

MALFUNCTIONS OF THE GENITOURINARY SYSTEM

Richard Schlussek, M.D.
Assistant Professor
Pediatric Urology



Morgan Stanley

**Children's Hospital
of New York-Presbyterian**

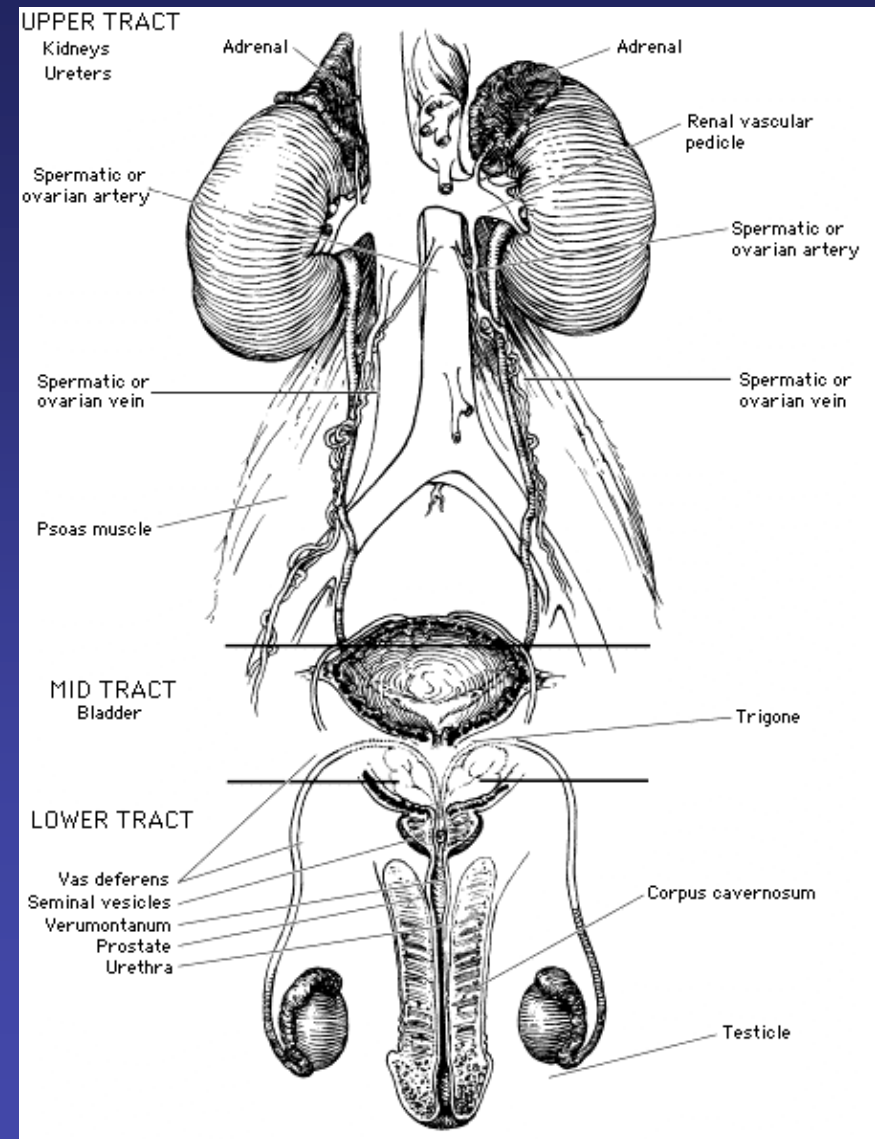
Columbia University Medical Center

MALFUNCTIONS OF THE GENITOURINARY SYSTEM

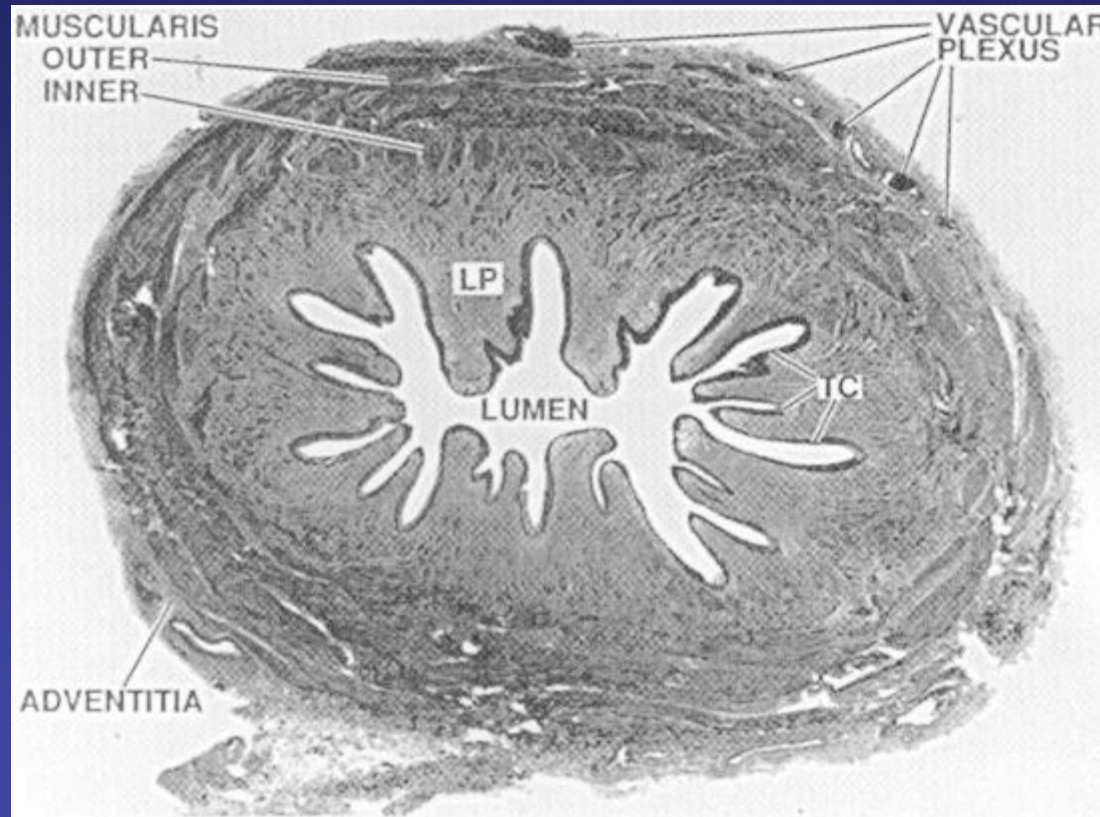
- **Ureteropelvic junction obstruction**
- **Megaureter**
- **Reflux**
- **Ectopic ureter**
- **Undescended testis**
- **Hypospadias**
- **Intersex**

Uretero Pelvic Junction (UPJ) obstruction

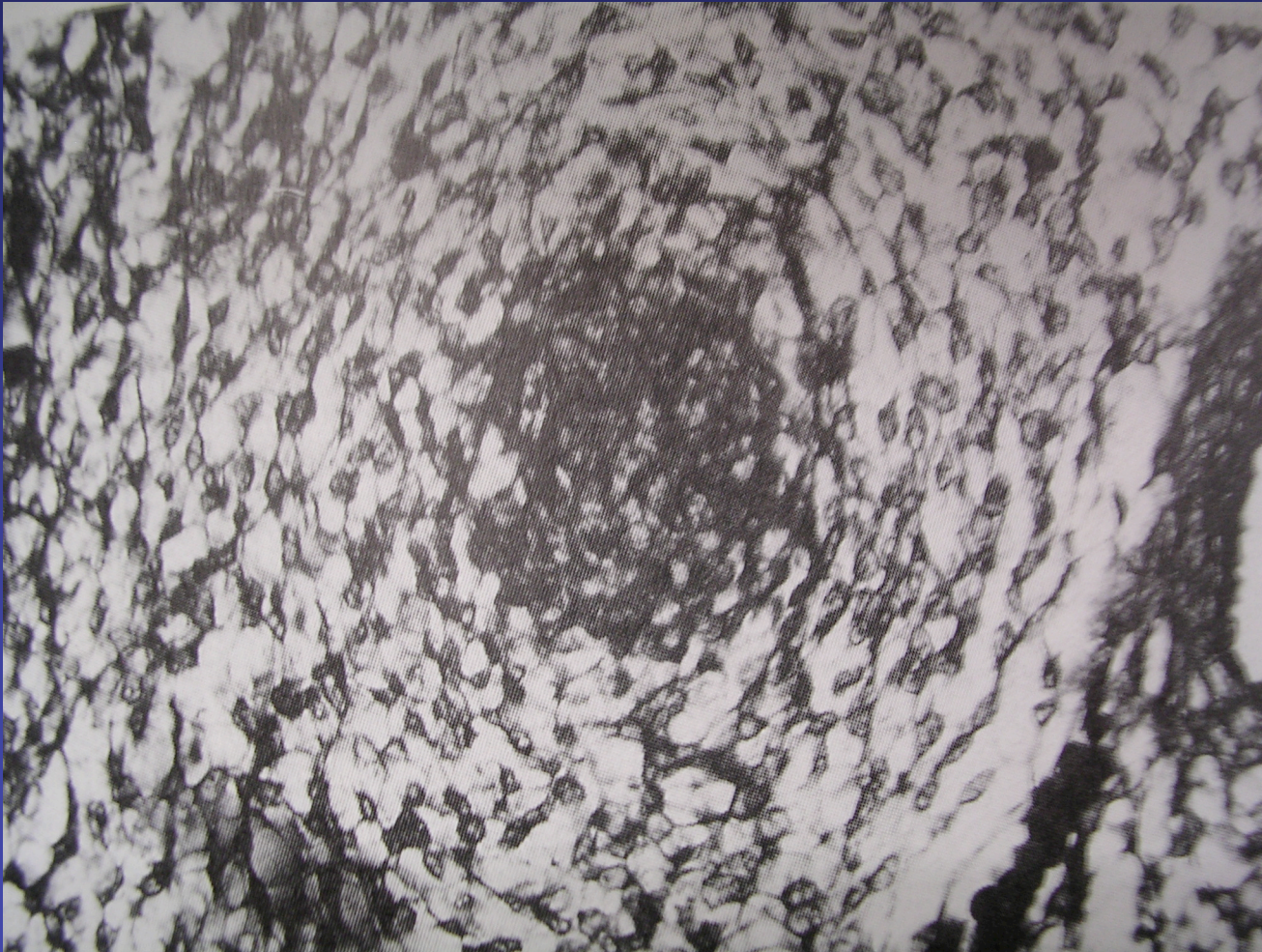
- Normal
 - Lumen develops
 - Muscular peristalsis
- Abnormal
 - Lumen occluded
 - No peristalsis



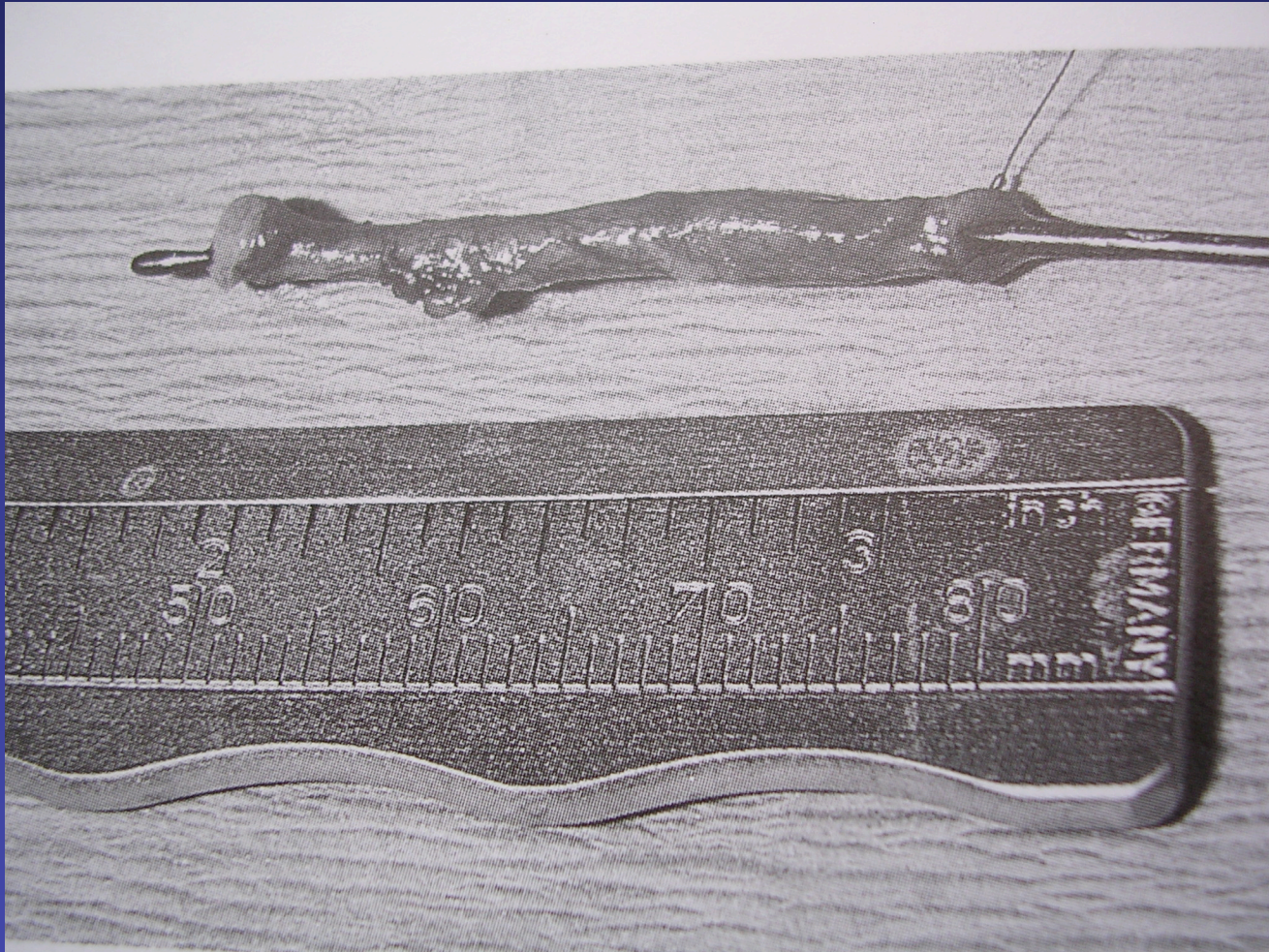
Uretero Pelvic Junction (UPJ) obstruction



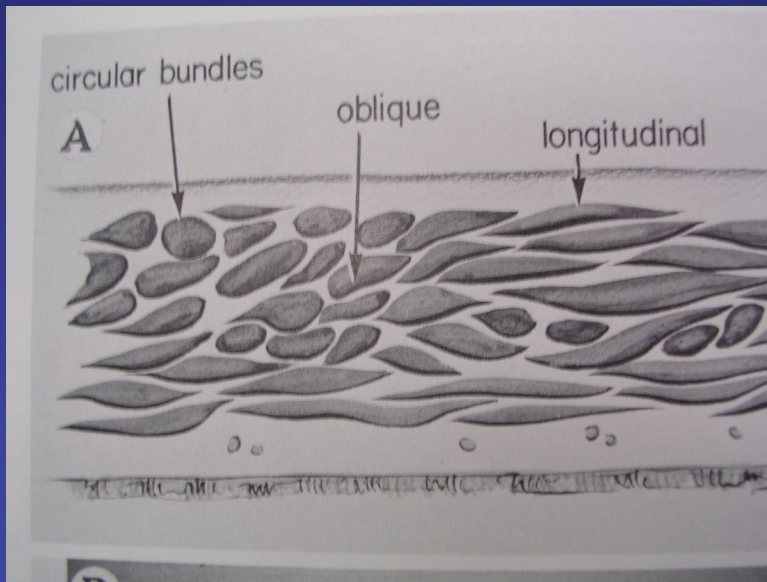
Uretero Pelvic Junction (UPJ) obstruction



