Medical Journal of Babylon
Vol. 12- No. 4:1006 -1014 , 2015
http://www.medicaljb.com
ISSN 2312-6760©2015 University of Babylon

Original Research Article

Presentation and Options of Management of Undescended Testis in our Practice

Hussein Oudah Al-Jasmawy Adel Ibraheem Muhi
Ali Abdulhaleem Kadhim*
Hilla Teaching General Hospital, Hilla, IRAQ

*E-mail:aliabdulhaleem@yahoo.ca

Accepted 3 November, 2015

Abstract

Undescended testis is a common congenital anomaly in pediatric population, associated with many complications if not managed properly. This study for clinical presentation, available investigations and the different modalities for treatment of undescended testis in our practice.

One hundred twenty patients diagnosed with undescended testis in Hilla Teaching General Hospital and Private Hospitals during the period of June 2007 to June 2014. Age of patients included is from 6 months to 40 years age, intersex and ectopic testis were excluded. Ultrasonographydone for all patients, CT scan and MRI or diagnostic laparoscopy were added to investigate sonography undetectabletestis in groin. Management includes hormonal therapy for selected patients and surgical intervention for the others including those with failure of hormonal therapy. Diagnostic laparoscopy done for two cases.

Presentation age were 42% at 2-5 years age and 33% were below 2 years. Best hormonal response were in bilateral than unilateral cases, 25% for bilateral versus 10 % for unilateral cases. One stage open orchiopexy was the common surgical procedure used (85.83%).

The best results for surgical orchiopexy can be obtained when performed at age below two years. Hormonal therapy was benefit in some patients. One stage orchiopexy is a safe procedure in most of cases in our practice. We advise to start laparoscopic approach in diagnosis and treatment of intra-abdominaltestis.

Keywords: undescended testis, orchiopexy, management, hormonal therapy

الخلاصة

الخصية الهاجرة من التشوهات الولادية الشائعة في الاطفال والمتصاحبة بالعديد من المضاعفات في حالة عدم معالجتها بصورة صحيحة. الغرض من البحث هو لدراسة الحالات سريريا وعرض الفحوصات المتوفرة وطرق معالجتها من خلال خبرتنا .تمت دراسة ١٢٠ حالة مشخصة خصية هاجرة في مستشفى الحلة التعليمي العام ومستشفيات اهلية في الحلة خلال الفترة من حزيران ٢٠٠٧ الى حزيران ٢٠١٤والذين تبدا اعمارهم من الستة اشهر . تم اجراء فحص السونار لجميع الحالات بالاضافة الى فحص المفراس والرنين والتشخيص الناظوري للحالات التي لاتحس فيها الخصية. الذين تمت معالجتهم في الوقت المناسب اي قبل عمر السنتين كان ٣٣ % واكثر الذين تمت معالجتهم كانوا بين عمر ٢-٥ سنوات(٤٢%).تمت معالجة قسم من الحالات بالعلاج الهرموني اذ كانت الاستجابة اكثر في حالات الخصية الهاجرة للجهتين ٢٥% بينما كانت الاستجابة بنسبة ١٠ % في حالات الجهة الواحدة. طريقة الفتح المغبني الجراحي المرحلة الواحدة كانت الاكثر استخداما. نوصي بالعمل على تقليل العمر الذي تجرى فيه التداخل الجراحي لتجنب المضاعفات اللاحقة وتهيئة المستلزمات اللازمة بالتدريب والمعدات اللازمة لاضافة الناظور في تشخيص وعلاج الخصية الهاجرة.

Introduction

Undescended testis is the most common anomaly of reproductive system in infants, diagnosed in 1-2 % of boys at age of 6 months, up to 33% in premature [1, 2]. Rather than the classification into abdominal, inguinal, supra-scrotal or ectopic, now simple clinical classification is often used: palpable (80%), non-palpable (20%), unilateral (60-70 %) and bilateral30-40% [3].

