

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.

Inside This Issue:

- Laser lithotripsy using dusting technique for symptomatic upper urinary tract stones
- Thioredoxin 1 (Trx1) is associated with poor prognosis in clear cell renal cell carcinoma (ccRCC): an example for the crucial role of redox signaling in ccRCC
- Case Report: Conservative approach for the treatment of urethral prolapse in children and literature review of 278 pediatric cases

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

Laser lithotripsy using dusting technique for symptomatic upper urinary tract stones

Introduction

Ureterorenoscopy is a less invasive modality for treatment of ureteric and renal stones and may be used in antegrade or retrograde. No clear recommendation regarding the best mode of laser lithotripsy either fragmentation or dusting. Stone dusting is the process in which it converts stone into tiny fragments or dust by decreasing energy and varying frequency to allow these tiny fragments to pass spontaneously.

Aim: The objective of this study was to assess the safety and efficacy of stone dusting technique during laser lithotripsy in symptomatic UUT (upper urinary tract) stones.

Methods: Around Sixty patients with symptomatic single or multiple UUT stones less than 3 cm in diameter were included. Patients with coagulation disorders and active UTIs were excluded. All patients were clinically evaluated and underwent non-contrast spiral CT (NCSCCT) to detect stone site, size, number, Hounsfield unit. A rigid or flexible ureteroscope was used with stone dusting using the Ho: YAG laser at low-energy and high-frequency (0.5 J & 20 Hz) set. Operative and fluoroscopy time, total energy delivered, type of stent, hospitalization time, complications and its grade, and stone-free rate using NCSCCT after 4 weeks were recorded.

Results: Sixty subjects were included in this study. 71.6% of stones were ureteric in position, and 83.3% of subjects had single stone. 58.5 min was the mean operative time and DJ was inserted in 63.3% of the subjects. For primary procedure the stone-free rate was 91.66%.

Postoperative data	
Total patients n=60	
Mean hospitalization time in days $\pm$ SD (range)	4.12 $\pm$ 2.43 (2–19)
Complications; number (%)	11 (18.33%)
Grade of complication n=11	
Grade I (%)	8/11 (73)
Grade II (%)	1/11 (9)
Grade IIIa (%)	2/11 (18)
Stone-free rate (for single session) number (%)	55 (91.67)
Number of sessions; number (%)	
Single	55 (91.67)
Multiple	5 (8.33)

Comparison between baseline parameters with stone- free rate			
Baseline and operative parameters	Outcome parameters Stone-free rate		p value
	Yes (n=55)	No (n=5)	
Stone size	1.48 $\pm$ 0.45	2.34 $\pm$ 0.90	<0.001
HFU	790.71 $\pm$ 300.30	832.80 $\pm$ 280.03	0.764
Stone number			
Single	48/50 (96%)	2/50 (4%)	0.007
Multiple	7/10 (70%)	3/10 (30%)	

Stone size and number significantly correlated with stone-free rate, while no significant correlation was found between stone site, size, operative time, and incidence of complications. Operative time correlated significantly with stone size, site and hounsfield unit (HFU).

Parameters affecting type of stent at the end of the procedure			
	Stent type		p value
	JJ stent n=38	Ureteric cath n=22	
Stone size	1.77±0.45	1.17±0.48	<0.01
Stone site			0.778
Ureter n=43	26/43 (60.47%)	17/43 (39.53%)	
Pelvic n=10	7/10 (70%)	3/10 (30%)	
Calyceal n=2	1/2 (50%)	1/2 (50%)	
Pelvicalyceal n=5	4/5 (80%)	1/5 (20%)	
Operative time	62.71±15.25	51.22±15.51	<0.01

Thirty-eight subjects (63.3%) received a DJ stent; out of which 10.5% had bilateral stones, 26.3% had residual fragments, 7.9% needed multiple sessions, 2.6% had solitary kidney, 39.4% had infection, and 13.3% had ureteric wall injury. The relation between stone size, HU and total laser energy delivered was statistically significant.

