Hypospadias
Introduction: Embryology and Practical Anatomy for the Surgeon

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Hypospadias

Hypospadias results from incomplete development of the urethra and occurs in 0.3% of the male population. Problems resulting from this condition include, deviation of the urinary stream, cosmetic and psychological considerations, and potential adverse effect on sexual functioning. The optimal time to perform hypospadias repair is between the ages of 6 and 15 months, when the psychological effects of general surgery are minimal.

An understanding of the anatomy of the normal penis is critical to optimal reconstruction. For example, the neurovascular bundle on the penis fans out quite proximally on the corporal bodies and care should be taken not to disturb these structures during penile straightening procedures. The vascularity of the normal penis and the hypospadiac penis are similar except for the abnormal urethral spongiosa at the site of the hypospadiac defect.

Presently, the onlay island flap is the most versatile repair for penile shaft and more severe hypospadias. Based on the blood supply to the prepuce, the flap can be used to bridge a long gap using the flap in onlay or tubularized form. In general, it is very rare to resect the urethral plate with penile straightening being performed by dorsal plication. More recently, a modification of the Thiersch-Duplay repair is being used with incision of the urethral plate. For severe hypospadias two-stage repairs are also coming back into vogue, but this has been reserved for the very severe perineal and scrotal hypospadias.

In conclusion, the hypospadiac surgeon should be well versed in all types of hypospadias repair, and a clear understanding of the neurovascular anatomy is critical for the best results in these young children.

**Algorithm for Repair**

1. Orthoplasty
2. Urethroplasty
3. Glansplasty
4. Scrotoplasty
5. Skin

**Etiology of Penile Curvature**

1. Skin
2. Dartos Fascia
3. Corporal Disproportion
4. Short Urethra
Algorithm for Hypospadias Repair

Preservation of Urethral Plate
Skin and Dartos Dissection

Distal

- Glass Configuration
- Meatal Quality and Location
- Urethral Plate Width

Assess Curvature
Dorsal Plication if necessary

Assess Curvature (Finger test)
Dorsal Plication if necessary
Rarely Resect Plate
Rarely Dermal Graft

Onlay
Two Stage (foreskin amount)

- MAGPI
- GAP/Pyramid
- Dorsal Incision/Tubularization
- Onlay

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Dorsal Plication (midline) Repair