

Common problems in Paediatric Urology

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Fellowship programme



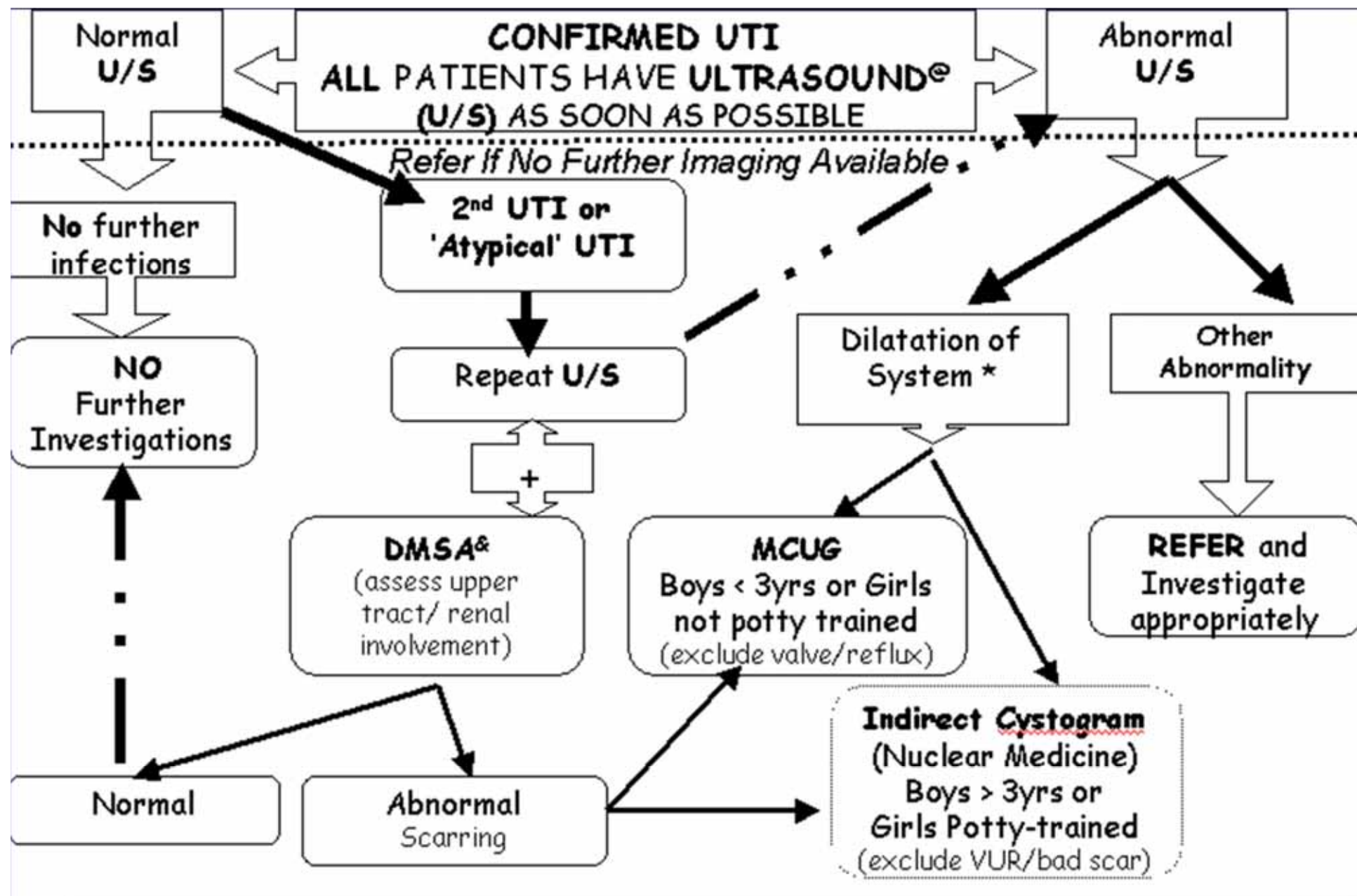
Common problems in Paediatric Urology

- Approach to Paediatric UTI
- Congenital hydronephrosis

- Hypospadias
- Neuropathic bladder
- Nocturnal Enuresis and Dysfunctional voiding

- 8% girls will have a UTI by 7yrs! (2% boys)
- 1/3 of UTI's in children = VUR

Gabrielle Williams, [Vesicoureteral Reflux](#). J Am Soc Nephrol 19: 847–862, 2008



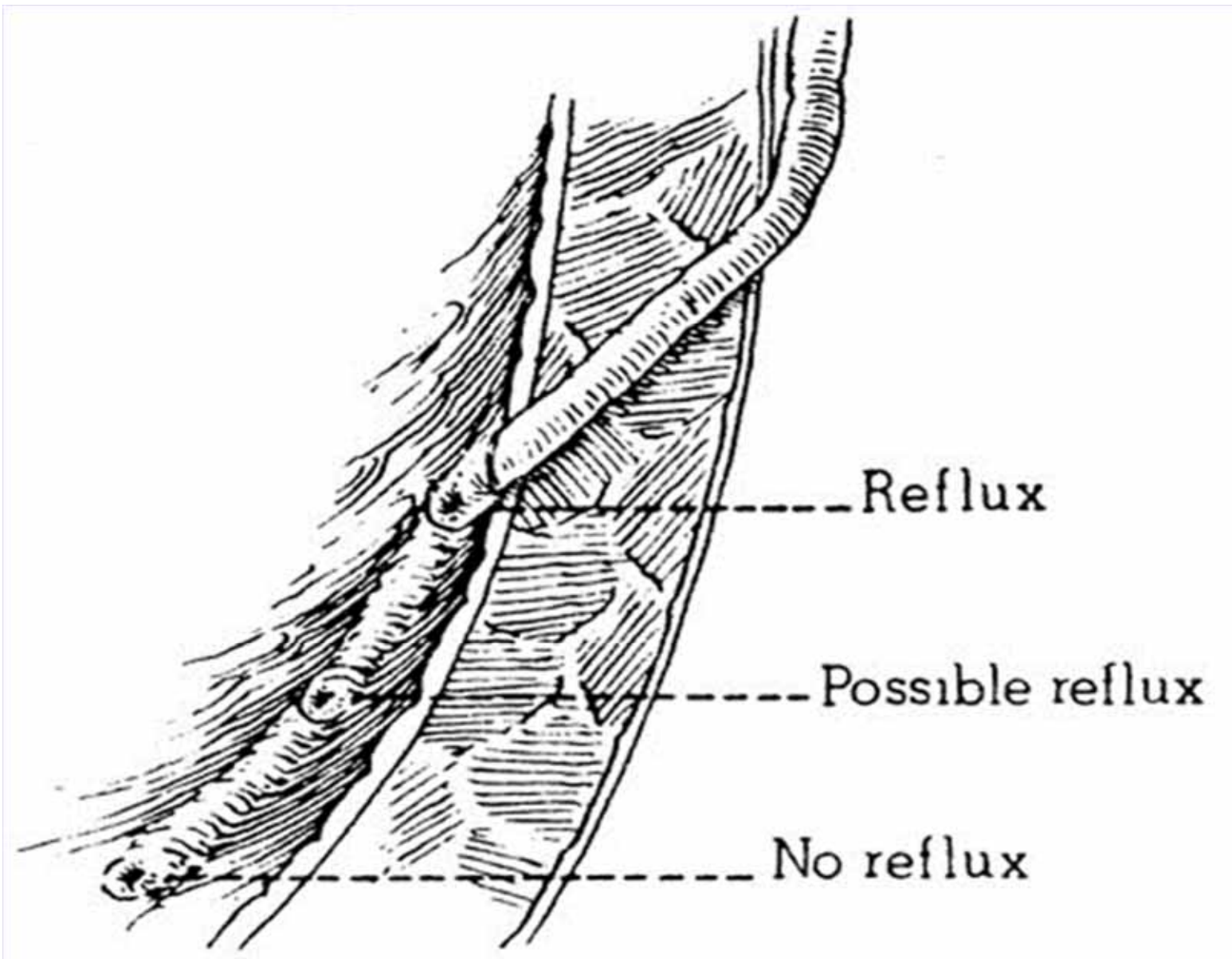
® Presumed reliable 3rd trimester **Antenatal U/S** not available in all patients