Till now the real etiology of cryptorchidism remains unknown, but many hormonal factors: GnRH, FSH LH, testosterone and Mullerian inhibiting substance, or mechanical factors as: gubernaculum, cord (vas and vessel), Epididymal, abdominal pressure and abdominal wall growth may play a role in the testicular descent [4]. Treatment of undescended testis is principally to avoid complications as infertility, trauma, torsion, hernia obstruction and testicular cancer, as well as because cosmetic concerns [5].

In addition to careful clinical examinations, ultrasound, CT scan and MRI are helpful for localization. CT scan is noninvasive but carries a radiation risk. MRI is very sensitive in obese children but require general anesthesia. However the main two tools commonly used now for localization in routine practice are ultrasound and laparoscopy [6].

After waiting for descent during the first 6 months, the first line to start is hormonal therapy. The first trial of hormonal therapy was started in 1930, using gonadotropin HCG, while the second one was intranasal treatment with gonadotropin-releasing hormone which was started to use in 1975. [7]. In undescended testis the success rate of hormonal therapy is less than 15% and might have deleterious effects like precocious puberty and fertility reduction, so it is not routinely recommended, and should be used within proper dose [8]. In general, success rate of hormonal therapy is better with lower location of undescended testis. In spite of these in some guide lines provided not to use hormonal therapy due to the low response rate and lack evidence of long term efficacy [9]

After the age of 6 month, spontaneous descent in not expected and surgical correction is advice [10]. Though there are no rigid agreements about the time of early Orchidopexy, the guidelines of American urological association which is similar to current European recommendations prefer the orchiopexy between 6-18 months of age [9]. Open orchiopexy using inguinal approach is the standard surgery for groin palpable testis. For groin undetectabletestis by ultrasound or CT, surgeons can choose to perform an orchiopexy by laparoscopy or open surgery. The common surgical procedures used are: standard open orchiopexy, one-step Fowler-Stephens procedure, two-step Fowler-Stephens procedure, microvascular orchiopexy and laparoscopic orchiectomy [11].

The one step Fowler-Stephens orchiopexy can be done where the testis is located more than 3 cm away from ipsilateral internal inguinal ring, Most pediatric surgeons choose the two step fowler- Stephen procedure to decrease the risk of ischemia, in which in the first step the spermatic vessels are clipped 3-4 cm proximal to the testis and in the second step are done 3-6 months later [11, 12].

Laparoscopy regarded now as the best method in diagnosis and surgery for intra-abdominaltestis. After diagnostic laparoscopy, the further action is decided which is either: 1- laparoscopic orchiectomy is performed in adult patients with unilateral undescended testis, if the affected testis is atrophic and the other testis is normal in the contralateral scrotum. 2-one-stage laparoscopic orchiopexy is done if the undescended testis is near the internal ring or is of peeping type. 3-the two-stage Fowler-Stephens orchiopexy is decided, if the testis is located away from the internal rings and near the iliac vessels [13].

The aim of this research is to study the clinical presentation, the available investigations and the different modalities for treatment of undescended testis in our situation and how to solve problems which arise in this subject, including delay presentation, delay in time of surgery, options of management and the importance to add laparoscopy in diagnosis and surgery of undescended testis.

Patients and Methods

The study involved 120 patients diagnosed with undescended testis presented to Hilla Teaching General Hospital and Private hospitals during the period of June 2007 to June 2014.The study exclude cases below 6 month waiting for spontaneous descent, cases with intersex and retractile testis. After detailed history and full general examination and local examination of genitalia, the diagnosis of undescended testis was done. A routine ultrasonography was done for all patients to detect the size and site of testis. All patients with groin detectable testis were subjected to surgery. Patients with groin undetectabletestis were subjected to further investigations to assess size and location, as CT scan, MRI and diagnostic laparoscopy before planning for surgery. In 40 patients between age of 2 and 4 years we started hormonal therapy using pregnyl (human chorionic gonadotropin) 1000 IU weekly for 6 weeks and then surgery was decided in failure of this treatment. The surgical procedures were used are: 1- the standard open orchiopexy one stage which was done in most of the cases. 2-Fowler-Stephen`s procedure. 3-open orchiopexy two stages 4-orchiectomy in small and flabby testis.5-laparotomy and orchiectomy in malignant 2 cases.

