

ORIGINAL ARTICLE

Relationship between Persistent Processus Vaginalis and Cryptorchidism—A Study in the Eastern Region of India

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Abstract: Cryptorchidism is typically associated with an ipsilateral inguinal hernia and is at a greater risk for trauma. Premature infants also have a higher incidence of cryptorchidism. In the present study conducted at the Paediatric Surgery department of a teaching hospital in Kolkata 25 male patients in the paediatric age group with cryptorchidism were studied for the occurrence of persistent processus vaginalis. Necessary investigations were done and these were corroborated with the surgical findings. The findings were recorded in tabular form and the relevant results were compared with similar studies done elsewhere. Patients with history of premature birth were not included in the study. Early detection of this condition is of utmost importance to prevent future complications.

Key words: testis, cryptorchidism, processus vaginalis, inguinal hernia, prematurity

Introduction

Cryptorchidism (permanent retention of the testis outside the scrotum) has an incidence of 1 in 100 births, and can result in permanent anatomic alterations [1]. Most infantile herniae tend to become complicated, usually by becoming irreducible and obstructed. This is a surgical emergency. The incarcerated bowel and the testis and its vessels become compressed at the neck of the hernial sac. In fact, testicular atrophy is common if the treatment is substantially delayed [2]. The present study was undertaken to detect persistent processus vaginalis in patients with cryptorchidism in the Eastern Region of India and to observe if there is an age range where persistent processus vaginalis is more frequent.

Material and Methods

25 cases of cryptorchidism were selected from the Department of Paediatric Surgery of IPGME and SSKM Hospital, Kolkata. They were studied by adopting the following procedures: history, clinical examination, preliminary investigation and operative findings. Special emphasis was given to age, side of empty scrotum, associated complaints, presence of other congenital anomalies, birth history, family history and any previous hormonal and surgical treatment.

Clinical examination was done in supine (Fig. 1 & Fig. 2), standing and squatting position to exclude retractile testis. In case of impalpable testis the inguinal region, suprapubic area, perineum, thighs, contralateral scrotum and abdomen were searched clinically and by USG (Fig. 3).

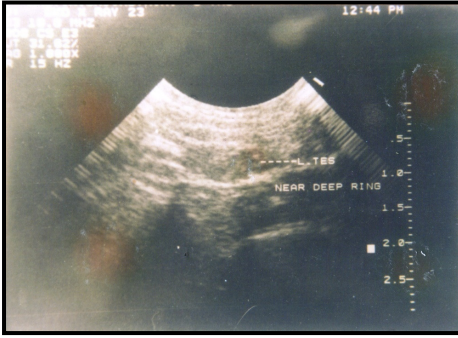
Fig-1: Undescended testis (left side)



Fig-2: Undescended testis (right side)



Fig-3: USG of undescended left testis (near deep inguinal ring)



Examination was done to detect any ipsilateral or contralateral inguinal hernia. Laparoscopic localization was needed in 2 cases. The clinical findings were corroborated with the operative findings and the data obtained were recorded in tabular form. Informed consent was obtained for all cases in this study.

Results

The relevant data can be summarized as follows: the average age of presentation was 5.5 years – lowest being 11 months and highest being 10 years. The age range that showed the highest frequency of persistent processus vaginalis was in the first 4 years of life (Table 1). Bilaterally undescended testes were present in two cases (Fig 4): in one patient aged 9 years and 6 months with bilaterally undescended testis, the processus vaginalis was patent on the right side and obliterated on the left. In another patient aged 4 years and also with bilaterally undescended testis the processus vaginalis was patent on both sides.

Table-1: Persistence of Processus Vaginalis (PV) in relation to age range. Two patients with anorchism and bilaterally undescended testes are not computed.		
Age	Persistent PV	Obliterated PV
Birth-4 yrs (10 pts)	10	0
5-8 yrs(7 pts)	7	0
> 9 yrs (4 pts)	4	0
Total (21 pts)	21 (100%)	0

Fig-4: Bilaterally undescended testes



Bilaterally empty and poorly developed scrotum were observed in 8% cases. Clinically palpable testes were present in 52% cases while others were impalpable. In cases with bilaterally empty scrotum it was the left testis which was clinically palpable. The overall incidence of such cases being 8%. Testis could not be located in 8% cases by USG or during laparotomy – hence a diagnosis of anorchism was made. Hernial sac was present in 92% cases. It is interesting to note that in one case hernial sac was

present on the side, opposite to which the undescended testis was located.

Most testes were located in the inguinal canal. The testes located in the inguinal canal presented the highest index of persistent processus vaginalis while those located in the inguinal ring presented the lowest. In one case with bilaterally undescended testes, processus vaginalis was absent for the testis located in the external ring but present for that located in the internal ring (Table 2).

Table-2: Testicular position in patients with cryptorchidism and its relation to the persistence of the processus vaginalis. Two patients with anorchism and bilaterally undescended testes are not computed.		
Testicular position	Total (%)	Processus Vaginalis (%)
Internal ring	3 (12)	3 (100)
Canal	13 (52)	13 (100)
External ring	5 (20)	5 (100)
Total	21 (100)	21 (100)

The highest incidence of associated anomalies was present in the first 4 years of life and lowest in the age group of 5-8 years. 3 cases of phimosis and 1 of hydrocele were observed in the first 4 years of life. 1 case of hypospadias was observed above 9 years of age (Table 3; Fig 5).

Fig-5: Undescended testis with hypospadias



Table-3: Associated anomalies in patients with cryptorchidism		
Age	Associated anomaly present	Associated anomaly absent
Birth-4 yrs	4 (16%) (3 phimosis, 1 hydrocele)	7 (28%)
5-8 yrs	0 (0%)	9 (36%)
> 9 yrs	1 (4%) (hypospadias)	4 (16%)
Total (25 pts)	5 (20%)	20 (80%)

Discussion

Testis develops retroperitoneally in the posterior abdominal wall and migrates downwards through the inguinal canal to reach the scrotum at or just before birth. Preceding its descent an extension of peritoneal pouch – processus vaginalis grows through the developing inguinal canal and begins to close once the testis has reached the scrotum and ultimately disappears [3]. Any abnormality in the mechanism of descent alongwith closure of processus vaginalis leads to undescended testis with ipsilateral inguinal hernia and is at greater risk for trauma [4-6]. In the present study hernial sac was present in 92% cases while Snyder and Chaffin reported an incidence of more than 65% [7] and Scorer and Farrington reported an incidence of 90% [8].

A patent processus vaginalis is found in more than 90% of patients with undescended testis [8-10]. The processus normally closes between the period after complete testicular descent and the first month after birth [11]. In one study the incidence of testicular descent was 49.5% in patients with a normal processus vaginalis and zero in testes associated with a patent processus vaginalis [12]. Heath et al (1984) detected persistence of processus vaginalis in 21.3% cases [13] while Bica and Hadziselimovic (1993) reported an incidence of 81.3% [14]. In our study it was 100%. Adamsen and Borjesson (1989) unexpectedly found a hernia or hydrocele at surgery in 77% cases [15]. 26% of cases with maldescent of testis had a history of prematurity [16] but in our study it was 0%.

Undescended testis is a commonly encountered congenital anomaly with potency to beget complications like torsion, tumour and trauma. Central to the development of inguinal hernia in such cases is the persistence of a patent processus vaginalis. The clinical significance of a patent processus vaginalis is that it has been shown to affect the efficacy of hormonal treatment of cryptorchidism [11].

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