Reviewer’s report

Title: Optical puncture combined with balloon dilation PCNL vs. conventional puncture dilation PCNL for kidney stones without hydronephrosis: a retrospective study

Version: 2 Date: 27 May 2019

Reviewer: Thomas Tailly

Reviewer's report:

Materials and methods: The authors report inflating the balloon up to a pressure of 20-25mmH2O. This seems very low. I assume the authors mean 20-25 Atm, as most manual pumps provided by the companies to inflate the balloon demonstrate a pressure up to 30 Atm and not mm H2O.

Materials and methods: I appreciate that this is a retrospective study and that as such, there is an inherent selection bias. This should be mentioned in the limitations section. Secondly, could the authors elaborate on why some patients were elected for this approach while others were not?

Materials and Methods/discussion: The authors compare visual puncture and balloon dilation with conventional puncture and dilation with fascial dilators. As two different aspects of tract creation are changed from the control group to the experimental group, could the authors speculate which of both is responsible for the differences between the two groups? Arguably, one could say that is mainly the balloon dilation method that reduced the bleeding and pain and not so much the visual puncture.

Material and methods/limitations: In the responses to the reviewers' comments, the authors mention an additional cost to this technique. Could the authors comment on that in the manuscript? I assume that the cost of the additionally needed scope and the balloon add to the total cost? Also, a 3F camera is most likely quite fragile, could the authors comment on durability of the scope? Were any repairs needed/ breakages reported of the 3F scope during the study?
Discussion: The authors report in the comments and in the discussion that artificial hydronephrosis may interfere with the ultrasound image. In theory, fornix rupture may occur when performing a retrograde injection of saline, this is however extremely rare in my experience. Do the authors have any literature supporting the interference of retrograde pyelogram with ultrasound image of the kidney? With regards to injecting air through the ureteral catheter; if the catheter is sufficiently purged and aspiration of fluid is performed prior to injecting saline into the collecting system, the inadvertent injection of air into the collecting system can be prevented. Also, a retrograde injection of saline is not performed under continuous flow, but rather slowly and manually until sufficient hydronephrosis is acquired. The short-term dilation and thus short term and low pressure increase due to retrograde pyelogram is very unlikely to be of more importance than the hydronephrosis achieved by nephroscopy. It is not the goal to question the practice of the authors on whether or not to perform a retrograde pyelogram. It is however of importance not to misinform the reader with theoretical disadvantages that cannot be substantiated by peer-reviewed literature. I would therefore urge the authors to attenuate the statements to read that these deficiencies are theoretical and not supported by peer-reviewed literature, rather than truth.

Discussion: The authors report using direct vision to determine the accuracy of the puncture. In the response to the reviewer's comment, they elaborate on how this visual puncture influences the process of reaching the correct calyx. "As we mentioned in the discussion part (page 13, line 308, revised version), using direct vision, the accuracy of puncture position was determined by the visual puncture technique. (If we didn't see the stone, we should adjust the puncture angle.) And the needle tip position was observed by intrathecal endoscopy and the depth of needle tip in the targeted renal calyx was adjusted properly to ensure that the guide wire in the narrow space of the renal calyx was placed exactly in place." As this is an important part of the puncture and actually essential to understand why this is performed, I would urge the authors to also report this in the actual manuscript.

Discussion: Tract sizes: The authors refer to two papers to assign different tract sizes to standard, mini and ultra mini perc. The paper by Zeng demonstrates that there is a broad range of miniaturized PCNL equipment but provides no consensus, where the paper from Sashikant describes their experience with mini-perc. It would be appropriate to reference Schilling or Rassweiler or both additional to the Zeng paper as they both suggested a standardized nomenclature for PCNL description. [1,2]


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