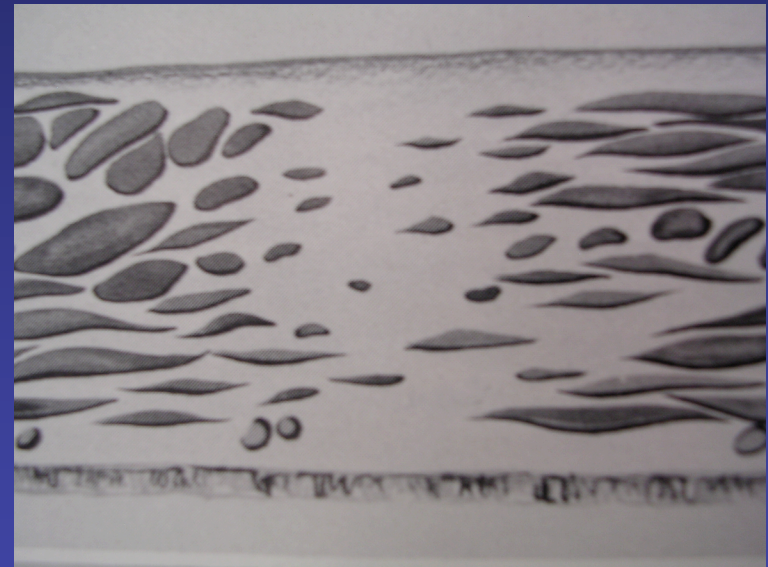
Uretero Pelvic Junction (UPJ) obstruction



Uretero Pelvic Junction (UPJ) obstruction

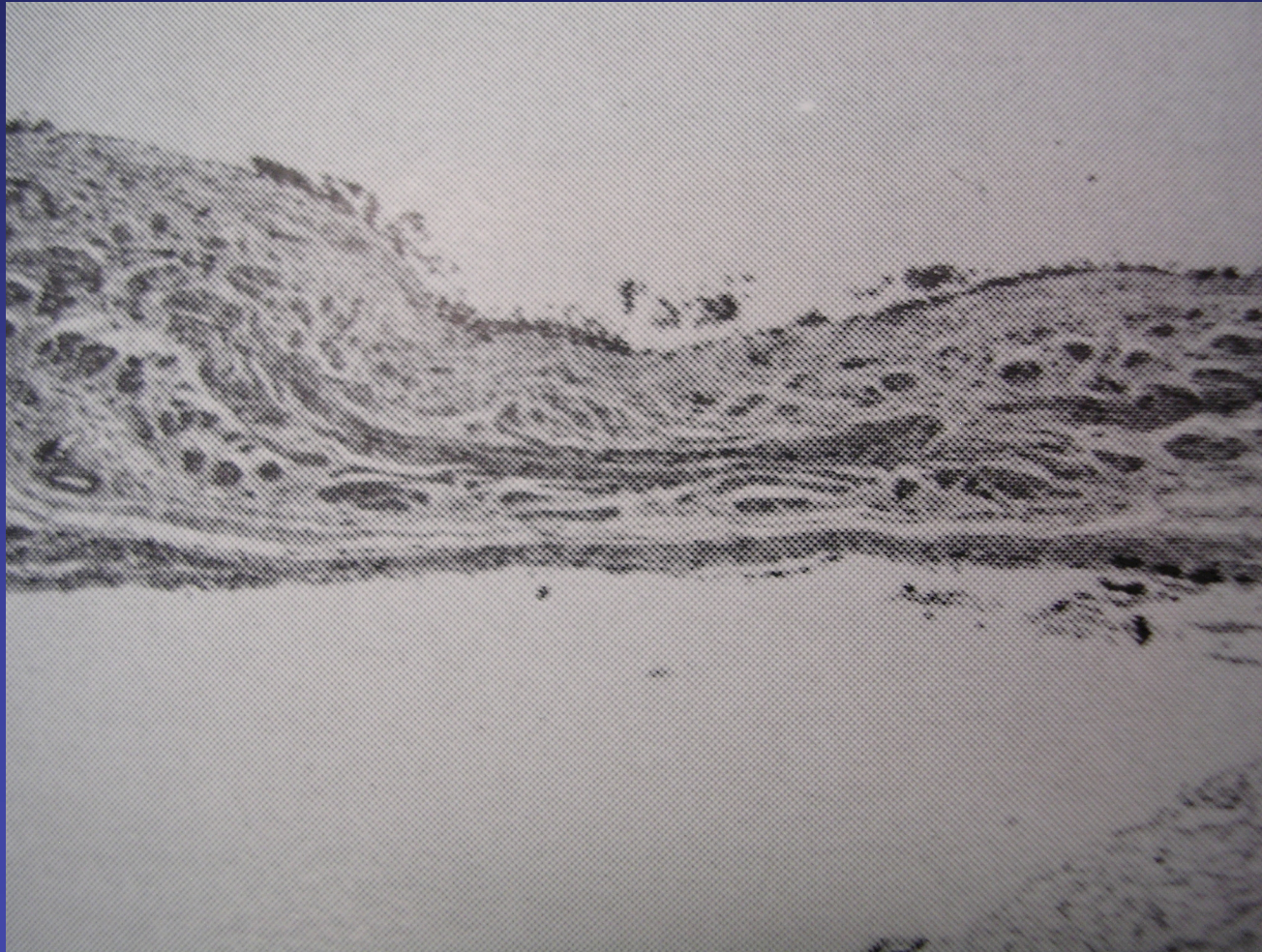


NORMAL



**FUNCTIONAL
OBSTRUCTION**

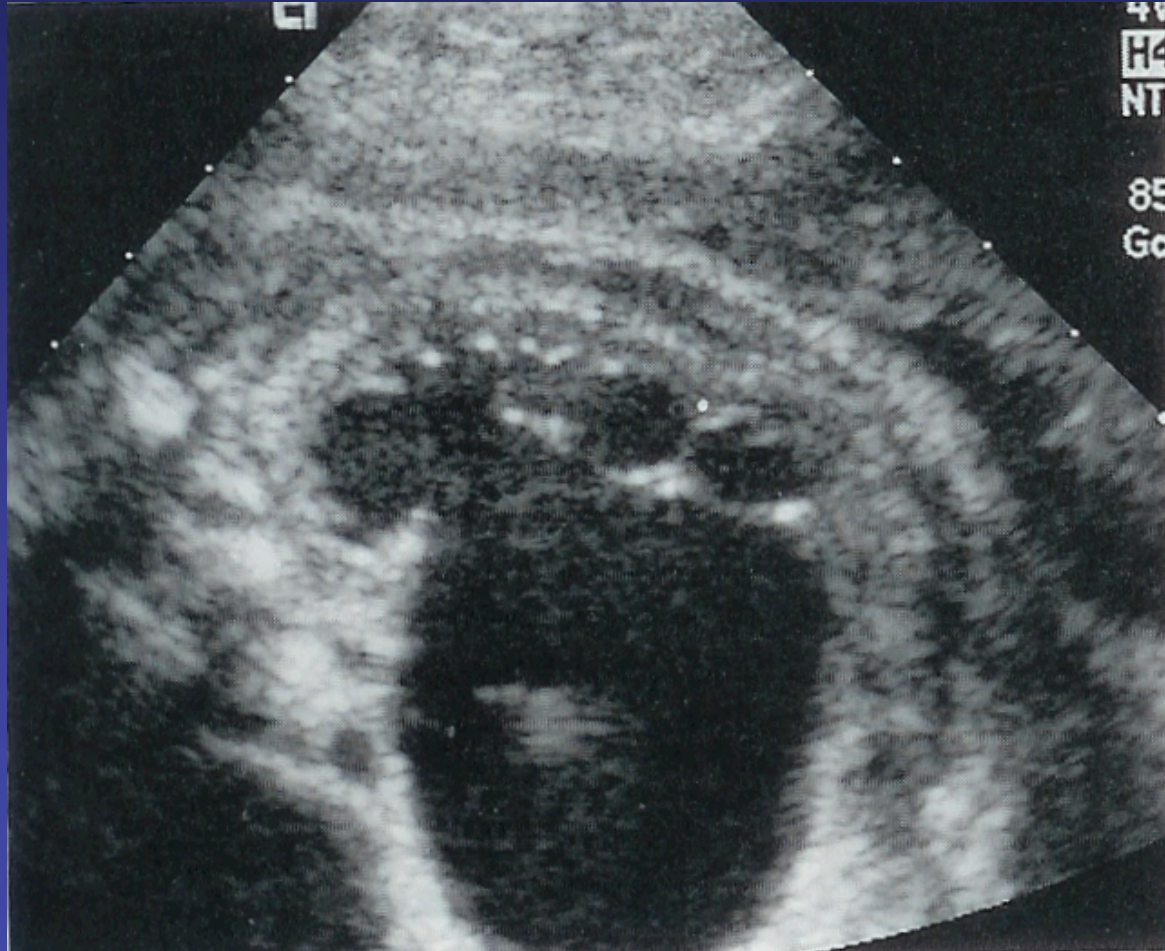
Uretero Pelvic Junction (UPJ) obstruction



Uretero Pelvic Junction (UPJ) obstruction



Uretero Pelvic Junction (UPJ) obstruction



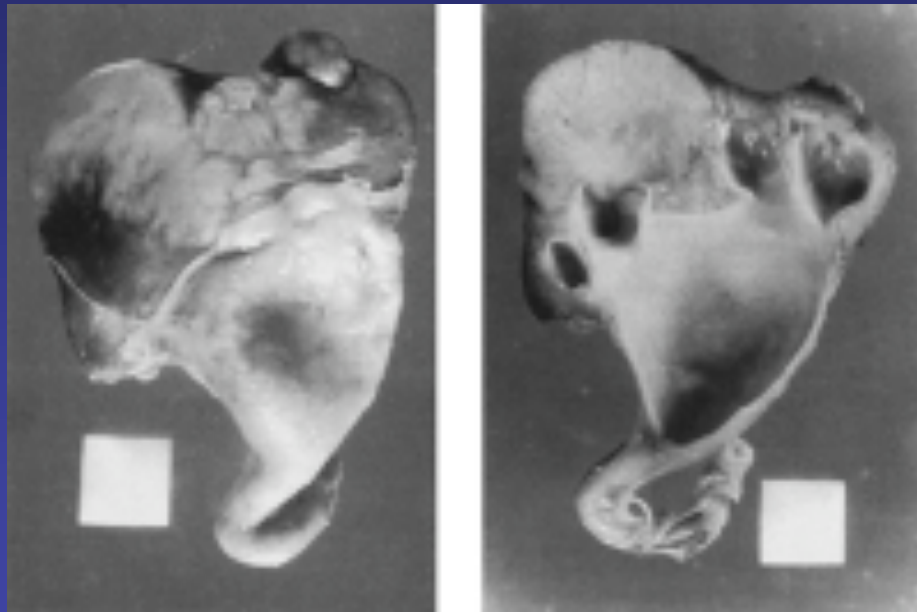
Uretero Pelvic Junction (UPJ) obstruction



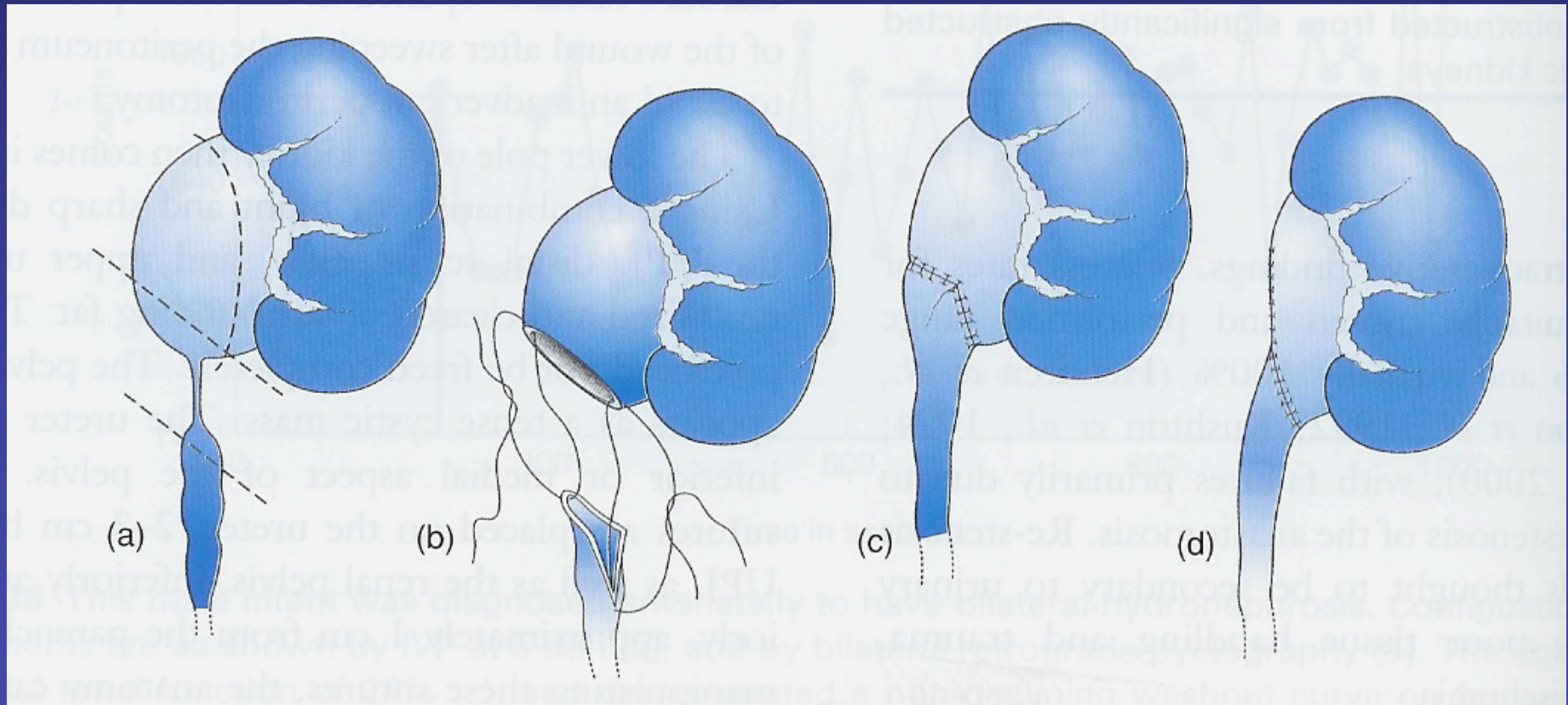
Uretero Pelvic Junction (UPJ) obstruction

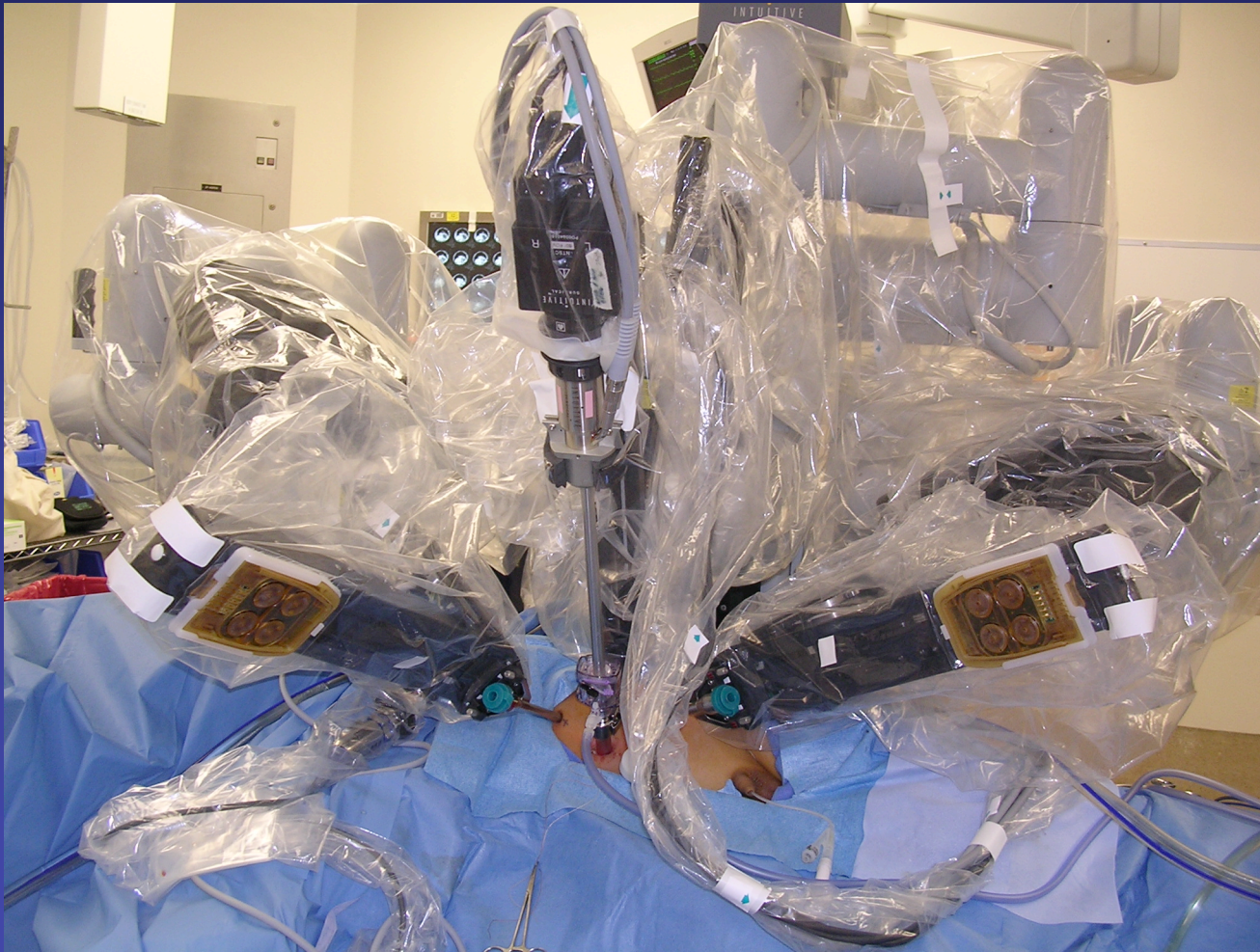
- **Consequences**
 - **Abdominal pain**
 - **Infection**
 - **Decreased renal function**

Uretero Pelvic Junction (UPJ) obstruction



Uretero Pelvic Junction (UPJ) obstruction



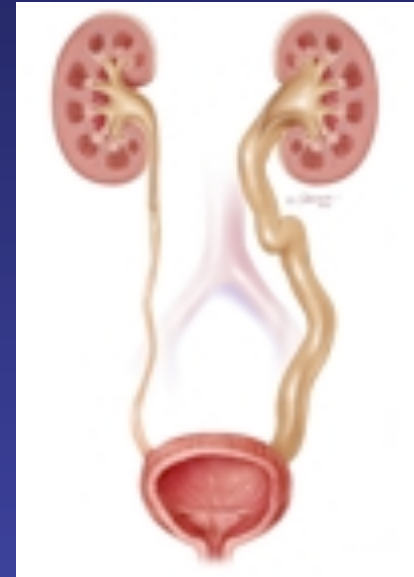


I Robot !!