Results

A total of 120 patients who had undescended testis were included in this study. Eighty patients (67 %) of them presented above the age of 2 years and 40 patients (33%) only were below the age of 2 years [Table 1] and [Figure 1]. One hundred and one patients (84 %) had a unilateral undescended testis (right side 47 % and left side 37 %), 14 patients (11.66%) had bilateral, two patients(1.66%) had transverse testicular ectopia and the testis were absent in 3 cases (2.5%)[Table 2].

Table 3 shows the tools for diagnosis, of which, ultrasound were done in all cases, while MRI in 4 cases and 2 cases for each CT scan and diagnostic laparoscopy.

Five out of forty testis (12.5 %) were descended by using hormonal therapy. The descent was more in bilateral hormonal treated cases 25% while it was only 10 % in unilateral treated cases. Most of cases with failed hormonal therapy (30 out of 35 testis) were associated with big sacs [Table 4] and [Picture2]. One unilateral case responded to hormonal therapy [Picture 1].

Open orchiopexy one stage is the common surgical procedure, 110 out of 131 testis (84 %).The incidence of other methods are shown in Table 5.Diagnostic laparoscopy was done in 2 cases as they are shown in Picture 3,4, and 5. Malignant transformation was found in 2 out of 131 testis.

Table 1 : Age distribution of patients of undescended testis

Age (years)	No. of Patients	%
6 months-2years	40	33 %
2-5	50	42 %
5-10	16	13 %
10-20	8	7 %
20-30	4	3 %
30-40	2	2 %

Picture 1: Unilateral response to hormonal therapy

Picture 2: hernial sac in the side of the nondescended testis

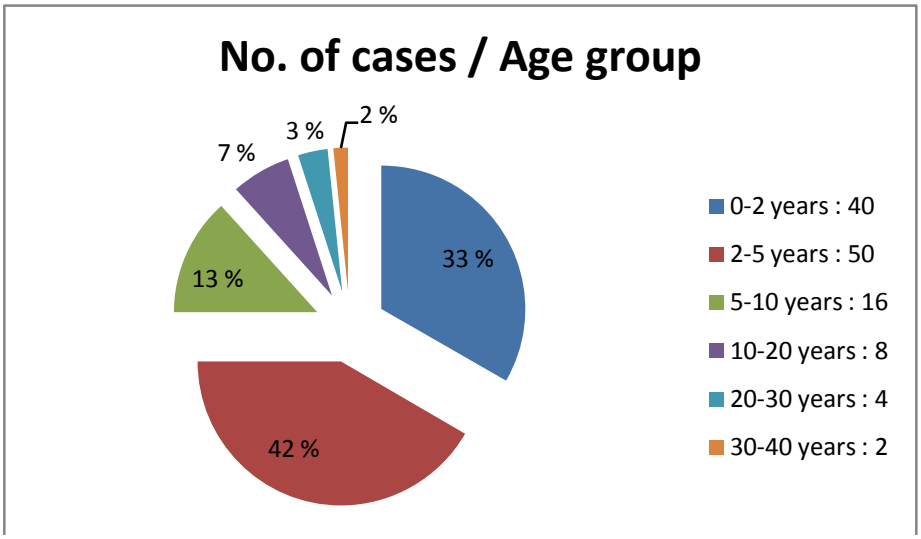
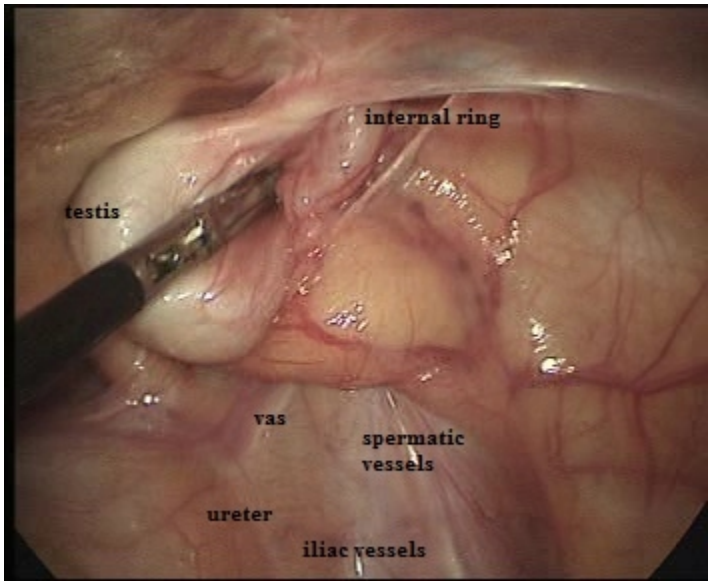
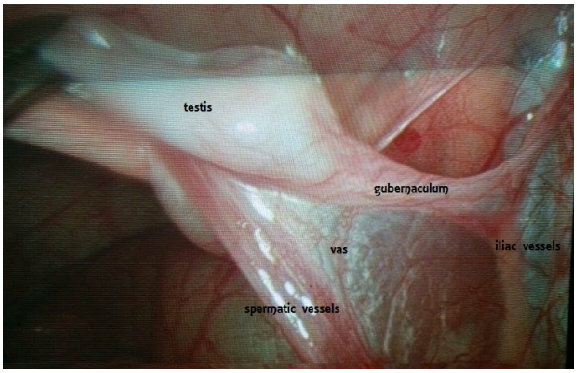


