Multidisciplinary Consensus on the Classification of Prenatal and Postnatal Urinary Tract Dilation (UTD)

UTD Classification System

J. Mei-Mei Chow

No disclosures
Characterizing upper urinary tract dilation of ultrasound: a survey of North American pediatric radiologists’ practices
Swenson DW, Darge K, Ziniel SI, Chow, JS, Pediatric Radiology 2014, Nov 25

- Hydronephrosis
- Uronephrosis
- Pelviectasis
- Pyelectasis
- Pelvicaliectasis

- Pelvic dilatation
- Pelvic fullness
- Pelvic and calyceal dilatation
- Pelvic and calyceal fullness
- Urinary collecting system dilation, prominence, or fullness
• 95% of pediatric radiology SPR members believe a unified classification system would be useful

• 87% would use it if it became available
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UTD Classification System

Nguyen et al, J of Pediatric Urology Dec 2014, Vol 10, Issue 6, pg 986-998
UTD Classification

1. Anteroposterior diameter of renal pelvis (APRPD)
2. Parenchymal appearance
3. Parenchymal thickness
4. Calyceal dilation
5. Ureters
6. Bladder
7. Oligohydramnios (prenatal only)
A-ntenatal Classification

A-1
A 2-3

P-ostnatal Classification

P-1
P-2
P-3
Peripheral calyx

Central calyx
Recommendation: Terminology

• Suggest consistent use of the term “UT dilation”

• Discourage the use of non-specific terms (e.g., hydronephrosis, pyelectasis, pelviectasis, uronephrosis, UT fullness or prominence, pelvic fullness)
Technique for APRPD Measurement

- Image: AP of the fetus/patient
- Measurement at the maximal diameter of intrarenal pelvis dilation
  - Prenatal: spine at the 12 or 6 o’clock, transverse image
  - Postnatal: prone position, transverse image
- Consistent position (prone or supine) takes precedence over prone requirement for serial evaluations
# Defining Normal

<table>
<thead>
<tr>
<th>Ultrasound Findings</th>
<th>16-27.9w</th>
<th>≥ 28w</th>
<th>Postnatal (&gt; 48h)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anterior posterior diameter</strong></td>
<td>&lt; 4mm</td>
<td>&lt; 7mm</td>
<td>&lt; 10mm</td>
</tr>
<tr>
<td><strong>Calyceal dilation</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Central</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Peripheral</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Parenchymal thickness</strong></td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td><strong>Parenchymal appearance</strong></td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td><strong>Ureter (s)</strong></td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td><strong>Bladder</strong></td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td><strong>Oligohydramnios</strong></td>
<td>No</td>
<td>No</td>
<td>NA</td>
</tr>
</tbody>
</table>
Prenatal: Normal

APRPD < 4 mm (@ 16-27 wk) or < 7 mm (@ ≥ 28 wk)
Postnatal: Normal

APRPD < 10 mm
Antenatal Classification

A-1
A 2-3
A-ntenatal Classification

A-1
A 2-3

16-27 wks
APRPD ≥ 7mm

≥ 28 wks
APRPD ≥10mm

Peripheral
calyceal dilation*

Parenchymal
thickness abnl

Parenchymal
appearance abnl

Ureters
abnormal

Bladder
abnormal

Unexplained oligohydramnios**
P-ostnatal Classification

P-1
P-2
P-3

No central calyceal dilation with APRPD = 10-15 mm

Central calyceal dilation with APRPD < 10 mm

Central calyceal dilation

Parenchymal thickness normal
Parenchymal appearance normal
Ureters normal
Bladder normal

> 48 hours
APRPD
10 to < 15mm

OR
P-ostnatal Classification

P-1
P-2
P-3

> 48 hours APRPD
≥ 15mm

Peripheral calyceal dilation

Parenchymal thickness normal

Parenchymal appearance normal

Ureters abnormal

Bladder normal
P-ostnatal Classification

P-1
P-2
P-3

17.33mm

> 48 hour AP RPD ≥ 15mm

Peripheral calyceal dilation

Parenchymal thickness abnl

Parenchymal appearance abnl

Ureters abnormal

Bladder abnormal
UTD Classification System

UTD classification for better communication and prediction of outcomes