* Dilated Kidney only - PUJ(pelvi-ureteric junction) obstruction need **MAG3** Nuclear study

& **DMSA** in our setting best early as compliance better + if bad 'defect' proceed with investigations

“top down vs bottom up”

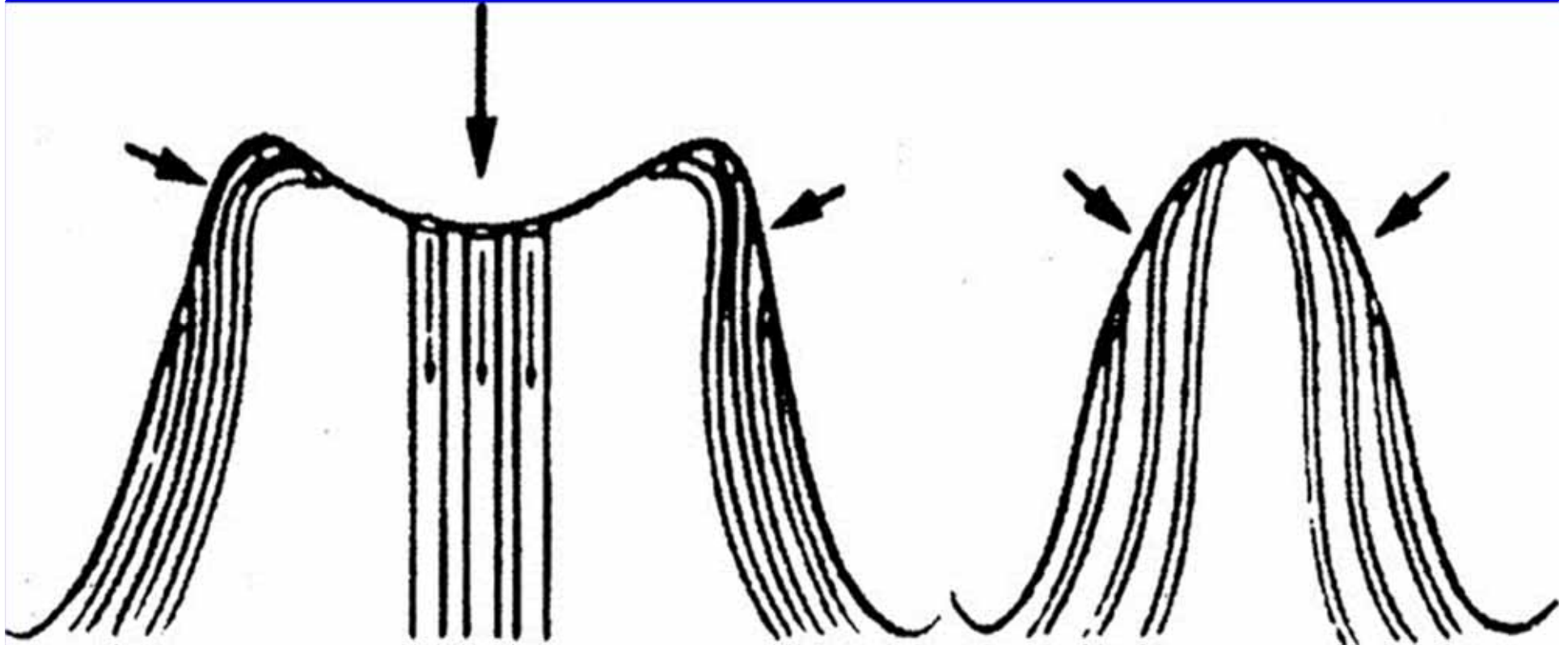
- DMSA vs MCUG
- MCUG
 - invasive
 - +/-1:2500 risk of Ca



Paquin AJ: **Ureterovesical anastomosis: The description and evaluation of a technique.** J Urol 1959;82:573

Establishing an algorithm

- Lancet - 1974 (Phillip Ransley)
 - Renal papillae and intrarenal reflux in the pig.



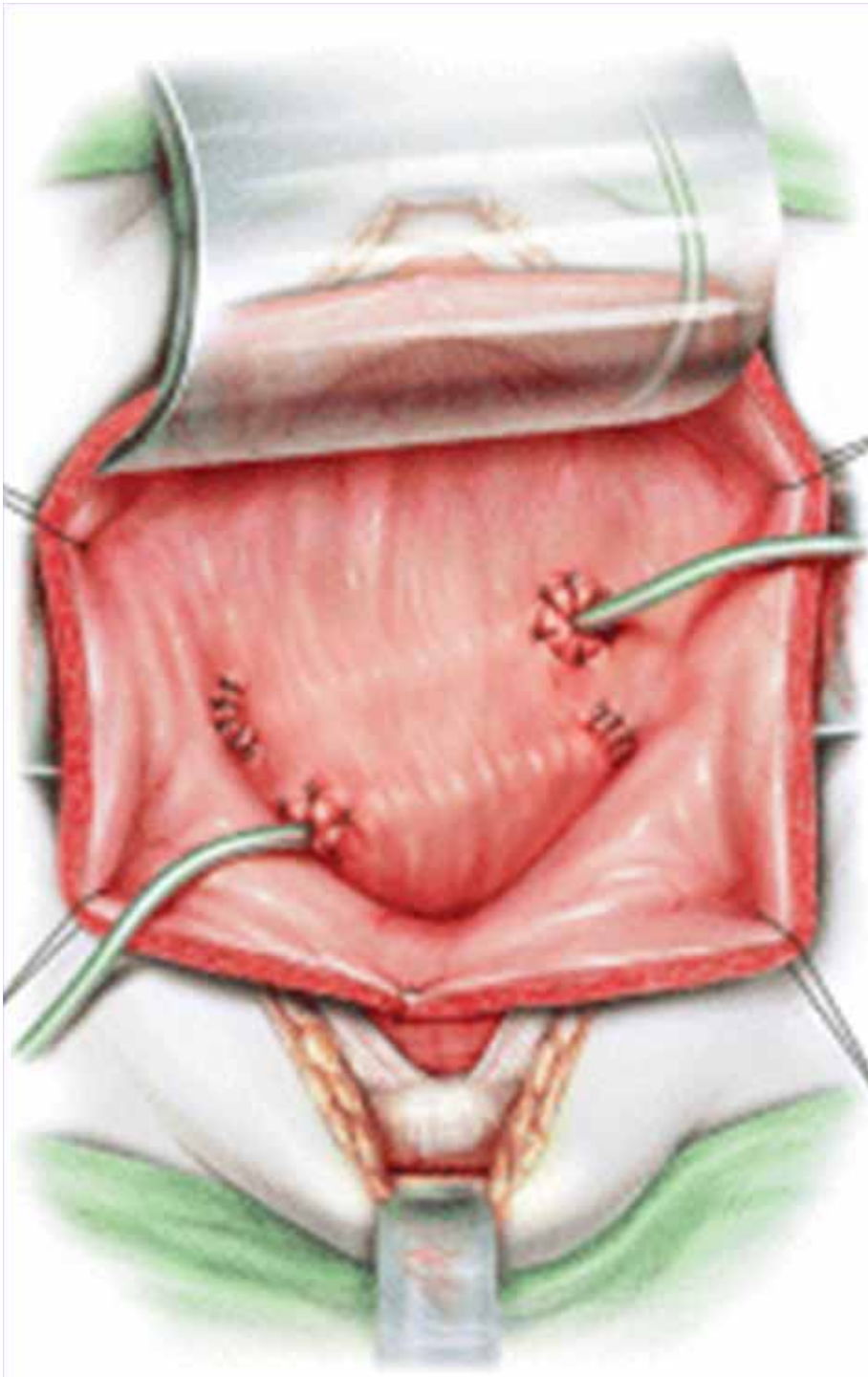
- Lancet - 1978
 - **VUR + UTI = Chronic pyelonephritis**