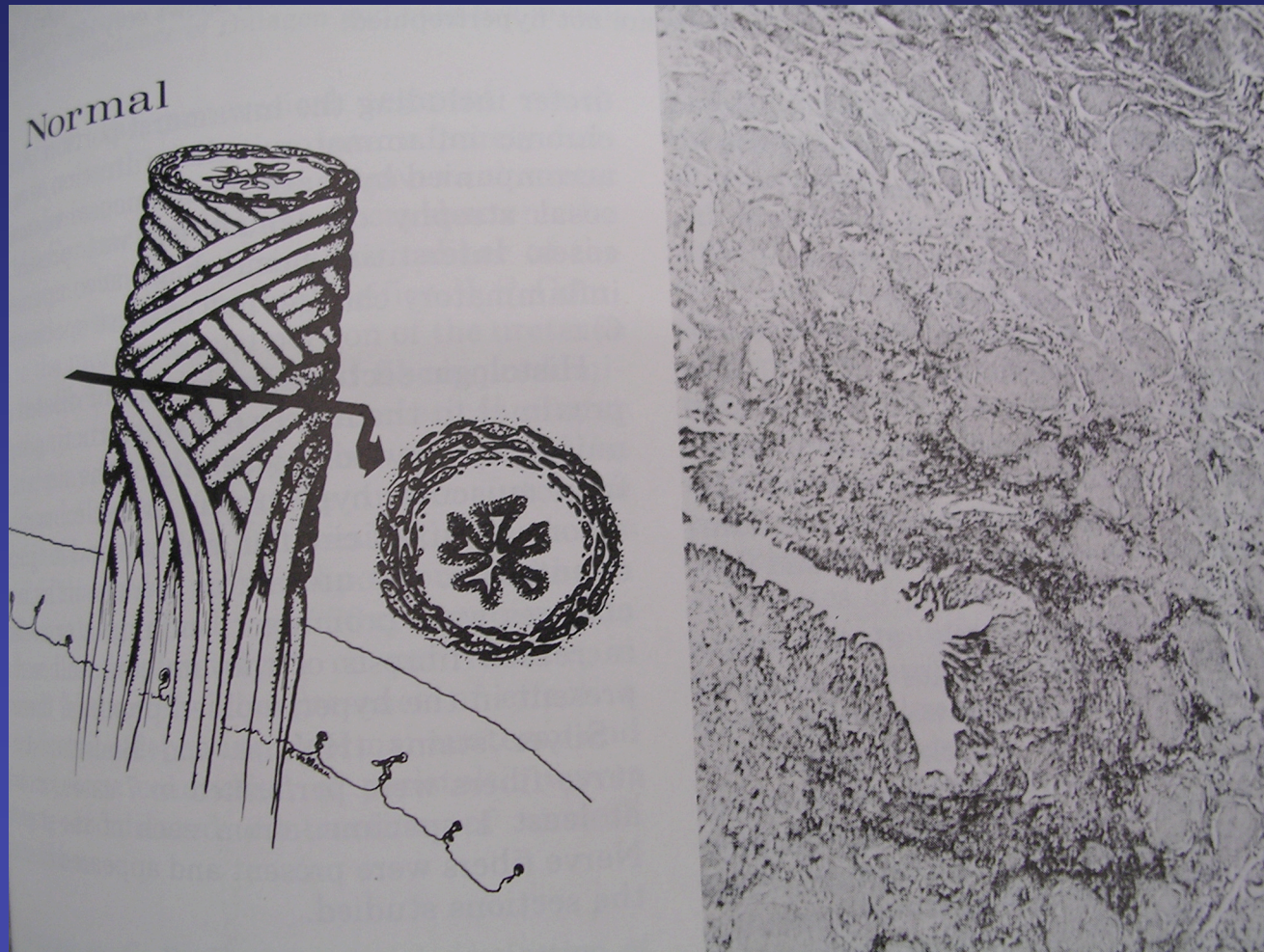


Megaureter

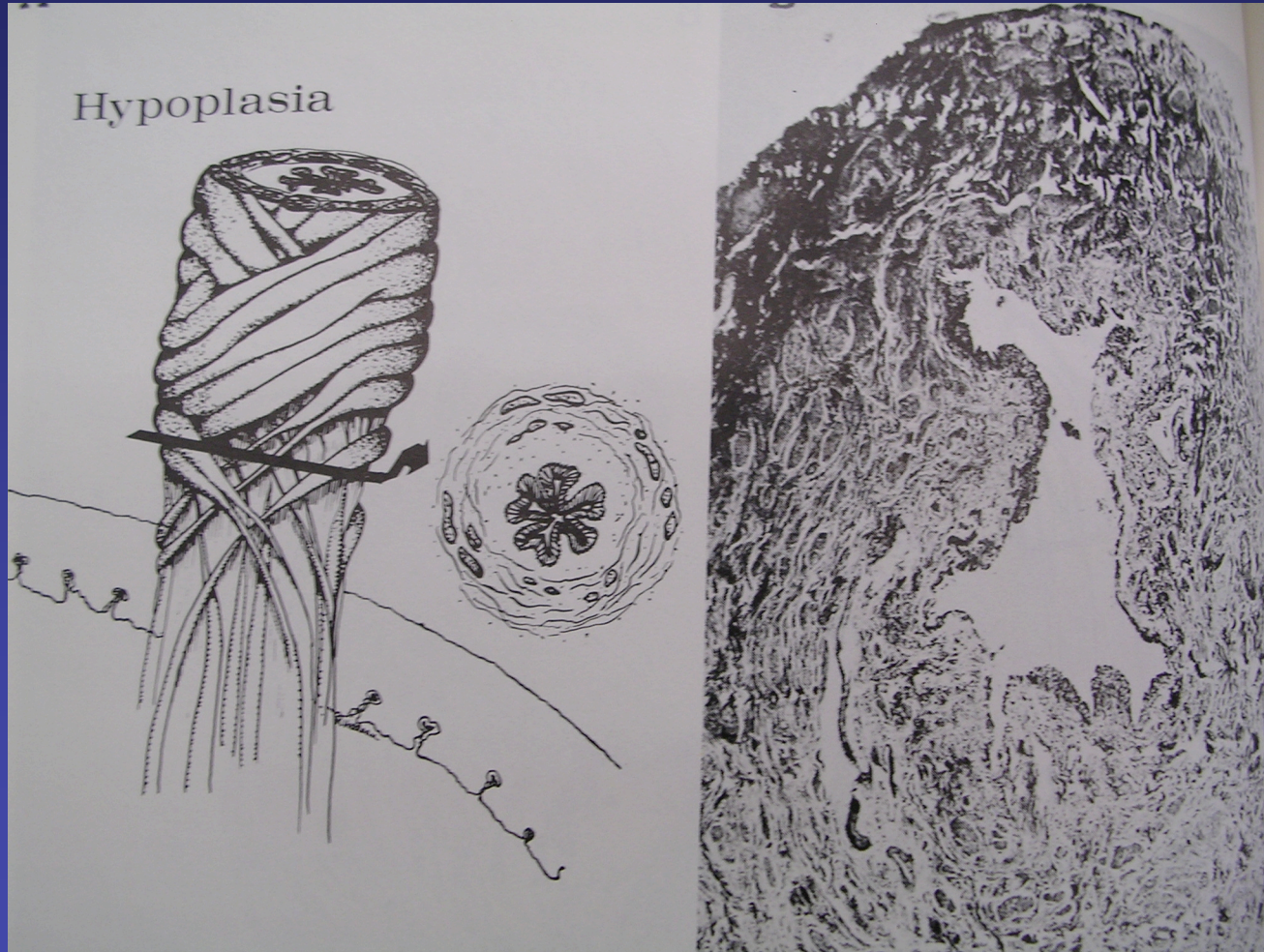
- **Normal**
 - Patent lumen
 - Muscular peristalsis
- **Abnormal**
 - Obstructing membranes
 - Lack of musculature, aperistaltic



