



# Accurate dilated renal pelvis measurement

Ismail Mihmanli<sup>1,2</sup>

Received: 19 September 2022 / Revised: 19 September 2022 / Accepted: 15 January 2023 / Published online: 31 January 2023  
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2023

Dear Editor,

I read the article entitled “2021 update on the urinary tract dilation (UTD) classification system: clarifications, review of the literature, and practical suggestions” which was published in the April 2022 issue of pediatric radiology [1].

In the urinary tract dilation (UTD) classification system, one of the main parameters is anteroposterior (AP) intrarenal pelvic diameter; hence, measurement of the dilation is very important. In this updated article, UTD P3 was shown as 10 mm for pelvic dimension, while in the previous article, it was 15 mm [2]. In the updated article, there was no explanation about this amended numeric value, so I think this may be written unintentionally. This issue is important not only for colleagues who are studying this subject but also for physicians and sonographers who are performing the ultrasound examination.

AP diameter of the renal pelvis is affected by some situations such as hydration status, degree of bladder filling, patient position, and even respiration. These are possible reasons for inter-rater and intrarater differences in the literature. I would like to focus on patient position and respiration during the examination. It is mentioned that examination should be performed in prone position; however, it does not specify whether there is a pillow under the belly. In my opinion, pillow under the belly would increase the dimension as well. Besides, prone position would increase the pressure of the abdomen resulting in enlargement of renal pelvis and calyces. That is why standardization is necessary. I suggest examination be performed in contralateral decubitus position [3] while ultrasound probe is posteriorly approached near the spine like suggested prenatal imaging. This position will prevent any pressure in the abdomen so the renal

pelvic dimension remains unchanged. On the other hand, prone position can be preferred for renal length measurement for better contour demarcation of the poles [4].

Respiration effect also needs to be mentioned for accurate AP diameter measurement. Due to the nature of the B mode ultrasound physics, respiratory motion may cause blurring of the renal pelvis wall and inaccurate measurement of the pelvic dimension. Respiration should be taken into consideration to receive a high-quality image coupled with accurate measurement. Cine loop can help this problem to some extent.

As radiologists, we are responsible for accurate pelvic dilation measurement and we should not increase the UTD level intentionally or unintentionally.

## Declarations

**Conflicts of interest** The author declares no competing interests.

## References

1. Nguyen HT, Phelps A, Coley B, Darge K, Rhee A, Chow JS (2022) 2021 update on the urinary tract dilation (UTD) classification system: clarifications, review of the literature, and practical suggestions. *Pediatr Radiol* 52(4):740–751
2. Nguyen HT, Benson CB, Bromley B et al (2014) Multidisciplinary consensus on the classification of prenatal and postnatal urinary tract dilation (UTD classification system). *J Pediatr Urol* 10(6):982–998
3. Kadioglu A (2010) Renal measurements, including length, parenchymal thickness, and medullary pyramid thickness, in healthy children: what are the normative ultrasound values? *AJR Am J Roentgenol* 194:509–515
4. Kantarci F, Mihmanli I, Adaletli I et al (2006) The effect of fluid intake on renal length measurement in adults. *J Clin Ultrasound* 34:128–133

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

✉ Ismail Mihmanli  
ismailmihmanli@gmail.com

<sup>1</sup> Medical Faculty, Istanbul University-Cerrahpasa, Department of Radiology (Emeritus Professor), Istanbul, Turkey

<sup>2</sup> ALKA Radiological Diagnostic Center, Buyukdere Cad. No 36 /14 Sisli, 34394 Istanbul, Turkey