



## Clinical Diagnosis for Atrophic Testis ... Is it Possible?

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### Abstract

**Background:** An undescended testis is one of the most frequently occurring genito-urinary anomalies in the field of pediatric surgery. Although laparoscopy is considered the most accurate tool in diagnosis of impalpable undescended testis, we outline in this report the importance of the clinical examination and how it affects the management of the impalpable undescended testis.

**Objective:** The study objectives were to assess the validity as well as diagnostic power of the selected clinical criteria in diagnosis of impalpable undescended testis.

**Methods:** A cross-sectional study was carried for all patients who were conducted to Alexandria university children hospital. A clinical sheet was used when each patient enrolled in the study followed by surgical intervention either by open or laparoscopy to assess the validity of diagnosis based on selected clinical criteria applied in examination of each patient.

**Results:** According to our selected clinical criteria, we classified impalpable undescended testis into three groups: pure intra-abdominal testis, peeping testis and atrophic testis.

We had 48 patients (27%) with atrophic testis who showed positive findings by selected clinical criteria which were: Assessment of Contra lateral testis, Presence of Ipsilateral intrascrotal nubbins, Development of Ipsilateral half of scrotum, Feeling of Ipsilateral rolling of spermatic cord against pubic bone. The selected clinical criteria showed 91% sensitivity and 95.6% specificity in diagnosis of atrophic testis.

**Conclusion:** Careful and meticulous clinical examination is considered the corner stone in diagnosis and management of impalpable undescended testes especially atrophic one.

**Keywords:** Impalpable Undescended Testis; Clinical Criteria; Atrophic Testis; Developing Countries

### Introduction

Developing countries are faced with the burden of healthcare problems and limitation of facilities. An undescended testis is one of the most frequently occurring problems in the field of pediatric surgery which showed continuously increasing especially in preterm.

The primary genital organ is placed in close proximity to the kidney, and before reaching its ultimate resting place in the scrotum it must pass along the posterior abdominal parities and through

the inguinal canal and upper parts of the scrotum and that occurs through 2 phases:

- Trans abdominal descent - dependent on insulin-like hormone 3 (INSL3).
- Inguinoscrotal descent - dependent on androgens.

The first stage of testicular descent occurs 10–15 weeks of gestation with the testes moving to the inguinal region [1].

The diagnosis of undescended testes is a clinical one, The use of laparoscopy is gold standard to visualize intra abdominal testis vis passing through testis, laparoscopy is consider up till now as advanced facilities which isn't available as sterilized and adequate in relation to incidence of patients specially in developing countries [2].

A selected clinical criteria were used to determine atrophic testis as provisional diagnosis which was compared with postoperative diagnosis whatever the maneuver of operation either open surgical technique or laparoscopy.

Impalpable undescended testis was be evaluated with careful clinical examination commenting on:

- Size and consistency of the contra lateral testis
- Presence of Ipsilateral intrascrotal nubbin
- Development of the scrotum
- Ipsilateral rolling of spermatic cord against pubic bone [3,4].

**Methods**

All pediatric patients with impalpable undescended testes who were diagnosed during 18 months period of the field work September 2015 to February 2017 were enrolled in the study with exception of Any pediatric patient with retractile testes or with previous surgery in the inguinal region.

All patients with impalpable undescended testis were examined with commenting on selected clinical criteria

- Assessment of Contra lateral testis.
- Presence of Ipsilateral intrascrotal nubbin
- Development of Ipsilateral half of scrotum.
- Feeling of Ipsilateral rolling of spermatic cord against pubic bone.

Data entry was performed using the Statistical Package for Social Sciences (SPSS ver.18) followed by processing and analysis.

Data processing included range checking to ensure that all questions had valid codes, recoding of variables to include them in the analysis, and computation of new variable.

For quantitative variables mean, standard deviation, and range (minimum and maximum) were calculated. On the other hand, categories of studied qualitative variables were presented as sensitivity, specificity, PPV,NPV and diagnostic power of each clinical criteria.

**Results**

On studying the relation between each clinical criteria in provisional diagnosis with postoperative diagnosis, Distribution of the studied cases according to contralateral testis.

Table 1 Show that Contralateral testes were normal in majority of patient (68.5%) while they were large significantly in (24.5%) of patient and not palpable due to bilaterality in 7% of patient.

Distribution of studied patients according to contralateral testis	No.	%
large	44	24.5
Normal	121	68.5
Can't be assessed due to bilaterality	12	7

**Table 1**



**Figure 1:** Large and tense contralateral testis in case of left impalpable atrophies testis.



**Figure 2:** Normal contralateral testis in case of left impalpable peeping testis.

While Table 2 shows that more than three fourths of patients (76.3%) had non palpable nubbin during clinical examination while 23.7% of patients had palpable nubbin during clinical examination.