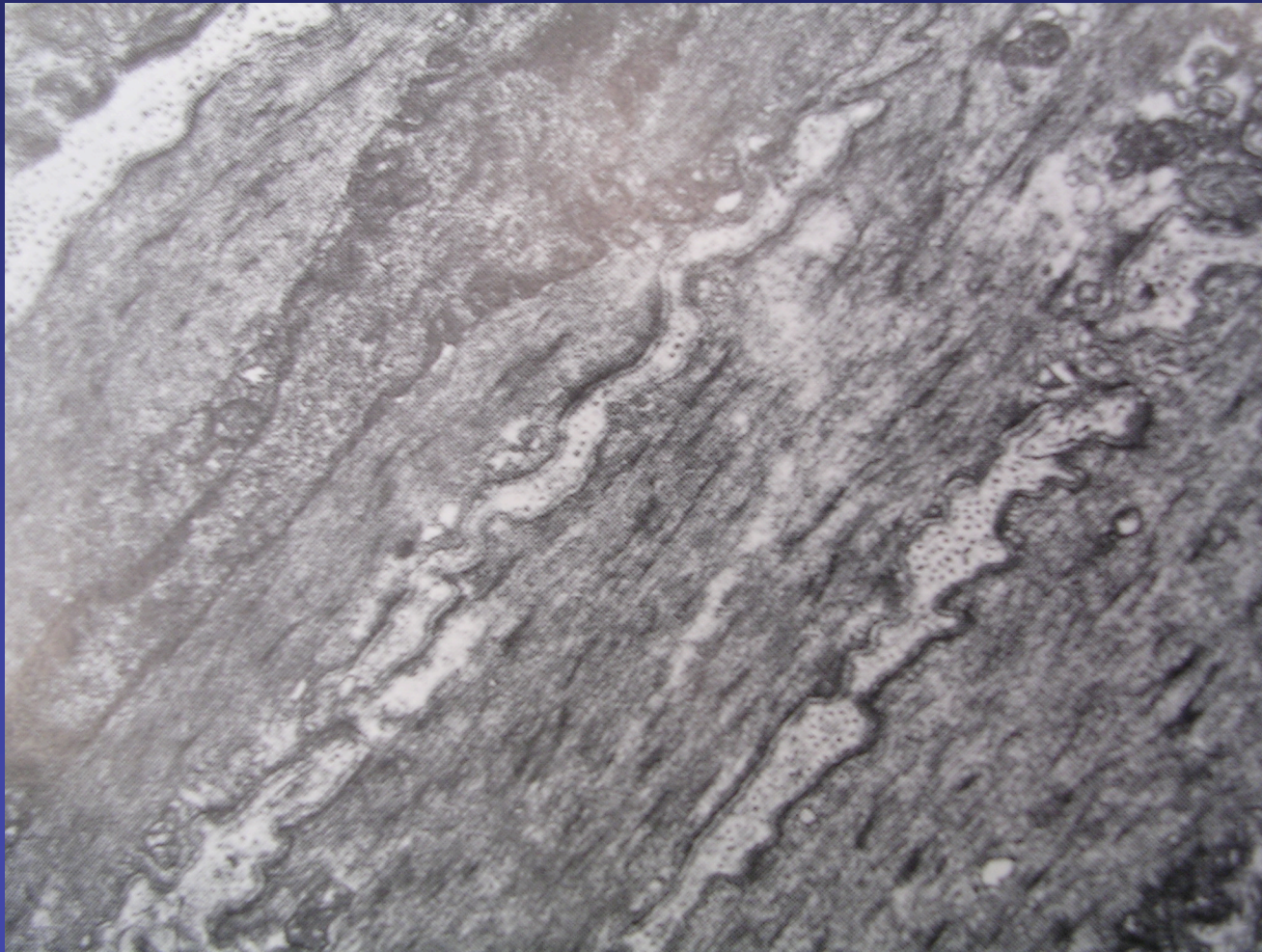
Megaureter



Megaureter



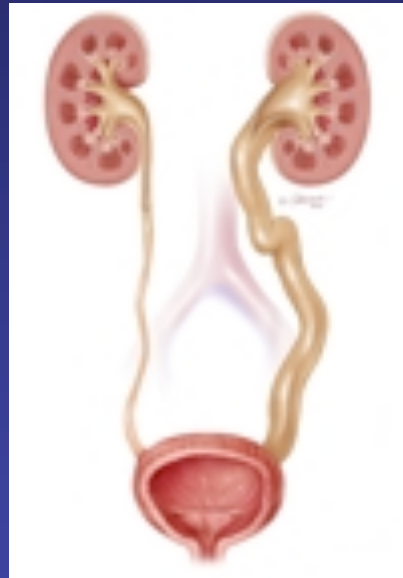
Megaureter



Megaureter

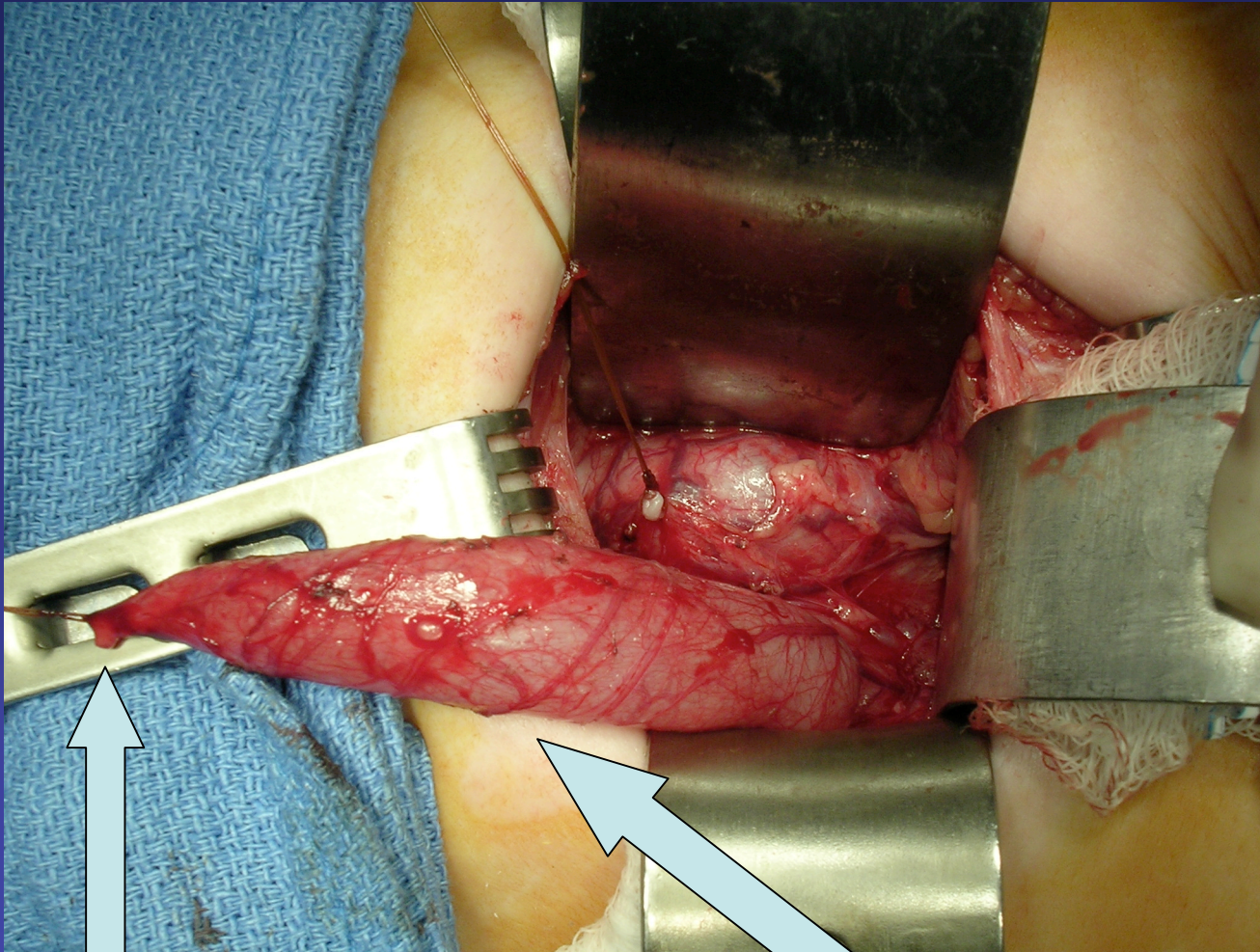


Megaureter



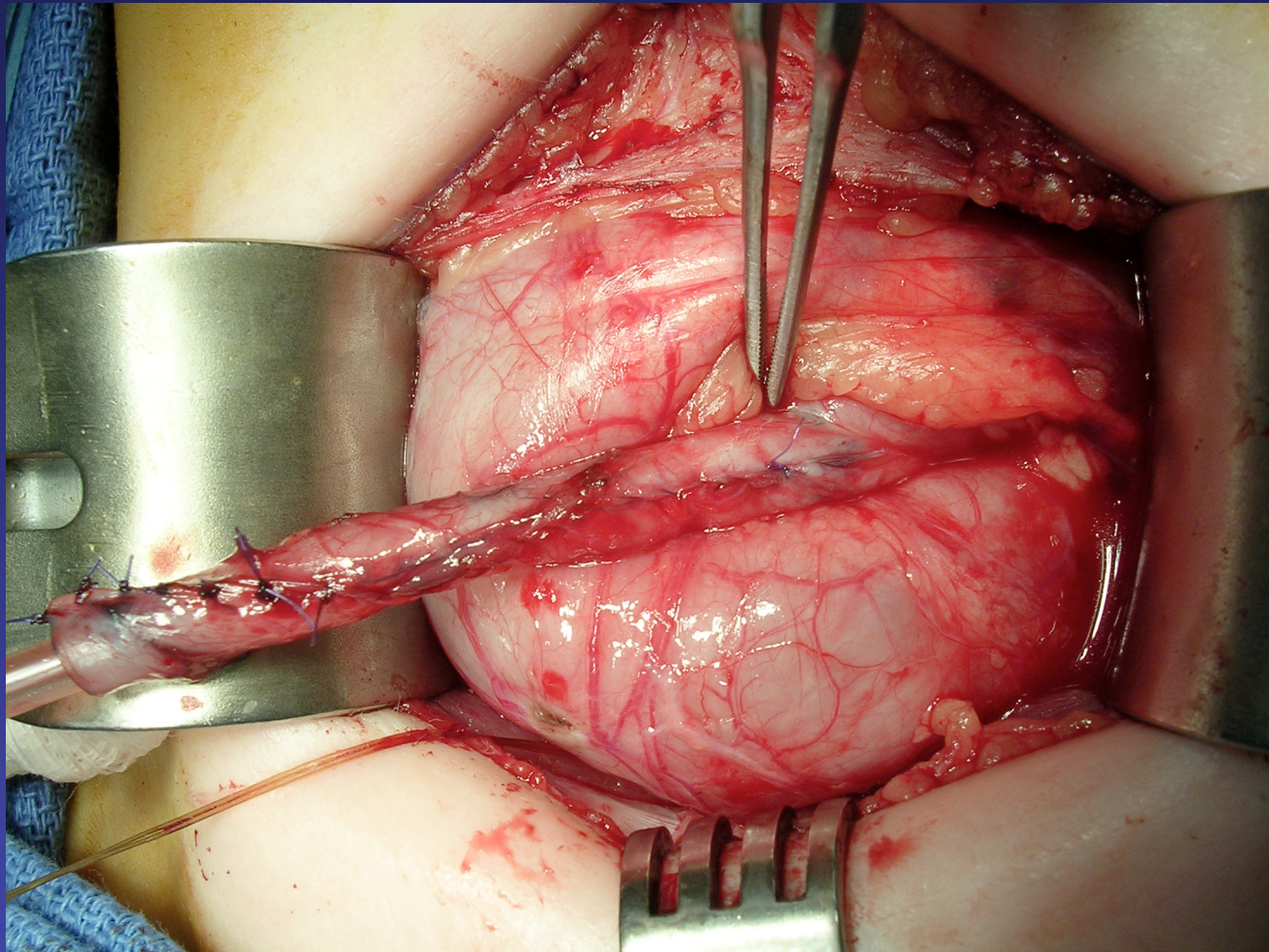
Megaureter

- **Consequences**
 - Abdominal pain
 - Infection
 - Decreased renal function



DISTAL OBSTRUCTING URETER

DILATED URETER

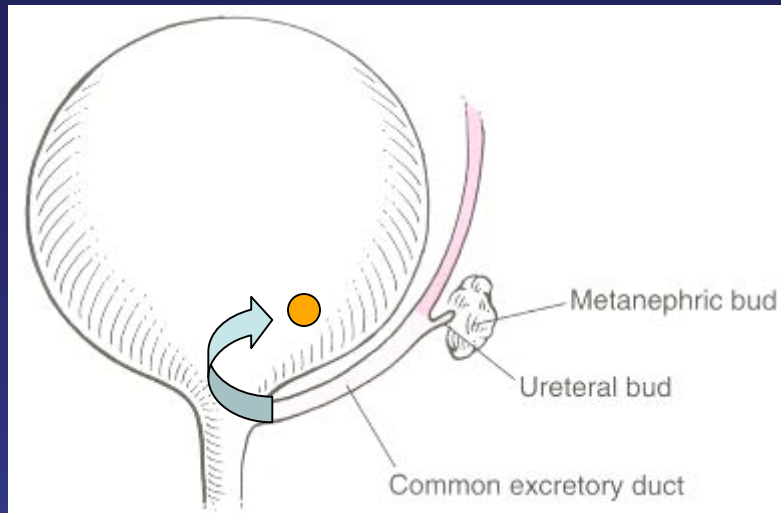


- DISTAL URETER EXCISED
- URETER TAPERED

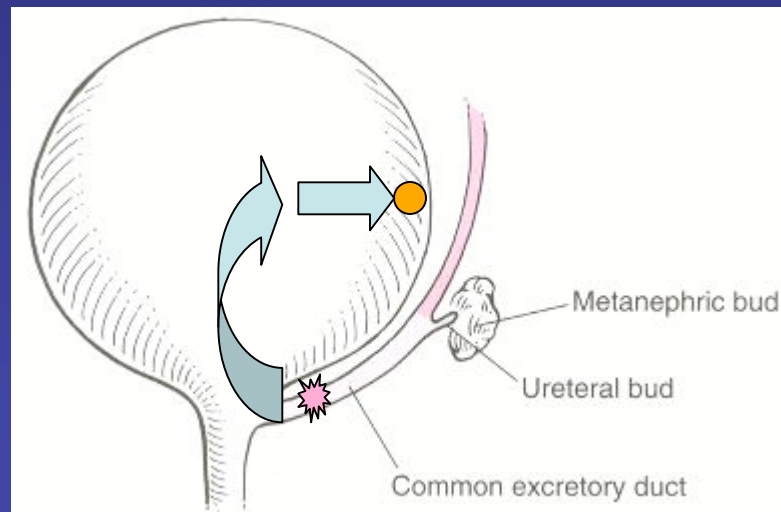
Reflux

- **Normal**
 - Ureter compressed between mucosa and muscle
- **Abnormal**
 - No tunnel, no compression

● = FINAL URETERAL ORIFICE POSITION

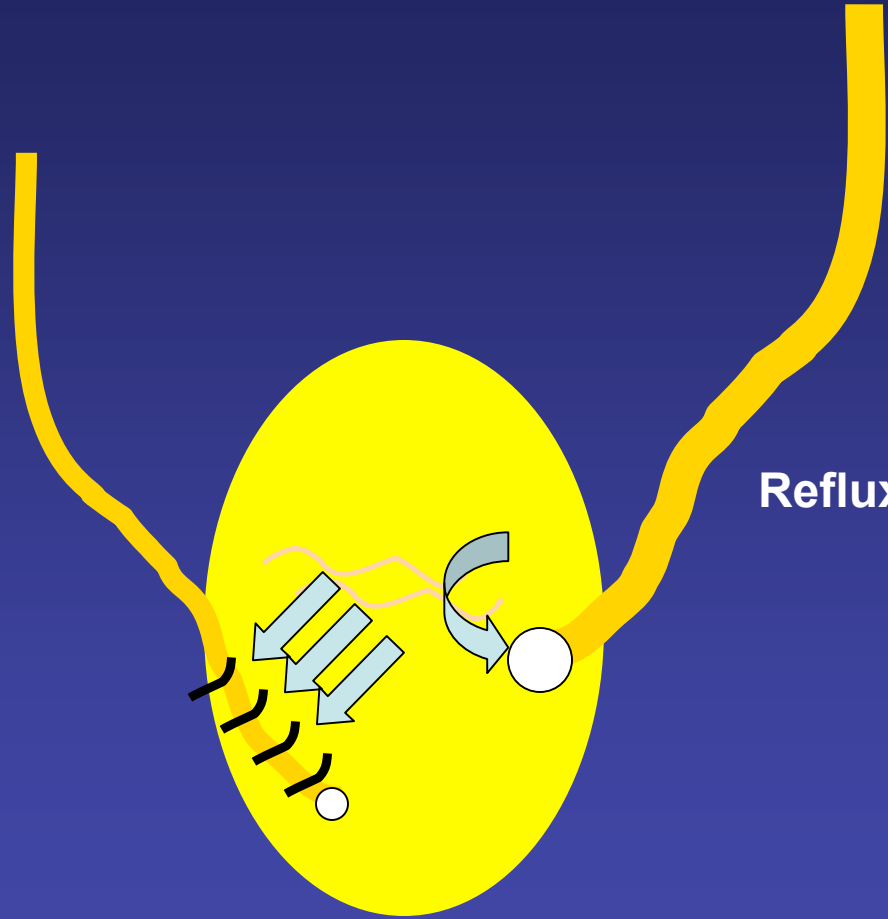


Normal

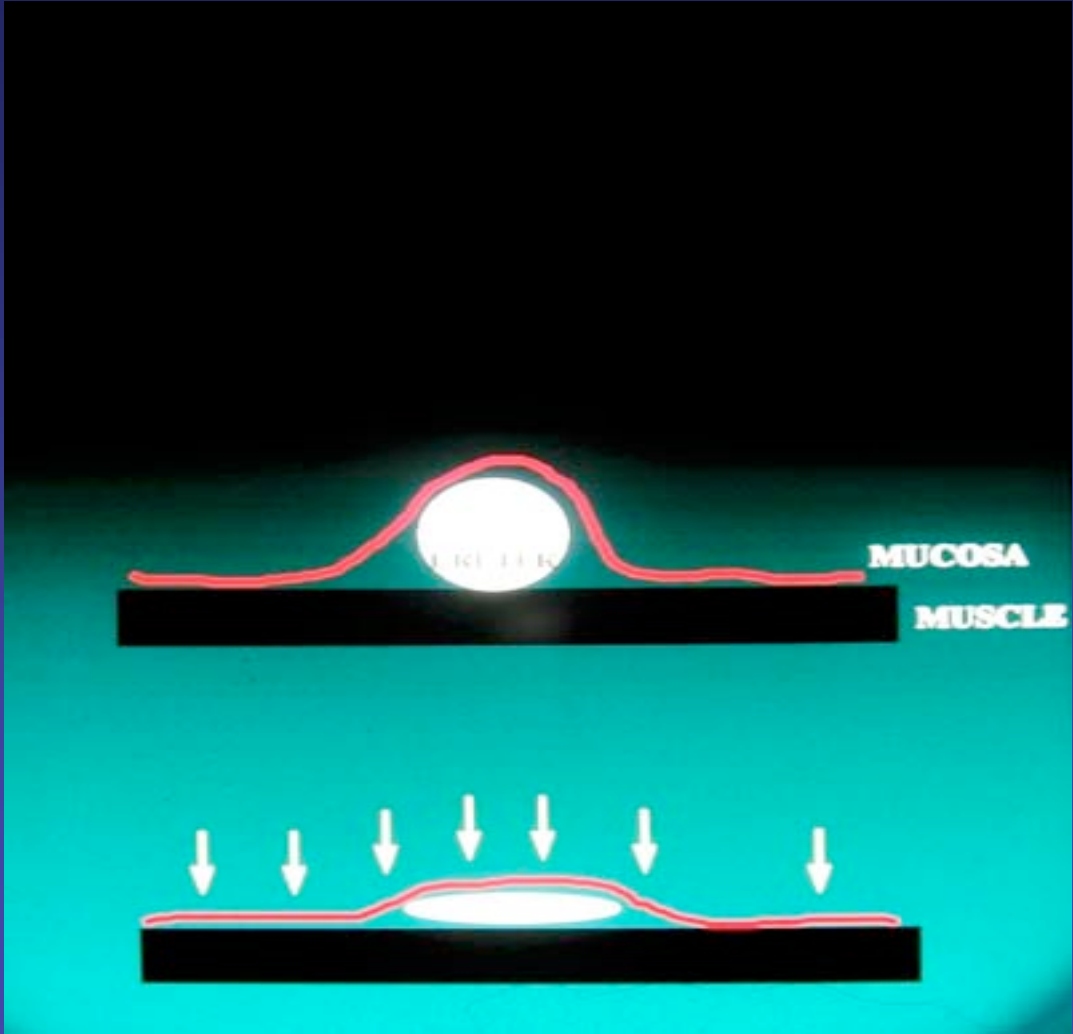


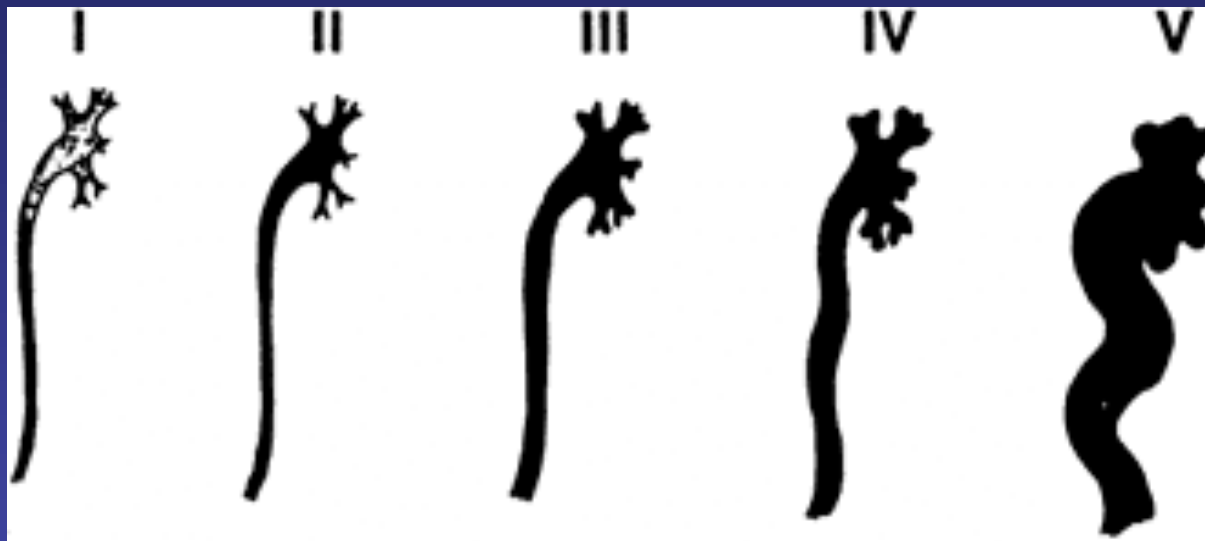
Reflux

'Flap Valve'



