TESTICULAR RE-ROUTING IN HIGH UNDESCENDED TESTIS

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ABSTRACT

Objective: *To assess the efficacy of re-routing the testis in the inguinal canal, in high undescended testis.*

Material and Methods: *Testicular re-routing was done in 19 patients with high undescended testis, where usual dissection of the testis brought it to the superficial inguinal pouch, upper part of scrotum or mid scrotum but with considerable tension.*

Result: *In all nineteen cases in which the procedure was employed, satisfactory mid scrotal position was achieved without extra complication which was not possible with routine dissection.*

Conclusion: *Testicular re-routing is a simple, and useful method in achieving, a mid scrotal position, not possible with ordinary dissection of the testis.*

Key Words: *Orchidopexy, Testicular re-routing, undescended testis.*

INTRODUCTION

Cryptorchidism (Greek word Cryptos meaning hidden and orchis meaning testis) is widely used for different forms of undescended testis[1]. Cryptorchidisim is a common problem in Children and its incidence is about 4% at birth[2], at one month it falls to 1.8% and up to 1% at the age of two years. Whereas 75% of the undescended testis at birth will descend at the age of one year, the remaining 25% will require surgical intervention[3,4]. The timing of surgery is a subject to controversy[5]. The general consensus is to perform orchidopexy between the age of one and one and a half years[6]. Some recent studies recommend surgery at the age of six months to allow the development of post natal germ cell to proceed normally. The objective behind early placement of the undescended testis into the scrotum is to improve spermatogenesis; to assess the testis early; for development of malignancy; to correct the associated hernia; and to alleviate the psychological trauma[7].

The testis can be brought to the scrotum mostly through standard orchidopexy technique. Whenever it is not possible to bring the testis to the scrotum, through the standard technique the testicular vessel is usually the limiting factor[8].

Keeping this factor in mind different surgical techniques are evolved like the Stephen Fowler technique in which ligation of testicular vessel and bringing the testis on the vessels of the vas in single or two stages is done[9]. Another technique is free transfer of testis with micro-vascular anastomosis but the facility is limited to few centres.

The simple technique which is the focus of our study is devised by Khani Khalid & Mehmood et al[10]. This is a modification of an already established procedure-the Prentiss maneuver in which the inferior epigastric vessels are ligated and the fascia transversalis is divided to place the spermatic vessels medially thus gaining extra length. The procedure which we have done is a modification of the above technique in which we did not divide the fascia transversalis and the testis is brought sub fascially through the intact posterior wall.

MATERIAL AND METHODS

A total of 123 orchidopexies were done over a period of two years from Dec 2005 to Dec 2007 at Lady Reading Hospital. Testicular re-

DIFFERENT PROCEDURES OF ORCHIDOPEXIES DONE

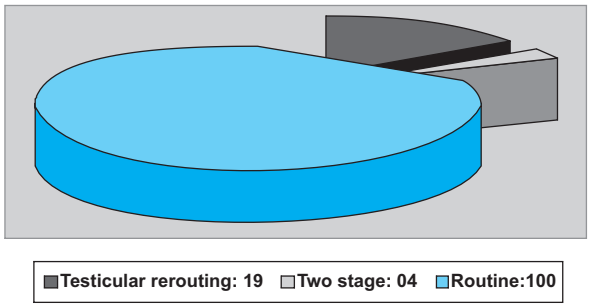

Fig. 1

routing was done in 19 cases. Routine orchidopexy was done in 100 patients while in four patients we had to do staged orchidopexy. Fig 1. Testicular re-routing was done in the patients where the usual method of dissection and mobilization of the testis could bring the testis to the superficial inguinal pouch, upper scrotum or mid scrotum but with tension. Fig. 2.

The procedure was not attempted in those cases in which the testis were intra-abdominal and from the beginning a decision of two stage usual orchidopexy was done.Up till the herniotomy and usual mobilization of the vessels and vas the procedure of orchidopexy in our study was that of the standard one. If the testis could be brought to the mid scrotum without tension then the orchidopexy was carried out in the usual manner as in our 99 cases. In the patients where mobilization could not bring the testis to the mid scrotum without tension, sub fascial re-routing of the testis was done. The steps of the procedure are as follows.

An artery forceps is passed behind the fascia transversalis from a point just above the public tubercle and is advanced laterally to the internal inguinal ring. Palpation of the external iliac vessels is done during the procedure to avoid damage to these vessels.

The artery forceps is brought out of the deep inguinal ring. The testis is held by the tunica from its lower pole. Taking care to avoid twist in the cord, and is drawn through fascia transversals, through that small opening made in the fascia transversalis medially. Fixation of the testis is done in the sub dartos pouch in the usual manner.

RESULTS

The total number of orchidopexies done during a period of two years was 123. The procedure of sub-fascial re-routing was done in 19 cases; in four cases staged orchidopexy was done, as they were not suitable for this procedure. Fig 1

All the nineteen cases were those, in whom the dissection of the cord was done in the usual manner, but it was not possible to bring the testis to the scrotum, tension free. In eleven cases out of the nineteen the testis were brought from the superficial inguinal pouch, five were brought from the upper part of the scrotum and in three the testis were in the mid scrotum but with tension The re-routing procedure was done in these cases. Fig 2.