Figure 1 : Presentation of cases according to age groups



Picture 3: Diagnostic Laparoscopy for intra-abdominal right testis



Picture 4 : Case 2 Diagnostic Laparoscopy for intra-abdominal testis in 2 years old child

Picture 5: Case 2 Prepairing the Testis for orchiopexy after isolation of peritoneum

Table 2: Laterality of undescended testis:

Side	**No. of cases**	**%**
Bilateral	14	11.66%
Unilateral: Right Left	 56 45	 46.66 37.50%
Transverse testicular ectopia	2	1.66%
Absent	3	2.50%

Investigation Table 3: Types of investigations:

Types of investigations	No. of cases
ultrasound	120
CT Scan	2
MRI	4
Diagnostic Laparoscopy	2

Table 4: Response of hormonal therapy in undescended testis:

No. of testis	Increase in size	No increase in testis size	Decrease in testis size	Descent and no need for surgery	No descent
Unilateral: 32	22	6	1	3 (10%)	29
Bilateral: 8	4	2	0	2 (25 %)	6
Total: 40	26 (65%)	8	1	5 (12.5%)	35*

Table 5: Surgical methods used

Type of surgery	No. of testicls (including bilateral)	%
Open orchiopexy- one stage	110	83.96%
Fowler-Stephen`s procedure	4	3.05%
Open orchiopexy- two stage	9	6.87%
Orchiedectomy, including 2 malignant	4	4.57%
Diagnostic laparoscopy	2	1.52%
Total	131	100%

Discussion

The aim of early diagnosis and proper management of undescended testis is to avoid complications, on the top of them is irreversible histological changes that affect fertility. In this study, 40 out of 120 patients (33 %) only were presented under the age of 12 months. Delayed orchiopexy, beyond the recommended age is still a universal problem and reported by many centers from all over the word .Some studies have shown better results in decreasing the median age of surgery by applying a guidelines stressing on early referrals. [14] In addition to that, they found that the coordinated work between surgeons, pediatricians, general practitioners and community workers may improve the timely interventions. [15]