Conclusion: The main Limitation of the study was being a non-comparative study with small sample size. This study revealed that stone dusting technique is feasible, safe, and effective in management of upper Urinary tract (UUT) stones.

Reference: Ashmawy A, Khedr M, Saad IR, Zamel S, Kassem A. Laser lithotripsy using dusting technique (low energy, high frequency) for symptomatic upper urinary tract stones. African Journal of Urology. 2021 Dec;27(1):1-6.

Thioredoxin 1 (Trx1) is associated with poor prognosis in clear cell renal cell carcinoma (ccRCC): an example for the crucial role of redox signaling in ccRCC

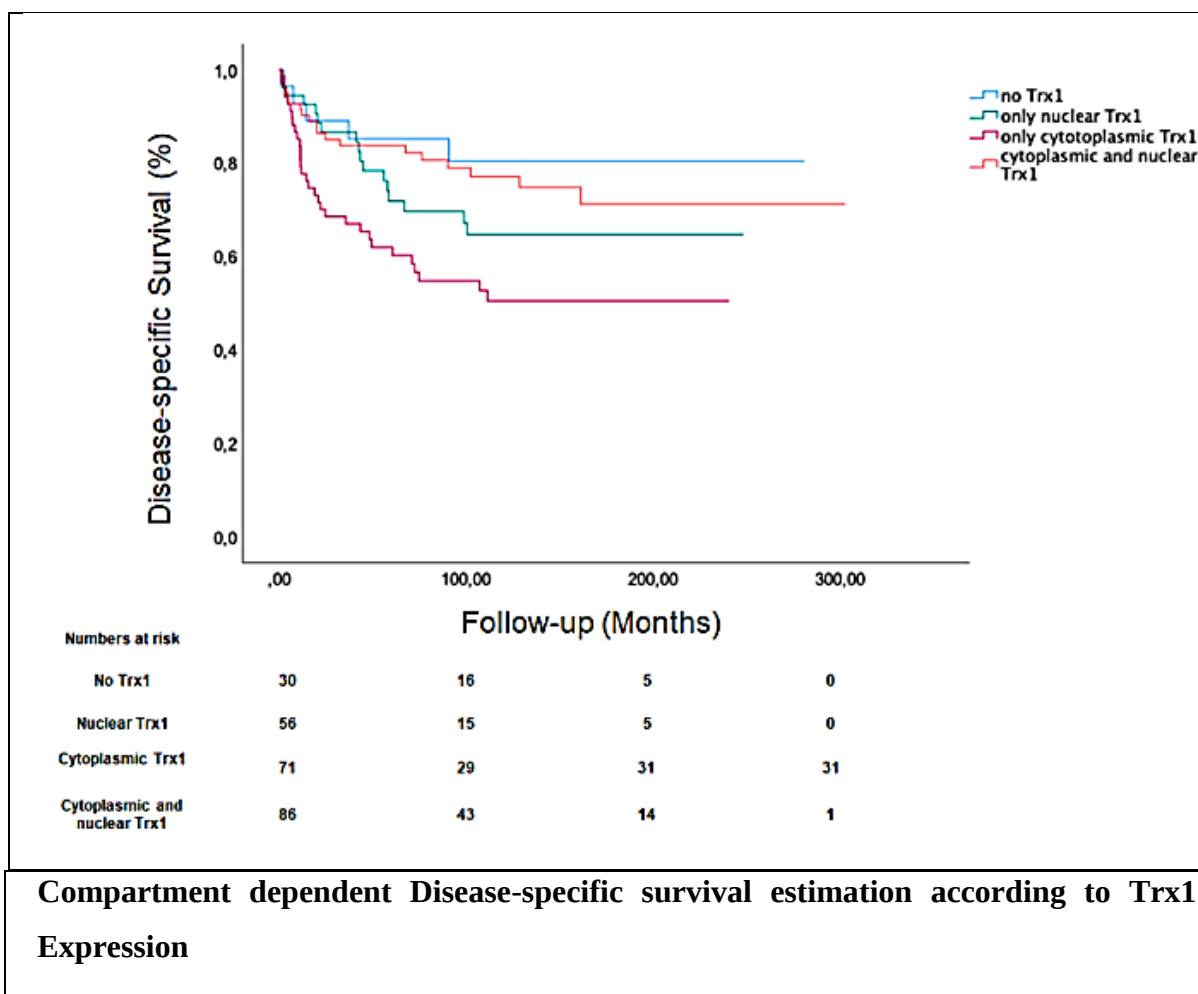
Introduction:

For many decades oxidative stress has been associated with carcinogenesis. Imbalance of pro-oxidants and antioxidants leads to Desoxyribonucleic acid (DNA) damage, failure in pivotal cellular processes, including metabolic deregulations, cellular membrane injuries and failure in DNA transcription and mRNA translation. The major regulator of an oxidative equilibrium in cells is the thioredoxin family. Throughout almost all cell species thioredoxins are highly conserved. They consists of 3 types of proteins thioredoxins (Trxs), glutaredoxins (Grxs), and peroxiredoxins (Prxs).

Aim: To evaluate the prognostic role of Thioredoxin 1 (Trx1) in clear cell renal cell carcinoma (ccRCC).

Methods: To evaluate the association of Trx1 with clinico-pathological features and survival outcome a tissue micro-array (TMA) study was carried out. By an experienced genitourinary pathologist the staining was evaluated and the intensity was counted on a 0–3 scale (0=negative, 1=weakly positive, 2=moderately positive, 3=strongly positive). For the association of characteristics in the Trx1 gene with clinicopathological features and survival outcome Data from the Cancer Genome Atlas (TCGA) was evaluated.

Results: This study included 248 subjects (171 men and 77 women) with a median age of 65 years.



In a tissue micro-array (TMA) subjects with ccRCC that had high Trx1 levels had lower T stages, less often distant metastases, lower nuclear grades, and less often tumor necrosis or sarcomatoid features. Compared with the subjects with low combined score of <10 , the patients with a combined score of ≥ 10 had better disease-specific survival (DSS). Clear cell renal cell carcinoma (ccRCC) subjects whose tumors had exclusively Trx1 expression in the cytoplasm had the worst survival outcome. When compared to the subjects with Clear cell renal cell carcinoma without copy number variations (CNV) or gains, Genomic data from the TCGA

demonstrated that patients with ccRCCs that had Trx1 losses had more advanced clinicopathological features and worse survival outcome in disease specific ($p < 0.001$), overall ($p = 0.001$), and progression free survival ($p = 0.001$).

Conclusion: This study suggest that Trx1 has a role in tumor biology of ccRCC. Important role of redox signaling ccRCC are regulation of immune response, metabolic pathway regulations and the regulation of HIF-2 α expression. The current study strongly advises intensified investigations of redox signalling pathways in ccRCC.

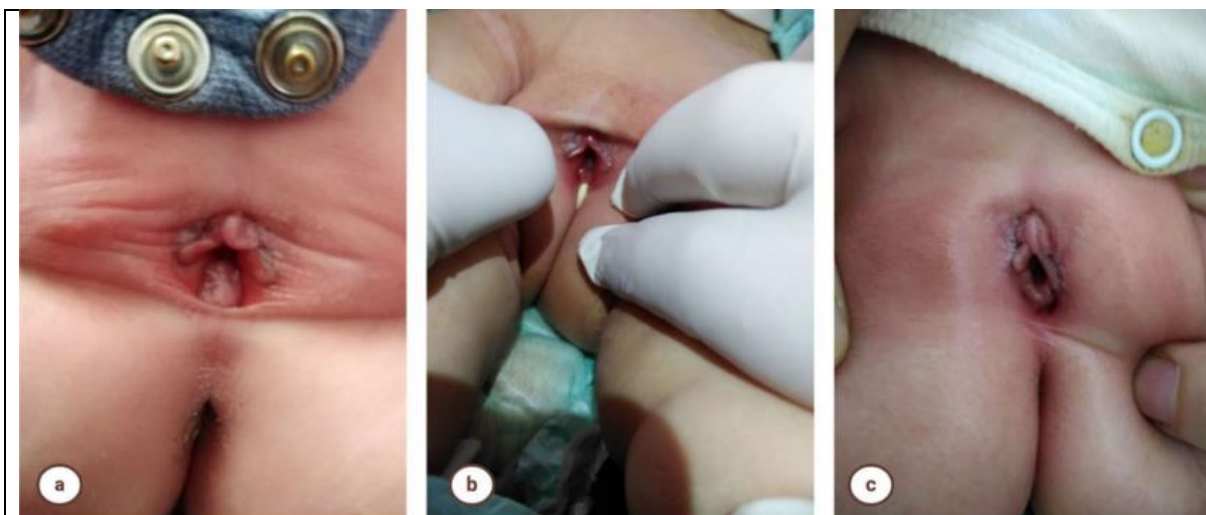
Reference: Ribback S, et al. Thioredoxin 1 (Trx1) is associated with poor prognosis in clear cell renal cell carcinoma (ccRCC): an example for the crucial role of redox signaling in ccRCC. World Journal of Urology. 2021 Dec 2:1-8

