Current management of undescended testes

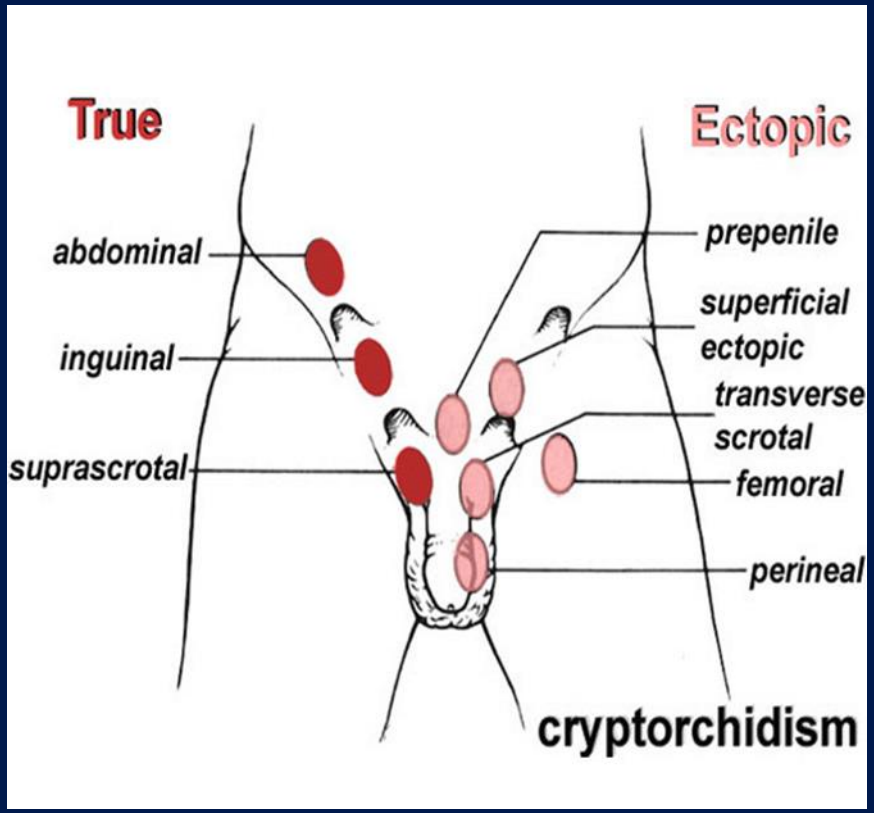
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Definitions

- Undescended testis (UDT)
  - Not present in the scrotum by 3 months of age (corrected)
  - Maldescended=crypt-orchid=UDT
  - Normal line of descent or ectopic



Definitions

- Ascending Testis Syndrome (ATS)
  - Present in scrotum at birth or within first 3 months of life
  - Not in scrotum later in childhood
    - Overactive cremaster
    - Spasticity – CP
    - Failure PV disappearance
- Retractile testes
  - Can be reduced to scrotum
  - Remain for “a period of time”
    - Tension
    - Size
    - Development of scrotum

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Incidence

- Common
  - 0.5 to 4% of male infants at birth
  - Many will descend spontaneously in first 3 months of life
  - Data on incidence and surgery complex
    - Diagnosis
    - Treatment
    - Recurrent UDT



