

# Cryptorchidism

**Cryptorchidism** is a general term for **the absence of a testis in a scrotum in a patient over 4 months of age**. In approximately 70% of all cases, the undescended testicle is palpable.

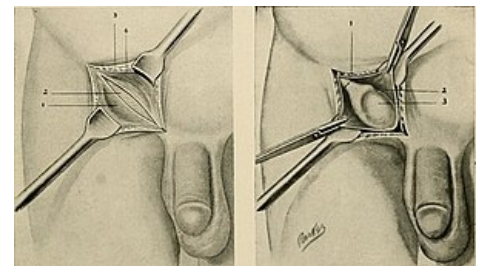
## Etiology

If one or both testes do not descend within the 4th month of a boy's life, we speak of cryptorchidism. In term-born boys, cryptorchidism occurs in approximately 1% of cases at 1 year of age. This is the most common congenital malformation of the genitals in boys. In boys older than one year, it occurs in 0.8–1.8%. Disorder of testicular descent is usually caused by impaired endocrine regulation either at the level of the hypothalamus-pituitary axis or by reduced (or missing) stimulation of Leydig cells, Luteinizing hormone (LH) or Chorionic gonadotropin (HCG).

Prolonged abnormal testicular placement can lead to reduced fertility in adulthood. Furthermore, such a testicle is 2-8 times higher (depending on the location) of the risk of cancer, and most often (in 74% of cases) it is seminoma. Up to 10% of patients with testicular cancer have a history of cryptorchidism.

## Terminology

- **Retinal / undescended testicles**, so-called **true cryptorchidism** - is a case where the testicle is located somewhere on the path of physiological descent. It can be placed abdominally, inguinally or supracrotally. "Slippery testes" refers to the state when the retained testicles can be withdrawn into the scrotum, however, immediately after releasing them, it returns to its non-physiological position.
- **Ectopic testicles** - the testicle is located completely outside the area of physiological descent. In most cases, we find it laterocranially from the outer inguinal ring, but sometimes we can find it on the perineum, in the femoral region, at the root of the penis or on the other half of the scrotum.
- **Absence of the testicle** - the testicle is intangible because it was not developed at all (testicular agenesis) or gradually atrophied (testicular atrophy). These conditions can be caused, for example, by prenatal torsion.
- **Retractile testis** - cannot be considered true cryptorchidism. This is an occasional migration of the testicle due to increased cremaster reflex. By gentle manipulation, it is possible to pull the testicle back into the scrotum. As long as the activity of muscle fibers m. cremaster limits, eg in Turkish sitting or in a warm bath, the testicle remains in the scrotum. In the future, however, it may change into an ascending testicle (see below).
- **Ascendant Testicle** - the testicle was previously present in the scrotum, but later for some reason it changed position and now the condition de facto corresponds to a retained / undescended testicle.



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## Dispensarization

The following patients should be referred to a pediatric urologist (possibly for multidisciplinary follow-up and follow-up):

- newborns (phenotypically boys);
  - with bilaterally intangible testes;
  - with unilaterally intangible testis and hypospadias;
  - with suspected sexual differentiation disorder (including congenital adrenal hyperplasia);
- boys older than 1 year with bilaterally intangible testes;
- unilaterally intangible testes from birth;
- unilaterally or bilaterally palpable undescended testicles from birth (ideally between 4 and 12 months of age);
- testicular ascendants in boys older than 1 year;
- suspicion of atrophic testicles when palpation of the scrotum;
- difficult distinction between undescended, retractile or ectopic testis at any age.

## Diagnostics

### Physical examination

For a correct examination of the testicle position, a calm environment and the patience of the examinee and the examiner are required. The presence of one parent is essential. We examine the patient first standing, then lying down and finally in a Turkish sitting position. Immediately after the discovery of the scrotum, we perform the aspect that precedes the palpation examination. Sufficiently warm hands and care are important when palpating, so that we do not induce a cremaster reflex unnecessarily. First, we place the fingers of the hand in the area of the crista iliaca and move them towards the scrotum during the inguinal canal. We can help by compressing the abdominal wall and increasing intra-abdominal pressure. If the testicle is not palpable, it is necessary to examine

the places of possible ectopic placement. In the Turkish sitting position, the abdominal muscles relax, thus reducing the effect of the cremaster contraction. Approximately 18% of non-palpable testes can be removed during general anesthesia in the operating room.