Case Report: Conservative approach for the treatment of urethral prolapse in children and literature review of 278 pediatric cases

Introduction: Urethral prolapse (UP) consists of the eversion of the distal urethral mucosa through the outer urethral meatus which leads to vascular obstruction and prolapsed tissue edema, which aggravates the prolapse. If not treated properly urethral prolapse may have deleterious consequences. With an estimated prevalence of 1:3000 children, most of the reported cases were seen in the pediatric population.

Patient Description: A 13-month-old female infant was admitted to our department complaining of urinary tract infection and vaginal bleeding. No history of trauma or instrument-induced injury to the vagina. Two episodes of urinary tract infection was observed. The last one occurred one month prior to the presentation and was treated with antibiotics.

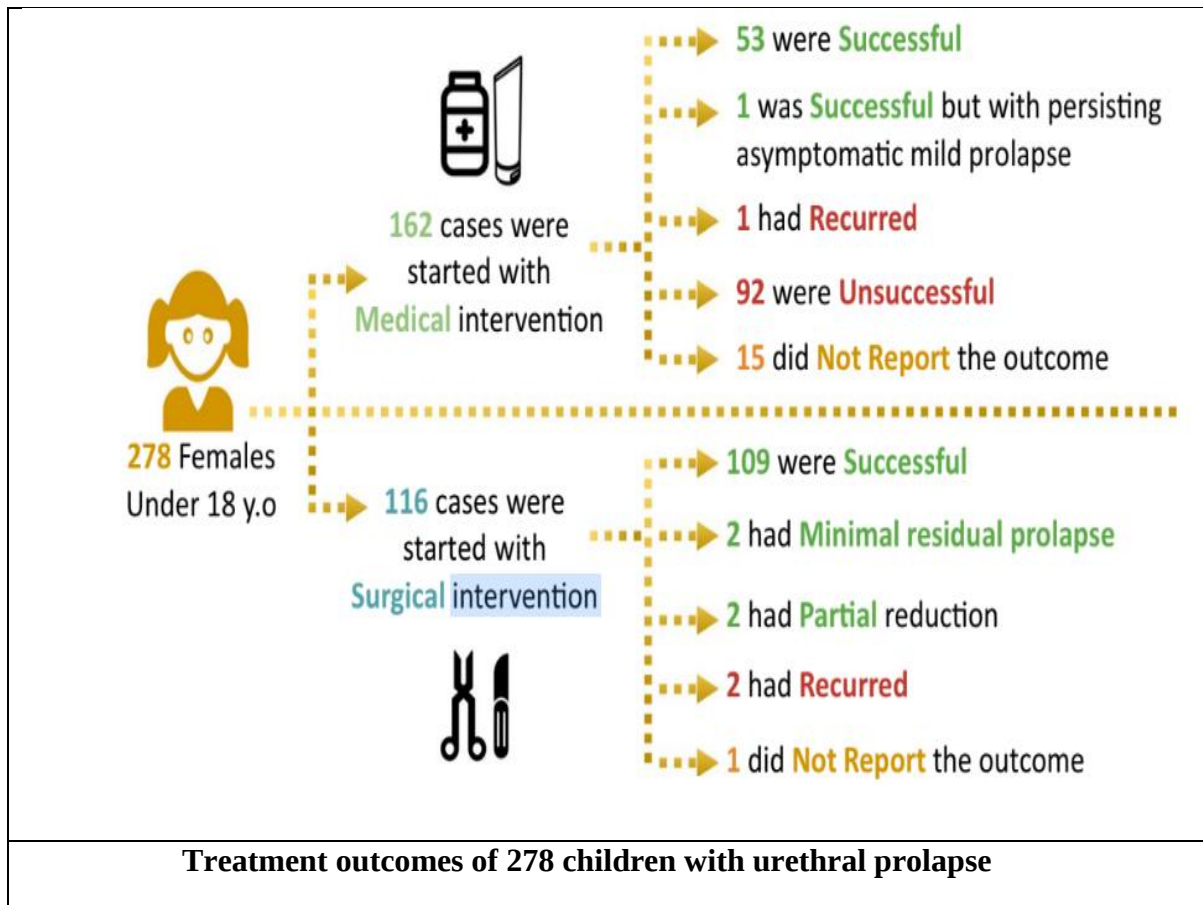
Abdominal examinations and Physical examination was normal. Hyperemic donut-shaped mass covering the urinary meatus, of 0.7 cm diameter, with an actively bleeding open center was revealed by Genital examination. The vaginal mucosa and the hymen was intact.