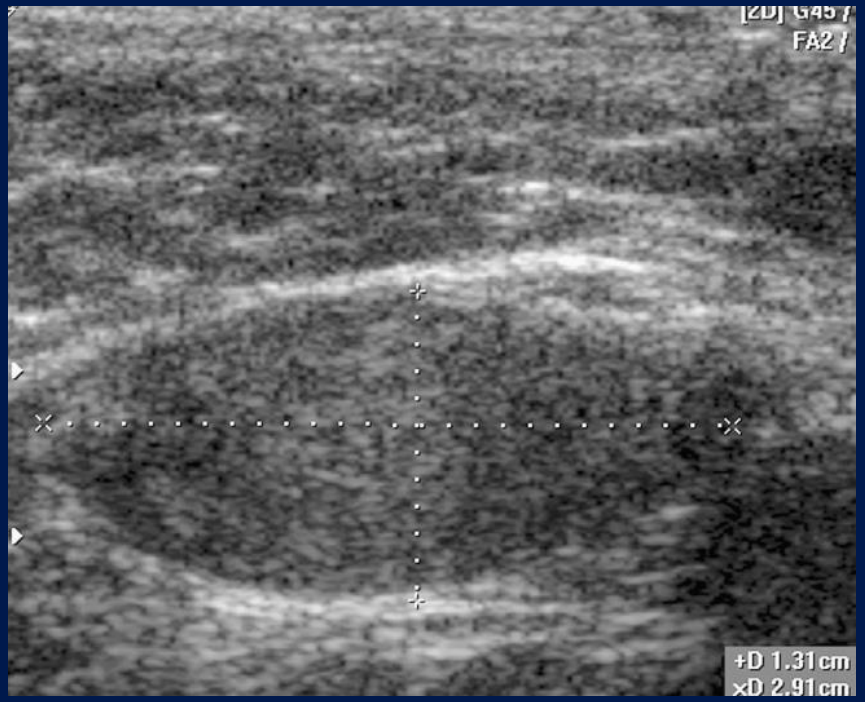
Incidence

- Increasing
  - Increasing survival extreme premature infants
  - Increased recognition ATS
  - Environmental risk factors
- Decreasing
  - Clinical diagnosis
  - Exclusion of ATS
  - Data completeness

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Diagnosis - ultrasound

- Ultrasound frequently used, limited value
  - Poor accuracy
  - Cost
  - Parental anxiety
  - Delays in referral
    - May have a role in objective assessment testicular size, architecture and confirmation of “nubbin”



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Diagnosis - history

- Risk of UDT increased with maternal exposure
  - Diethylstilboestrol 2 x
  - Horticultural industry 1.3 x
  - Smoking 1.17
  - Gestational DM 1.12
  - Family history
    - UDT 2.3 – 3.5 x more likely
- Risk of UDT Not associated with maternal
  - Obesity
  - Alcohol
  - Hairdressers
  - Other oestrogens

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Diagnosis - examination

- Clinical assessment
  - Experience
    - Scrotal asymmetry
  - Education
  - Dynamic
  - Beware “bilateral UDT and hypospadias” referral
  - Known syndromes
    - Noonan, Prader-Willi
- Screening



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Treatment

- Function
  - Spermatogenesis
- Increased risk of torsion
- Risk of malignancy
  - 2.9 x risk
  - Detection
- Cosmesis



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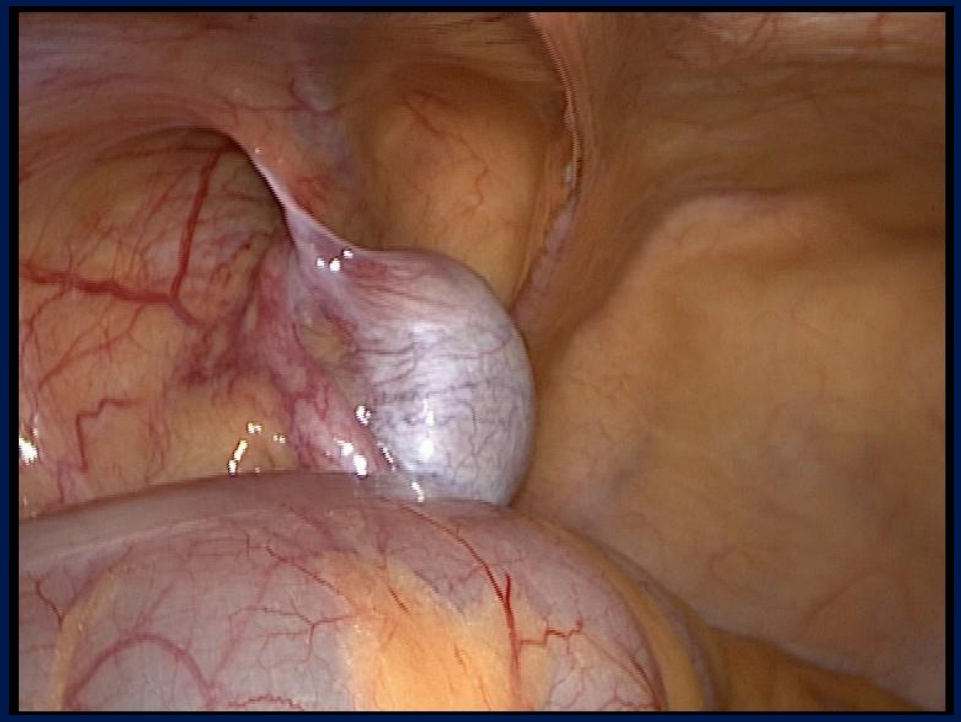
Hormonal therapy

- Ineffective in isolation
  - hCG
  - LHRH
  - Abnormal expression of androgen receptor in UDT
- May have role in conjunction with orchidoepxy
  - GnRH
    - Improved germ cell counts and semen analysis

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Orchidopexy

- Open
  - Inguinal
  - Parascrotal



- MIS
  - Lap assisted
  - One-stage
  - Two-stage
    - How to decide?

