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A modified technique for scrotal fixation during orchiopexy

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ABSTRACT

Background: Undescended testes are a common problem, affecting up to 3% of newborn males. The goals of orchiopexy in humans are to provide adequate scrotal fixation, to prevent recurrent torsion of the testis and spermatic cord or ascent of the testis, and to achieve these goals with minimal trauma to the testis. The best method of achieving fixation remains controversial. **Purpose:** The aim of our study is to evaluate our modified extra Dartos pouch technique in retaining testis in the scrotum. **Patients and Methods:** A prospective randomized study included 159 patients with 185 orchiopexies age ranging from 5 months to 14 years with the mean age of 49.5 ± 33.3 months (4.08 years). They were divided into two groups: Group I for whom the extra Dartos pouch technique was applied were compared to Group II for whom classic sub-Dartos pouch technique was done. **Results:** Testis was located in the superficial inguinal pouch in 102 cases (64.1%) and intra-canalicular in 57 cases (35.6%). Hernial sac was found in 153 cases (96.2%), postoperative wound infection occurred in 3 cases (1.9%) and hematoma formation in three cases (1.9%); one case reported ascent of the testis and another one had testicular atrophy in the follow-up period which extends now up to 3 years and we are still in follow-up with those cases. **Conclusion:** Our modified technique for extra Dartos pouch fixation seems to be a fast reliable method for orchiopexy; however, comparative studies and long-term assessment is still needed to establish this method.

Key words: Extra Dartos orchiopexy, orchiopexy, sub-Dartos pouch, surgery, undescended testis

INTRODUCTION

Undescended testes are a common problem, affecting up to 3% of newborn males,[1] although spontaneous descent may occur, leaving a frequency of about 1% at 1 year of age. Transferring the testis to the scrotum is important to provide a normal genital appearance, to avoid complications (torsion, inguinal hernia),[2] possibly to preserve fertility[3] and to reduce the risk of malignancy.[4]

The majorities of undescended testes have a normal histological appearance at birth but develop progressive and irreversible changes after the end of the second year with a reduction in the number of spermatogonia. In the light of these factors it has become widely accepted that orchiopexy should be carried out before the age of 2 years.[5] The goals of orchiopexy in humans are to provide adequate scrotal fixation, to prevent recurrent torsion of the testis and spermatic cord or ascent of the testis, and to achieve these goals with minimal trauma to the testis. The best method of achieving fixation remains controversial. The methods in common use include classic transfixation orchiopexy, involved transfixation of the testicular wall at two different points and fixation of the dartos fascia, scarification, the "window" technique, eversion of the parietal tunica vaginalis, and true dartos pouch orchiopexy with creating a window in the dartos fascia, passage of the testicle, and closure of the window from both sides of the testicle.[6]

The Dartos pouch technique, in various forms, has been described by several investigators over the years, from Koop and Minor[7] to Benson and Lofti.[8] A modified Dartos pouch orchiopexy was reported by Ritchey and Bloom[9] as an alternative to transparenchymal suture fixation. Here we evaluate our modified extra Dartos pouch technique in retaining testis in the scrotum.

PATIENTS AND METHODS

Between November 2005 and September 2009, a total number of 185 inguinal orchiopexy operations were done for 159 patients who were included in this study and admitted to general surgery department and

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pediatric surgery unit, Mansoura University Hospital, Egypt. They were randomly divided into two groups: Group I (73 cases) with the modified extra Dartos pouch technique as illustrated below and Group II (a control group of 86 cases) for whom orchiopexy was done in the classic way according to Ritchey and Bloom[9] [Figure 1]. All patients were prepared on outpatient clinic and admitted on one day case surgery protocol for such cases in our department. Under general anesthesia, the patient was placed in supine position and groin crease incision of about 2–3 cm in length was created followed by opening the scarpa's fascia with identification of the testis. Dissection of the testis was done aiming to freeing it from surrounding tissues. Herniotomy was performed for associated hernial sac. If adequate length of the spermatic cord was achieved, a scrotal skin incision was done followed by passage of blunt-tipped artery forceps to dissect the subcutaneous tissue to produce a roomy subcutaneous pouch that will retain the freed testis. The artery forceps then was pushed upwards till the neck of the scrotum where it pierces the subcutaneous tissue to become in line with the opened groin space.Catch the mobilized testis in its normal anatomical direction and brought down to the created pouch where it was not usually fixed if it was resting with ease or the gubernaculum end was Fixed by stitch to the subcutaneous tissue. The scrotal skin and groin crease incision was sutured without drain and patient was discharged the next morning. Dressing was kept in place till removal of stitches in the next week follow-up visit Seven patients (9 orchiopexies) lost follow-up, hence were excluded from the study. Statistical analysis was done using SPSS 17 T test to compare means and non-parametric tests for other variables

