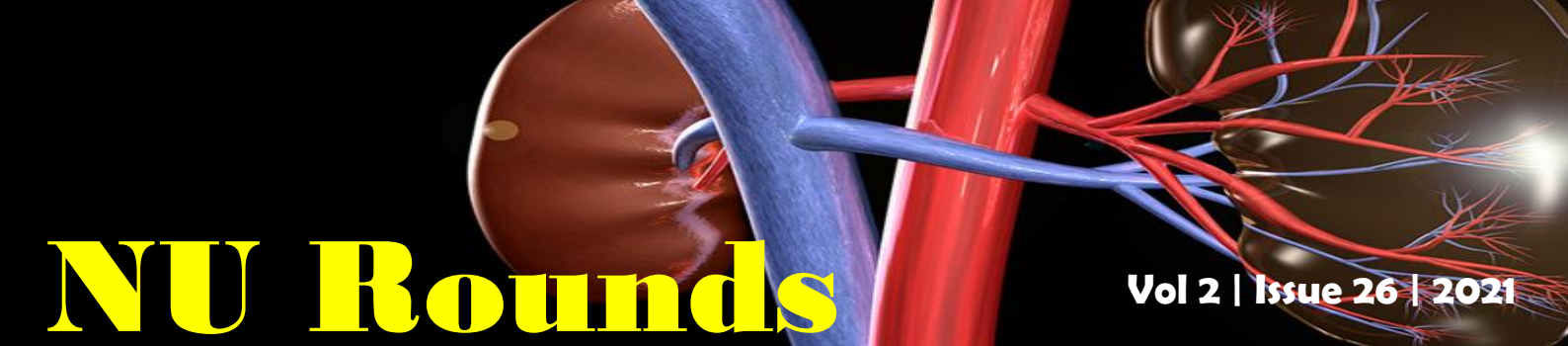
Observed/expected capacity Vs Compliance



Finally, low-capacity (<50% of expected CC) patients had significant improvement in capacity and compliance when compared with high-capacity patients ($p = 0.004$ and $p = 0.036$, respectively). Improvement in detrusor overactivity (DO) was noted in both the clinical responders and non-responders.

Conclusion

Among the patients, 38% had clinical success with intradetrusor Botox injections for refractory neurogenic bladder. When successful, improvement in capacity and compliance, DO, and/or incontinence was consistent with prior literature. At least 1 injection of Botox should be considered for a subset of children with refractory NGB, before undertaking more invasive treatments.



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Source: Softness KA, et al. Onabotulinumtoxin A (Botox): A reasonable alternative for refractory neurogenic bladder dysfunction in children and young adults. *Neurourol Urodyn*. 2021 Sep 6. Online ahead of print.