International Reflux Study

- Randomised **surgery vs prophylaxis**
- no differences in recurrent UTI & scarring, therefore prophylaxis adopted as first-line therapy
- **BUT:** Lower risk of febrile UTI in surgery group,
- **BUT** no placebo / observational only arm

International Reflux Study Committee: Medical versus surgical treatment of primary vesicoureteral reflux: a prospective international reflux study in children. J Urol 1981; 125: 277.

Duckett J, et al Results of a randomized clinical trial of medical versus surgical management of infants and children with grades III and IV primary vesicoureteral reflux (United States): the International Reflux Study in Children. J Urol 1992; 148:1667-73.



Standard algorithm

antibiotic prophylaxis recommended as first-line treatment,

surgery for severe or persistent cases

(AUA 1997)

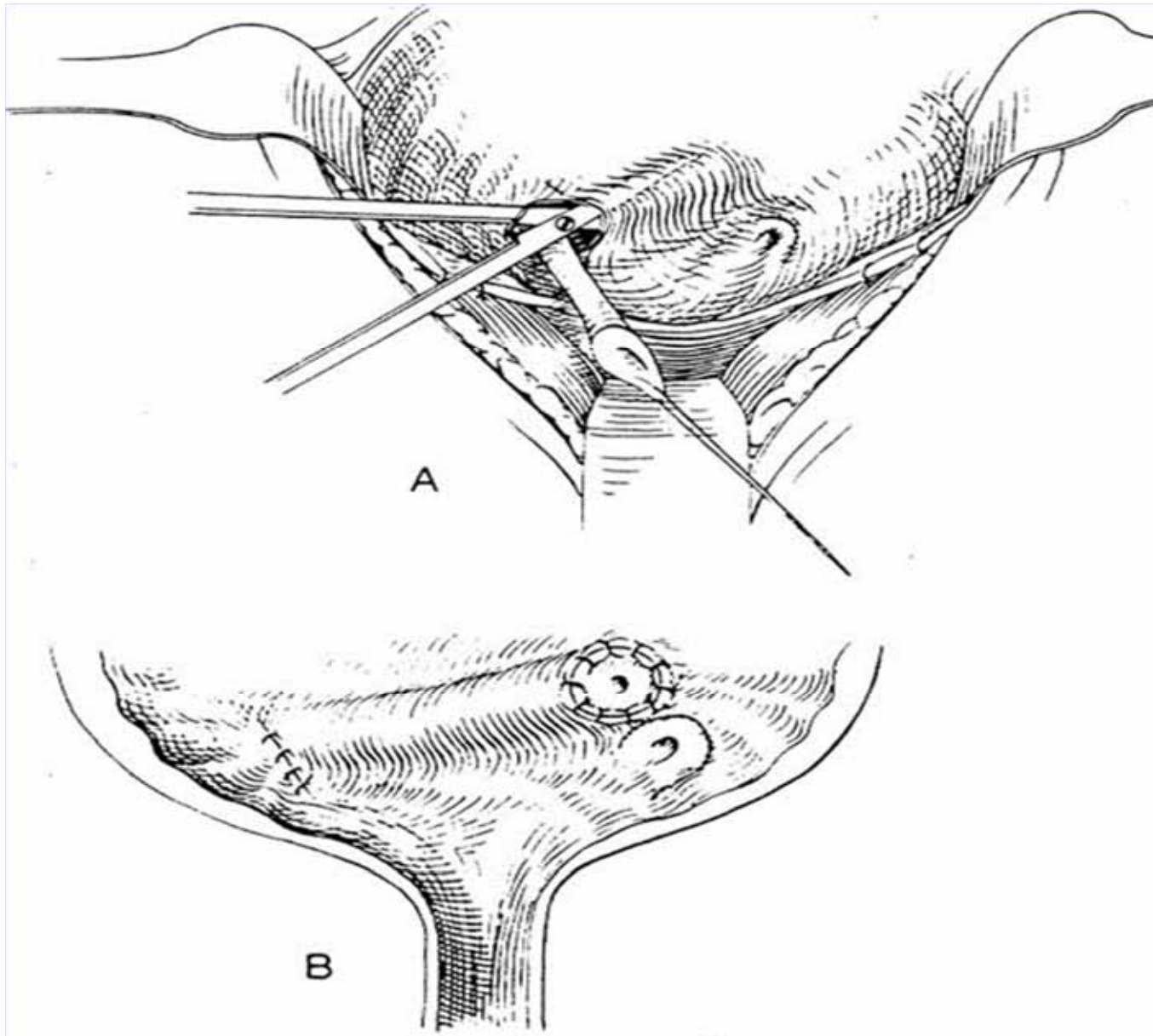
STING

- Unlike antibiotics, endoscopic treatment is a potential cure for VUR

1. O'Donnell B, Puri P. **Treatment of vesicoureteric reflux by endoscopic injection of Teflon.** Br Med J (Clin Res Ed). 1984 Jul 7

2. Aaronson IA *et al.* **Endoscopic treatment of reflux: Migration of Teflon to the lungs and brain.** Eur Urol 1993; 294–9

Cohen reimplant



Cohen SJ. **Ureterozystoneostomie. Eine neue Antirefluxtechnik.** Akt Urol 1975; 6: 1–7