**If no testicle can be felt, it is necessary to distinguish agenesis, androgen insensitivity syndrome or chromosomal abnormality from simple bilateral cryptorchidism. In practice, this means arranging for follow-up examination by a pediatric endocrinologist.**

If baseline FSH levels are elevated in a boy under 9 years of age, it is testicular agenesis and no further investigation is required.

For normal baseline FSH and LH levels, testosterone can be stimulated with hCG, with two possible results:

- testosterone level rises adequately - exploratory laparoscopy is indicated (abdominally retinal testes or remnants of functional testicular tissue may be present);
- testosterone levels do not rise enough - exploratory laparoscopy is still indicated (dysfunctional testicular tissue may be present).

## Imaging Methods

A number of studies have shown, that examination by an experienced physician has a much greater sensitivity in the diagnosis of cryptorchidism than ultrasound, computed tomography (CT) or magnetic resonance imaging (MRI) and therefore these examinations are not routinely performed. In rare cases of bilaterally non-palpable testes, magnetic resonance imaging with gadolinium may be beneficial in the detection of abdominal retinal testes.

**The absence of testicles in images taken by any imaging method does not demonstrate their agenesis.**

## Treatment

Adequate treatment should start immediately after 10 months of age and end no later than 24 months of age. It is possible to use conservative (but is still considered controversial) and surgical treatment. Conservative treatment includes hormonal treatment, which can be used only for disorders, where no mechanical barrier is proven and with high retention. We use surgical treatment if it is not possible to use hormonal treatment or if this treatment was not successful.

### Palpable undescended testicles / testicles

Under general anesthesia (possibly together with ilioinguinal nerve block or caudal epidural anesthesia), an incision in the groin leads to aponeurosis m. obliquus externus abdominis, which is intersected in the direction of the fibers. It locates the testicles with the sperm funicular and are released from the fibers of the cremaster and gubernacula. The tunica vaginalis and the processus vaginalis are separated from the ductus deferens and the spermatic vessels. The vaginal process is twisted, ligated with a puncture ligature and amputated. If the testicles cannot be withdrawn into the scrotum, preparation up to the retroperitoneum through the anulus inguinalis profundus can help. Using a finger or tool, a tunnel is created from the site of the inguinal canal to the scrotum. The skin of the scrotum is cut above the finger, penetrated through the tunica dartos by coagulation and a subcutaneous pocket is formed. The pean is carefully passed through the incision on the scrotum to the inguinal canal, the testicle is caught behind the rest of the gubernaculum, which is pulled down, the defect in the tunica dartos is slightly sealed with individual sutures and the testicle is inserted into the subcutaneous pocket. The procedure typically ends by closing the groin in layers and placing the individual self-absorbing sutures on the skin of the scrotum.

### Non-palpable undescended testicles / testicles

If the testicle is not palpable even under general anesthesia, the first step is either a groin revision or a laparoscopic revision of the abdominal cavity (procedures vary according to the habits of individual clinics). In the last decade, it is preferred to start with a laparoscopic revision. If the groin is first revised and the testicles (and its remains) are not found, then it is necessary to continue the laparoscopic revision at one time. In one retrospective study, 215 boys with non-palpable testis in only 34% of them were located distal to the anulus inguinalis profundus.

## References

### Related articles

- Scrotum
- Testicle

### Used literature

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- HOLCOMB III, George W. – MURPHY, J. Patrick – OSTLIE, Daniel J.. *Ashcraft's Pediatric Surgery*. 6. edition. Elsevier, 2014. ISBN 145574333X.

