Surgery in Boys

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Introduction

To fully understand the challenges and treatment option for a boy with a difference in sexual development we need to look both at the development of the testicles and the development of the penis and scrotum.

The testicles

The testicles are important as they produce sperm and produce the male hormones early in a boy’s life and from puberty onwards. They develop high up in the abdomen and move gradually down before entering the groin and making their way into the scrotum. They have blood vessels that connect them to the kidney and a tube called “the Vas” which connects them to the urethra and will carry the sperm (hence the term “vasectomy” for the operation of cutting the vas to prevent unwanted pregnancies). To give the testicle the best chance of developing and working normally it has to make its way down to the scrotum by a year of age. This is because the testicle has been designed to work best at the cooler temperature found in the scrotum.

In a boy with a DSD the testes may not have developed to their full potential and may not have made their way down to the scrotum. The operation to bring the testicle the rest of the way down is called an orchidopexy. There are basically two types of orchidopexy used commonly in the UK, both are performed under a general anaesthetic. Your son’s surgeon will recommend which technique should be used dependant on how far down the testicle has come. If the testicle can be felt within the groin then it can be brought the rest of the way down into the scrotum as a simple day-case procedure. If the testicle is still within the abdomen then the surgeon will perform a laparoscopy (key hole surgery) to find the testicle and bring it into the scrotum. You should be aware that sometimes there is no testicle to find or the testicle is malformed and it needs to be removed. On other occasions the testicle is high up in the abdomen and needs to be brought down in two stages. Your son’s surgeon will discuss all of these options with you before surgery.
Some doctors believe that the development of the testis can be improved by giving the boy a short course of hormonal treatment. Not all doctors agree with this and some think that the hormones can cause harm. You should discuss the pros and cons of this with your surgeon and paediatric endocrinologist.

The penis and scrotum

When a boy is developing, his scrotum is split into two halves and the penis develops between these two “half-scrotums”. The penis starts out pointing down towards the boy’s feet, with the opening for urine quite close to the bottom. During development the penis gets bigger, straightens out and starts pointing upwards. The urethra starts to get longer and its opening moves up the penis until it reaches its tip. As the urethra gets longer the two halves of the scrotum move together and join in the middle creating an obvious “join line” called by doctors “the midline raphe”.

In a boy with a DSD this process is not complete. The penis may be smaller and curved downwards; this is called “cordee”. The foreskin is mostly on the upper side of the penis and appears to resemble a hood. The urethra opens at the base of the penis and the scrotum is often split in two; surgeons call this a “bifid scrotum” and the whole appearance of the penis and scrotum is called “hypospadias”. Hypospadias is a very common abnormality, but in boys with a DSD the problem is more severe.

Most boys with a DSD have no difficulty passing urine through the abnormally situated opening. However if there is any doubt scans and other tests may be considered. Your surgeon may recommend a test called a cystoscopy where he looks at the urethra tube with a small camera.

Surgery is routinely recommended to correct these anatomical differences of the penis and scrotum. The aim of the surgery is to straighten the penis, bring the two halves of the scrotum together and make a urethra that will carry the urine to the tip of the penis. The surgery itself can make the penis look longer, but it cannot actually make it bigger. Hormones can be given to do this in the short term. The hormones can be given as a cream applied to the penis, which
reduces their effect on the whole child, this makes their use less controversial than hormones given for the testes.

There are many different types of surgery to make the appearance of the penis and scrotum look more masculine. The majority of surgeons within the UK now use a technique that takes two operations or stages. In the first stage the penis is straightened and a graft is taken from the inner layer of foreskin and placed on the under side of the penis. When this has healed and the skin looks healthy (this normally takes around six months) a second operation is performed to form this skin into a new urethra.

**Complications of surgery**

The surgery for boys with a DSD is difficult and the success not only depends on the operation chosen and the skill of the surgeon, but on the original diagnosis and size of the penis. As well as the routine complications related to the general anaesthetic that will be required, there are a number of complications related to the surgery itself and some related to the healing after the surgery.

In the surgery, the surgeon attempts to make the penis as straight as possible and forms a new urethra to carry the urine to the tip of the penis. The surgeon wants this tube to carry urine without a leak and to be big enough for the boy to pass urine without difficulty. The urethra normally has the ability to squeeze and get rid of any urine within it, this does not happen in a surgically created urethra so it is common for a boy with hypospadias to dribble a small amount of urine after going to the toilet. If the urethra is too narrow then the boy struggles to get the urine passed the narrowing and is prone to urine infections, this is called a stricture and happens once in every 20 surgeries. If some of the urine leaks out of the tube before it gets to the tip this is called a fistula. This makes it impossible for the boy to pass urine in a single stream. This complication occurs in about 1 in 10 surgeries. Both of these complications will require further surgery.

Whether there have been complications or not long-term follow up is always required to make sure that the boy has no difficulty passing urine.
Further questions about surgery for boys with a DSD.

Does my son really need surgery?
On some occasions a boy will require surgery for medical reasons when there is a problem with the passage of urine out of the urethra. However, in most cases surgery is done when both the parents and the doctors think it will be in the boy’s best interests. Your surgeon should be able to examine your son and let you know how difficult he/she thinks the surgery will be and what the penis and scrotum will look like after surgery.

When should surgery be done?
The surgery can be done at any age after about 6 months. Most parents ask for the surgery to be done as soon as possible. The majority of surgeons who look after boys with DSD would prefer to do the surgery around a year of age to minimize the chance of him remembering the surgery.

Can the nerves to the penis be damaged?
The nerves of the penis travel down the back/top of the penis, which is the other side to where most of the surgery is performed. On occasions surgery has to be done on this side to correct a severe bend. In this situation the surgeon looks for the nerves and makes sure that they are not damaged.

What happens to the foreskin?
In boys with minor hypospadias the foreskin can be preserved and reconstructed to make the penis look uncircumcised. In boys with a DSD then this is not possible as the skin is used to make a new urethra. The penis therefore looks circumcised.
What about scarring of the penis?

All boys who have surgery on their penis for a DSD will have some scarring of their penis. The amount of scarring varies from boy to boy. In some the scarring will be minimal and the penis will simply look circumcised.