

Peer Review File

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Reviewer A: The purpose of this retrospective study is to search for predictors of success of SWL for ureteral stones. The author's hypothesis was SWL energy might affect ureteral stone fragmentation. Here are my comments:

Comment 1: please remove the name of the Institution where the study took place from Methods session;

Reply 1: Thank you for your comment. We have removed the name of the Institution.

Changes in text: on line 5 in page 6

Comment 2: How many patients with ureteric stones were treated during the study period? How many patients lost follow-up?

Reply 2: Thank you for your comment. During the study period, a total of 172 patients underwent ESWL for the first time, of which 150 patients excluding renal stones were included in the study. We have added above information in Methods section.

Changes in text: on line 5 in page 6

Comment 3: the authors already mentioned that the retrospective nature of their study is a limitation for their conclusions. However, the fact that all patients were submitted to pre and post procedure CT should be commended.

Reply 3: Thank you for your comment. Regrettable, although all patients performed CT (non-enhanced or enhanced) before the procedure, CT or KUB was performed to confirm the results after 1week.

Comment 4: Please report stone free rate (zero fragments) after each procedure;

Reply 4: Thank you for your comment. In our study, if a stone was < 4 mm or disappeared, we regarded it as a success. Patients underwent ESWL an average of 1.5 times, and the success rate according to the session was 65.3% for the first, 83.3% for the second, and 90.0% for the third session. As mentioned above (Reply 3), it is difficult to determine the zero fragment because CT is not performed at all when determining the result. We hope for your generous understanding.

Comment 5: Please report complications based on Clavien-Dindo classification;

Reply 5: We appreciate the reviewer's comments and agree with your opinion. We have already reported complications based on Clavien-Dindo classification (Results section: on line 8 in page 7 & Table 2). Complications occurred in three patients, but all were mild grade 1 symptoms. All improved with conservative management.

Comment 6: please investigate if SWL intensity was associated with complications;

Reply 6: Thank you for your comment. Since only 3 patients (2%) had mild complications, it was difficult to find a relationship with SWL intensity. We hope for your generous understanding.

Comment 7: please explain why no analgesia was used;

Reply 7: Even if analgesia is used during the procedure, it takes quite a while for the effect to appear, so we mainly use analgesia after the procedure.

Reviewer B: This is a retrospective study of SWL outcomes. The study does not support the hypothesis and may not have been designed to be able to. They observe stone size and HU correlate with reduced success.

Comment 1: This seems like a paper about how well can your urologists tell from the image that the stone is broken. Would you only turn it up to the highest setting at the end if you thought the stone was not breaking? What is the correlation between high settings and unsuccessful breaking.

Reply 1: Thank you for your comment. Clinicians generally believe that high intensity ESWL can induce a high SFR, but intensity did not affect the SFR in this study. Although ESWL is a very safe procedure, it rarely causes life-threatening complications, such as renal hematoma or surrounding organ injuries. Therefore, it is not recommended to try every stone treatment completely during only one procedure with high and risky energy levels. Although this study included potential weaknesses because of its retrospective nature, this is the first study to analyze success rates according to ESWL intensity. That is, this study can be an important basis for safe ESWL without unnecessary increases in ESWL intensity.

Comment 2: Does this journal prefer Extracorporeal Shock Wave Lithotripsy or just Shock Wave Lithotripsy?

Reply 2: We prefer Extracorporeal Shock Wave Lithotripsy (ESWL).

Comment 3: Accessed should be assessed

Reply 3: We appreciate the reviewer's comments and agree with your opinion. We have revised it according to your suggestion.

Changes in text: on line 8 in page 2 and on line 4 in page 7.

Comment 4: This sentence does not have a reference and I think the idea is slower is better not that 60-90 is the optimal.