Skepticism

4 recent trials showed no reduction in UTI's with prophylaxis

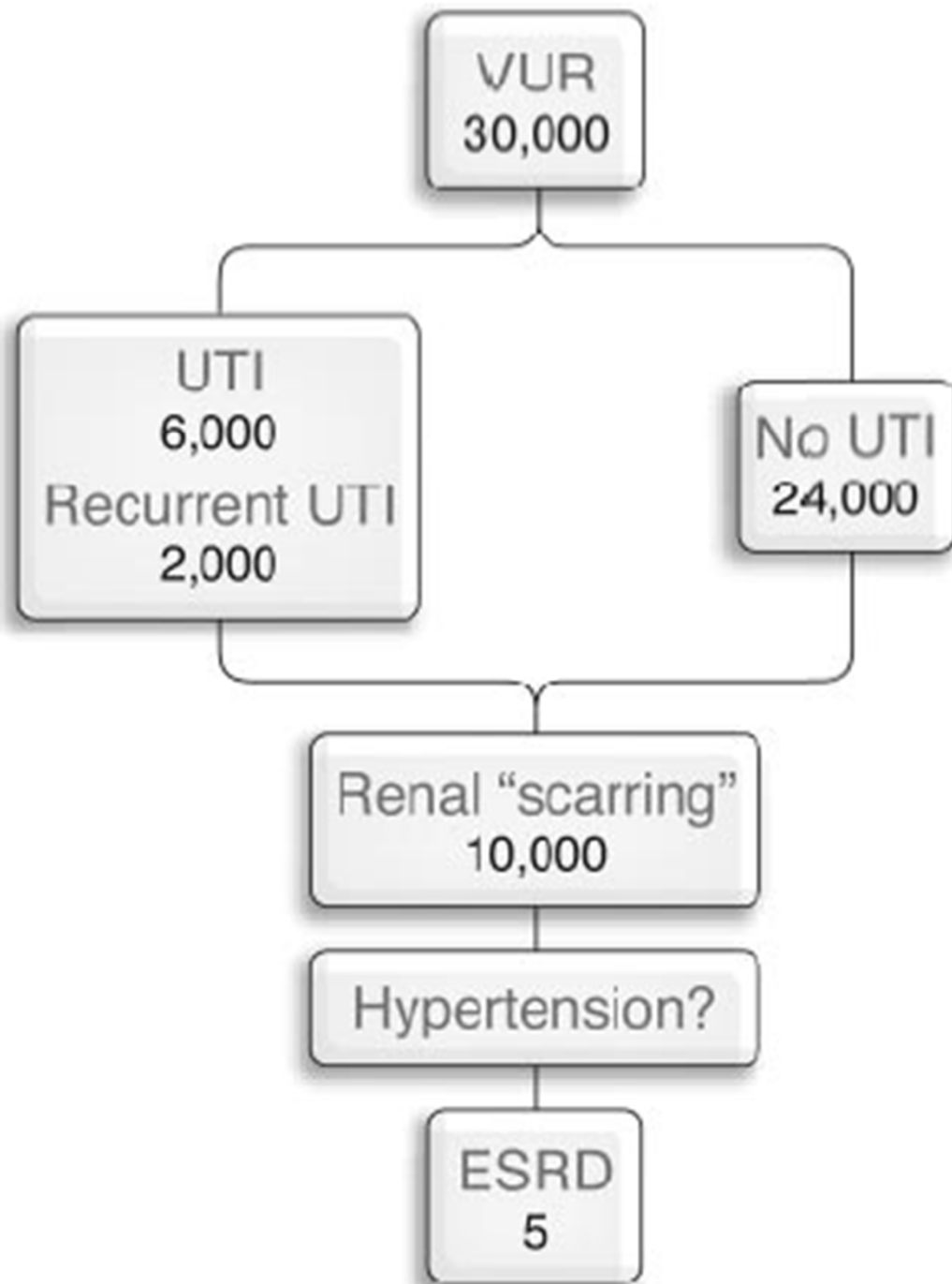
1. **Garin EH. Clinical significance of primary vesicoureteral reflux and urinary antibiotic prophylaxis after acute pyelonephritis: a multicenter, randomized, controlled study.** Pediatrics 2006;117:626-32.
2. **Idres N, et al. Antibiotic prophylaxis for the prevention of recurrent urinary tract infection in children with low grade vesicoureteral reflux: results from a prospective randomized study.** J Urol 2008;179:674-9.
3. **Peratoner L, et al. Is antibiotic prophylaxis in children with vesicoureteral reflux effective in preventing pyelonephritis and renal scars? A randomized, controlled trial.** Pediatrics 2008;121(6):e1489-e1494.
4. **Zucchetta P, et al. Prophylaxis after first febrile urinary tract infection in children? A multicenter, randomized, controlled, noninferiority trial.** Pediatrics 2008;122:1064-71.

Cochrane review

1. “It is uncertain whether the treatment of children with VUR confers clinically important benefit.”
2. “The additional benefit of surgery over antibiotics alone is small at best...”

Interventions for primary vesicoureteric reflux.

Cochrane Database Syst Rev. 2007 Jul 18;(3)



Natural history of VUR in 1 million children (assuming 3% prevalence)

Estimated \$5 million to prevent 1 ESRD

McIlroy PJ et al **Outcome of primary vesicoureteric reflux detected following fetal renal pelvic dilatation.** *J Paediatr Child Health* 36:569, (2000)

Questions

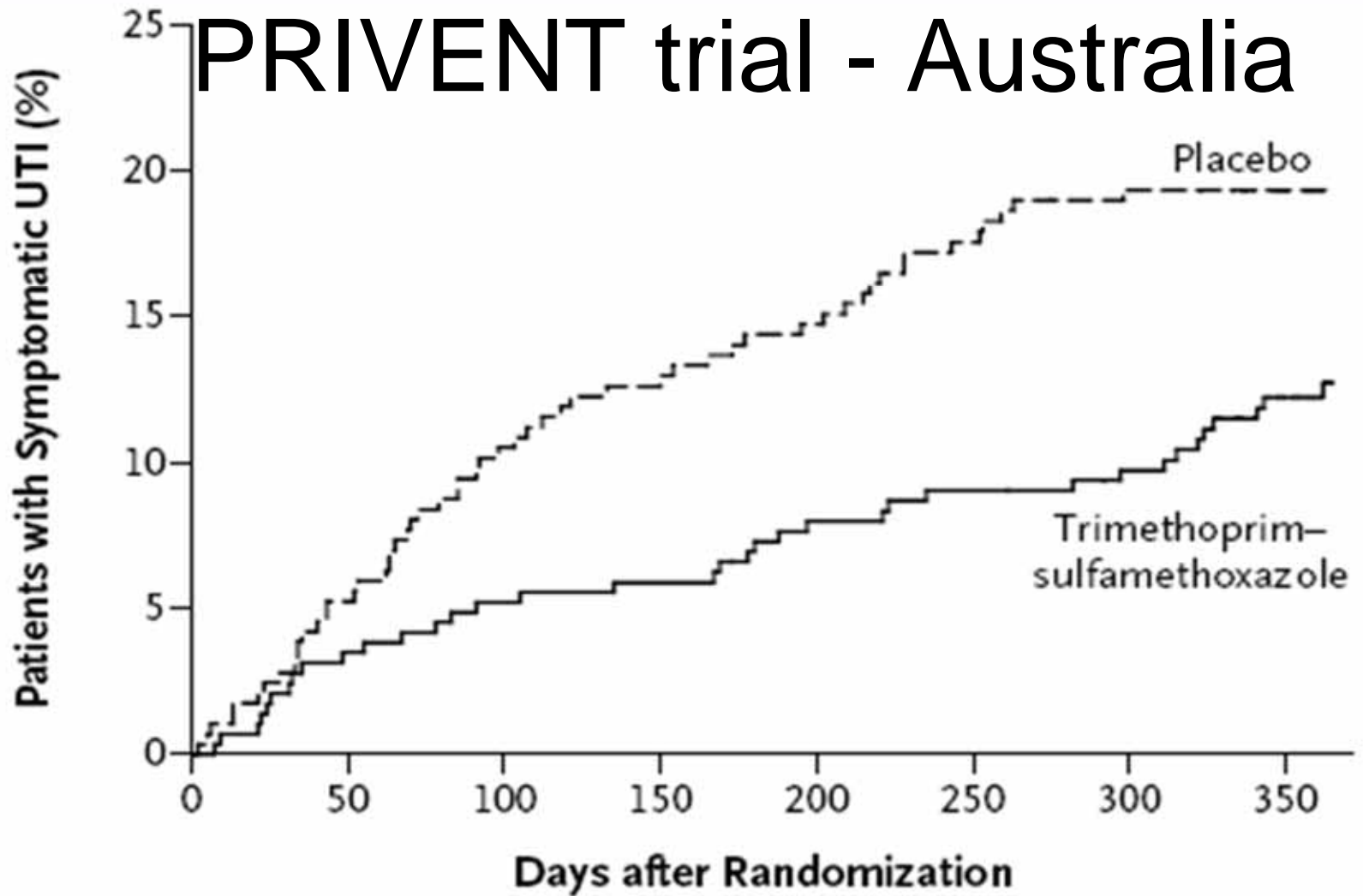
1. Is VUR significant enough in the etiology of UTIs and renal scarring to warrant detection and treatment?
2. Can we better define the minority of children in whom reflux is significant to avoid overtreating the rest?

