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### Case series: Epidemiology of management of cryptorchidism at our rural setup

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#### Abstract

**Objective:** Cryptorchidism or undescended testes is a common birth condition in children and infants. Numerous complications can arise if untreated, but can be prevented by timely intervention. This prospective study is done to determine the epidemiological parameters of undescended testes in rural population of North Maharashtra.

**Methodology:** This case series included 89 patients presenting to our OPD at ACPM Medical College, Dhule, From June 2014 to March 2016. Variables studied were the age of presentation, the population distribution, position of testes, size of testes and surgical outcomes.

**Results:** Among 89 patients, over all incidence of cryptorchidism in boys in our study was found to be around 0.7% (total pediatric OPD cases were 12,714). This rate was slightly lower to similar studies conducted elsewhere. No definite etiology could be found but there are some persistent factors like socio economic status. Higher rate of cyptorchidism was noted in lower socioeconomic class. About 20.22% patients were preterm suggesting higher preponderance with prematurity. 10.1% patients had a positive family history indicating a possible role in etiology. Maximum frequency of presentation was in 0 to 2 years age group followed by 3 to 5 years age group. But about 13.48% patients presented as late as 11 to 13 years thereby having a higher risk of testicular atrophy. Diagnostic investigation in all patients was abdominal ultrasound. All the testes impalpable on examination could be located with ultrasound in various regions of abdomen and pelvis, thereby aiding advanced planning of intervention required. Two staged orchidopexy can give good results but should be reserved for high lying testies, especially abdominal, for rest, a single stage orchidopexy can give satisfactory results.

**Conclusion:** Undescended testes is a common birth problem among paediatric population and surgical approach has shown to have good results.

**Keywords:** Epidemiology, management, cryptorchidism, our rural setup

#### Introduction

The word cryptorchidism is derived from Greek word 'cryptos' meaning hidden and orchis meaning testes i.e. absence of one or both testes from the scrotum. Cryptorchid testes is defined as failure of descent of one or both testes amidst the normal pathway <sup>[1]</sup>. Failure of descent can occur at any level in the normal pathway.

Cryptorchidism is most common birth defect of genitalia in boys <sup>[2]</sup>. Despite its frequency there are many controversies regarding many aspects including its etiology, natural history, mode and timing of treatment as well as complications. Failure of testes to descent can be a result of multifactorial causes like: hormonal, genetical congenital syndromes, permanently, low birth weight, environmental and maternal factors, familiar (siblings).

Numerous complications can result when testes don't lie in the scrotum. These complications can be prevented by timely intervention <sup>[1]</sup>. The proper timing of surgery has long been debated. In the seventies the American Academy of Pediatrics recommended that genital surgery should be done at the age of four for psychological reasons. During the last decades, based on indirect proof, there has been a shift towards earlier treatment leading to a general consensus that treatment should be given before the age of one year.

Hence our study aims at delineating various factors that can be taken care of in gestational and neonatal period that may aid timely diagnosis in suspect population, if not absolute prevention.

#### Aims and Objectives

1. Investigations and management of cryptorchidism.

## Material and Methods

Study was conducted over 89 patients of cryptorchidism at rural setup in our institute from June 2014 to March 2016. It is a prospective study. All patients in our OPD with genitourinary complaints were examined and cases with cryptorchidism were included in our study. All cases of cryptorchidism were subjected to diagnostic investigations and surgery, and followed up accordingly.

## Inclusion Criteria

1. All cases of cryptorchidism at 0-20 yrs of age at presentation.
2. Associated urogenital anomalies.

## Exclusion Criteria

1. No other associated congenital anomalies.
2. Patients with intersex conditions

The study protocol was reviewed by institutional ethical committee and permitted by it. The relevant data was obtained

from patients and their parents accordingly, by using pretested proforma. All patients included in the study were evaluated on the basis of history, clinical examination, routine investigations, ultrasound of abdomen and pelvis for detection of : 1) Position of undescended testes, 2) Parenchymal changes, 3) Vascularity of gonadal vessels. Patients diagnosed with undescended testes underwent appropriate operative procedure (staged/ unstaged orchidopexy) and were followed up.

## Observation and Results

A total of 89 patients were admitted and treated at our institute. Hospital with the diagnosis of undescended testes.

In 77.5% patients the testes were palpable on examination in inguinal region, 22.5% patients the testes were impalpable. Out of the patients who had palpable testes 46.06% had testes in inguinal canal, 22.5% at root of scrotum, 8.89% at the internal ring, 4.49% of testes were palpated in superficial inguinal pouch (ectopic) [Table 1]. 40.4% patients were left sided, 36% patients had right sided, while 23.6% patients had bilateral palpable testes.