Reflux

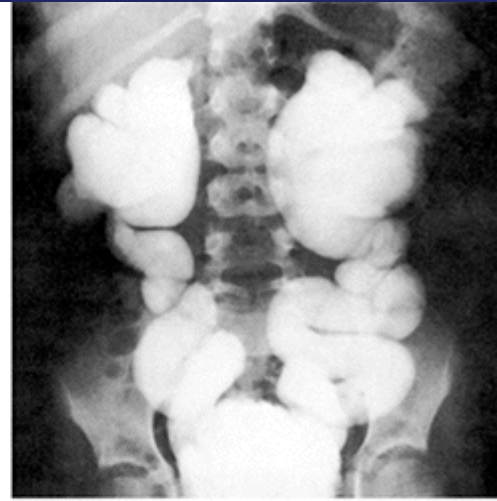
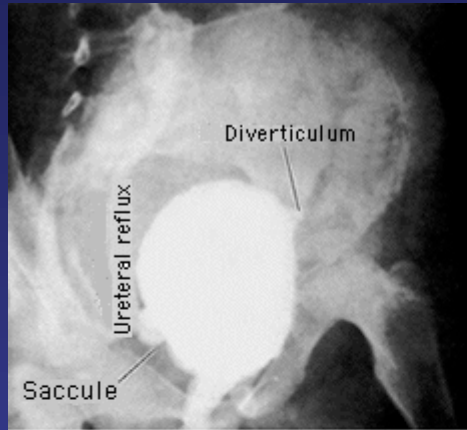




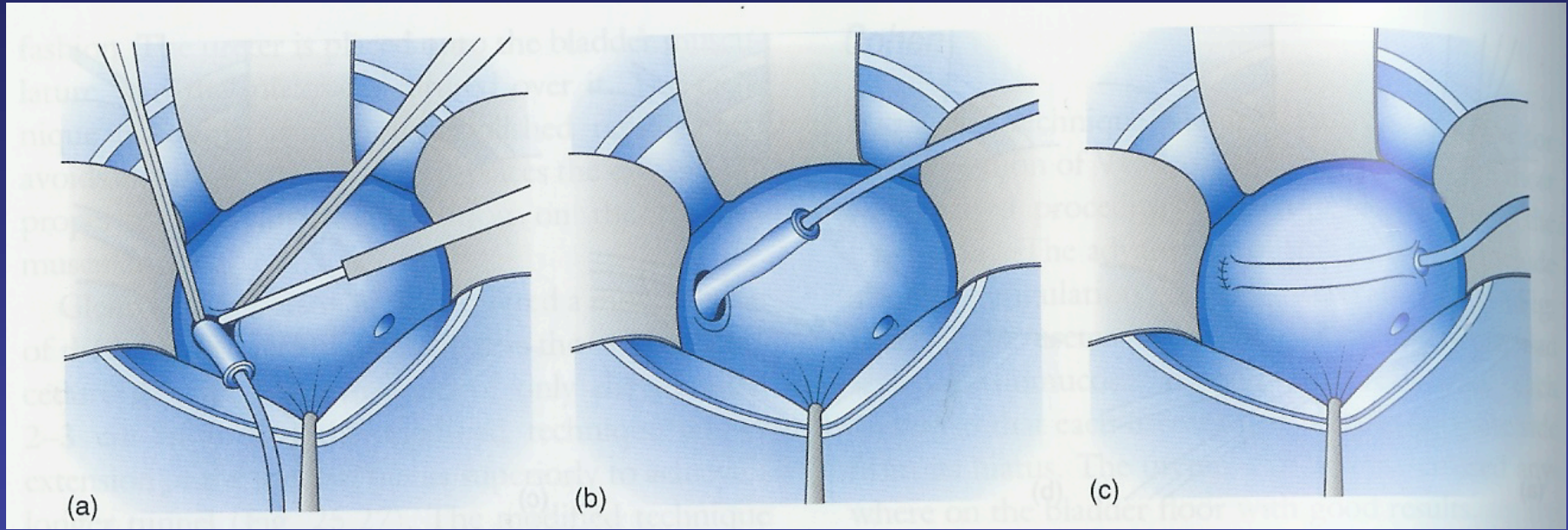
Grades of Reflux

Reflux

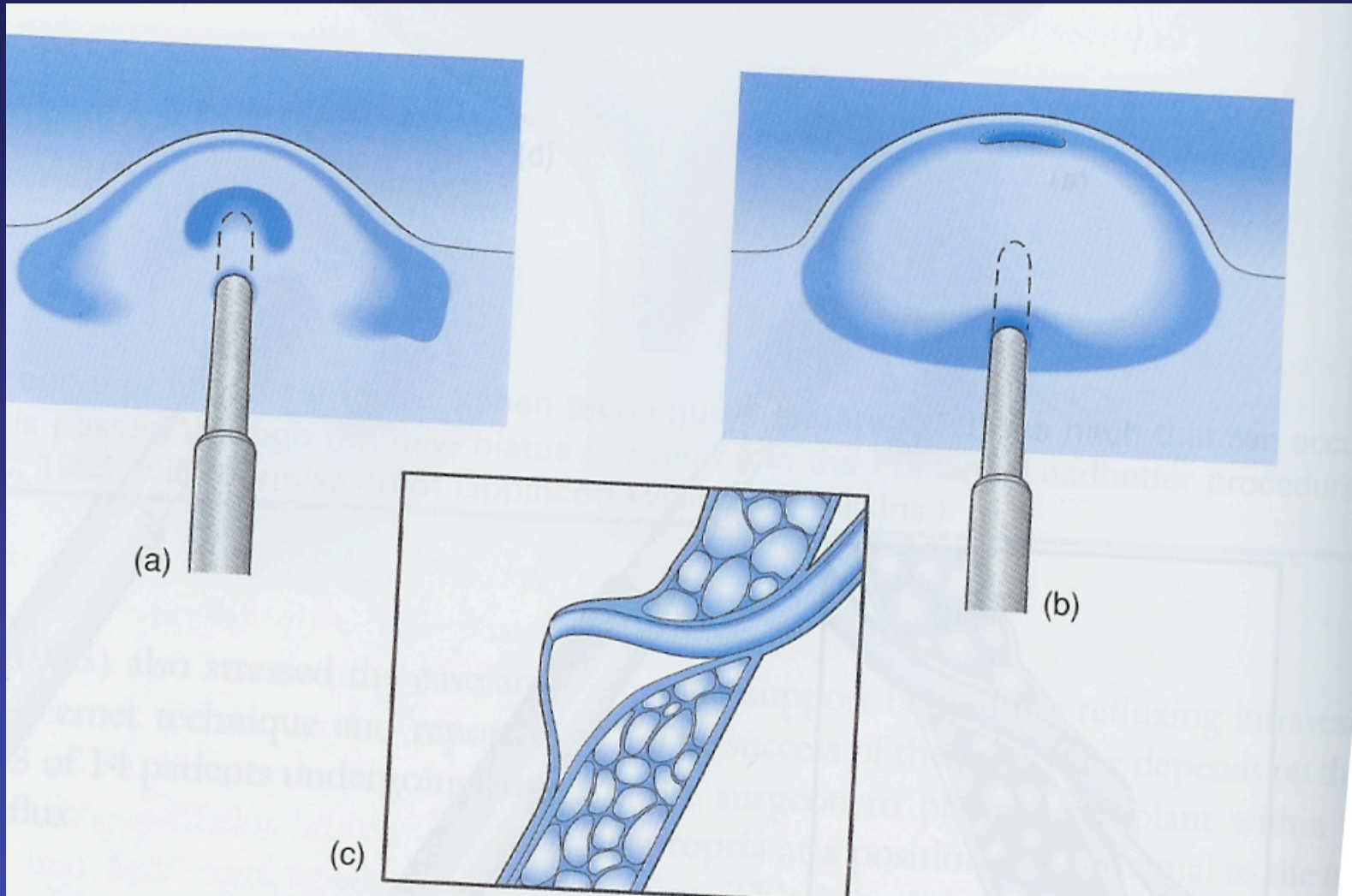
- **Consequences**
 - Infection
 - Decreased renal function
 - Voiding dysfunction



Reflux

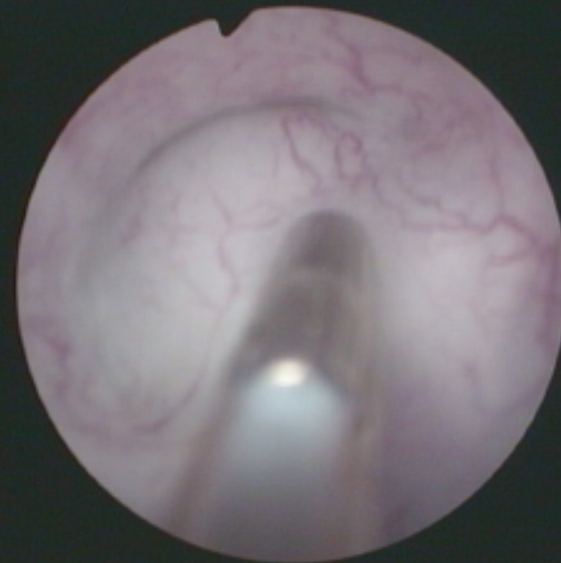
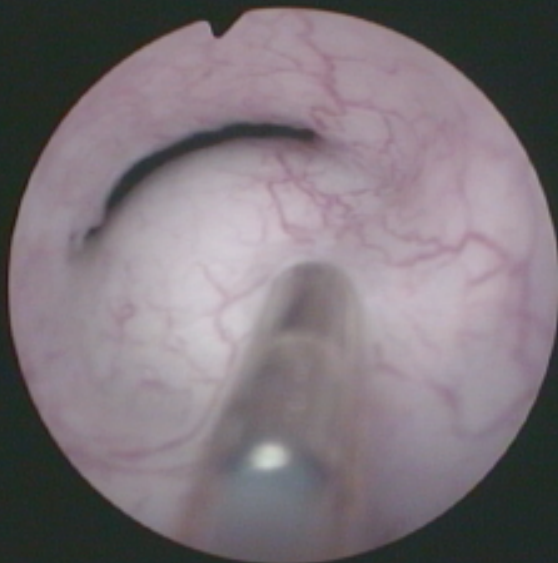
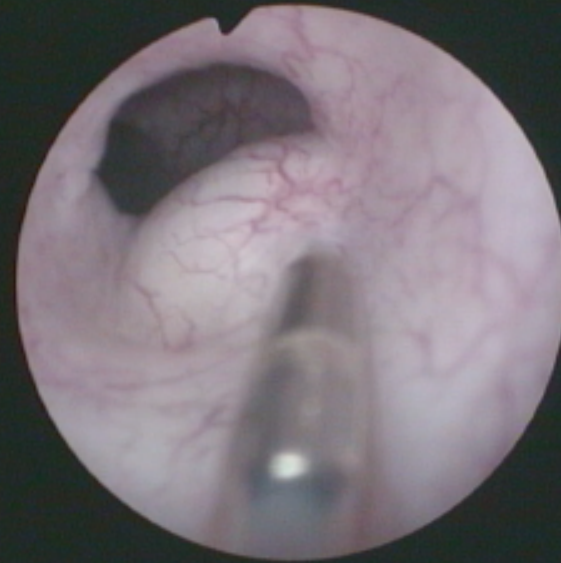
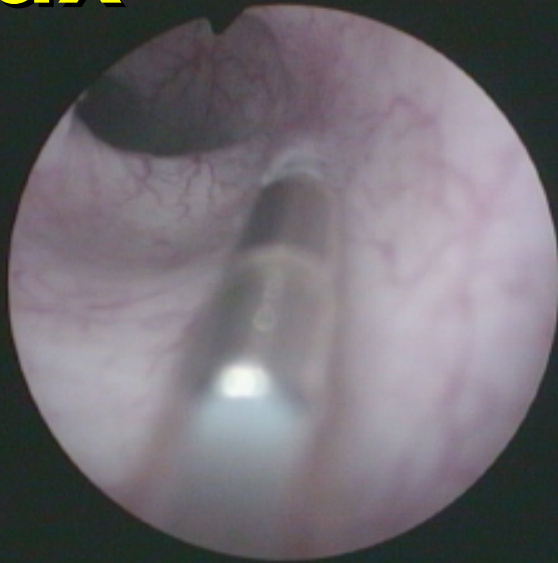


URETERAL REIMPLANTATION



SUB-URETERIC INJECTIONS

Reflux

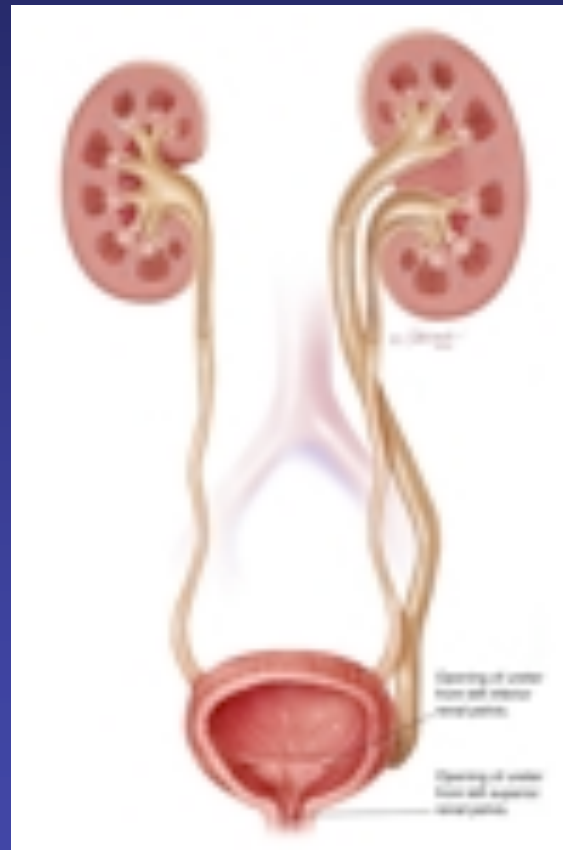


SUB-URETERIC INJECTIONS

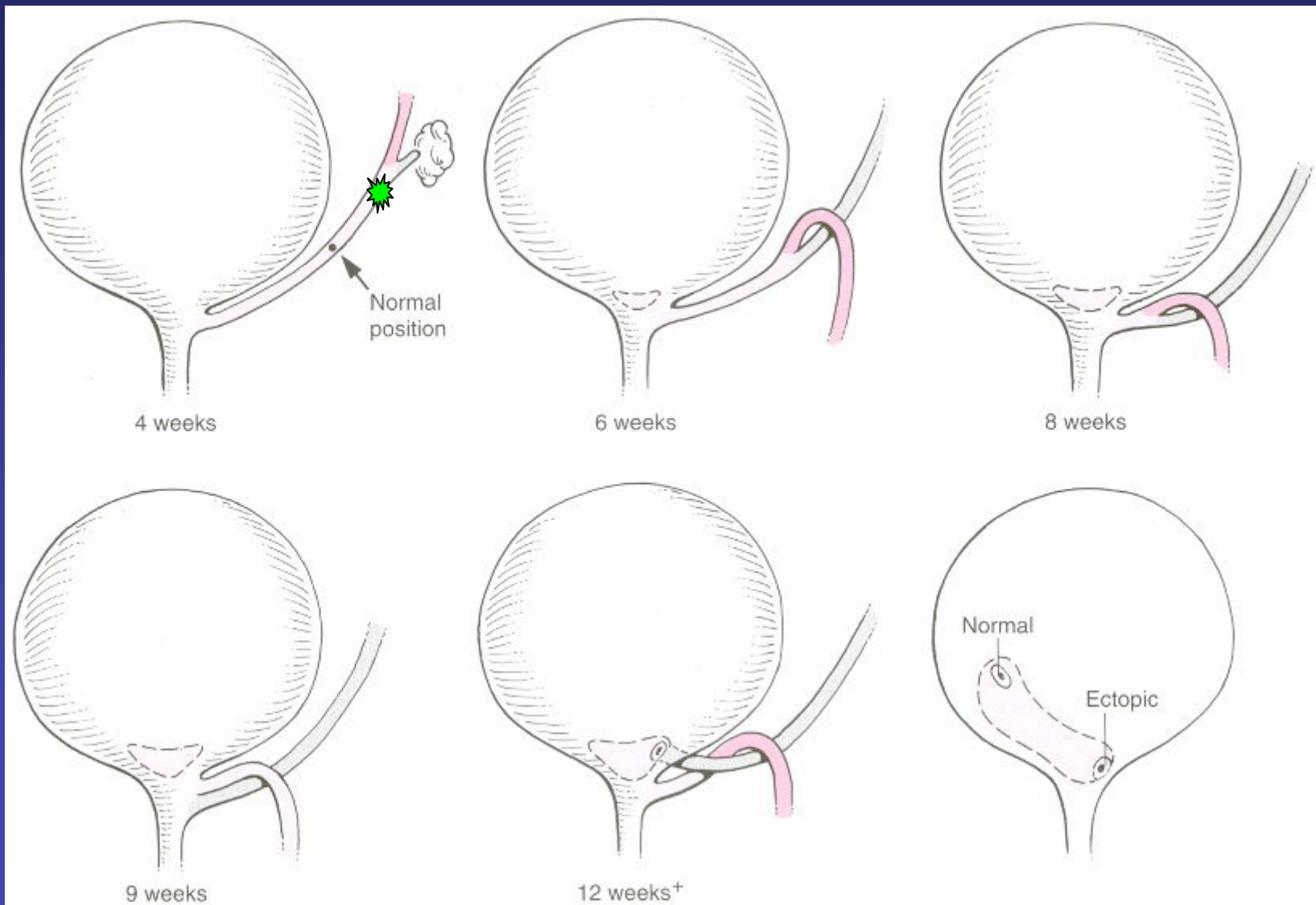
Ectopic Ureter

- **Consequences**
 - Abdominal pain
 - Infection
 - Decreased renal function
 - Incontinence (females)
 - Normal voiding with continuous dribbling