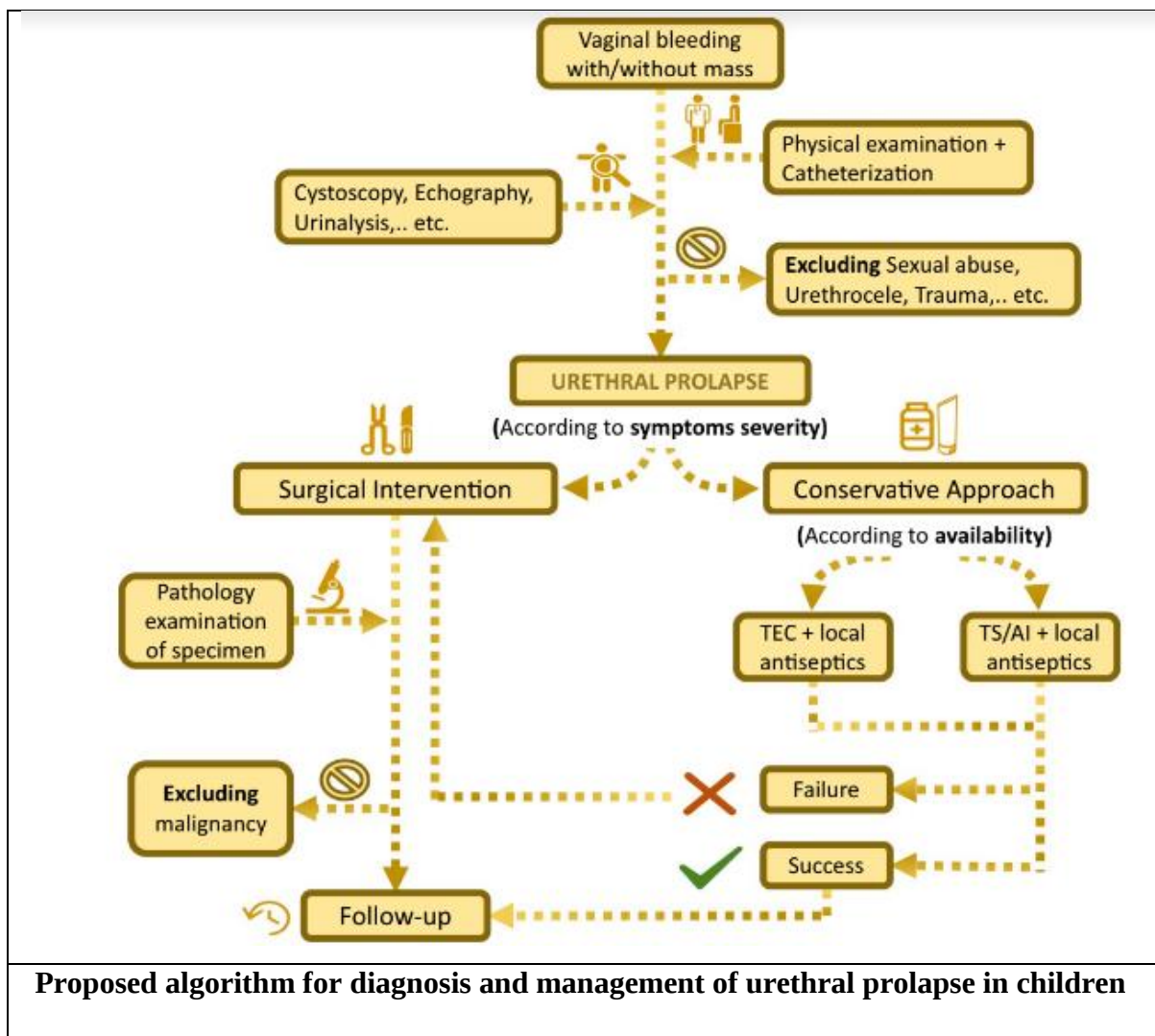


a)The appearance of the prolapsed tissue on physical examination, **b)** urethral catheterization of the prolapsed urethra, **c)** the healthy appearance of the urethral meatus after the resolution of the prolapse

Elevated platelets, lymphocytes, and C reactive protein was revealed by Complete blood count and additional lab findings. For microbiological analysis and culture urine sample was collected. By using a combination of two antibiotics the treatment of UTI was started. [cefotaxime 100 mg/kg per day for 10 days and gentamicin 5 mg/kg for 3 days]. No sonographic abnormalities in the kidneys, bladder, or uterus were observed. The diagnosis of Urethral prolapse was established and a 12 French size catheter was placed in the open center of the mass, urine output from the center of the protrusion confirmed the diagnosis of UP. After receiving the urine culture isolating *Escherichia Coli* the empirical antibiotic treatment was maintained.

Topical corticosteroids including betamethasone 1% cream 2 times daily for 10 days was applied on the prolapsed tissue. Regression of the prolapsed tissue was revealed in the first-week and the subject was discharged with a scheduled follow-up appointment. The subject was seen in the outpatient clinic after four months and the examination showed normal vaginal mucosa with no evidence of relapse. There were no symptoms of urinary infection or bleeding over that period.





