Penile diseases

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Problems with the penis which can cause pain and affect a man's sexual function and fertility.
Erectile dysfunction

Priapism

Balanitis

Penile fracture

Peyronie's disease
Erectile dysfunction - inability to get or keep an erection

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Balanitis - inflammation of the skin covering the head of the penis, most often in men and boys who have not been circumcised

Penile fracture - is rupture of one or both of the tunica albuginea

Peyronie's disease - bending of the penis during an erection due to a hard lump called a plaque
Definition of erectile dysfunction (ED)

Erectile dysfunction (ED) or impotence is characterized by the inability to develop or maintain an erection of the penis during sexual activity for at least 6 months.

NIH Consensus Development Panel on Impotence
Anatomy of the penis

- (Corpus cavernosum)
- V. dorsalis penis superficialis
- V. dorsalis penis profunda
- A. dorsalis penis
- A. profunda penis
- BUCK-Faszie
- (Corpus Spongiosum)
- (Urethra)
Physiology of erection

Triggered by the parasympathetic division of the autonomic nervous system, Nitric Oxid (NO) increases the blood flow in the trabecular spaces, resulting in an erection. Simultaneously, a compression of the veins occurs.
Sexual stimulations result in the release of NO from nerves and endothelial cells directly into the penis.

PDE5 normally inhibits penile erection by degrading cGMP (cyclic guanosine monophosphate).

PDE5 inhibitors lower the activity of PDE5 by competing with cGMP and consequently raise the level of cGMP.
Therapy of erectile dysfunction: PDE5-inhibitors
Pharmacological characteristics

<table>
<thead>
<tr>
<th>PDE 5-inhibitors</th>
<th>Earliest effect</th>
<th>Pharmacologic distinction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sildenafil (Viagra®)</td>
<td>14 Minuten²</td>
<td>12 Stunden²</td>
</tr>
<tr>
<td>Tadalafil (Cialis®)</td>
<td>16 Minuten³</td>
<td>36 Stunden⁴</td>
</tr>
<tr>
<td>Vardenafil (Levitra®)</td>
<td>10 Minuten⁵</td>
<td>12 Stunden⁶</td>
</tr>
<tr>
<td>Avanafil Spedra®</td>
<td>15 Minuten⁷</td>
<td>6 Stunden⁷</td>
</tr>
</tbody>
</table>

Different pharmacological effects

Therapy of erectile dysfunction

Penile pump

Vakuumpumpe (Motor)

Ein-/Ausschalter

Vakuumpumpe (mechanisch)

Gummiring

Pumpenhebel
Therapy of erectile dysfunction

Injected medication

Alprostadil

C. cavernosa
Therapy of erectile dysfunction

MUSE (Medical Urethral System for Erection) with PGE1
Therapy of erectile dysfunction

Penile implants
Priapus, a fertility god often represented with a disproportionately large and permanent erection.
Priapism

Priapism is a potentially painful medical condition in which the erect penis does not return to its flaccid state, despite the absence of both physical and psychological stimulation, within four hours.

Priapism may be associated with hematological disorders, especially sickle-cell disease and other conditions such as leukemia, thalassemia, neurologic disorders such as spinal cord lesions and spinal cord trauma.

Low-flow und high-flow-Priapismus

ischaemic  non-ischaemic  distinguish with blood gas analyse
**Priapism**

**Therapy:**
The first step in management is a puncture of one corpora cavernosa. Sometimes a medical therapy is administrated (Etilerfin) or *directly a surgery*.

If aspiration fails and tumescence recurs, surgical *shunts* are next attempted. These attempt to reverse the priapic state by shunting blood from the rigid corpora cavernosa into the corpus spongiosum (which contains the glans and the urethra). Distal shunts are the first step, followed by more proximal shunts.
Priapism

shunting blood from the rigid corpora cavernosa into the corpus spongiosum
Balanitis

*Balanitis* is inflammation of the glans penis.

When the foreskin is also affected, it is termed *balanoposthitis.*
Balanitis

Inflammation of the glans penis and the preputial mucosa of a circumcised penis
Phimosis

It is a condition in males where the foreskin cannot be fully retracted over the glans penis.
Paraphimosis is a medical condition where the foreskin becomes trapped behind the glans penis, and cannot be reduced.
Penile fracture is rupture of one or both of the tunica albuginea, the fibrous coverings that envelop the penis's corpora cavernosa.
Penile fracture
Penile fracture
François Gigot de LaPeyronie (1678-1747)

De la Peyronie F.: 
*Sur quelques obstacles qui s’opposent à l’éjaculation naturelle de la semence.*

Mem Acad Roy Chir 1743; 
1: 318-333
Symptoms

• penile pain
• penile plaque
• deviation
• erectile dysfunction
• penile shortening
Ethiopathogenesis

resolving 13%

Rep. mikrotraumatisation with a genetic disposition

Patients are free of pain in 12 – 18 months

Gelbard et al.: J Urol 1990; 144: 1376
Phases

**Inflammatory stage**

**stable stage**
Therapy

• drug therapy

• Intraleisonal therapy

• other non-invasive Therapies
  1. ESWT
  2. Radiation
  3. Iontophoresis
1. The exact mode of action is unclear
2. Destruction of penile pain receptors
3. Influence of inflammatory components

Results of prospective, randomized, double-blinded, placebo-controlled Studies.

Pain relief

**in summary:** no significant effect of deviation, but pain reduction and improvement of the erectile function

IONTOPHORESIS

Elektrokinetic transport (Electrophoresis)

- transdermal transport of drugs
- high local concentration
- low side effect rates
Penile stretcher

Andro-Penis®

Levine et al., J Sex Med 2008
Gontero et al., J Sex Med 2009

www.andromedical.com
Ventral shortening procedure

Penile straightening of the penis by ventral shortening:
Surgery: „Essed-Schroeder“
Dorsal Incision with graft interposition

Penile straightening with a small Incision of the dorsal tunica albuginea and implantation of a graft (Montorsi-Lue-technique):
„Small Incision-procedure with Tutopatch™-graft
Dorsal Incision with graft interposition

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Dorsal Incision with graft interposition
Avoiding shrinkage of the graft

Vitamine B (3 months)

PDE-5 inhibitors (3 months)

Vacuum device (3-6 months)

Modified according to Montorsi et al., J Urol (2000)
Combination of techniques

deviations of more than 90°
with severe rotations
therapy – PD & ED

Penile straightening by simultaneous implantation of a penile implant (Wilson)

- safety
- effective
- high patient satisfaction

From: Carson, Kirby, Goldstein: „Textbook of erectile dysfunction“

Wilson et al., J Urol 165: 825 (2001)
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