PRIVENT trial - Australia

- 600 kids (10yr!) – randomised placebo vs antibiotics
- (mean 14mo, 64% F, 42% VUR)
- 6% reduction in the risk of febrile UTI, (19% vs 13%)
- higher grades of VUR 6,8% vs no VUR 1,8%
- **Prophylaxis is modestly effective**
- **need 15 children on prophylaxis to prevent 1 febrile UTI @ 1yr!**

Craig JC et al. **Antibiotic prophylaxis and recurrent urinary tract infection in children.** N Engl J Med 2009;361:1748-59.

PRIVENT trial - Australia



No. at Risk

Antibiotic	288	278	273	271	264	261	257	216
Placebo	288	271	254	248	242	232	225	208

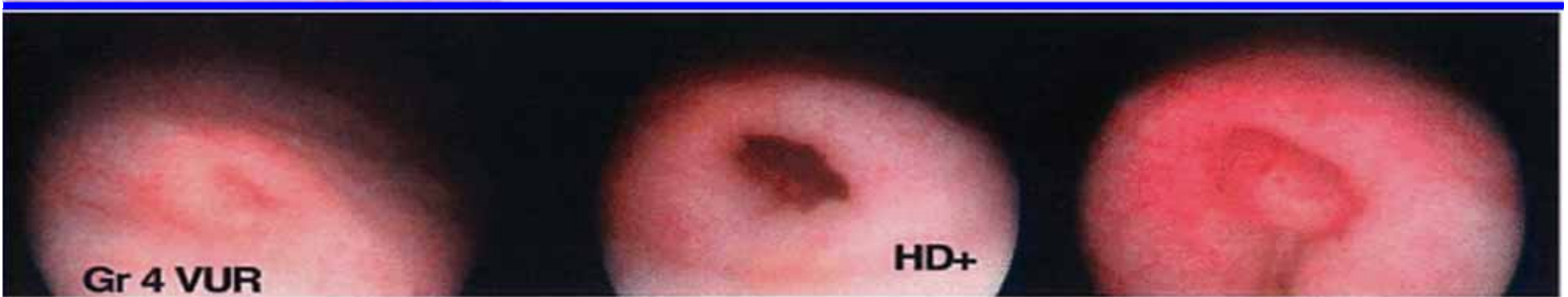
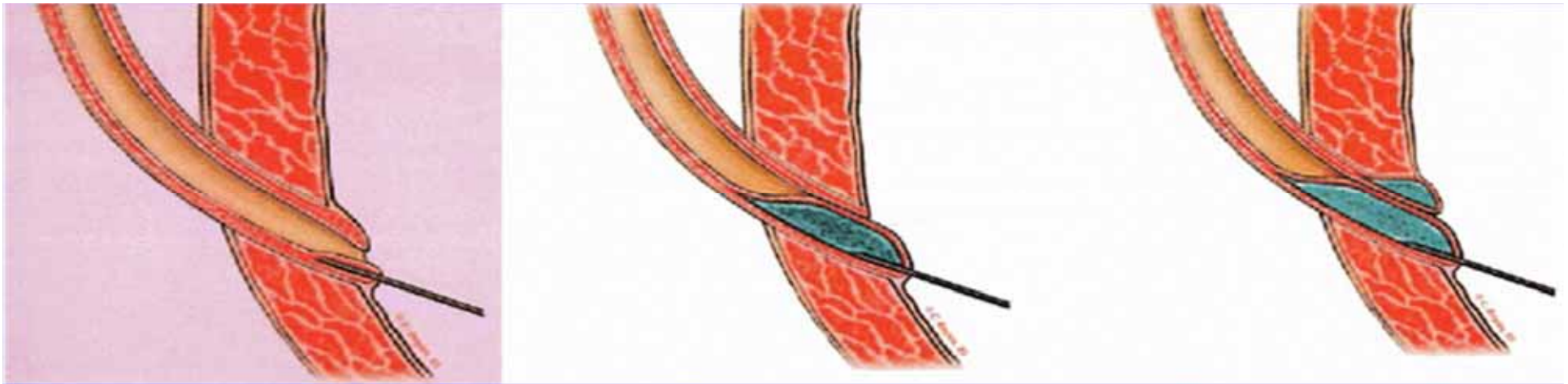
Figure 2. Time to Symptomatic Urinary Tract Infection (UTI) (Primary Outcome).

Swedish reflux study

600 patients (2/3 girls, dilating VUR)
randomised

	Resolution @ 2 yrs	Recurrence UTI
Prophylaxis	40%	19%
Surveillance	48%	57% (p=0,0002)
STING	71% (p=0,0002)	23%