Palpation of intrascrotal nubbin	No.	%
Palpable	42	23.7
Non palpable	135	76.3

**Table 2**



**Figure 3:** Palpation of intrascrotal nubbin.



**Figure 4:** Palpation of intrascrotal nubbin.

Table 3 reveals that, less than one fifth of studied cases (18.6%) had normal development of Ipsilateral half of scrotum while majority of cases (76.3%) show undeveloped ipsilateral half of scrotum.

Development of ipsilateral half side of scrotum	No.	%
Developed	33	19
Undeveloped	132	74
Can't be assessed due to bilaterality	12	7

**Table 3:** Development of Ipsilateral half side of scrotum.



**Figure 5:** Undeveloped ipsilateral side of scrotum.



**Figure 6:** Looking normal development ipsilateral side of scrotum.

While when Ipsilateral Rolling of spermatic cord against pubic bone was assessed, the majority of patients (61%) had positive (felt) ipsilateral Rolling test of the cord against public bone while 25.5% of the patients with attenuated cord on rolling test and about 13.5% of patients with non-felt cord on rolling test (absent).

Ipsilateral Rolling of spermatic cord against pubic bone	No.	%
Attenuated	43	25.5
Felt	108	61
Absent	24	13.5

**Table 4:** Rolling of spermatic cord against pubic bone.

### Results following surgical intervention and its outcome

#### Validity of New clinical diagnostic criteria in diagnosis of atrophic testis

$$\text{Sensitivity } \frac{42}{46} \times 100 = 91.3\%.$$

$$\text{Specificity } \frac{125}{131} \times 100 = 95.4\%.$$

$$\text{(PPV) } \frac{42}{48} \times 100 = 87.5\%.$$

$$\text{(NPV) } \frac{125}{131} \times 100 = 96.8\%$$

Sensitivity: 91.3% of patients with atrophic testis will be positive by diagnostic criteria.

Specificity: 95.4% of patient without atrophic testis will be diagnosed to be free with diagnostic criteria.

PPV: 87.5% of patients who were diagnosed to have atrophic testis by diagnostic criteria will actually having atrophic testis.

NPV: 96.8% of patients who were diagnosed not to have atrophic testis by diagnostic criteria will be actually not have atrophic testis.

### Discussion

The incidence of undescended testes has been reported to be 0.8% of infants at 1 year of age, of all undescended testes, approximately 20% are reported to be clinically impalpable [5].

Our study was conducted on 177 patients examined in Alexandria children university hospital from September 2015 to February 2017.

In our study, 20% (35 patients) of impalpable testes were identified Pure intra-abdominal and 27% (48 patients) were absent and 53% (94 patients) were considered peeping testis ; therefore, selected diagnostic clinical criteria was helpful in 84.7% of impalpable testes. Our study supported with Be KH., *et al.* [10] who confirmed that most of the impalpable undescended testes either peeping testes or atrophied intrascrotal nubbin. Performing careful examination and application the new clinical criteria can prevent unnecessary laparoscopic intervention, also Zakaria., *et al.* [7] who applied careful and meticulous examination under anesthesia as before surgery and reported that more 66% of his cases were not true impalpable undescended testes.

Size and consistency of contralateral testis is a common clinical finding in boys with non-palpable testis. Koff [11] observed hypertrophy in 12 of 37 boys (32%) with a non-palpable testis. Hurwitz., *et al.* [12] identified contralateral testis hypertrophy in 29% of the patients when it was defined as greater than 2 cm. Koff reported that the degree of contralateral hypertrophy correlated with the volume of testicular tissue present on the non-palpable side Contralateral hypertrophied was evident when associated with ipsilateral atrophic testis, on our study we identified 44 patients out of

48 one with significant contralateral hypertrophy and tense consistency of testes that associated with ipsilateral atrophied testes.

Snodgrass, *et al.* [13,14] reported that the initial scrotal incision for a unilateral impalpable testis may be definitive management when a nubbin is identified. This study demonstrated that laparoscopy is a reliable diagnostic tool for detection of an intra-peritoneal testis, but a dilemma arises when there is no testis, and the cord structures exit from the inguinal ring. Thus, most patients who undergo initial laparoscopy will undergo a second inguinal incision for an orchiectomy or orchipexy, In our study we suggests that laparoscopic intervention as diagnostic and therapeutic tools is of choice in Bilateral impalpable undescended testes while in the unilateral impalpable undescended testis, the selected clinical criteria help in detection atrophic testes and inguinal approach is of choice in these cases [6,8,9,15].

## Conclusion

1. Diagnosis of undescended testes needs a high level of experience and clinical training especially diagnosis of impalpable undescended ones
2. Careful and meticulous clinical examination is considered the corner stone in diagnosis and management of impalpable undescended testes
3. Atrophic testis with intra-scrotal nubbin can be identified perfectly with clinical examination and laparoscopic intervention can be avoided.

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