RENAL ABNORMALITIES ON ANTENATAL SCAN

ANTENATAL ASSESSMENT
Fetal diagnostic scans are undertaken in mid-trimester (18-20 wk) and may be repeated at 32-34 weeks

10-20 week scan
Possible renal abnormalities include:
- Upper tract dilatation (pelviectasis):
  - mild: renal pelvic dilatation (RPD) [anterior-posterior (AP) diameter] 5–9 mm
  - moderate: RPD 10–14 mm
  - severe: RPD >15 mm
- Dilated bladder ± ureter
- Multi-cystic dysplastic kidney(s)
- Infantile polycystic kidney disease
- Renal agenesis ± oligohydramnios
- Abnormally positioned kidney
- Solitary kidney

32–34 week scan for dilated renal pelvis seen in 10-20 week scan
- Gauge severity of pelviectasis according to dimension:
  - <7 mm: normal
  - 7–10 mm: mild hydronephrosis
  - >10 mm: moderate hydronephrosis
  - >15 mm: severe hydronephrosis (high risk of obstruction)

Communication
- Provide mother with information leaflet about significance of findings and proposed plan of management after birth

POSTNATAL MANAGEMENT
Indications for intervention
Urgent
- Evidence of lower tract obstruction in male posterior urethral valves (PUV)
- Bilateral RPD >10 mm
- Hydroureter

Non-urgent
- Bilateral mild pelviectasis (RPD <10 mm)
- Unilateral renal problems
- Infantile polycystic kidneys (provided renal function satisfactory)
- Multi-cystic dysplastic kidneys

Other conditions requiring renal evaluation
- Single renal artery in cord
- Increased risk of renal abnormality
- Postnatal ultrasound scan only if antenatal scan missed or abnormal
- Ear abnormalities: ultrasound examination only if associated with:
  - syndrome
  - other malformations
  - maternal/gestational diabetes
  - family history of deafness
**IMMEDIATE MANAGEMENT**

For urgent indications
- Start trimethoprim 2 mg/kg as single night-time dose
- Renal ultrasound scan USS, day 2-3 [early dehydration and low GFR may give a false normal appearance if checked too early (i.e. day 1 or 2)]
- If indicated following postnatal scan, urgent micturating cysto-urethrogram (MCUG)
- Check voiding pattern
- Electrolytes at day 4-7

*Follow results*
- If Posterior Urethral Valves (PUV) suspected in antenatal scan, refer infants urgently after confirmation with urgent micturating cysto-urethrogram (MCUG) (can be done within 48 hr) to paediatric urologist
  - place urinary catheter
- For bilateral RPD >10 mm, arrange MCUG
  - Discuss with consultant before discharge

For non urgent indications
- Renal USS at 6 weeks of age
- Consultant review with results

*Antibiotic prophylaxis*
- For RPD >10 mm, give trimethoprim 2 mg/kg as single night-time dose until meets criteria for stopping (see below)

**SUBSEQUENT MANAGEMENT**

Subsequent management depends on findings, especially of USS at 6 weeks

**Normal or mild isolated pelviectasis (<10 mm)**
- Stop antibiotic prophylaxis
- Repeat scan after 6 months
- If 6-month scan normal or shows no change and there have been no urinary tract infections (UTIs), discharge
- If unwell without obvious cause, advise urine collection

**Moderate unilateral pelviectasis (10–15 mm) and/or ureteric dilation**
- Presumed mild obstruction or vesico-ureteric reflux (VUR)
- MCUg in females if not performed already and if available
- If deteriorating and no reflux or >15 mm in repeat scan, go onto MAG3 scan
- Continue prophylaxis for VUR >grade 4 (marked dilatation of ureter and calyces) until fully continent
- Repeat scan every 6 months until RPD <10 mm, then follow advice in Normal or mild isolated pelviectasis (<10 mm) above

**Hydronephrosis (>15 mm)**
- MAG3 scan after 6 weeks of age
- MCUg if not done earlier to rule out reflux and dilatation not limited to upper tract only
- Repeat USS at 3-6 months of age (depending on cause of dilatation, a complete obstruction needs closer monitoring)
- Urology referral with results
  - Continue antibiotic prophylaxis until VUR ruled out

**Multi-cystic kidney**
Renal abnormalities 2009-11

- DMSA to confirm nil function
- Repeat USS 6-monthly to observe re-absorption of kidney (may take several years)
- Be aware of 20% risk of reflux in contralateral kidney, advise parents to be vigilant for UTI
- MCUG or prophylaxis until continent ONLY if dilated pelvis or ureter in good kidney
- Annual blood pressure check until kidney resorbed
- Urology referral if cysts persistent, enlarging or hypertension

Outflow obstruction
- Urgent MCUG
- Prophylaxis until problem resolved
- Urgent urology opinion
- Repeat electrolytes daily if initially abnormal until not deteriorating

Ureterocoele
- MCUG
- MAG3 to check function and drainage from all poles
- Prophylaxis until problem resolved
- Urology referral

Solitary kidney/unilateral renal agenesis
- Kidney ultrasound at 6 weeks to confirm antenatal findings and rule out other urogenital structure abnormalities
- DMSA to confirm absence of other kidney
- If contralateral kidney absent and solitary kidney appears to be working well, discharge

Renal parenchymal problem
- Bright kidneys
- Multiple cysts
- Nephrology opinion