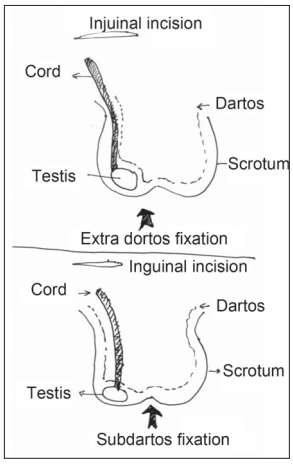


Figure 1: Diagram showing the difference in the course of spermatic cord from our technique to that of sub-Dartos one

RESULTS

Our studied groups [Table 1] included 159 patients with 185 orchiopexies age ranging from 5 months to 14 years with the mean age of 49.5 ± 33.3 months (4.08 years). Fifty four patients (34.9%) had unilateral left side, 79 patients (49.7%) had unilateral right side and 26 patients (16.4%) had bilateral undescended testis. Testis was located in the superficial inguinal pouch in 102 cases (64.1%), intra-canalicular in 57 cases (35.6%). Hernial sac was found in 153 cases (96.2%), postoperative wound infection occurred in three case (1.9%) and hematoma formation in three cases (1.9%). Ascent of the testis occurred in one case in group II and testicular atrophy was observed in one case of group II also [Table 2] during the follow-up period which extends up to three years. Our modified technique significantly had shorter operative time with fewer complications rather than sub-Dartos orchiopexy and long-term follow-up was still needed [Table 2].

DISCUSSION

Bevan in 1899 first reported orchiopexy as a treatment for the undescended testis. Little has changed in the principles of surgical technique and that he described hernia repair and adequate retroperitoneal mobilization were both stressed to ensure that the testis would easily reach the scrotum without undue tension. The most important determinants of whether the testis will remain in place after surgery are adequate mobilization of the

Table 1: Clinical parameters in the studied groups

Clinical parameters	Group I (*n*=73)	Group II (*n*=86)	*P*<0.05*
Mean age	52.8 ± 35.1	46.6 ± 31.6	0.24
Range	(5–168 month)	(10–144 months)	
Side of undescended testis:	31 (42.5%)	23 (26.7%)	0.053
Unilateral			
Left	35 (47.9%)	44 (51.2%)	0.7
Right	7 (9.6%)	19 (22.1%)	0.056
Bilateral			
Site: Superficial inguinal pouch	45 (61.6%)	57 (66.3%)	0.65
Intracanalicular	28 (38.4%)	29 (33.7%)	0.65
Mean operative time	33.4 ± 6.7 minutes	48.3 ± 6.6 minutes	0.001*

Table 2: Complications in the studied patients

Complication	Group I	Group II	Significance
Hematoma	1 (1.4%)	2 (2.3%)	0.82
Wound infection	2 (2.7%)	1 (1.2%)	0.93
Testicular atrophy	0 (0%)	1 (1.2%)	0.92
Testicular ascent	0 (0%)	1 (1.2%)	0.92

testis with spermatic cord and tension-free placement within the scrotum. Not all surgeons use additional sutures during orchiopexy.[10] The most significant complication of orchiopexy is testicular atrophy. Injury to the spermatic vessels, or extensive downward traction during repair, can cause postoperative venous congestion or ischemia with resultant testicular atrophy. Although this is a rare complication of routine orchiopexy, published reports indicate an 8% failure rate of orchiopexy, even in the distally situated undescended testis, and failure of more than 25% for intraabdominal testes. Other infrequent complications include ascent of the testis, infection, and bleeding.[11]

In this preliminary report of our modified extra Dartos pouch technique we noticed no major complications (such as testicular atrophy, ascent nor loss) and no hernia recurrence up to 3 years of follow up, only minor complications in the form of wound sepsis in two cases (2.7%), hematoma of the scrotum resolved completely with conservative treatment in one case (1.4%). It has been a long-standing surgical dogma that undescended testis is always associated with a hernial sac making an inguinal approach mandatory. The reported incidence varied from 36% to more than 90%.[12-16] The total number of hernial sacs in our series was 153 cases (n=159) {96.2%} favoring this dogma.

In our modification we made long subcutaneous track for the cord till the testis lie down in the scrotum, so here we avoid the testis to be immediately facing the opening in the dartos and tunica thus decreasing the possibility for testicular ascent. Also we think that this path would induce some adhesions between the cord coverings and subcutaneous tissue, thus further preventing testicular ascent following this technique and also diminishing the need for suture fixation or narrowing of the window around the cord as done in the conventional orchiopexy.

CONCLUSION

Our modified technique for extra Dartos pouch fixation seems to be a fast reliable and with less complications method for orchiopexy rather than the classic sub-Dartos one; however, further studies and long-term assessment is still needed to establish this method.

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