

High Undescended Testis a New Technique for Orchidopexy

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The term cryptorchidism meaning hidden testis (Greek cryptos: orchis) has now been widely accepted as appropriate for the different forms of undescended testis. This is the most common disorder of sexual differentiation in the male. About 4% of the new born boys have an undescended testis. At one month the incidence falls to 1.8% and by 9 months it is further diminished to about 0.8%¹ In 1762 John Hunter concluded that the testicle was directed in its descent by the Gubernaculum -- the word meaning "Helm" or "Helms man" and if descent was arrested he said, "it is not easy to ascertain the cause of failure of the descent, but I am inclined to suspect that fault originates in the testis themselves."² This holds true even to this day and age.

Whereas 3/4th of the undescended testis at birth will descend by the age of one year, for the remaining 1/4th surgery is indicated preferably at an early stage. The general agreement now is to perform orchidopexy between 18 months to 2 years of age¹⁻³.

The object of treatment in cryptorchidism is to place the testis into the scrotum, in order to improve spermatogenesis, to make the testis more accessible for examination for the detection of malignancy, to correct the associated hernia and to alleviate the psychological problems related to this disorder.

Although standard orchidopexy technique will allow the testis to be brought down into the scrotum in majority of the cases, there are those, in which adequate length of the spermatic vessels cannot be achieved by this method "High undescended testis". This high undescended testis is encountered more often in impalpable testis (about 20%) in which mobilization of the testis into the scrotum without risking its viability presents an operative challenge.

Several techniques have been described in the past to deal with this difficult situation, ranging from extensive mobilization of the spermatic vessels to staged procedures and finally upto autotransplantation of the testicle through micro vascular techniques. We have devised a simple technique whereby re-

routing of the spermatic vessels behind the transversalis fascia gives an additional 3-4 cm of length to the testicular pedicle, so that the testes can be placed into the scrotum. This technique is a modification of a previously described procedure (Prentiss maneuver) involving the division of the inferior epigastric vessels and the transversalis fascia to place the spermatic vessels medially⁴

MATERIAL AND METHOD

Over a period of four years (from 1987 to 1990), A total No of 90 cases of undescended testis were operated upon. This includes all patients under 14 years of age who were offered orchidopexy. About 40 % (36) of these cases had impalpable testis and 33% (30) were considered to be high undescended testis (Testis at or close to the deep inguinal ring in which following adequate mobilization of the testicular pedicle it was not possible to bring the testis into the midscrotum. In these cases the new technique of subfascial rerouting of the spermatic vessels were carried out by the senior author (Mahmood Ahmad).

Steps of the operation

All steps of the operation are described briefly for a better understanding and the ease of presentation. Steps 1, 2, 3 and 5 are reproduced from the standard texts¹⁻³.

Technique

Step-1.

A skin crease incision is made 1 cm above and parallel to the medial two-third of the inguinal ligament. Inguinal canal is opened by dividing external oblique in the line of its fibres. A careful search is made for the testis. Once found the tunica of the testis is cleared of adherent tissues and the gubernaculum at the lower pole divided. Cremasteric fascia is cleared from the spermatic cord by blunt gauze dissection so that the cord lies free up to the internal ring. Artery forceps may be applied to the tunica.

Step-2

The covering of the cord is then divided longitudinally and free margins held apart with forceps so as to expose the contents. If a hernial sac is found, an inguinal herniotomy is performed. In the proximal part of the cord the vas deferens and testicular vessels are dissected free from the surrounding tissue. The vas and vessels are then held to one side and the remaining tissue divided transversely.

Step-3

At this stage the testis is suspended from the internal ring only by the vas and vessels. The peritoneum is lifted free by blunt dissection using a finger or gauze and the bands, lateral to the spermatic vessels seen when the vessels are under gentle traction, are divided.