"A shock wave frequency of 60–90 shock waves/min improves the stone-free rate (SFR), and tissue damage decreases with a low shock wave frequency"

Reply 4: We appreciate the reviewer's comments and agree with your opinion. Stone fragmentation during ESWL was reported to be improved by slowing the rate of shock waves down to 30 or 60 shock waves/min rather than 90, 120 or 150 shock waves /min [1, 2]. Although an ultraslow rate of 30 shock waves /min was reported to be both safer and more effective in fragmentation, it was not used clinically due to potential prolongation of procedure time [1]. We have added references.

Changes in text: on line 13 in page 4.

Comment 5: There is no reference for and I do not believe there is support for this statement.

"A higher energy intensity generally induces a better SFR in clinical practice."

Reply 5: We appreciate the reviewer's comments and agree with your opinion. Several studies recommend increasing the power step-by-step, as this ramping technique improves stone fragmentation and reduces renal injury during ESWL [3-7]. However, no study has investigated the final energy intensity of ESWL. The "higher energy" mentioned above means the final energy intensity. Therefore, We have changed the sentence as follows "A higher final energy intensity may generally induces a better SFR in clinical practice."

Changes in text: on line 18 in page 4.

Comment 6: Again this is not a clear as it should be. There is definitely animal data that injury increases with the energy dose.

"Although a higher intensity can lead to better performance, it can cause other

side effects, such as pain and injury to the urinary tract.”

Reply 6: We appreciate the reviewer’s comments and agree with your opinion. We have changed the sentence as follows “Although a higher final energy intensity may lead to better performance, it can cause other side effects, such as pain and injury to the urinary tract.”

Changes in text: on line 20 in page 4.

Comment 7: This phrase “confirms intensity” does not make sense.

Reply 7: Thank you for your comment. We have changed the sentence as follows “We used the Dornier Compact Delta/Sigma model as the ESWL device, and this electromagnetic model can confirm confirms intensity.”

Changes in text: on line 11 in page 6.

Comment 8: “ESWL was practiced as a ramping technique,” is there anything more specific or controlled to how you ramped?

Reply 8: Ramping technique typically starts at a low energy intensity, and is gradually increased. But if patients complained of pain, we stopped increasing the intensity.

Comment 9: “About 3,000 shocks were delivered at a frequency of 70–80/min.” does the number of SWs affect success. I did not see that listed.

Reply 9: Thank you for your comment. In terms of frequency, we evenly gave about 3,000 shocks were delivered at a frequency of 70–80/min. Therefore, it could not be analyzed.

Comment 10: Seems like it would have been better to estimate the path of the SWs, than this measure of SSD “The SSD was calculated on the CT scan using three measured distances from the center of the stone to the skin (0°, 45°, and 90°).”

Reply 10: We appreciate the reviewer’s comments and agree with your opinion. This study is a retrospective study, so it is difficult to identify the path of the SWs. However, your suggestions will be of great help in doing better research in the future. Thank you.

Comment 11: This does not seem very carefully controlled.

“Most patients were followed up 7 days after ESWL, for a check of the KUB or for a CT scan. If a stone was < 4 mm or disappeared, we regarded it as a success.”

Also that is a very liberal success criterion and a short follow up window. And follow up should be done with CT not KUB.

Reply 11: We appreciate the reviewer's comments and agree with your opinion. If there are stones of less than 4mm in the kidney, it can be considered as residual stone, but in our study, only ureter stones except renal stone were included. In this case, we think that it can be regarded as a success because it is common to fall out on its own without treatment. Also, if a stone was $\geq 4\text{mm}$, it is not difficult to observe in KUB, so we think it is possible to confirm success with KUB. We hope for the generous understanding of the reviewers.

Comment 12: I cannot analyze if the statistics were done correctly. This range of stone size is rather incredible. 3 mm is successful before you start. Hard to imagine a 37 mm ureteral stone. " 7.2 ± 3.4 (3.0 -37.0)"

Reply 12: We appreciate the reviewer's comments and agree with your opinion. Even small stone with 3 mm observed on CT were included in this study because ESWL was performed rather than observation in cases with severe pain. In addition, proximal ureter stones around UPJ may not only accompany a sign of hydroureteronephrosis, but also may have a stone size of 30 mm or more.

