

**Redo Inguinal Orchiopexy is a safe option for still high testis.**

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**Abstract:** Undescended testis is the most common genitourinary surgical pathology seen in males. The main objective of the surgery is to provide a normally palpable testis in the scrotum. Occasionally if the testis after long enough follow up is still not lying comfortably in scrotum then it needs a redo orchiopexy which requires an experienced pediatric subspecialty surgeon, detailed anatomy knowledge, meticulous operative technique, injury-free cord dissection, full proximal retroperitoneal cord mobilization, and tension-free intra scrotal fixation. A retrospective wasreview performed on patients that had repeated redo orchiopexy, between January 2000 and December 2010, in King Abdulaziz University hospital, Jeddah, Saudi Arabia to study the final post-operative size and location. A total of 43 testes (of 37 patients) had a grand total of 50 redo inguinal orchiopexy. The follow up period ranged from 2 to 12 years results were analyzed in terms of final testicular location and its size and conclusions are mentioned.

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**Key words:** Cryptorchidism, inguinal, redo orchiopexy, undescended testis

**1. Introduction:**

Undescended testis is the most common genitourinary surgical pathology in males. It is found in 3 % of full-term infants and 33 % of preterm infants at birth and in 1 % of 1-year-old male children (1). The main objective in undescended testis surgery is to provide a normally palpable testis in the scrotum, although this is not a guarantee of fertility (2). Many surgical procedures have been described for this condition, including one- or two-stage Fowler-Stephens procedure (laparoscopic or open surgery), per scrotal orchiopexy, inguinal orchiopexy, staged orchiopexy or an extra peritoneal approach (2- 4).

Secondary or redo orchiopexy requires an experienced pediatric subspecialty surgeon (pediatric or urologic), detailed anatomic knowledge, meticulous operative technique, magnification and delicate instrumentation, injury-free cord dissection, full proximal retroperitoneal cord mobilization, and tension-free intra scrotal fixation (5).

**2. Patients and Method:**

A retrospective study was performed on patients that had repeated inguinal orchiopexy, over almost ten years, between January 2000 and December 2010, in King Abdulaziz University hospital, Jeddah, Saudi Arabia. This review consisted of all orchiopexy operated by Pediatric Surgeons alone. All the testes operated for repeated inguinal orchiopexy were reviewed for the initial size and location of testis, intra-operative location, level and type of fixation of testis, final post-operative size and location. Anorchia and vanished testes were excluded. The criterion of size was standardized into satisfactory, small and very small testis depending on

the gross evaluation by the surgeon's experience and in comparison to the contra lateral testis. Location was standardized into five easily differentiable positions which are intra-abdominal, canalicular (emergent), groin, neck and bottom of scrotum.

**Management Protocol:**

In all palpable undescended testicles, inguinal orchiopexy will be the operation of choice to fix it into the scrotum. Some would require extensive mobilization to attain a satisfactory length of the cord. After mobilization of the testicle and its cord till the internal ring a sufficient length is usually achieved to be able to fix the testis in the lowest possible level in scrotum by positioning it within the subdartos pouch.

If the testis did not reach comfortably into bottom of the scrotum then it is further fixed to the median raphe using 3/0 absorbable stitch.

In some cases the testicle would only reach the neck of the scrotum, this would require it to be fixed to peanut gauze across the skin with a non absorbable stitch. This will help in keeping the spermatic cord stretched on gentle traction without jeopardizing the vascularity of the testis. This stitch with the peanut gauze would be removed during the outpatient visit after 2-3 weeks.

Very infrequently, because of the very short cord the testis will be fixed to the pubic tubercle. Wrapping of testis by tunica vaginalis, is left to surgeon's choice.

After the first stage orchiopexy, patients were seen one week after surgery to review the wound and the viability of the testis and then the patient will be seen after the six months in OPD. During this visit the comment will be made on the position and size of

testis in comparison to the contra lateral testis. Any patient with testis not within the scrotum will be seen again after another 6 months (12 months post surgery), then a decision is taken for those in need of a re-do inguinal orchiopexy.

During the second orchiopexy, through the same previous inguinal incision, the testicle with its cord will be freed from the fibrous surrounding adhesions and the canal should be opened wide enough to allow generous safe careful mobilization. The vas and vessels should be taken care of at all times. The testis will then be fixed again as in the first stage. Same post operative outpatient follow up protocol is applied

### 3. Results:

Out of the 670 orchiopexy surgery done within this period of 10 years for both testes palpable and impalpable: 43 testes (of 37 patients) had re-do orchiopexy, making (93.6%) success rate of inguinal orchiopexy of both palpable and in-palpable testes. They had their first orchiopexy in our center. Right to left ratio was 23:20. Initial location of testes before the first orchiopexy was impalpable in 32 (intra abdominal in 26 and canalicular in 6) and 11 were in the groin.

The follow up period ranged from 2 to 12 years showed after the redo inguinal orchiopexy. Results were analyzed in terms of final testicular location and its size that:

Out of the 43 testes operated for orchiopexy twice in 37 patients; 7 testes had orchiopexy three times. This makes the total number of redo inguinal orchiopexy 50 operations, which is used for the study of results.

Overall: before redo orchiopexy 34 of the 50 testes were at a relatively high level, the other 16 at the neck of the scrotum.

Post redoes orchiopexy location: 35/43 testes were reaching and settling in the bottom of scrotum (28 after one redo and 7 after 2<sup>nd</sup> redo inguinal

orchiopexy). This makes a success rate of re do inguinal orchiopexy of (81%).