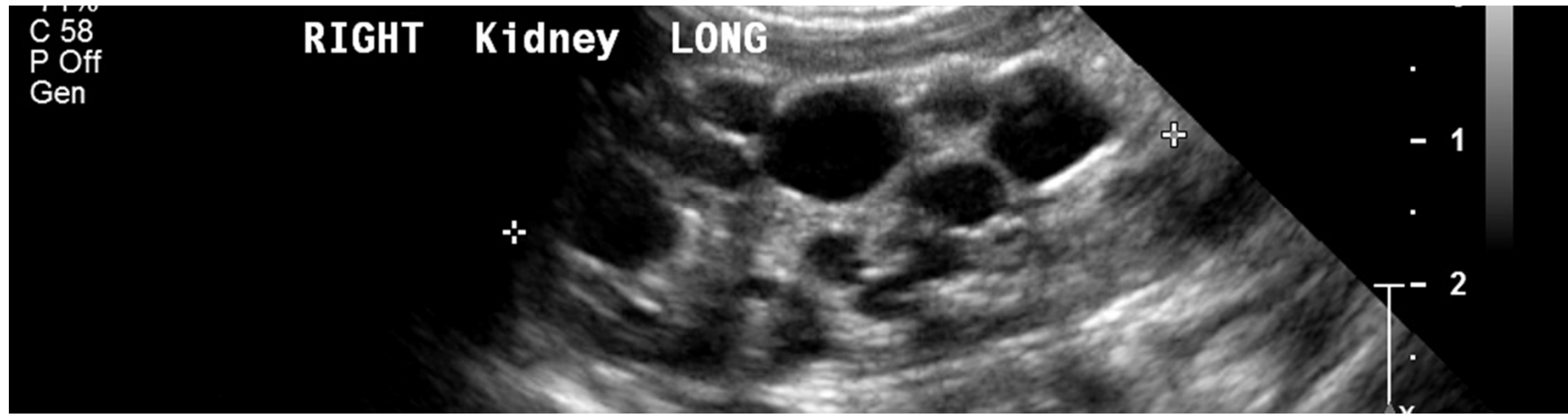
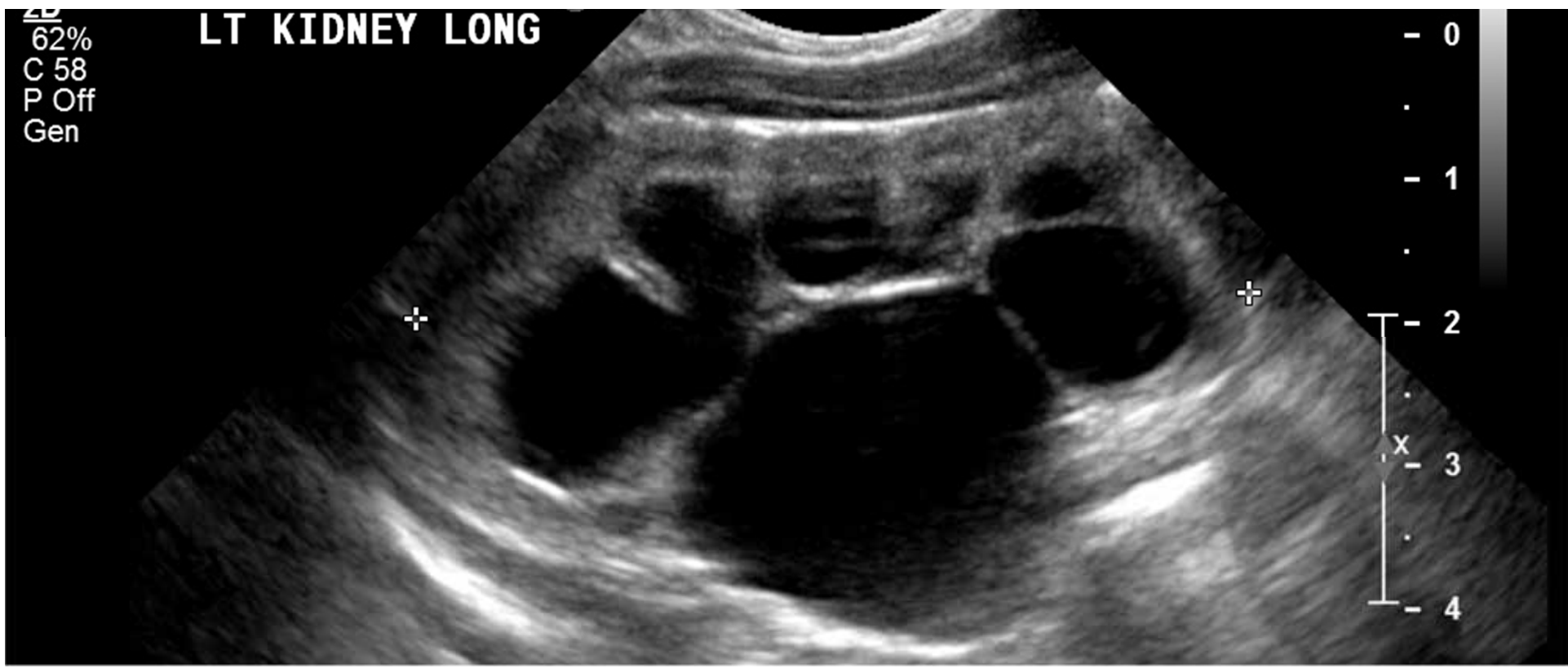
Holmdahl G, **The Swedish Reflux Trial in Children: II. Vesicoureteral Reflux Outcome.** J Urol. 2010 May 18.



Modified STING: 1) Hydrodistention 2) intraureteric inject
3) Increased vol. Kirsch et al JUROL, 171:2004

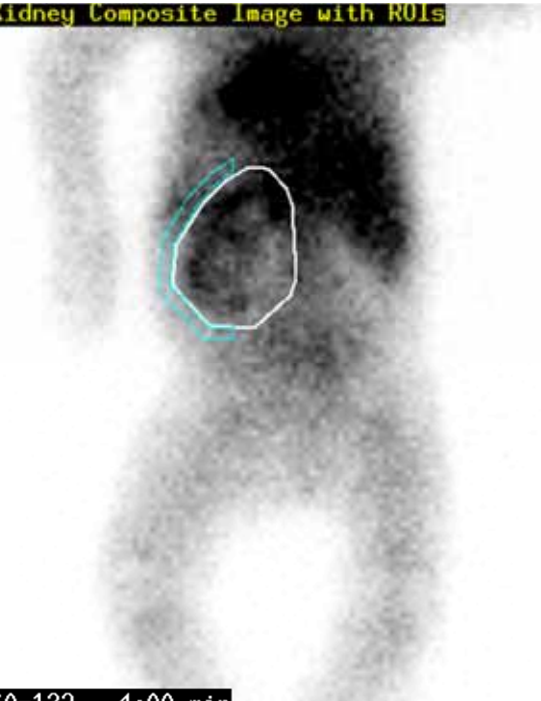
Summary

- Most VUR resolves, 30% have recurrent UTI, few will have major renal sequelae
- Detecting VUR using VCUG after UTI should be abandoned
- Trial data that supports the use of prophylactic antibiotics, reimplantation surgery to prevent recurrent UTI in children with VUR is weak and inconclusive.