Ectopic Ureter

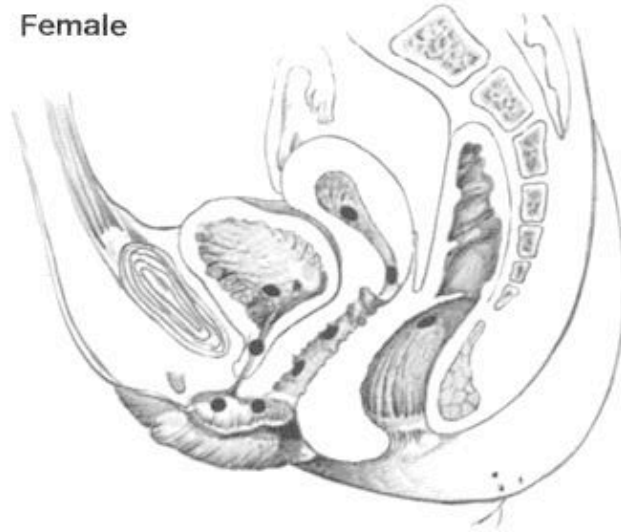


Ectopic Ureter

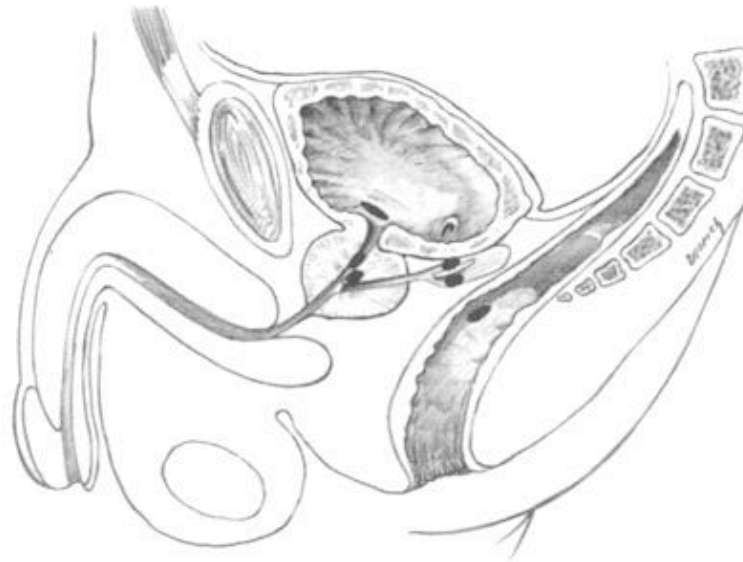


Ectopic Ureter

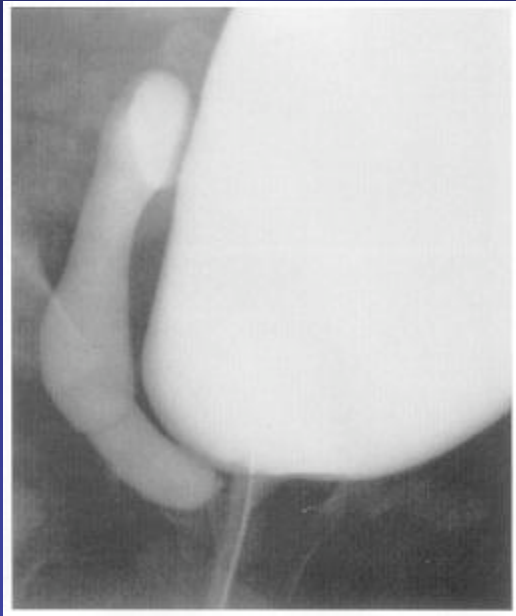
Female



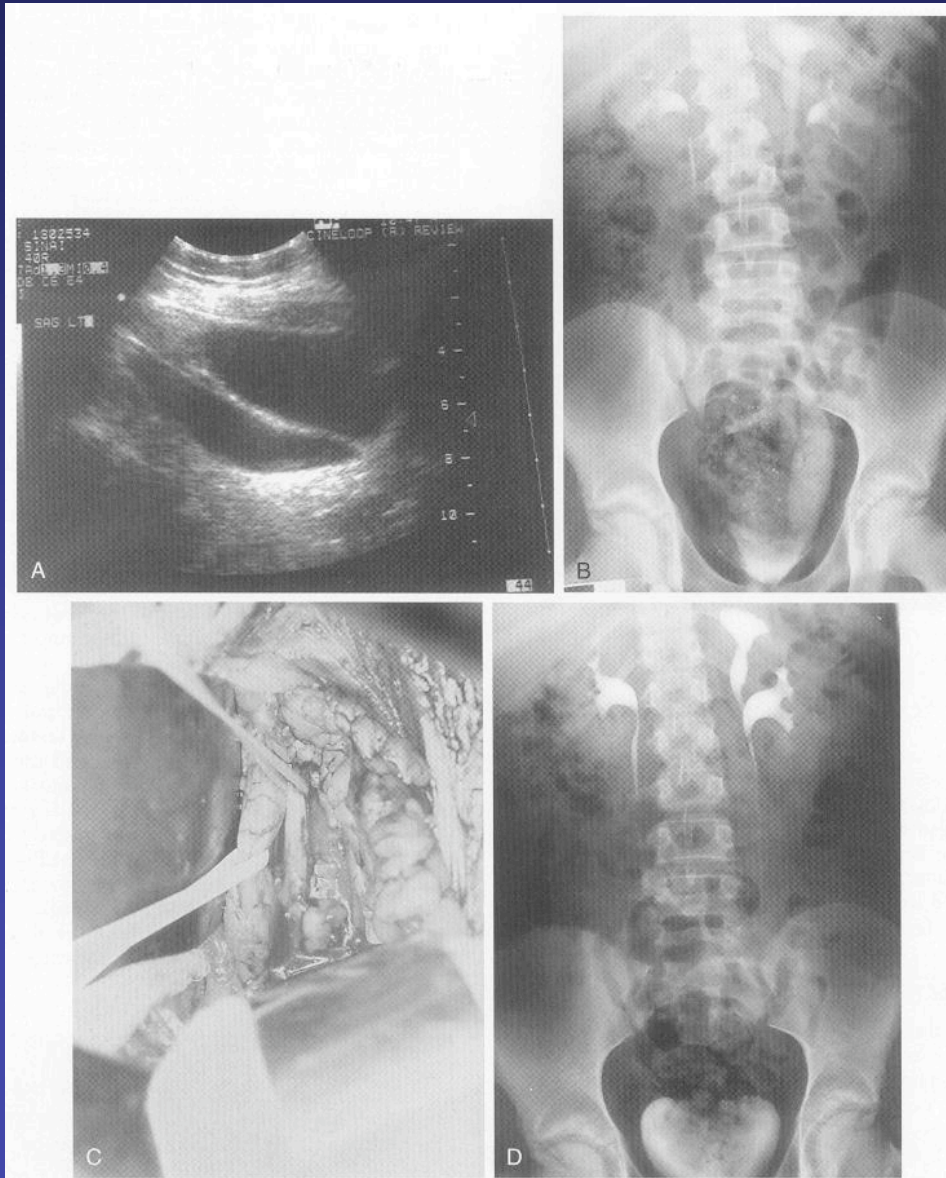
Male



Ectopic Ureter



Ectopic Ureter

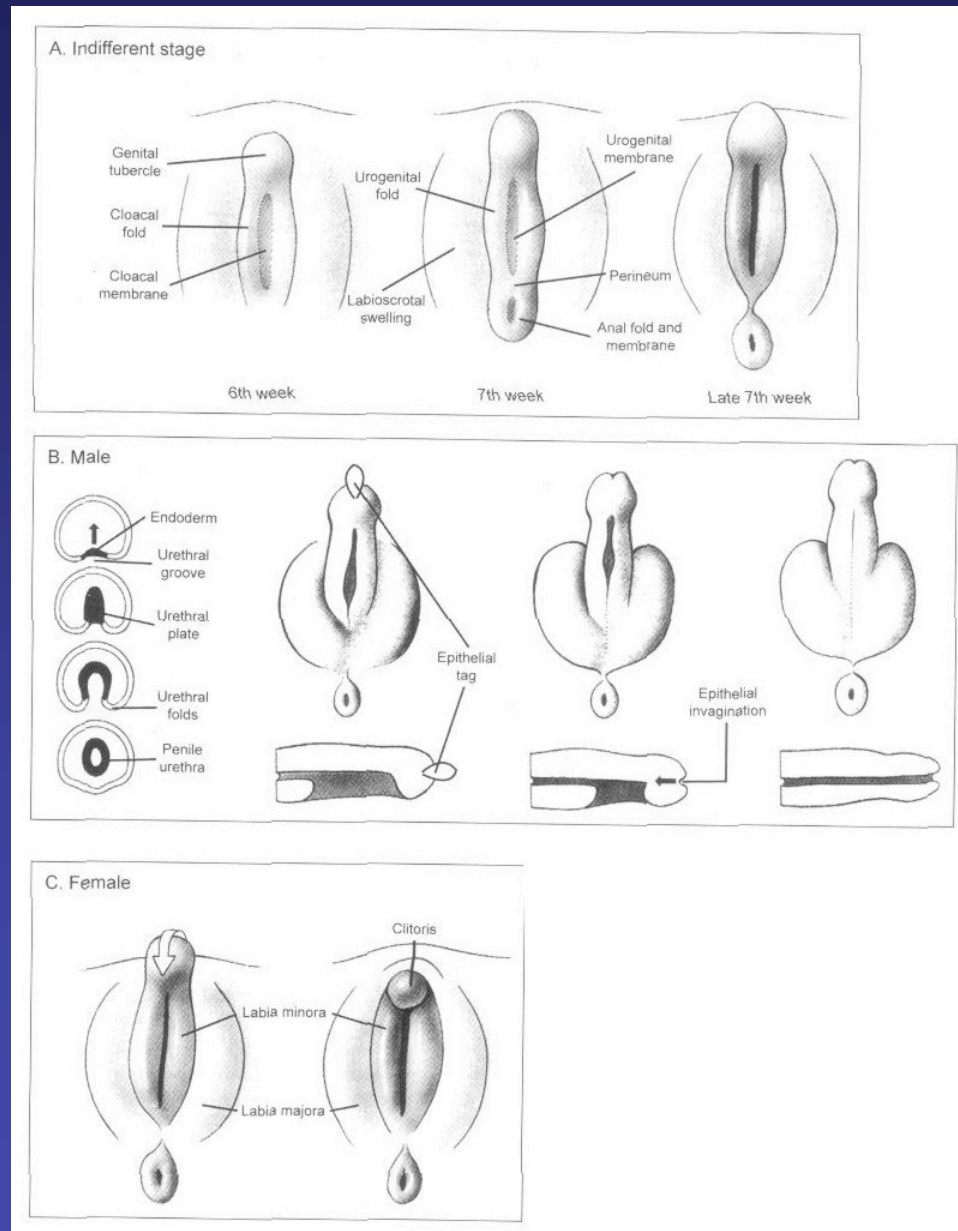


Hypospadias

- Ventral urethral meatus
- Penile curvature
- Incomplete foreskin



Hypospadias



Androgens
- Testosterone
- DHT

Androgen receptors

Hypospadias



Endocrinopathies

Receptor deficiencies

Arrested maturation

Hypospadias

- **Consequences**
 - **Voiding difficulties**
 - **Curvature: intercourse issues**
 - **Possible infertility**
 - **Cosmesis**