The eight testes not in the scrotum did not proceed to further redo inguinal orchiopexy due to continuing observation, family refusal or loss of follow up.

Our preference has always been to delay the redo orchiopexy, for at least a year, after the first surgery. Therefore almost all of our patients were operated after 12 months, except one after 8 months. Mean time between the first and redo orchiopexy was 25.8 months (ranging between 8 – 69 months), median of 18 months.

Forty five out of the 50 testes could be fixed to the Subdartos pouch & median raphe, 2 could only be fixed to a peanut gauze and the dartos tissue with the scrotal skin, 2 were fixed to pubic tubercle and one fixed externally to the medial aspect of the thigh.

Regarding the post operative testicular size evaluation during follow up period we found the results mentioned below.

Initial size of these testes, even before the first orchiopexy, 29 were of satisfactory size, 14 were small, but none was very small. All the small sized testes after the first stages were fixed to the sub-dartos pouch &/or median raphe, after extensive mobilization that enabled them to reach the scrotum bottom.

Six testes (12%) deteriorated in size after the redo inguinal orchiopexy, only one testis that was initially of a satisfactory size became very small. Five of these were fixed to the sub-dartos pouch &/or median raphe, except one was fixed by the peanut gauze method.

All the 7 testes subjected to 2<sup>nd</sup> redo inguinal orchiopexy maintained their size.

Complete atrophy was not seen in any of the testes at any stage.

No intra-operative vas deference or vascular injury and all testes maintained a healthy color till the end of the surgery.



Figure 1: The Peanut gauze technique to fix a testis under safe traction.

#### 4. Discussion:

The rate of recurrence of undescended testis is variable, ranging from 0.2% to 10% (6,7).

Although long-term success varies with the initial position of the testis and the extent of surgical dissection required to achieve adequate cord length, even high intra abdominal undescended testes can be successfully descended with quite satisfactory results ranging from 60% to 70% (8). When we reviewed our orchiopexy results we found that (6.4%) of the 670 testes did not settle finally in scrotum making (93.6%) success rate of inguinal orchiopexy of both palpable and in-palpable testes.

A redo-orchiopexy has always been a challenge for surgeons; a meticulous dissection with preservation to all the structures of the spermatic cord is the mainstay of any surgery in a previously operated inguinal region. Even initial orchiopexy can be associated with trauma to the spermatic cord and leading to testicular atrophy. Redo orchiopexy is a difficult procedure due to the altered anatomy and strong adhesions (9). Redo orchiopexy requires meticulous dissections, to avoid vas deference or vascular injury. Fixation of the testis of over stretched spermatic cord should also be avoided. We think the concern that a second inguinal procedure causes trauma to testicular vasculature structures is true but may be is over inflated.

We did not try the other published approaches for redo orchiopexy like High scrotal orchidopexy for palpable mal descended testes by A.J. JAWAD (10) or Trans-scrotal approach for recurrent and iatrogenic undescended testes by I. Karaman *et al.* (11).

All testes that deteriorated in size in the first and second orchiopexy were actually fixed to the lowest possible level i.e. to the median raphe or the sub-dartos tissue. This deterioration in size may be due to a vascular compromise from the excessive stretching of the spermatic cord. A third surgery in a previously twice operated region would presumably cause more damage to the testes and the spermatic cord but none of the testes in our review, after the third surgery, deteriorated in size.

Different reports in literature recording success rate of putting testes in scrotum without evidence of atrophy that ranges from (93.5%) (5), to 100 % (9,12,13). In our hands the success rate of redo inguinal orchiopexy was 85.4% (35/41 testes) as two patients lost follow up.

Ziylan *et al.*, found during the second operation, patent processus vaginalis in 11 (34.4%), and unsuccessful hernia repair in (28.1%) of his cases (14). We did not encounter any remnant patent processus vaginalis or hernial sac along the spermatic cord during redoes inguinal orchiopexy.

Average time between the second and third surgery in our series was 30 months (2.5 years). This might have contributed positively in operating on a cold area and this is comparable with other's results (5). The mean period of time between the first and the second operations was 3.2 (1-13 years) years (14).

Our review is one of the few that discloses the outcomes of testes that were operated for the second and third time by redo high inguinal orchiopexy.

We believe that post orchiopexy a retracted testis deserves a second operation to be placed in the scrotum. However, a redo-inguinal orchiopexy is always a challenge due to the delicate vascular structures and a very adherent testis and cord to surrounding tissues. Our concern is mainly regarding the risk of damage to these structures and the possibility of permanently damaging the viability of the testis. In our practice the decision of leaving a healthy testis in its retracted position outside the scrotum was outweighed by the risk of re-operating and placing it within the scrotum by a senior experienced surgeon with such procedure.

#### Conclusion

Our results were encouraging after the second redo-inguinal orchiopexy, with an acceptable deterioration in size and an acceptable scrotal position. Similarly the third orchiopexy showed good results

Therefore we concluded that our careful selection of patients, careful timing of repeat surgeries and meticulous surgery, the outcome of a repeat inguinal orchiopexy can be fruitful with encouraging results of having an acceptable risk which should be weighed against the current position of testis.

It is important to emphasize that the best chance to put an undescended testis is during the 1<sup>st</sup> orchiopexy which always should be done by an experienced surgeon.

Type of fixation had no affect on size of testes or relevance to the level of retraction.

The above management protocol did very well in our hands & we recommend it for application in management of undescended testis.

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