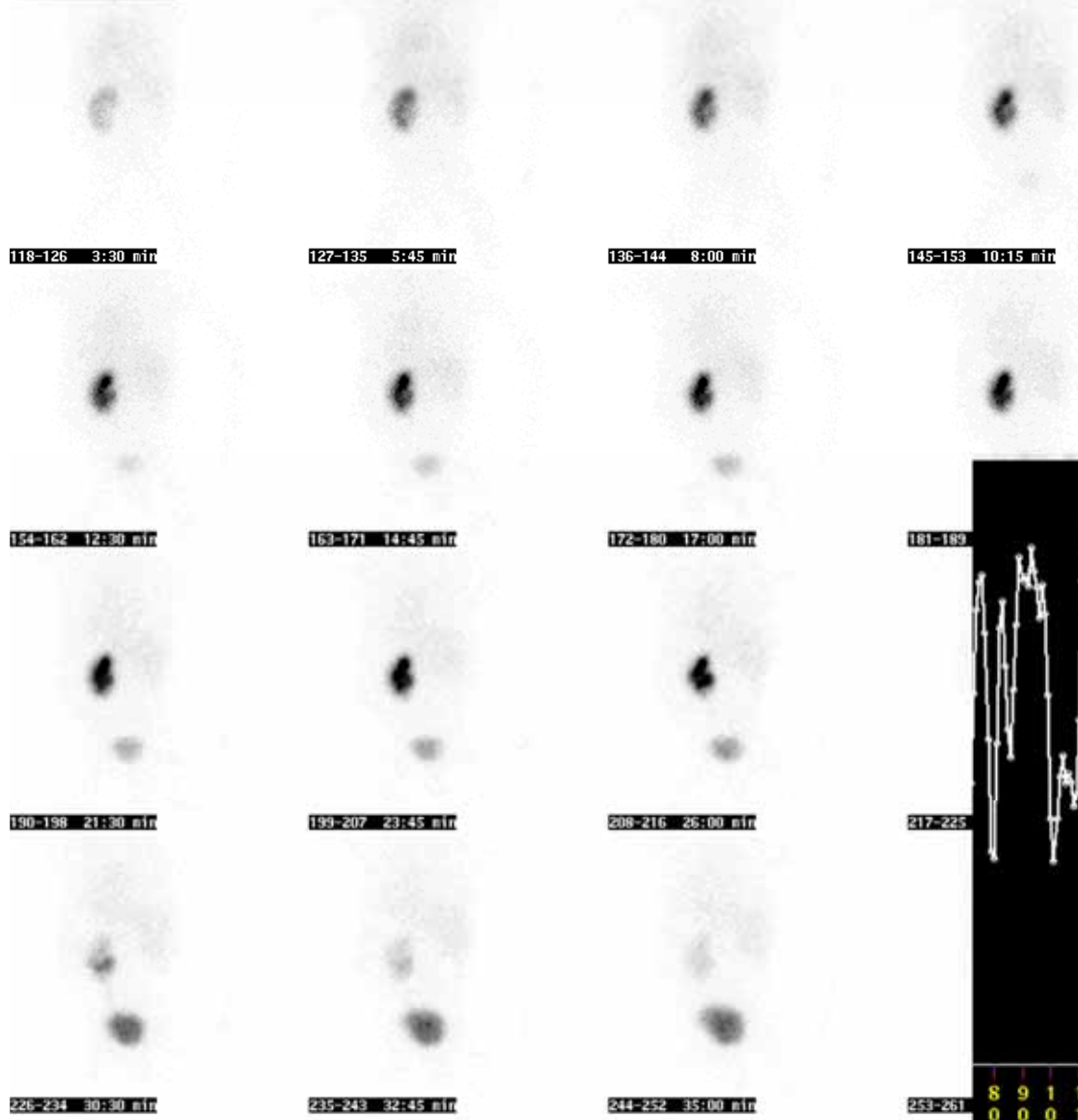


Mvunge I 117260836 3rd April 20

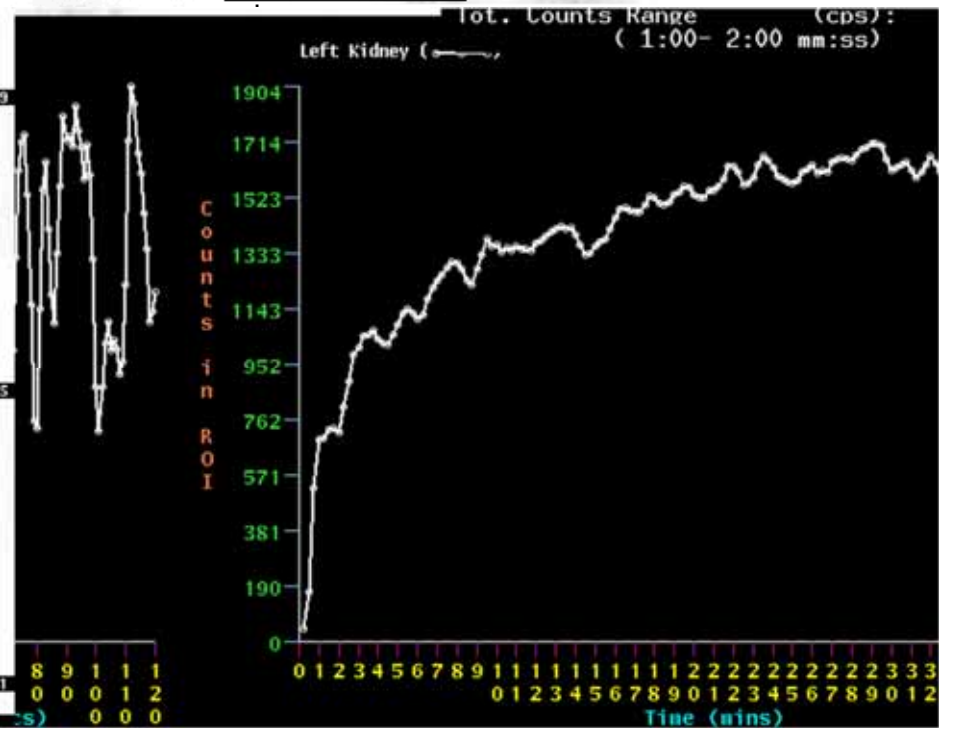
Kidney Composite Image with ROIs

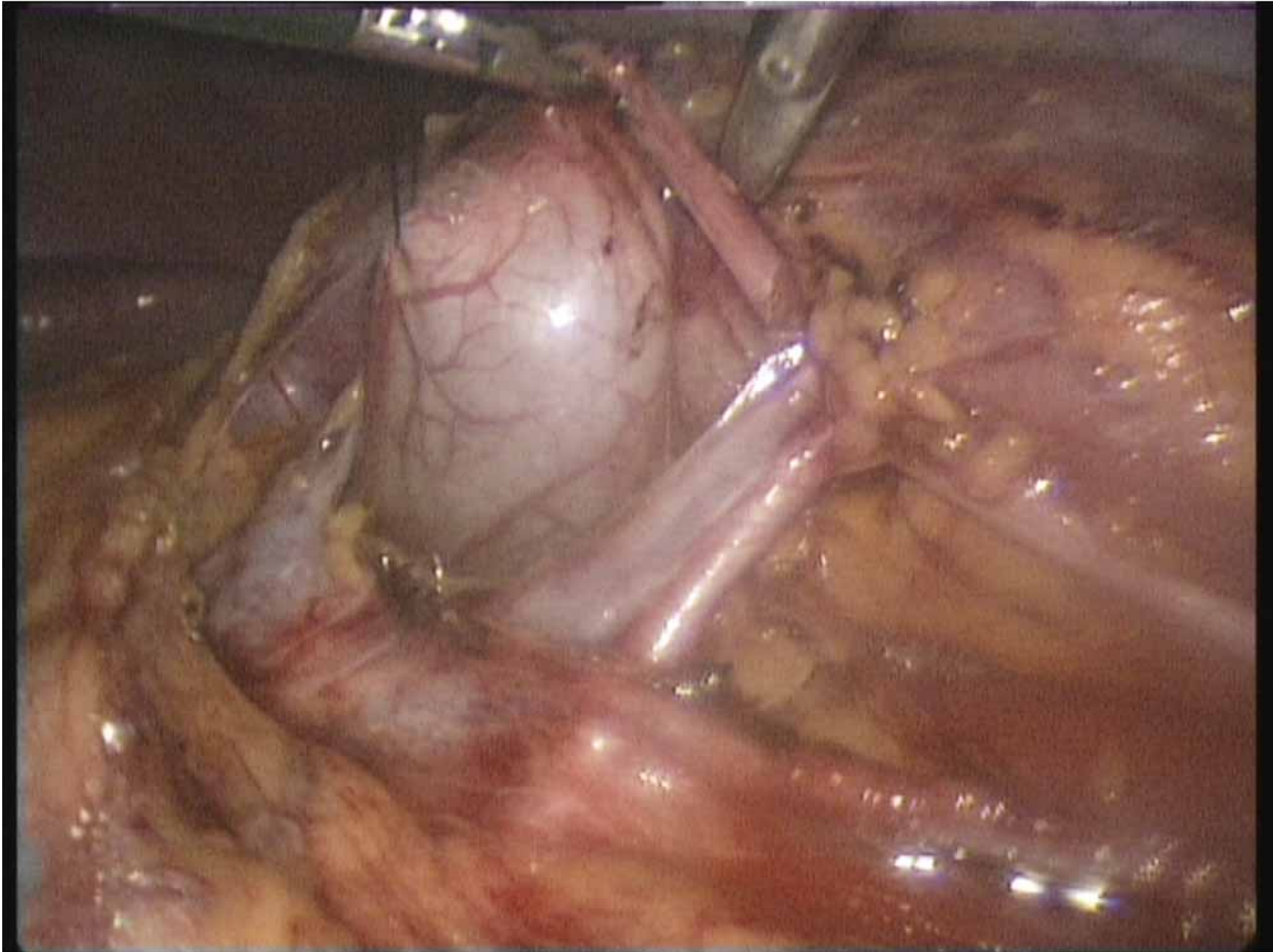


Clearance Phase - Mvunge, I 117260836posterior Posterior