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Results

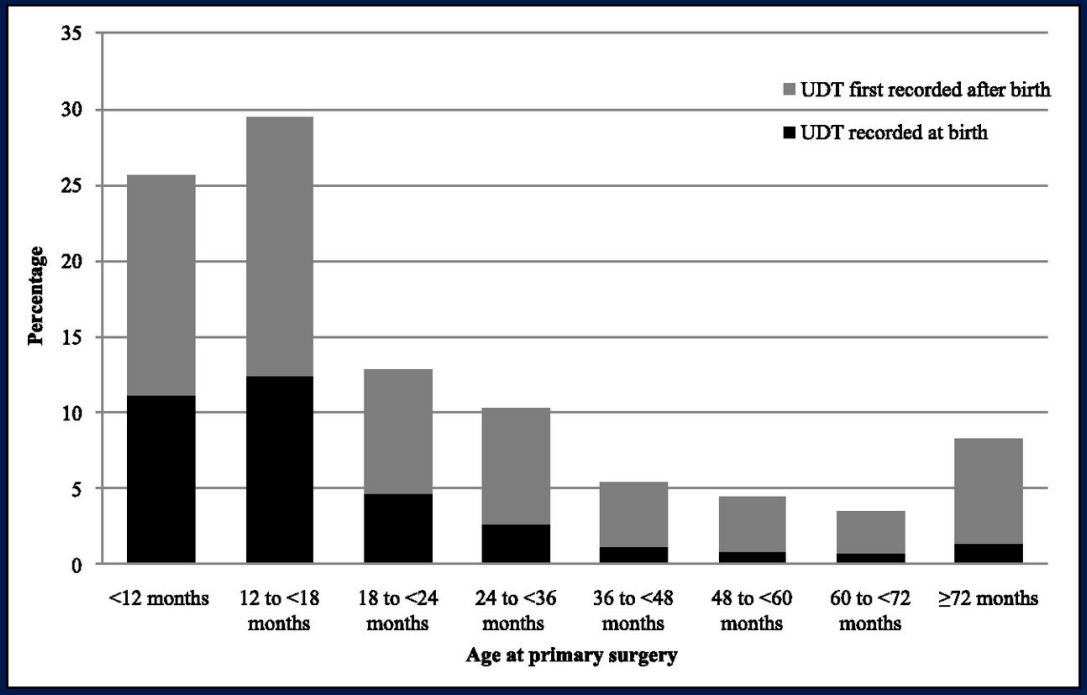
- Literature unclear
  - Objective assessment initial position
  - Objective review of outomes
    - Position
    - Size
    - Function
  - Length of follow-up
- 10% revision rate overall following “successful” orchidopexy
- 80 and 85% success rates for one and two stage orchidopexy for intra-abdominal testes

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When to operate?