Step-4

At this stage the testis can usually be placed into scrotum, but when tension on the vessels is expected, an artery forceps is passed behind the fascia transversalis from a point just above the pubic tubercle, and is advanced laterally towards the deep ring. A finger is kept over the point where pulsation of external iliac vessels is felt, and the tip of the artery forceps brought out of the deep ring. The testis is held by the artery forceps applied to the tunica at the lower pole. By withdrawing the forceps, the testis is pulled behind the fascia transversalis out of the small hole above the pubic tubercle.

Step-5

The testis may be placed in a pouch in the scrotal wall between the Dartos and the skin (Dartos Pouch). First a finger is pushed through the inguinal wound to break down fascia occluding the neck of the scrotum and to stretch the corrugated skin. With finger still in place a transverse incision is made just through the skin in the lower part of the scrotum and a pouch is developed between the dartos and the skin. An artery forceps is then pushed through the dartos and the fascia, through the scrotum and up-to the inguinal wound where the testis is grasped, by the tunica. The testis is pulled down through the dartos into the pouch. The scrotal skin is then closed over the testis with absorbable interrupted sutures. The external

fixation stitch is some times required as an additional measure to prevent retraction of the testis.

RESULTS

Out of a total No 90 cases of undescended testis 29 patients underwent orchidopexy by the above technique. In only one patient (age 14 years) the testis could not be brought into the scrotum, and hence orchiectomy was performed. The post-operative course and later follow up was satisfactory in all those children who had orchidopexy by the new technique (minimum 3 months).

DISCUSSION

Cryptorchidism is not an uncommon condition and is frequently encountered in the general surgical as well as paediatric practice. The high undescended testis is a definite entity and poses a major problem to the practising surgeon. In the present series of the 90 cases with cryptorchidism, 30 were considered to have high undescended testis (33%). This figure is higher than 20% previously reported in the literature.³ The techniques previously described for a difficult orchidopexy are given below.

- (a) Additional retroperitoneal dissection and extensive mobilization of spermatic vessels to gain extra length⁵.
- (b) Fowler-Stephen's procedure, in which the testicular artery is divided in the hope that testes will retain sufficient vascularity from collateral blood flow through the artery to Vas (deferential artery). The incidence of testicular atrophy as with this procedure is about 30% which is significant⁶.
- (c) Staged Fowler-Stephens procedure: The testicular artery is simply ligated *in situ* to allow the collateral blood supply to develop without mobilizing the testes itself. 6-12 months later a standard Fowler-Stephen's orchidopexy is carried out.⁷
- (d) A planned two stage orchidopexy: In the first stage the testis and the spermatic cord after maximum mobilization are wrapped with a silicone sheath to prevent adhesions and

placed in the inguinal canal. The second stage is performed one year later. The success rate is variable 70-80%.⁸

- (e) Testicular autotransplantation, through microvascular technique:
A planned procedure and cannot be performed before 2-4 years of age⁹. This is a highly specialized procedure and the experience is limited.
- (f) Prentiss Maneuvour:
The inferior epigastric vessels are ligated and the transversalis fascia in the floor of the inguinal canal divided to allow the spermatic vessels to be placed medially with a more direct course to the scrotum⁴.
- (g) Rerouting of the testicular vessels (Authors Technique):
Normally the testicular artery assumes a triangular course from its origin at the aorta through the deep inguinal ring down to the base of the scrotum. Rerouting of the testicular vessels behind the fascia transversalis makes the course of these vessels direct, thus gaining on extra 3-4 cm length to the testicular pedicle which is sufficient to bring the testes to the scrotum without tension.

This technique is simpler one stage procedure and obviates the need for the ligation, division of the fascia and vessels in the Floor of the inguinal canal resulting in weakness of the posterior inguinal wall. The technique was used in 30 cases of high undescended testis and was successful in 29 (over 96% successful).

We conclude that our technique of sub fascial re-routing of the spermatic vessels in orchidopexy for the high undescended testis (the difficult type) is simple safe and highly effective.

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