# Necessity of Performing VCUG for Children with Unilateral MCDK

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## Introduction

- Multicystic dysplastic kidney (MCDK) is the most common type of renal cystic disease.
- It is associated with urinary tract abnormalities in the contralateral kidney in up to 30% of cases, most commonly vesicoureteral reflux (VUR).

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17<sup>th</sup> International Congress of Nephrology, Dialysis, and Transplantation Tabriz , Iran 19-22 November 2019



# **The Clinical Question:**

 Do all patients with unilateral Multicystic Dysplastic Kidney (MCDK) need Voiding CystoUrethroGraphy (VCUG)?



BJU International 2004-93, 388-392 / doi:10.1111/j.1464-410X.2004.04623.x Unilateral multicystic dysplastic kidney: experience in children a retrospective study

- The study included 97 children (60 boys, 37 girls) with Unilateral MCDK ,
- The contralateral kidney showed *anomalies* in 19 of 97 children (20%) by different Imaging techniques (Scan, US, IVP &VCUG);
- 89 children (92%) had VCUG.
- 16 of the 19 anomalies (84%) were detected by US.
- In only 4 of the 89 children (4.5%), VUR was found by VCUG;

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### CONCLUSION

• The low rate of reflux makes routine VCUG unnecessary if the contralateral upper urinary tract and kidney appear to be normal on US.





### A Systematic review & Meta-analysis:

- From 698 retrieved articles, 37 studies enrolling 2057 patients were analyzed.
- Of the patients:
  - 80% were male;
  - 50% had left unilateral MCDK;
  - 87% were diagnosed prenatally.

 A total of 1800 patients had VCUG, of whom 303 had VUR (17%)
grades I-II were 58%, grades III-V were 42%,





Of the patients:

- 99% were on continuous antibiotic prophylaxis
- 18% had urinary tract infections (UTIs)
- with a higher rate of UTIs (23% vs 10%) in patients with dilating VUR (grades III-V) vs lower grades,





In patients with dilating VUR (grades III-V) over a mean follow-up of 40 months :

- 23% will develop a UTI on the single functional kidney despite continuous antibiotic prophylaxis
- VUR resolved or downgraded to grade I in 52%
- 32% had surgical correction of VUR







### Do You choose to forego routine VCUG screening of the single functional kidney?

 Shared decision-making with the patient's caregivers is currently recommended, where the risks and benefits of the different approaches can be discussed.



Pediatr Nephrol. 2019 Feb;34(2):295-299 Yamamoto K. et al

- A retrospective study : 75 children with unilateral MCDK enrolled:
  - excluding patients with other genetic or chromosome abnormalities, spinal cord diseases, or anal atresia
- Abnormal VCUG findings in 24 of 75 patients (32%)
  - -VUR in 8 (10.6%), & lower urinary tract or bladder disease in 16 (21.3%)

#### Pediatr Nephrol. 2019 Feb;34(2):295-299 Yamamoto K. et al

- Only abnormal findings by (one to three times) ultrasonography was an independent risk factor for abnormal VCUG findings with statistical significance in multivariate analysis (OR 6.57; 95% CI 1.99-26.26; P = 0.002)
- Abnormal findings by ultrasonography to predict urologic anomalies by VCUG in these children:
  - Sensitivity: 83% Specificity: 59%
  - positive predictive value: 49%
  - negative predictive value: 88%



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<u>Yamamoto K. et al</u>

# **CONCLUSIONS:**

- Among children with unilateral MCDK, Only who has abnormal findings by ultrasonography, should undergo VCUG.
- It must be emphasized that ultrasonography should be performed repeatedly to detect congenital anomalies of the urinary tract.

