

# **SWL**

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## What is the best option for 10–20 mm renal pelvic stones undergoing ESWL in the pediatric population: stenting, alpha blockers or conservative follow-up?

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In pediatric population <10 mm pelvis stones have 90% stone free rates (SFR) with shock wave lithotripsy (SWL) and the level of evidence for this intervention is 1 grade A; while the SFR is 80% for the treatment of 10-20 mm pelvis stones with SWL and the need for additional intervention is higher in these patients. In this study, authors have aimed to identify effect of alpha-blocker use and ureteral stenting on SFR and complication rates compared to observation alone in 10-20 mm renal pelvis stones in pediatric population. Telli et al. designed a retrospective study and analyzed 241 renal units (RUs) of 195 consecutive patients with 10-20 mm renal pelvis stones. They used doxazosin as alpha-blocker in this study. The patients were categorized in 3 groups; RUs with ureteral stenting (group 1), RUs received doxazosin (group 2) and observation alone (group 3) following SWL. SFRs of the three groups were 89.2%, 87.1% and 82.1%, respectively ( $p=0.275$ ) and the complications (colic pain, hematuria, fever or Steinstrasse) were not statistically significant between three groups. But stone expulsion for groups 1 and 2 were 17.4 and 21.8 days respectively and significantly lower than group 3 (31.3 days) ( $p=0.003$ ). Authors have concluded that ureteral stenting or doxazosin for SWL is not superior to watchful waiting in terms of SFR and complications however both interventions shorten the stone expulsion time for 10-20 mm renal pelvis stones in the pediatric population.

## Triple D Score Is a Reportable Predictor of Shockwave Lithotripsy Stone-Free Rates

Timothy Y. Tran, MD,<sup>1</sup> Kathryn McGillen, MD,<sup>2</sup> Eugene Blanchard Cone, MD,<sup>3</sup> and Gyan Pareek, MD<sup>1</sup>

A considerable predictor for “shockwave lithotripsy stone free rates” have reported by Tran et al. They have described a simple scoring system named Triple D Score that is easy to calculate by radiologists. They have recommended it to be added in the radiology reports. They have performed a retrospective analysis and reached available preoperative imaging of one hundred thirty-three patients who were treated with the Medispec E3000™. They have taken the data of stone density, skin-to-skin distance (SSD), ellipsoid stone volume (ESV) and they have calculated Triple D Score using the cut-off values of these parameters. They have calculated the score for all stone locations (upper pole, interpolar, lower pole, pelvis, proximal-interpolar-distal ureter). They did not find any significant difference in age, gender, stone laterality or stone location between patients who are stone free or not. “They have used receiver operator characteristic curves and find out the cutoffs (150  $\mu$ L for ESV, 600HU for stone density, and 12cm for SSD) based upon the value corresponding to the greatest sensitivity and specificity. The Triple D Score was calculated based upon the number of parameters that fell below the cutoff values. A Triple D Score of 0, 1, 2, and 3 correlated with stone-free rates of 21.4%, 41.3%, 78.7%, and 96.1%, respectively. The area under the curve for the Triple D Score was 0.8338.” They have concluded that to increase the overall SWL success rates the Triple D Score is a useful and satisfying tool and it can be easily reported by radiologists. Using this tool, making decision preoperatively can be possible for stone disease undergoing SWL.

## Contemporary Practice Patterns in the Management of Acute Obstructing Ureteral Stones

Sri Sivalingam, MD,<sup>1</sup> Ian M. Stormont, MD,<sup>2</sup> and Stephen Y. Nakada, MD<sup>2</sup>

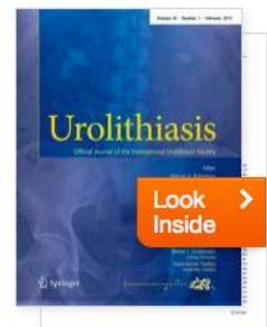
Sivalingam et al. have completed a survey about one of the common situations of endourologists in their daily practice. They have prepared the survey with following questions: "Patient presents to the ER with acute renal colic and intractable pain, no signs of infection, i.e. afebrile and no pyuria. Stone is obstructing, and causing intractable pain; thus observation or medical expulsive therapy is not appropriate." They wanted the participants to answer this question considering 12 different cases. The different cases have created for the survey with 5mm, 10 mm, 15 mm and 20 mm stones in proximal, mid and distal ureter and participants have asked to choose one of the immediate managements included shockwave lithotripsy (SWL), ureteroscopy (URS), stent placement or percutaneous management. Survey has sent to 2000 Endourological Society members and 416 members have given feedback. For 5, 10 and 15 mm stone in proximal ureter, URS was the most preferred modality while endourologists have preferred percutaneous management for 20 mm stone in proximal ureter. Immediate URS was the preferred choice for the mid and distal ureteral stone of all sizes. They have found a significant difference in management choice based on stone location ( $P < 0.001$ ) and stone size ( $P < 0.001$ ). So, they have concluded that endourologists prefer to manage the acutely obstructing ureteral calculi with immediate URS rather than stent placement or SWL. Endourologists, as expected, have chosen percutaneous management for the 20-mm stones in proximal ureter.

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## Ureteral wall thickness at the impacted ureteral stone site: a critical predictor for success rates after SWL

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Sarica et al. have reported an original paper that explains a predictor for success rates after SWL. They have examined 111 patients with impacted proximal ureteral stones treated with shock wave lithotripsy (lithotripter: Compact Sigma, Dornier Med Tech System GmbH, Wessling, Germany). BMI of the case, diameter of proximal ureter and renal pelvis, stone size, Hounsfield unit and ureteral wall thickness at the impacted stone site were analyzed. Among all these evaluated factors only ureteral wall thickness at the impacted stone site predicted shock wave lithotripsy success. They have found out that success or repeated attempts are related to ureteral wall thickness on the proximal ureteral stone site and the cut-off value for this prediction is 3.55 mm. With this valuable information unnecessary stone treatment can be prevented. Urologists will have chance of making proper management plan and schedule the treatment evaluation of patients with proximal ureteral stones.



Investigative Urology

## Comparison of Tissue Injury from Focused Ultrasonic Propulsion of Kidney Stones Versus Extracorporeal Shock Wave Lithotripsy

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Connors et al. have designed an animal study on female farm pigs to compare the volume tissue injury produced by focused ultrasonic propulsion with the injury produced by shock wave lithotripsy under situations that mimic clinical treatment conditions. They have implanted a human calcium oxalate monohydrate stone and/or nickel beads into kidneys of live pigs. Focus ultrasonic propulsion using clinical and excessive treatment parameters and SWL clinical treatment conditions have created for the animals included to the study in groups. After these efforts histological analysis was performed to assess the volume of hemorrhagic tissue injury created by each technique (% functional renal volume, FRV). With this study they have simulated a clinical treatment for the expulsion of residual stone fragments or small stones from their original position in a middle or lower pole calyx towards the ureter and renal pelvis. They have concluded that morphological lesion to the renal parenchyma with the simulated clinical treatment parameters produced with focused ultrasonic propulsion was not detectable. The results were comparable in size to SWL when using excessive treatment parameters for the focused ultrasonic propulsion.