60-132 4:00 min





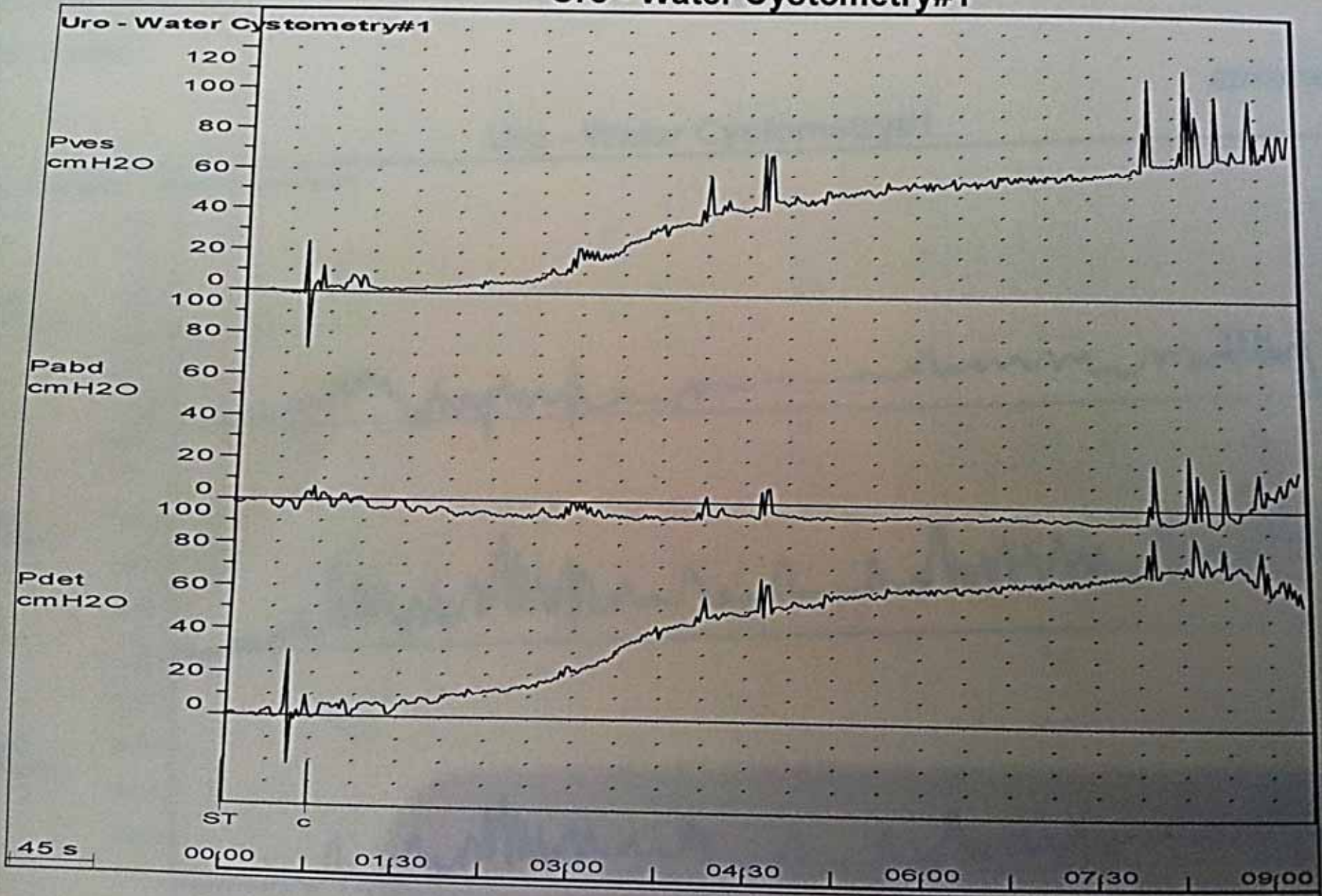






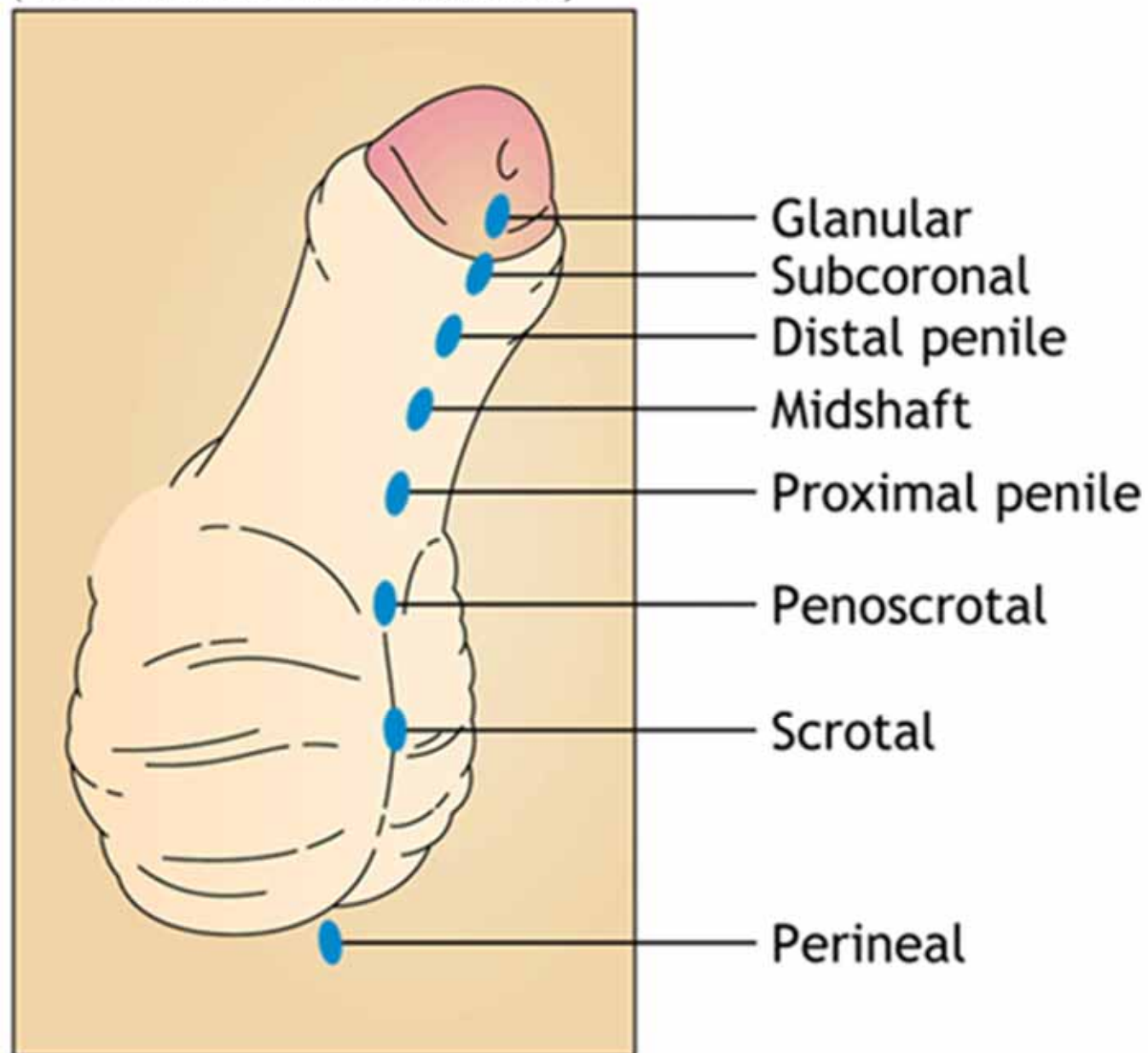
- 10 year old boy with MMC, UTIs and incontinence

Uro - Water Cystometry#1



Types of hypospadias

(shows where the urine comes out)



Enuresis