Comment 13: Some subset were on alpha blockers. Did they have an effect? Why is it only given to some people?

Reply 13: Thank you for your comment. Medical expulsive therapy is efficient for relieving pain and the passage of a stone [8]. Therefore, in general, alpha-blocker was prescribed (120/150, 80%). But if the patient did not want it, it was not prescribed.

Comment 14: Was the time until follow up imaging a factor?

Reply 14: Most patients were followed up 7 days after ESWL, for a check of the KUB or for a CT scan. If severe pain occurred after ESWL, image follow up can be performed a week before. But, the success or failure was confirmed based on the image performed one week later.

Comment 15: There were only 5 mid ureter stones. Can you really do statistics with only 5?

Reply 15: We appreciate the reviewer's comments and agree with your opinion. Even if 5 mid ureter stones were excluded, the location of the stones

did not affect the ESWL success rate, so it was divided into 3 parts (proximal, mid and distal) as in many other studies.

Comment 16: References need to be added in the discussion such as “A repeat procedure increased the SFR about 90% in this study. Although ESWL is a very safe procedure, it rarely causes life-threatening complications, such as renal hematoma or surrounding organ injuries.”

Reply 16: This part of the discussion is based on this study, and the reference is this study. We hope for your generous understanding.

Comment 17: Also I don't think these statements can be supported. They are no conclusions of the paper and they are not references .I don't think there is a credible reference.

“Therefore, it is not recommended to try every stone treatment completely during only one procedure with high and risky energy levels. What is more important than intensity is using the energy ramping technique.”

Reply 17: Like as “Reply 16”, this study is a reference. Final energy intensity was not related to the success rate of ESWL, and a repeat procedure increased the stone free rate about 90% in this study. So it was suggested that it would be better to do it several times with adequate strength rather than strong strength at once. Also, in terms of energy intensity, the recommended ramping technique was mentioned. We hope for your generous understanding.

Comment 18: This statement is misdirected. The references are more about rate than intensity and they are not at all about ramping.

“A fixed ESWL intensity has an obvious disadvantage, called the screening effect, whereby the powder generated and fine fragments by the cavitation bubbles and stress waves cluster around the residual stones to attenuate and scatter the shock waves (12, 13).”

Reply 18: We appreciate the reviewer's comments and agree with your opinion. These references are articles to explain the screening effect. We have added the reference about ramping [9].

Changes in text: on line 10 in page 10.

Comment 19: The extended argument for ramping is not relevant to this paper and should be removed.

Reply 19: We appreciate the reviewer's comments and agree with your

opinion. We have added the reference about ramping [9].
Changes in text: on line 12 in page 10.

Comment 20: “crush effect” is not a good term. Fragmentation or comminution would be better than crushing.

Reply 20: We appreciate the reviewer’s comments and agree with your opinion. We have changed “crush effect” to “fragmentation”.
Changes in text: on line 2 and 3 in page 11.

Comment 21: The discussion would be stronger if focused more on the results of this paper than reviewing the literature.

Reply 21: We appreciate the reviewer’s comments and agree with your opinion. Once again, thank you so much for your attentive review. We did our best to modify it based on your review. I would be very happy if these efforts could satisfy you.

Comment 22: Missing some fundamental references on SW rate effect and ramping.

Reply 22: We have added the reference about ramping and frequency.
Changes in text: on line 10 and 12 in page 10.

[References]

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2. Greenstein A, Matzkin H. Does the rate of extracorporeal shock wave delivery affect stone fragmentation? *Urology* 1999; 54: 430–2.
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8. Skolarikos A, Grivas N, Kallidonis P, Mourmouris P, Rountos T, Fiamegos A, et al. The Efficacy of Medical Expulsive Therapy (MET) in Improving Stone-free Rate and Stone Expulsion Time, After Extracorporeal Shock Wave Lithotripsy (SWL) for Upper Urinary Stones: A Systematic Review and Meta-analysis. Urology. 2015;86(6):1057-64.

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2017;45(3):311-6.