Hypospadias



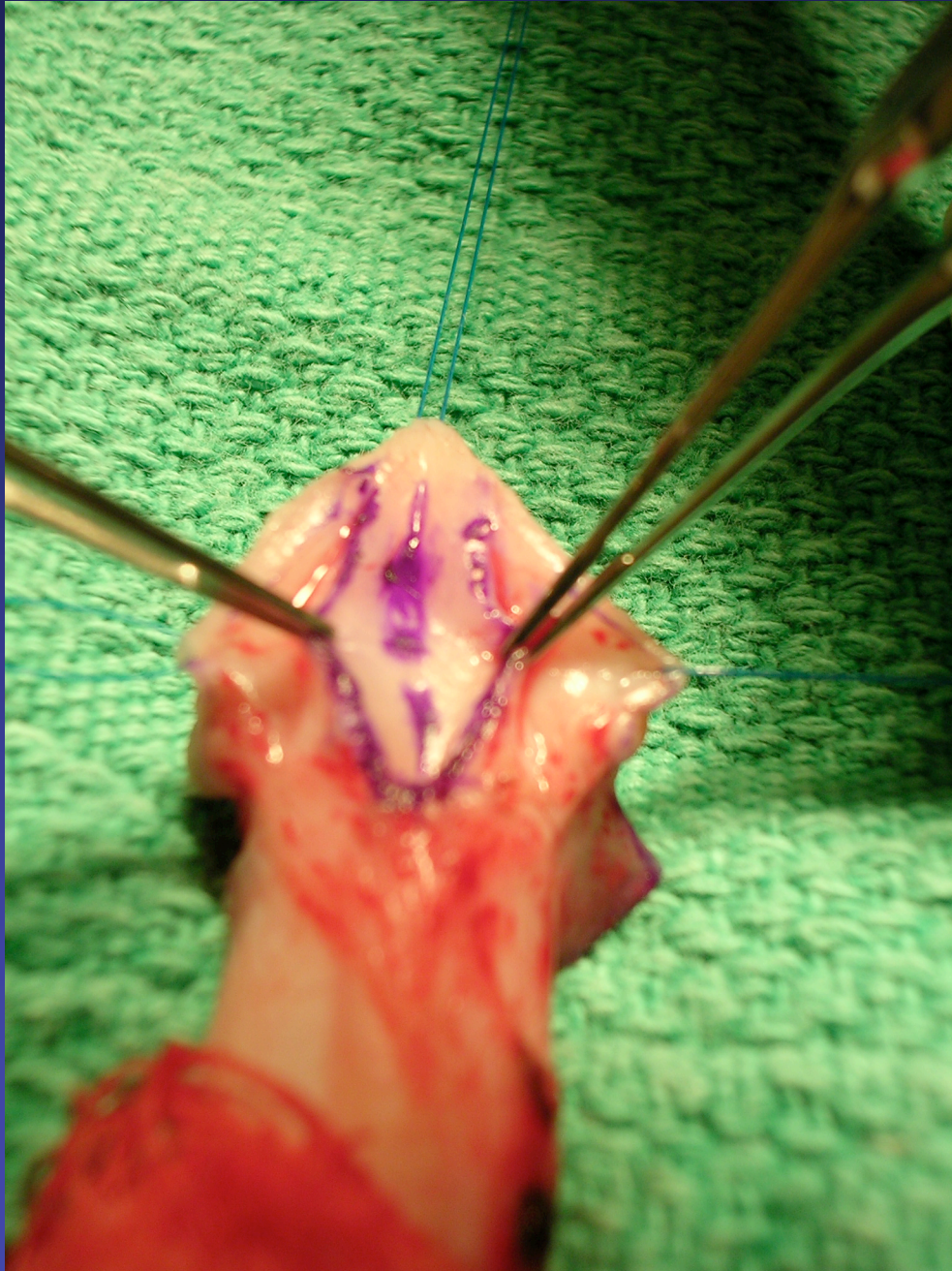
Hypospadias

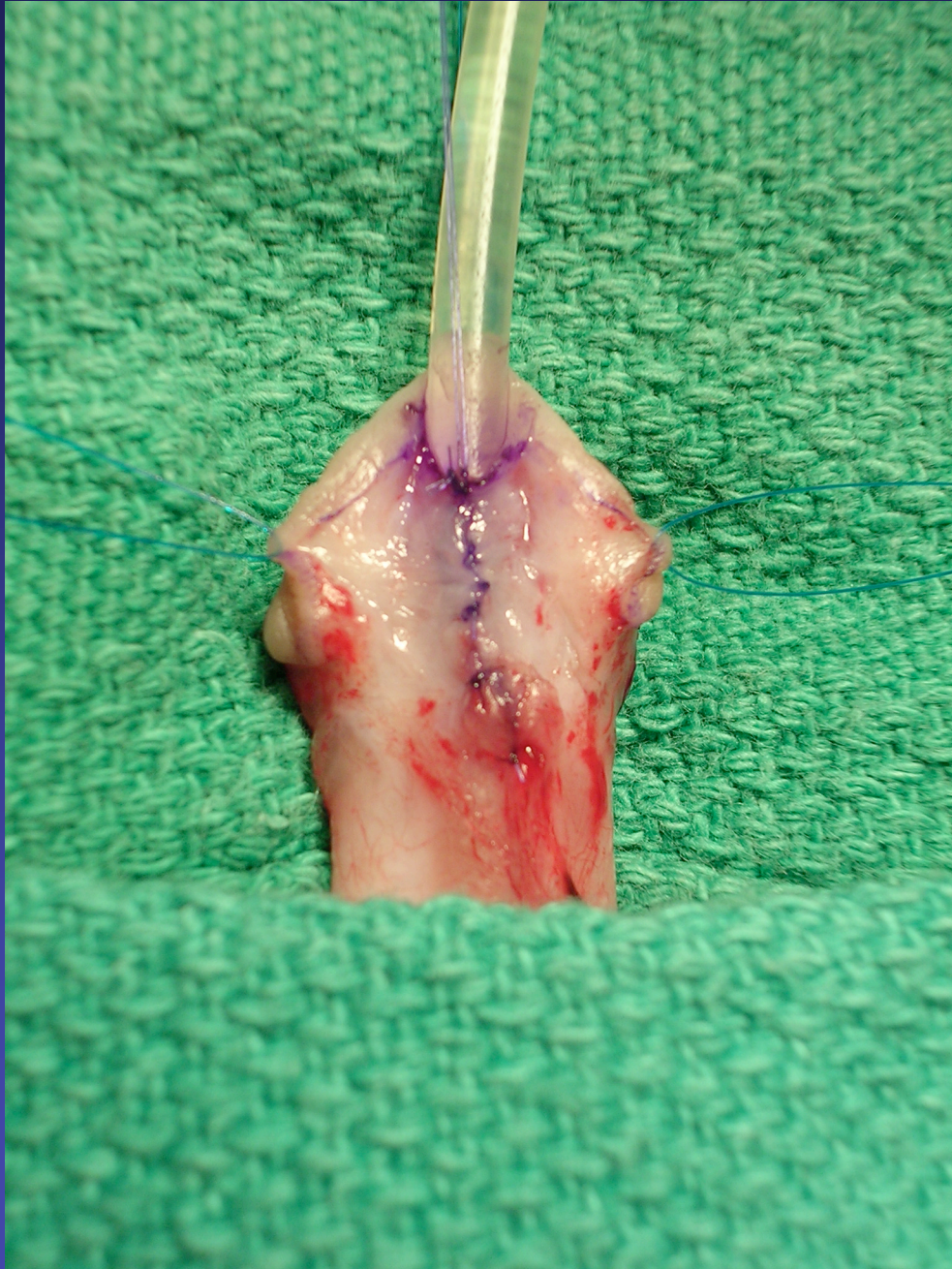


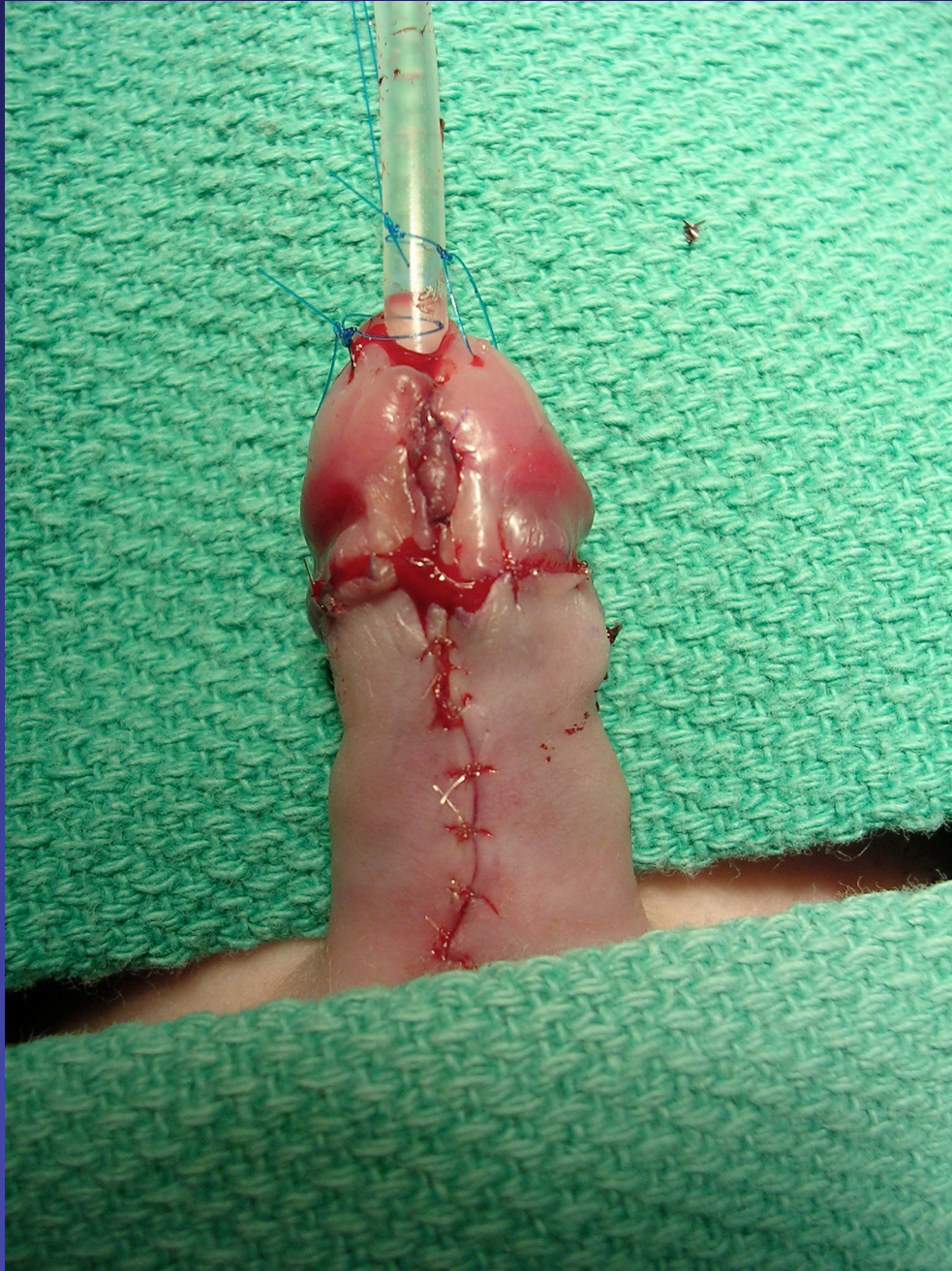
Hypospadias











Undescended Testes

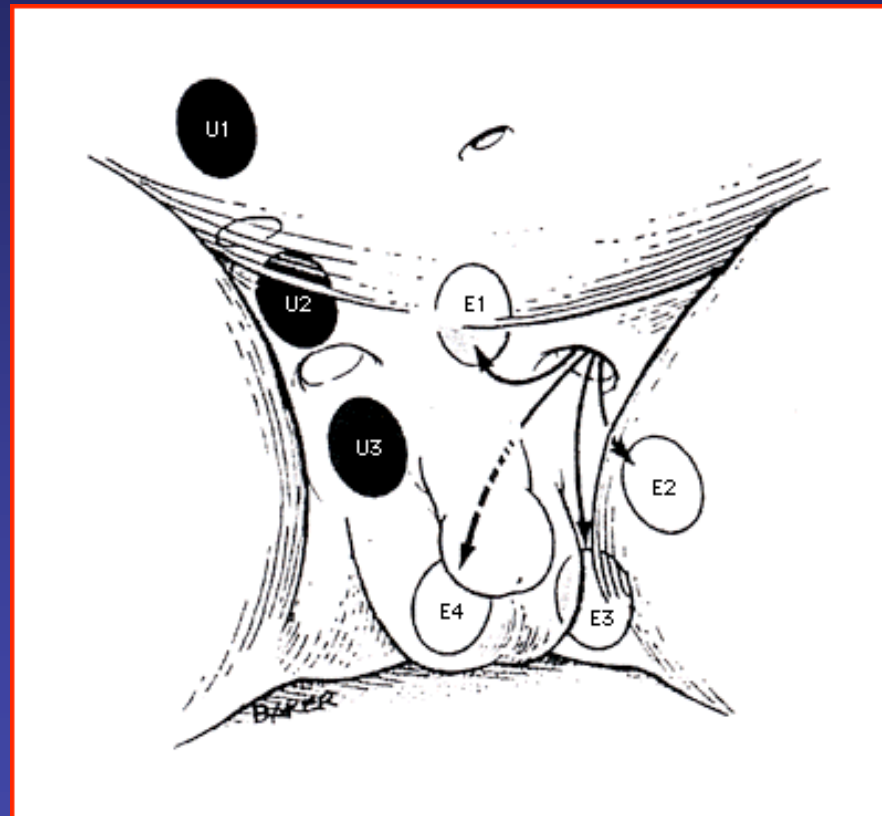
3 MONTHS



7 MONTHS



9 MONTHS

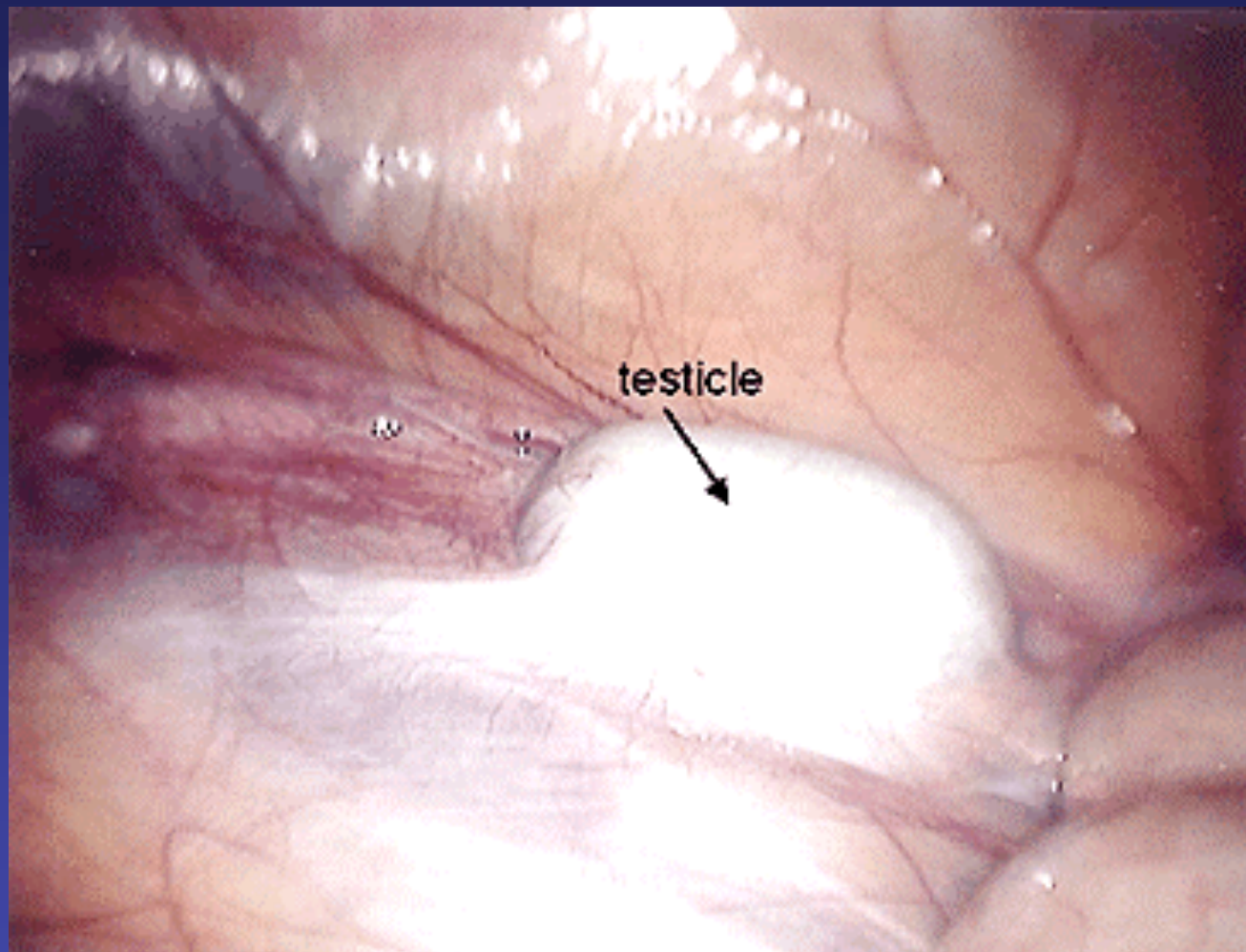


Ectopic testes Locations of undescended (U) and ectopic (E) testes. U1: intra-abdominal, U2: intracanalicular, U3: suprascrotal. E1: suprapubic, E2: femoral, E3: perineal, E4: contralateral. Reproduced with permission from: Pillai, SB, Besner, GE. Pediatric testicular problems. *Pediatr Clin North Am* 1998; 45:813. Copyright © 1998 Pediatric Clinics of North America.

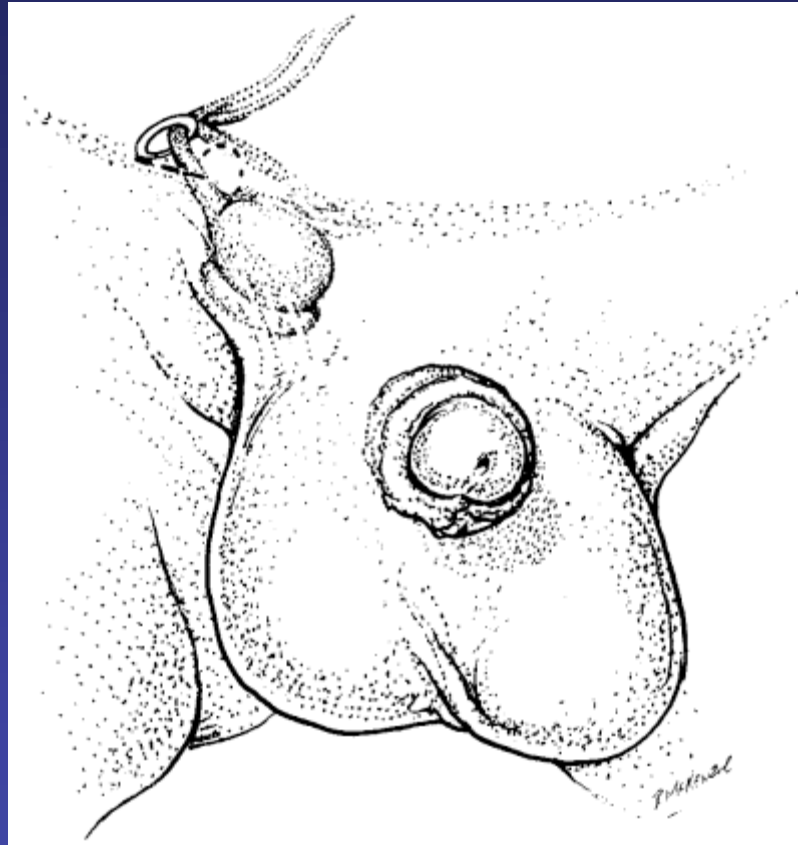
- gubernaculum
- Endocrine
- Genitofem nerve
- CGRP (calcitonin gene Related Protein)

