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## Gubernaculum with a long loop vas deferens

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## ABSTRACT

Cryptorchidism by definition suggests a hidden testis: a testis that is not within the scrotum and does not descend spontaneously into the scrotum by six months of age. Cryptorchid testes may be absent or undescended. If they haven't descended by six months of age, they are unlikely to descend and generally require surgical manipulation into and attachment to the scrotum to avoid potential complications and sequelae. This case describes an anatomical variation of vas deferens with gubernaculum which not previously reported in literature. A 9 month old boy was presented with diagnosis of left undescended testis and underwent standard orchiopexy operation. At the time of gubernacular dissection a long loop vas deferens without epididymis abnormalities was observed. A long loop of vas deferens originated from tail of epididymis and rotated up then formed a long loop with in the gubernaculum. This case reminds us of the possibility of anatomical variations and the importance of keeping them in mind to prevent complications at time of surgery.

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Cryptorchidism is an isolated finding and the most common congenital abnormality of the genitourinary tract and also orchidopexy is one of the most common operations in childhood, and this is a significant financial as well as emotional burden for parents.

The mechanisms responsible for normal testicular descent are not well understood. Changes in abdominal pressure, patency of the processus vaginalis, gubernacular regression, androgens, gonadotropins, mullerian inhibiting substance, and calcitonin gene-related peptide are all thought to play a role [1,2]. Most cryptorchid testes are undescended, but some are absent (due to agenesis or atrophy). Between 2 and 5% of full-term and approximately 30% of premature male infants are born with an undescended testis [3–6].

Alterations in any of these factors that contribute to normal testicular descent may theoretically result in undescended testes and also lead anatomic variation of testis, epididymis, vas deferens and gubernaculum. There is a recognized increased risk of complications in procedures with anatomical variations [7,8]. After the diagnosis of undescended testis; standard orchidopexy procedures are performed for inguinal located testis. Testis detachment from the gubernaculum and surrounding tissues and preparation for

fixation to the scrotum are all essential steps of standard orchidopexy procedure.

We did not find any case presentation like ours which mentioning gubernacular and vas deferens relation in English writing literature. That's why we try to demonstrate and remind this important entity of orchidopexy procedures.

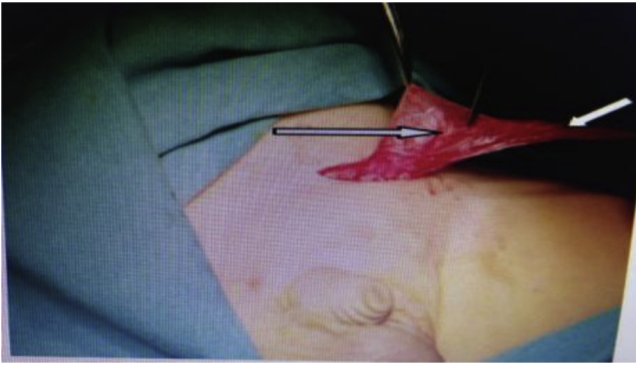
### 1. Case presentation

A 9 month old term toddler was presented with left cryptorchidism. A hypoplastic or poorly rugated scrotum with non palpable testis were the only examination findings. Ultrasonography identified a left inguinal located undescended testis. Then child was underwent surgery with the diagnosis of undescended testis with the option of standard orchidopexy.

Standard orchidopexy was performed at the surgery. The undescended testis was detected at the level of internal inguinal ring. When we started to dissect the gubernaculum, a thick and fleshy structure of the gubernaculum were palpated and observed. Then with a careful intraoperative examination of gubernaculum, we saw a long loop forming vas deferens lying with in the gubernaculum (Fig. 1). The gubernaculum attached to testis and epididymis from the cranial to the caudal direction and started to envelop the vas deferens and it's long loop at that position. There were no any other epididymis or vas deferens anomalies.

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**Fig. 1.** Long arrow is stand for epididymis and vas-deferens junction, short arrow is for gubernaculum with vas deferens.

Then with vas deferens preserving maneuver we dissected the most distance portion of the gubernacular attachment to the scrotum to perform orchidopexy. This was performed just by gently preparation and isolation of the long loop of vas deferens from to the most distal portion of gubernaculum scrotal junction and then incision of this point were performed. Also, a hernia sac was detected and it was corrected with high ligation. After fixation of the testis to the scrotum, standart orchidopexy operation was successfully completed.

## 2. Discussion

Cryptorchidism occurs because of both failure of migration congenitally, and failure of elongation of the spermatic cord post-natally. The configurations of epididymides and vas deferens in the undescended testes were also affected due to these problems. There are six reported anatomical variations (Turek et al.) of epididymis and the most common one is type1. Their data revealed that the incidence of epididymal abnormalities in undescended testis was 41% among the study population [9,10].

Elongated epididymis is an abnormality encountered most frequently in patients who have an undescended testis. To clarify the implication of this anomaly in testicular descent, the anatomic configuration of paratesticular structures, especially the site of cranial attachment of the gubernaculum in relation to the configuration of the vas deferens, was evaluated by Abe et al. in 54 undescended testes of 44 patients. Undescended testis was associated with an elongated epididymis in 42.5% of these cases. Of these, the cranial gubernaculum was attached solely to the vas deferens in 73.9%. In this group, the cranial gubernaculum was attached to the most descended part of the loop of the vas deferens [11].

Ductal abnormalities are reported in the literature and have an incidence of 10–27 percent in infertile patients compared to 0.5–1% in the normal population. Bilateral absence of the vas deferens is the most common abnormality and occurs in 1–2% of men presenting with infertility. Males with absence of the vas deferens commonly have other urogenital anomalies [12]. Variations in testicular anatomy have also been reported including cryptorchidism, polyorchidism, monorchidism, and testicular agenesis. Anatomical abnormalities of the vas deferens and epididymis are reported in many studies of cryptorchidism.

Cryptorchidism, the absence of one or both testes from the scrotum, is the most common birth defect of the male genitalia and occurs in approximately 1.5% of male infants [13]. Mollaeian et al. studied the prevalence of epididymal and ductal anomalies associated with cryptorchidism. 652 patients who underwent surgical

intervention for management of undescended testicles were examined intraoperatively. Epididymal and ductal anomalies occurred in 36 percent of cases (235 of 652 cases), with flimsy attachment of the head of epididymis to the testis was the most common anomaly [14].

The anatomical variation of vas deferens that we report in our case has not been previously reported and does not fit into any of the six variations of epididymis described. This is the first case that reports the presence of a normal epididymis and attached at the lower pole to the vas deferens which then form a long loop with in the gubernaculum.

Even though the testis was non palpable at the initial physical examination but sonographic detection of the testis was lead us to perform standart orchidopexy procedure instead of a laparoscopic approach. In their study, K.H.Bae et al. revealed that most of nubbins are within the scrotum and testes with intra-abdominal peeping testis are fixed down safely into the scrotum, the inguinal approach may suffice for the management of unilateral non-palpable testis. Laparoscopy should be reserved for patients with bilateral non-palpable undescended testis [15].

## 3. Conclusion

Anomaly in testicular descent, the anatomic configuration of paratesticular structures, attachment of the gubernaculum and relation to the configuration of the vas deferens are very important points of orchidopexy surgery. This case reminds us the possibility of anatomical variations and the importance of keeping them in mind to prevent complications at time of surgery.

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