

Managing boys with undescended testes

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Both babies and boys up to 6 years of age need to be checked for undescended testes. Boys with congenital undescended testes that are diagnosed definitively at 3 months of age and operated on by age 6 to 12 months are likely to have both near-normal fertility and a low cancer risk. School-aged boys who develop acquired undescended testes usually need an operation if the testes are unable to remain positioned in the scrotum spontaneously.

Failure of the testis to reach the scrotum by birth affects more than 5% of newborn boys.¹ Premature infants may be born before testicular descent has been completed (about 35 weeks' gestation) or descent may be slightly delayed until just after birth. If one or both of the testes have not reached the scrotum by three months after normal gestation, the boy can be diagnosed with congenital undescended testis and will need treatment.



Some boys older than 2 years of age will present with undescended testis; often these boys will have experienced delayed descent of the testis that was complete by three months after birth. This condition is now recognised as acquired undescended testis. During the natural history of acquired undescended testis there may be times when the testes appear 'retractile'. Boys with this condition need treatment to prevent secondary testicular malfunction similar to those with congenital undescended testis.

Pathophysiology

Testicular descent from its original intraperitoneal location in the fetus is a complex process occurring in two separate morphological steps that have different hormonal controls. The first step, the transabdominal phase, occurs between eight and 15 weeks' gestation. It is regulated by the newly described hormone, insulin-like hormone 3, which causes the genitoinguinal ligament, known as the gubernaculum, to enlarge and hold the testis near the groin as the fetus grows. This phase is relatively simple mechanically (as the enlarged gubernaculum passively anchors the testis near the groin) and is not often found to be abnormal, so intra-abdominal testes are uncommon (less than 10% of cases).

The second step, the inguinoscrotal phase, requires the gubernaculum (a 1 cm long structure) to migrate more than 4 cm

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from the groin to reach the scrotum. This phase is controlled by testosterone and, probably as a consequence of the very significant and complex change in position, is commonly abnormal, leading to undescended testis.

Most of the likely multiple causes of undescended testis remain unknown, but environmental factors that interfere with testosterone production have been implicated.¹

Acquired undescended testis occurs later in childhood. It is caused by failure of the spermatic cord to elongate as quickly as the boy grows, leaving the testis behind as the scrotum becomes further removed from the groin during childhood. The distance from the groin to the scrotum increases from 4 to 5 cm in a baby to 8 to 10 cm in a 10-year-old, so the spermatic cord needs to double in length to maintain a scrotal position for the testis. The cause of acquired undescended testis is unknown, but may be caused by deficient postnatal androgen levels at 2 to 6 months of age.

Presentation

Boys with undescended testis present with an empty hemiscrotum and at birth this is easy to recognise because pregnancy hormones make the newborn scrotum very flabby and the absence of a testis is obvious. Usually when the testis is not in the scrotum it is palpable in the groin near the external inguinal ring secondary to failed inguinoscrotal descent. In about 10% of cases of undescended testes the transabdominal phase is deficient and the testis is intra-abdominal, and therefore impalpable. In this case an ultrasound scan is useful to identify whether the testis is present and where it is located.

In school-aged boys the small, contracted scrotum and the active retraction reflex make clinical diagnosis much more difficult. The key to finding an undescended testis is to palpate the groin very gently, as this makes the testis easier to find. It is also worth remembering that the testis descends inside an extension of the peritoneal membrane, the processus vaginalis, which means that even if descent was deficient the undescended testis is still mobile to touch (because it is on a mesentery inside the processus vaginalis).

Once the diagnosis of undescended testis has been considered, it is usually worth referring the child to a paediatric surgeon rather than investigating further with an ultrasound scan, except when neither testes are palpable.

Management

Boys with congenital undescended testis will need an orchidopexy ideally between 6 and 12 months of age. If the testis is not in the scrotum at birth, the baby should be re-examined at 3 months of age. The boy should be referred to a specialist if the testis is still undescended at 3 months of age. Infants having an orchidopexy at age 6 to 12 months are likely to have a much better prognosis than previously when surgery was performed at a later age. It is thought that correcting the testis malposition at this

very early age will prevent the secondary testicular degeneration that leads to infertility and an increased risk of testicular cancer in young men, which at present is about fivefold higher than in men without undescended testis in childhood.

Boys with acquired undescended testis will need an orchidopexy to prevent impaired fertility, but they are thought to have a much lower risk of testicular cancer than boys with congenital undescended testis.¹ Most paediatric surgeons will perform an orchidopexy in older boys with testes that do not remain positioned in the scrotum spontaneously.

Boys in early primary school should be checked for undescended testis when they present with intercurrent medical problems, because it is at this age that acquired undescended testis is developing and is often missed by parents. If a 5-year-old boy has testes that are difficult to locate, he should be referred for expert assessment.

Orchidopexy in boys with either congenital or acquired undescended testis is a relatively simple day surgery, with recovery within a few days. Surgery has a high success rate (more than 95% resolved by a single operation) and a low risk (less than 5%) of testicular atrophy. Boys with intra-abdominal testes may need a two-stage operation, with a slightly lower rate of success (80 to 90%).

Conclusion

Undescended testes are common, and both newborn infants and primary school boys are affected, depending on whether the cause is congenital maldescent or acquired 'ascent'. In both groups regular screening is needed to ensure that timely treatment can be offered to ensure an optimal long-term prognosis for testicular function in adulthood.

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Reference

1. Hutson JM, Southwell BR, Li R, et al. The regulation of testicular descent and the effects of cryptorchidism. *Endocr Rev* 2013; 34: 725-752.

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