**Table 1:** Position of Testis on Examination

Position of palpable testes	Frequency	Percentage
Inguinal Canal	41	46.06%
Root of Scrotum	20	22.5%
Internal Ring	8	8.98%
Superficial Inguinal Pouch	4	4.49%
Non palpable	16	17.97%
Total	89	100%

**Ultrasound findings:** All our patients underwent ultrasound as a diagnostic investigation. 48.31% patients the testes were found in inguinal canal, in 22.47% testes were located at root of scrotum, in 14.60% patients they were found at internal ring, while 10.11% had them intra abdominally. Out of the entire group only 4.49% patients had ectopically placed testes in superficial inguinal pouch that were confirmed ultrasound were [Table 2].

**Table 2:** Location of testis found on ultrasound

Position of testes	Number of patients	Percentage
Root of scrotum	20	22.47%
Inguinal canal	43	48.31%
Internal ring	13	14.60%
Intra abdominal	9	10.11%
Superficial Inguinal pouch	4	4.49%
Total	89	100%

**Surgical treatment:** 89.88% patients underwent one stage orchidopexy, 7.86% underwent two stage orchidopexy and 2.24% underwent orchidectomy [Table 3].

**Table 3:** Patients undergone staged orchiopexy

Orchidopexy	No. of patients	Percentage of patients
One stage orchidopexy	80	89.88%
Two stage orchidopexy	7	7.86%
Orchidectomy	2	2.26%
<b>Total</b>	<b>89</b>	<b>100%</b>

89.9% testes were brought intrascrotal at the time surgery (one stage). 7 patients i.e. 7.86% at the external ring initially (two stage). Of these 7 patients 5 turned up for second stage repair, all of who testes were brought intrascrotal.

All patients were followed during the first postoperative week

(100%). Testes were intrascrotum in 89.9% patients and 7.86% patients had their testes at external ring. None of the testes atrophied after orchidopexy. Out of 7 patients who underwent two stage orchidopexy, 5 returned after 6 months for second stage repair. All of their testes were brought down to scrotum. [Table 4]

**Table 4:** Distribution of study group according to outcome following surgery

Result after surgery (Site)	Number of patients
Intra-scrotal	80 (89.88%)
At the external ring	7 (7.86%)
Orchidectomy	2 (2.24%)
Total	89 (100%)

89.99% of testes were found in inguinal canal at the time of surgery, 10.11% were intra-abdominal. Complications in short term were wound infection (2.44%), Wound dehiscence (0.0%), Retraction of the testes (0.0%).

## Discussion

Cryptorchism is most common birth defect of genitalia in boys [2]. Ultrasound was used as a diagnostic investigation in all of our cases. Though Magnetic Resonance Imaging (MRI) is considered 100% sensitive in case of cryptorchism, the availability and cost factors are major issues that limit the utility. Shoukry M, Choudhry M *et al* in their study of 50 cases, could localize 84% intracanalicular, 4% intra-abdominal and 12% could not be detected [3]. In a yet similar study of 191 cases Vijayaraghavan SB found 27.74% in the inguinal canal, 39.79% intra-abdominal, ectopic in 4%, 5.23% at deep ring [4].

In our study 48.31% patients the testes were found in inguinal canal, in 22.47% testes were located at root of scrotum, in 14.60% patients they were found at internal ring, while 10.11%

had them intra abdominally. Out of the entire group 4.49% patients had ectopically placed testes that on ultrasound were confirmed to be in superficial inguinal pouch [Table 2].

Staged orchidopexy is needed when the cord length is insufficient or the testes can't be mobilized enough without vascular compromise. Generally, a two stage orchidopexy is done in cryptorchid testes that are situated well above internal ring. Comploj E. *et al* in their case study of 41 cases about 80.48% cases required one stage orchidopexy was needed, whereas rest of them required two staged orchidopexy [4]. In our study 89.88% patients one stage orchidopexy was found sufficient while 7.86% required two staged procedure. 2.24% underwent orchidectomy due to late presentation. [Table 5]

**Table 5:** Comparison of studies on staged orchidopexy [4]

Procedure	Study by Comploj E. <i>et al</i>	Our study
One Stage Orchidopexy	80.48%	89.88%
Two staged Orchidopexy	19.52%	7.80%
Orchidectomy	----	2.24%

### Conclusion

From above results, we conclude that, the diagnostic investigation in all patients was abdominal ultrasound. All the testes impalpable on examination could be located with ultrasound in various regions of abdomen and pelvis, thereby aiding advanced planning of intervention required. Two staged orchidopexy can give good results but should be reserved for high lying testes, especially abdominal, for rest, a single stage orchidopexy can give satisfactory results.

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