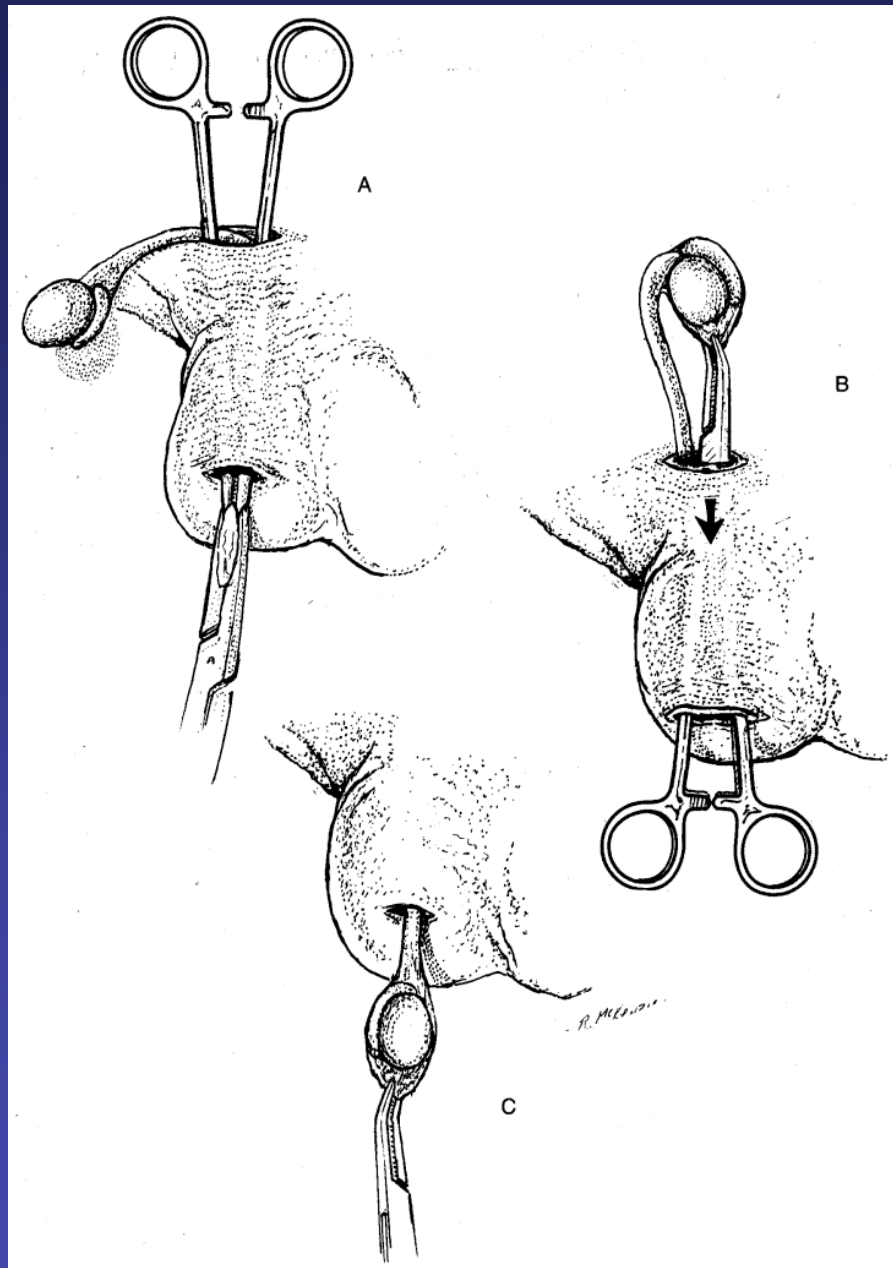
Undescended Testes

- Infertility
- Neoplasia
- Cosmesis
- Testis torsion

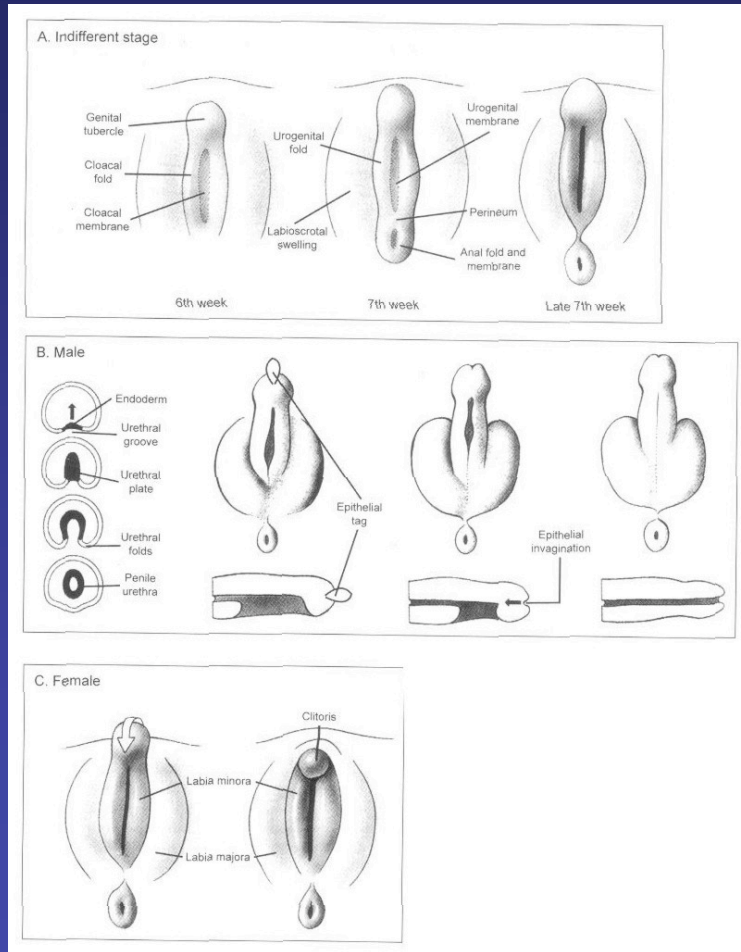


Undescended testicle Laparoscopic view of intra-abdominal right-sided undescended testicle. Courtesy of Christopher S Cooper, MD and Steven G Docimo, MD.

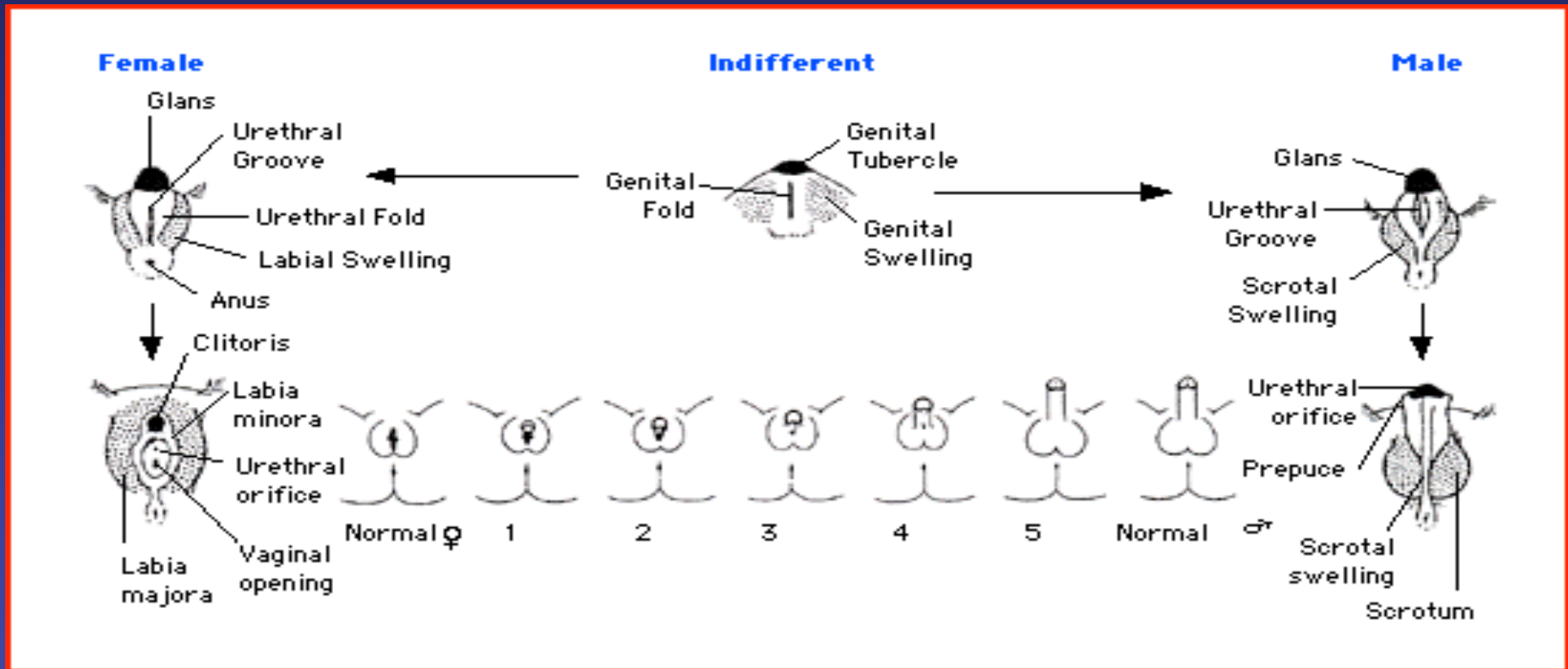




Ambiguous Genitalia

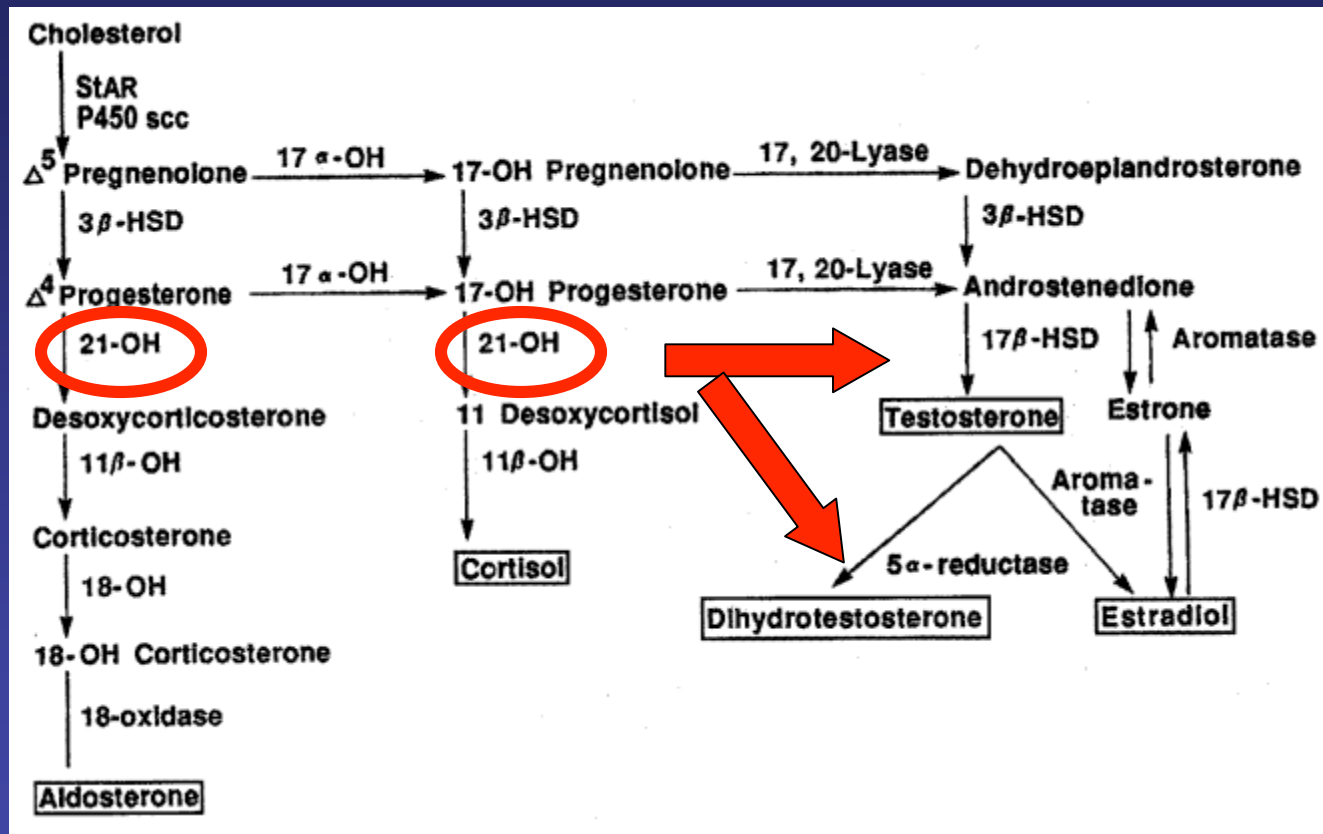


Ambiguous Genitalia



Virilization (external view) Normal and abnormal differentiation of the external genitalia. Diagrams of normal female and male anatomy flank a series of schematic representations of different degrees of virilization, graded using the scale developed by Prader. Reproduced with permission from: White, PC, Speiser, PW. Congenital adrenal hyperplasia due to 21-hydroxylase deficiency. *Endocr Rev* 2000; 21:245. Copyright © 2000 The Endocrine Society.

Ambiguous Genitalia

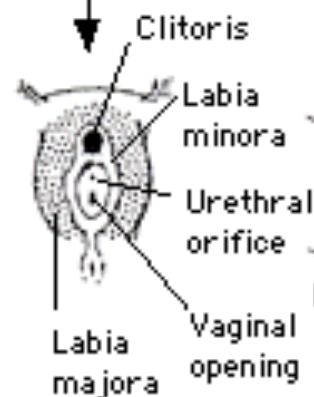
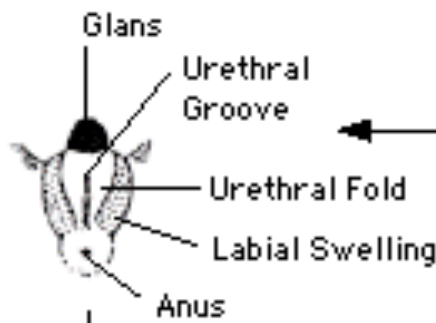


Congenital Adrenal Hyperplasia

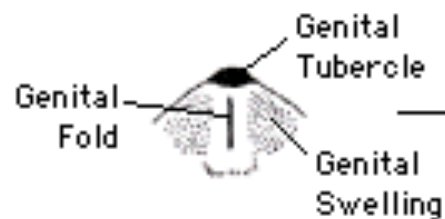
Ambiguous Genitalia

- **Female Pseudohermaphrodite**
 - **Congenital Adrenal Hyperplasia (CAH)**
 - 46 XX
 - Normal ovaries, uterus and upper vagina
 - Virilized external genitalia
 - Due to in utero exposure to testosterone
 - **Normal potential for sexual and reproductive function as females**

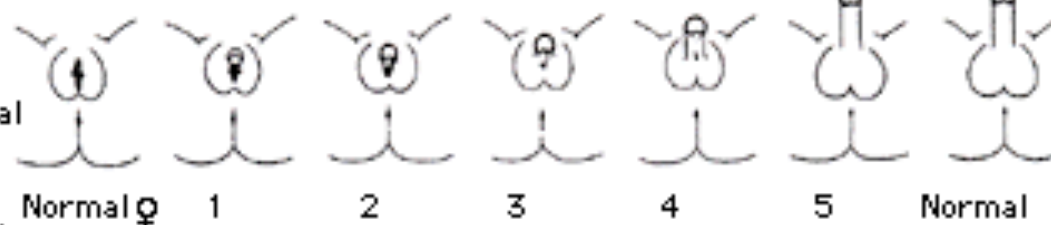
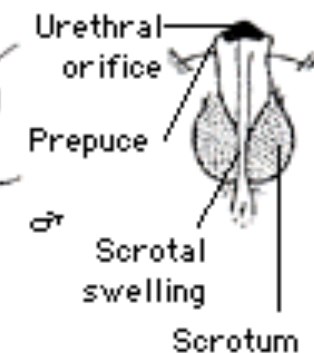
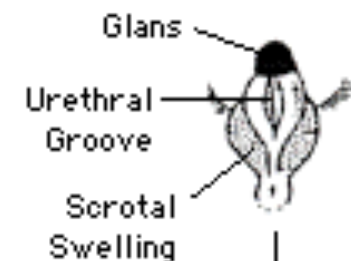
Female



Indifferent



Male



Virilization (external view) Normal and abnormal differentiation of the external genitalia. Diagrams of normal female and male anatomy flank a series of schematic representations of different degrees of virilization, graded using the scale developed by Prader. Reproduced with permission from: White, PC, Speiser, PW. Congenital adrenal hyperplasia due to 21-hydroxylase deficiency. *Endocr Rev* 2000; 21:245. Copyright © 2000 The Endocrine Society.

-Nonpalpable testes

-Hypospadias

- small phallus with curvature

-ALERT !!

-ALERT !!

-ALERT !!