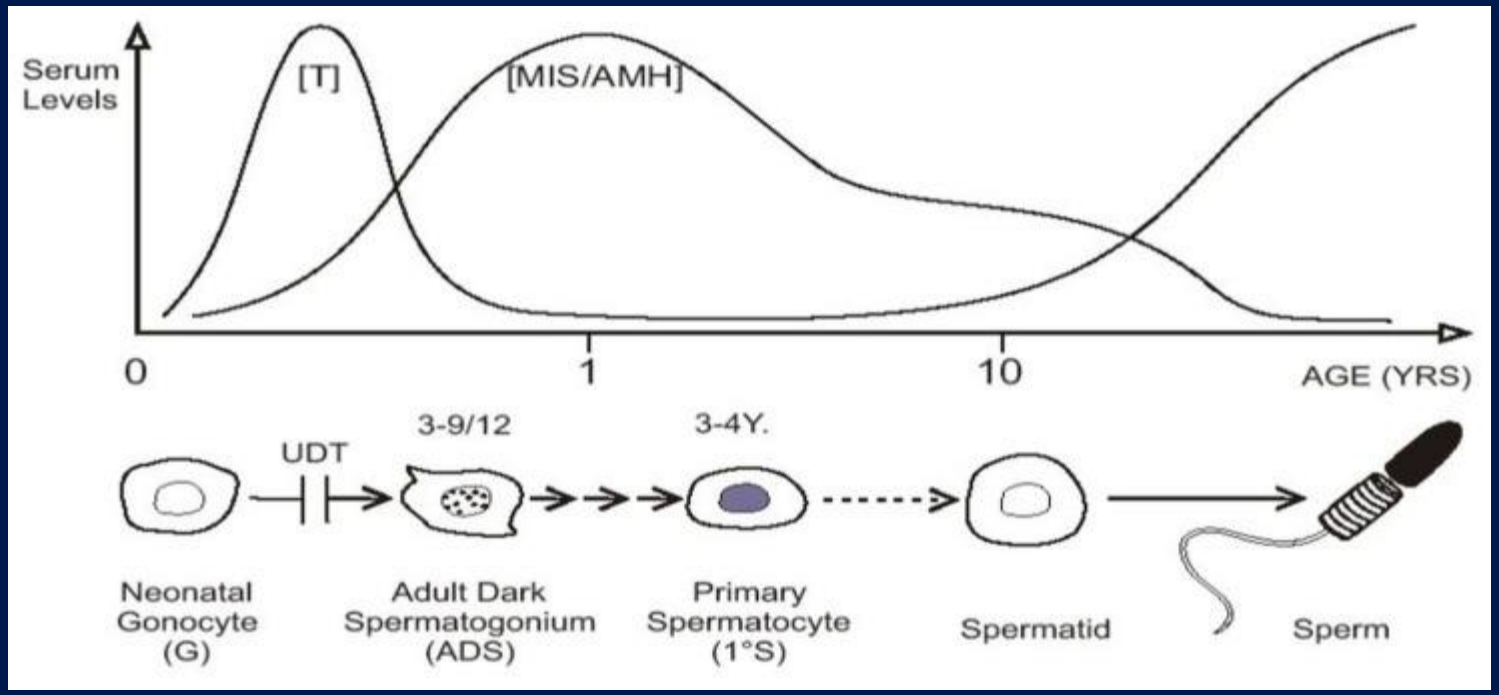
- Nordic consensus 2007
- Am Urol Assoc Guidelines 2014
  - Early referral
  - Surgery between 6 and 18 months of age

- 2/3rd surgery >12 months of age in NSW



Mini-puberty

- Gonocyte
  - Adult Dark Spermatogonium transformation
  - Apoptosis



Even earlier surgery?

- Spontaneous descent unlikely after 3 months
- Selection of gonocytes
  - Failure of apoptosis
- Increasing evidence earlier surgery reduces risk malignancy
- Concerns over neuro-toxicity associated with general anaesthesia (GA)

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Neuro-toxicity and GA

Setting	Epoch	N	Outcome	RR
Birth Cohort, Rochester, MN	1976 - 1982	593 exposed 4,796 controls	Learning disabilities/ADHD	1-2.6
NY State Medicaid dataset	1999 - 2002	304 exposed 10,146 controls	ICD-9 behavioural codes	1.1 - 4
Danish Nationwide birth cohort	1986 – 1990	2689 exposed 14,575 controls	Academic achievement	No effect
Raine cohort, WA	1989 – 1992	321 exposed 2,297 controls	Neuro-psych testing at age 10	1.53 – 3.52
National Health Insurance Research Database, Taiwan	2001 – 2007	5,197 exposed 114, 435 controls	Rates of autism	No effect
Swedish birth cohort	1973 -1993	33, 514 exposed 159, 619 controls	School grades 16 years, IQ 18 years	0.21 – 1.18%
Canadian provincial health database	2004 – 2012	28, 366 exposed 55, 910 controls	EDI questionnaire	1.05 – 1.06

Outcomes UDT

- Prospective birth cohort
  - Hart *et al* 2015
  - N=753
  - Control males
  - Lower testicular volume, sperm output and concentration
- Paternity
  - 1955 – 1971
  - Rates
    - 62% bilateral
    - 89.5% unilateral
    - 94% controls

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Outcomes UDT

- Earlier surgery (<1 years of age)
  - Improved semen analysis
  - Testicular volume
- Role of GnRH
  - Spinelli *et al* 2014
  - RCT
  - N=62
  - Doses prior to and after surgery
  - Reduced atrophy index

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What we will be doing in 2020?

- Enhanced screening
  - UDT and ATS
- Reduced use of US
- Early referral <3 months congenital UDT
- Elective surgery 3 to 9 months congenital UDT +/- GnRH
- Tailored surgery dependent on initial position of UDT
  - Increased single stage laparoscopic orchidopexy for impalpable UDT

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Conclusion

- UDT common
- Diagnosis, early referral and prompt surgery still a challenge even in wealthy counties
- Increasing evidence of benefits of earlier surgery



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References

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