We did not encounter any major complication except haematoma in the scrotal wound which was due to the bleeding from the scrotal dissection.

These patients were followed for six months. No, retraction, atrophy of testis or weakness of the posterior wall was noticed in all the nineteen cases.

DISCUSSION

Cryptorchidism is not an uncommon condition and orchidopexy is one of the commonest surgical procedures performed in paediatric age group.

The aim of surgery is to bring the testis to the mid scrotum without damage to the vas and vessels, and without tension on the pedicle. The length of the testicular vessel is the usual limiting factor[10].

To achieve this goal, it becomes sometimes difficult to bring the testis to the scrotum or results in considerable tension on the testicular pedicle and retracts back to the inguinal region.

DIFFERENT LEVELS FROM WHERE THE TESTIS REROUTING WAS DONE (routine dissection could bring the testis to these levels but with tension)

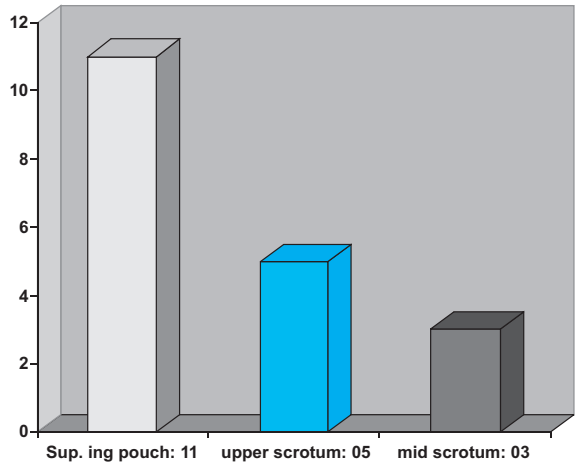

Fig. 2

To bring the high undescended testis to the mid scrotal position different surgical techniques are described e.g. two stage orchidopexy in the first stage of which the testis and cord is mobilized to the maximum length. If it could not reach to the proper place in the scrotum the testis is covered with silicon sheath and left in the inguinal canal. The second stage is done after six months-1yrs. The testis is re-explored and after mobilization it is brought to the scrotum. 70%-80% success rate is described in the literature[11, 12].

We perform this technique in the very high intra abdominal testis in our department. Another technique is Stephen Fowler technique which is performed either as a single or in two stages.

In a single stage the testis is mobilized and the testicular artery is ligated, the testis is brought to the scrotum on the vessel of the vas. There are high chances of testicular atrophy and up to 30% atrophy is reported with staged Stephen, Fowler technique described first in 1984[9,13].

In this technique, from the very beginning the decision of the staged procedure is done testicular artery is ligated but the testis is not mobilized from its bed to acquire its blood supply from the vessel of the vas and the surrounding peritoneum. Recently this procedure is done laproscropically to locate the intra-abdominal testis and clip the testicular vessel. In a second stage after six months the testis is mobilized and brought to the scrotum.

Testicular auto transplantation is another method for high intra abdominal testis. It's a planned procedure and can not be done before the age of 2-4 yrs, As, already mentioned the limiting factor in the testicular transfer to the scrotum is the length of the testicular vessels and all the technique mentioned above are performed to incase the available length of the vessel, In testicular auto-transplantation the testicular vessel is anastomosed to the inferior epigastric vessel, the size of the testicular vessel is very small and the procedure is done through microscope.

This procedure is gaining popularity but at present the procedure is limited to a few centers in the world with micro vascular expertise. In future with the hopes of spread of microvascular expertise this procedure is probably going to replace all the other procedures for high intra-abdominal testis.

Prentiss maneuver is another procedure. The principle of this procedure is based on the fact that if we divide the posterior wall of the inguinal canal the testicular vessel will acquire a direct route rather than a curved one when passes through the internal ring and we will get extra length.

The testicular re-routing is a modification of this procedure. In this procedure we do not divide the posterior wall of the inguinal canal but make a sub fascial tunnel, thus avoiding extensive dissection and disruption of the posterior inguinal wall integrity while at the same time we get the benefit of gaining extra length.

In our study we have not used this method for the testes that on exploration were found intra-abdominally. For such patients we used the simple two staged orchidopexy.

We kept the testicular re-routing limited to those cases in which with ordinary dissection, the testis could be brought to the superficial inguinal pouch, high scrotal position, or to the mid scrotal position but with obvious tension.

We have observed in the past that those testes brought to the mid scrotum with tension usually retract back to the superficial inguinal pouch needing another operation to bring it to the scrotum properly. This method helped us gaining extra 2-3 cm length which is crucially needed in those cases.

CONCLUSION

Testicular re-routing is a simple and safe method and we can gain extra length which is crucially needed in patients with undescended testis.

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