In this study, ultrasound was the common tool for investigations that it was done for all cases 120 patients while CT scan, MRI, and diagnostic laparoscopy were 2, 4, and 2 patients respectively [Table 3]. Reported data with ultrasound showed high accurate diagnostic rates. The limitation of using MRI in our hospital was the need of anesthesia for children doing this test, in addition to that MRI is no widely used because it is highly sensitive in obese only with low sensitivity in lean children due to the lack of tissue contrast. [17] Diagnostic laparoscopy was done for 2 cases only, and we found that it was very informative and we recommend it for all cases of groin undetectabletestis.

The response to hormonal therapy in this study was 12.5 % only and the response was better inbilateral cases than in unilateral [Table 4]. The association of big sac in cases of no response to hormonal therapy need further study whether the sac is a factor of preventing descent.Many studies shown generally poor results of hormonal therapy. Schwentner et al reported that only 15 % of cases of non-palpabletestis became palpable after hormonal therapy. [18] In comparing the different protocol, Swchentner C et al. found that the best success rate was 30%

with no difference between HCG and GNRH1 alone or combined. [19]

Open orchiopexy-one stage, using inguinal incision was the common surgical procedure, it involved 110 out of the 131 testis and it was safe for inguinal and some intra-abdominal cases. In cases of non-palpable testis and when we used the standard inguinal incision we can do further lateral extension ,if the testis cannot be found in inguinal region the internal inguinal ring must be opened and most of intra-abdominal testis was found near it[17].

The inguinal approach is usually unsuccessful if the testis is high in abdominal position or near the bladder. [20]In cases when we found that the cord was short we did surgery in 2 steps preserving the testicular artery. Though many articles shown that there is no difference between artery sparing and division regarding testicular atrophy [21], we used to preserve artery in most of our work and Fowler-Stephens` procedure was done only for 4 cases. The associated hernia sac was isolated and ligated in all cases and we didn't practice to leave sac ligation as was shown to be unnecessary in many studies. [22]

Though we did diagnostic laparoscopy in only 2 cases, laparoscopy is now regarded as a standard procedure for diagnosis and treatment of intra-abdominal undescended testis. By laparoscopy we can localize the testis and evaluate the size to select the surgical procedure. [23] For increasing cord length to put the testis in its position, we may need to do extended retroperitoneal dissection, to preserve its vascularity [24]. This length increasing can be done easily by mobilization of spermatic vessels by laparoscope using a single stage procedure if the testis located at less than 3cm from internal inguinal ring, otherwise we can use the two stage Fowler- Stephens orchiopexy by clipping the testicular artery followed by the second stage after 4 months to enhance good collateral circulations to avoid later testicular atrophy and dysfunction [25].

Conclusions

There is a late presentation of undescended testis in our hospital, with only 30 % of cases underwent surgery below 2 years old. To avoid unwanted consequences of delay of orchiopexy, we need to put a guideline for early referral, with a high coordination between surgeons, pediatricians and community workers to lower the age of orchiopexy. Inguinal one step orchiopexy approach is a save procedure in most of cases in our practice.

References

1- Berkowitz GS , Lapinski RH, Dolgin SE, et al. Prevalence and natural history of cryptorchidism. Pediatrics. 1993 Jul; 92(1):44-9.

2- Barthold JS, Goonzalez R. The epidemiology of congenital cryptorchism, testicular ascent and orchiopexy, J Urol 2004; 170:2399-2401.

3- Hack, W.W.M., Meijer, R.W., Bos, S.D. et al, A new clinical classification for undescended testis. Scand J Urol Nephrol. 2003; 37:43–47.

4- Dr. Nishant, Dr. Reina, Dr. Pradeep. Comprehensive study of management of undescended testis. Indian Journal of Applied Research, Volume: 3 | Issue: 2 | Feb 2013 |Page 71-72 ISSN - 2249-555X

5. Ashley RA, Barthold JS, Kolon TF. Cryptorchidism: pathogenesis, diagnosis, treatment and prognosis.UrolClin North Am. 2010; 37:183–193.