Sulfamethoxazole-induced sulfamethoxazole urolithiasis: a case report

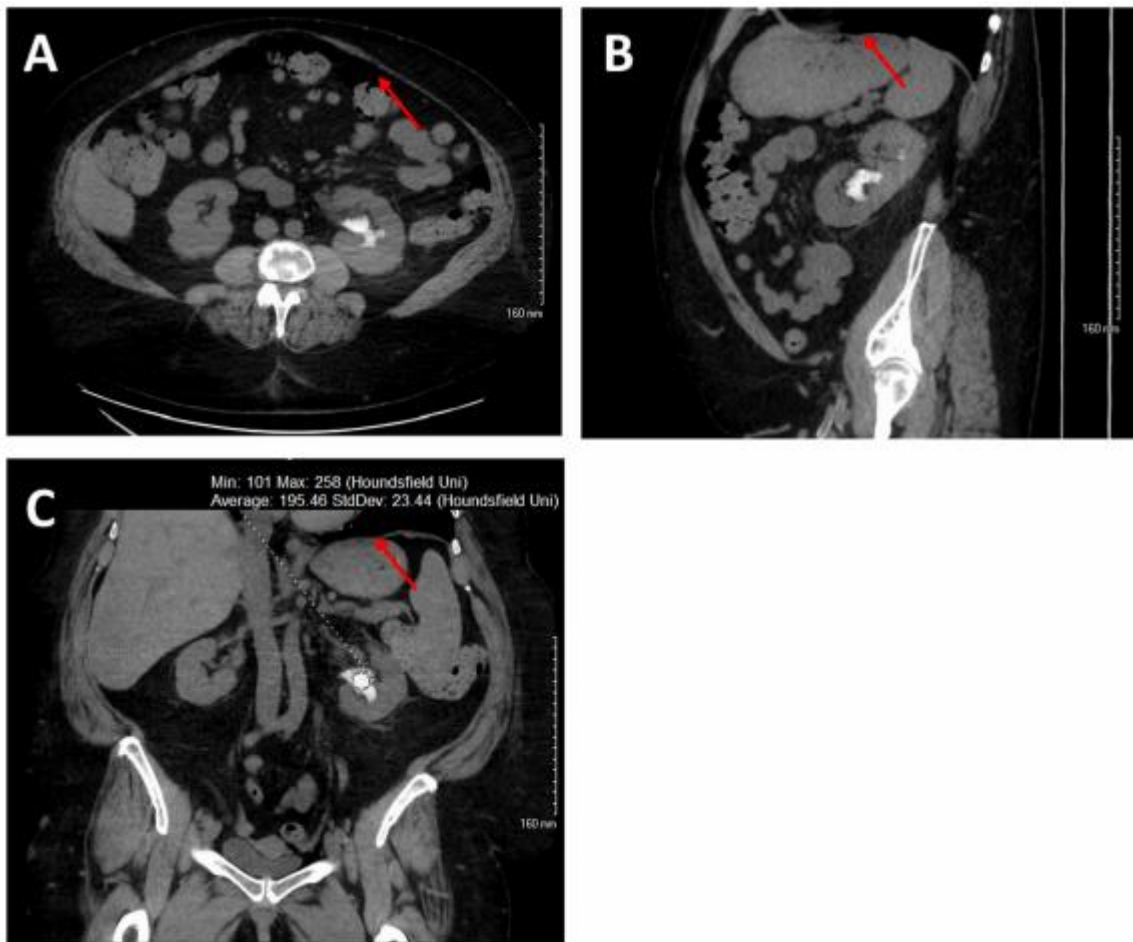
Background

Drug-induced kidney stones account for up to 2% of all urinary tract calculi. Typically, these drugs fall into one of two categories: Drugs that have high renal excretion and are poorly soluble in urine; and drugs that induce metabolic changes that favour urinary stone formation. Drugs within the first category, or metabolites thereof, are identified as components of calculi whereas drugs within the second category cause formation of calcium- and/or uric acid-containing stones. Metabolically-induced calculi containing calcium can be caused by hypercalciuria from excessive calcium and vitamin D supplementation. Other metabolism-altering drugs, like carbonic anhydrase inhibitors (e.g., acetazolamide, topiramate) contribute to calcium oxalate and phosphate stone formation by dramatically lowering urinary citrate excretion. Because they significantly raise urine pH, the danger for phosphate stones especially is increased. Uric acid-containing metabolic calculi are often induced by laxative abuse or by uricosuric agents like benzbromarone used to treat gout. Several antimicrobial agents are related to tract calculi. Some act by altering the gut microbiome and its ability to degrade oxalate, leading to the formation of hyperoxaluria and calcium oxalate stones. Trimethoprim-sulfamethoxazole (TMP-SMX) is a combination antibiotic of the sulfonamide family used to treat a wide variety of commonly encountered infections, including those affecting the urinary tract, respiratory system, and gastrointestinal tract. It is also indicated within the treatment and prophylaxis of opportunistic infections by *Pneumocystis carinii* and *Nocardia* spp. While first-generation sulfonamides were well-known to provoke drug-induced urolithiasis, it is significantly less common with newer sulfonamides and even less common with TMP-SMX. Cases of sulfonamide urolithiasis occurring in patients with known stone disease have rarely been reported.

Case presentation

A 64-year-old woman with gastroesophageal reflux disease, asthma (treated with inhaled but not systemic steroids), obesity, and type II diabetes mellitus (treated with metformin extended release 500 mg and glipizide 5 mg twice daily). Stone onset was characterized by presentation to emergency care for nausea, vomiting, diarrhea, and lower left quadrant abdominal pain. Labs were significant for white blood cell count of 20,000 K/uL, lactate of 2.2 mmol/L, creatinine of 1.98 mg/dL (baseline 1.06), and concurrent infection on urinalysis. CT scan revealed a 1 cm obstructive proximal ureteral stone. Patient was diagnosed with sepsis and acute kidney injury and was admitted for decompression and antibiotic therapy; patient was discharged after 3 days. Two months post presentation, patient underwent left URS with laser lithotripsy (LL). Stone composition was unknown. A 24-h urine collection demonstrated high oxalate and low citrate; other risk parameters were within normal limits. Patient initiated medical management in multidisciplinary stone prevention clinic for these risk factors. Three months later patient was found in follow-up to have an 8 mm left renal calculus which was removed within 2 weeks by URS with LL. Shortly thereafter patient was evaluated by infectious disease for a worsening productive cough over several months and was found to have *Nocardia pneumonia* with pulmonary nodules seen on CT scan. Patient was subsequently started on a six-month course of twice daily TMP-SMX 2DS and cefpodoxime 200 mg. Prior to starting the antibiotic regimen, a non-contrast CT scan showed a new 6 mm non-obstructing stone in the left lower renal pole. A repeat CT scan three months later (2 months after starting TMP-SMX) revealed interval growth of the renal stone to 9 mm; intervention with URS was scheduled. But in the interim, the patient became symptomatic and presented for emergency treatment. Physical exam was significant for mild pelvic tenderness. Labs were significant for creatinine of 1.58 mg/dL and hematuria but no infection. Patient pain was managed, and patient was discharged. Repeat CT, now 4 months after starting TMP-SMX, revealed a developing staghorn calculus in the left renal pelvis measuring up to 4 cm and an obstructing conglomerate of calculi in the left lower ureter measuring up to 7 mm with mild upstream hydronephrosis.

Radiographic images of left renal pelvis stone (red arrow) in the axial (a), sagittal (b), and coronal (c) on non-contrast CT abdomen and pelvis. The stone was demonstrated on imaging to have a density of 194.46 Hounsfield Units



Within 2 days, the patient underwent left URS and LL of the renal pelvis and ureteral stones. Afterward, the patient passed multiple amber coloured stone fragments.

Jagged, amber-colored stone fragments passed and collected by patient after ureteroscopy



The patient completed 6 months of antibiotics with resolution of lung nodules seen on CT and improvement of respiratory status to baseline. TMP-SMX and cefpodoxime were thus discontinued. A repeat CT a few months later showed clearance of post-URS fragments and no new urolithiasis bilaterally. Patient continues to follow in our stone prevention clinic.

Conclusion:

Stones composed of sulfamethoxazole or its metabolites are rare but have known associated risk factors that should be considered when prescribing this antibiotic. This case report illustrates additional risk factors for consideration, including pre-existing urinary calculi that may serve as a nidus for sulfamethoxazole deposition, and reviews treatment and prevention methods.

Source: Roedel et al. Sulfamethoxazole-induced sulfamethoxazole urolithiasis: A case report. BMC Urol. 2021; 21:133



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