Conclusion: Urethral prolapse is still a rare condition. The most common presentations were vaginal bleeding or mass. However, this study showed a promising results with the latter. Non-surgical treatment was tried for 162 patients. 53 of them were successfully managed, while 92 reported unsuccessful outcomes. Conservative approach was successful in 19% of all subjects and raised to 32.7% in the portion of children selected for the initial conservative approach. Comparative studies are required to evaluate the effectiveness of conservative treatment in comparison with surgical interventions.

Reference: Kacimi SE, Aloulou M, Naoum R, Moumeni M, Kaddour A, ElSheemy MS. Conservative approach for the treatment of urethral prolapse in children: case report and literature review of 278 pediatric cases. African Journal of Urology. 2021 Dec;27(1):1-3



This scientific input is prepared from the Department of Medical Services, an initiative of M/s Micro Labs Limited under the aegis of Micro Knowledge Academy. The information contained herein is for education purpose only. The content is developed by compiling information from various authentic and published literatures. Although great care has been taken to assure the accuracy of the publication, M/s Micro Labs Limited shall not be responsible or in any way liable for any inaccuracy, errors, or omissions resulting from negligence or otherwise howsoever or any consequences arising there from. In spite of best efforts, the information in this publication may become outdated over time. M/s Micro Labs Limited shall not be responsible in any manner whatsoever, for any action taken, opinions expressed, advice rendered or accepted, any direct, incidental, special or consequential loss and damage caused on the basis of any material or information presented in this publication / update