6-Weiss RM, Carter AR, Rosenfield AT. High resolution real-time ultrasonography in the localization of the undescended testis. J Urol 1986 135:936–93.Andrologia. 1974;6(3):197-201.

7- Bartsch G, Frick J.Therapeutic effects of luteinizing hormone releasing hormone (LH-RH) in cryptorchidism Andrologia. 1974;6(3):197-201.

8-Thorsson AV, Christiansen P &Ritze´n

M. Efficacy and safety of hormonal treatment of cryptorchidism: current state of the art ActaPaediatrica 2007 96 628–630.
9- Kolon, Thomas F. et al. Evaluation and Treatment of Cryptorchidism: AUA Guideline
The Journal of Urology 2014; 192 (2): 337–345.
10- Wenzler DL, Bloom DA and Park JM: What is the rate of spontaneous testicular descent in infants with cryptorchidism? J Urol 2004;171: 849
11-Hueih-Shing Hsu.Management of boys with nonpalpable undescended testis.Urological Science 23 (2012) 103-106.
12- Docimo SG. The results of surgical therapy for cryptorchidism:a literature review and analysis. J Urol 1995;154:1239-41.
13-Mehendale, Vinay G, Shenoy, Sharad N, Shah, Rupin S. and et al. Laparoscopic management of impalpable undescended testis: 20 years' experience Journal of Minimal Access Surgery 2013;9(4):149-153.
14- Capello SA, Georgi LJ Jr, Kogan BA. Orchiopexy practice patterns in New York State from 1984 to 2002 J Urol 2006; 176: 1180-1183.
15-Sinha CK, Vinay S, Kulkarni R, NourS . Delayed diagnosis for undescended testis . Indian Pediatr. 2008 Jun;45(6):503-4.
16- Tasian GE1, Copp. HL Diagnostic performance of ultrasound in nonpalpable cryptorchidism: a systematic review and meta-analysis Pediatrics. 2011;127(1):119-28.
17- Canavese Fetal. (1995) Non palpable testis: orchiopexy at single stage. Eur J Pediatric Surgery 5: 104-107
18- Schwentner C, Oswald J, Kreczy A, Lunacek A, Bartsch G, Deibl M, Radmayr C Neoadjuvant gonadotropin-releasing hormone therapy before surgery may improve the fertility index in undescended testis: a prospective randomized trial. J Urol. 2005; 173(3):974-7.
19. Esposito C et al. Comparison of five different hormonal treatment protocols for children with cryptorchidism. Scand J UrolNephrol. 2003; 37:246–249.
20- Humphrey GM1, Najmaldin AS, Thomas DF. Laparoscopy in the management of the impalpable undescended testis Br J Surg. 1998;85(7):983-5.
21- Geuvbashian G1, Jednak R, Capolicchio JP, El-Sherbiny M. Outcome of surgical management of non-palpable testisUrol Ann. 2013 Oct-Dec; 5(4): 273–276
22- Kumari V1, Biswas N, Mitra N, Konar H, Ghosh D, Das SK. Is ligation of hernial sac during orchiopexy mandatory? J Indian Associate Pediatric Surg. 2009;14(2):66-7.
23-Chowdhary SK, Chaudhury RK, Singh PP, Paljor Y, Joseph SC. Role of laparoscopy in the management of impalpable testis. Indian J Urol 2000; 17:13-5
24- SR Ranka, P. Shroff Extended retroperitoneal dissection for undescended testis: case study of 60 cases July- 2000, 5(3):103-107.
25- Vinay G Mehendale, SharadNShenoy, Rupin S Shah, NamitaChaudhari, and Alap V Mehendale Laparoscopic management of impalpable undescended testis: 20 years' experience. J Minim Access Surg. 2013 9(4): 149–153.