

CASE REPORTS

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Duplicate vas deferens in a 3-year-old boy: a case report and review of paediatric literature



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Abstract

Background: Congenital abnormalities of the vas deferens are very uncommon. Duplicate vas deferens is a rare abnormality. It is the presence of two separate vasa deferentia within one spermatic cord. It has been encountered during inguinal hernia repair, orchidopexy, varicocoelectomy, vasectomy and radical prostatectomy. Identification of the vas deferens is mandatory during surgeries involving manipulation of the spermatic cord because if duplication exists and is not detected, there is increased chance of iatrogenic injury.

Case presentation: We present a 3-year-old boy with duplicate vas deferens identified during herniotomy for a right hydrocele. A postoperative abdominopelvic ultrasound scan revealed no abnormalities.

Conclusion: The risk of iatrogenic injury to the vas is increased in the presence of a duplication. A deliberate identification of the vas during procedures involving manipulation of the spermatic cord reduces this risk.

Keywords: Duplicate, Vas deferens, Herniotomy, Spermatic cord

Background

Congenital abnormalities of the vas deferens are very uncommon [1]. Duplicate vas deferens is a rare abnormality. It is the presence of two separate vasa deferentia within one spermatic cord and is rarely reported in literature worldwide [2] [3]. It has been encountered during inguinal hernia repair, orchidopexy, varicocoelectomy, vasectomy and radical prostatectomy [4]. A large number of inguinal surgeries in children are performed annually with attendant risk of injury to the vas deferens. The aim of this report is to raise awareness to this condition to minimize the potential risk of injury. The literature is also reviewed.

Case presentation

A 3-year-old boy presented with a 1-year history of painless right scrotal swelling. He had no other symptoms. Examination revealed a large irreducible right scrotal swelling which transilluminates brilliantly with the testis not separately palpable. A diagnosis of right hydrocele

was made and he subsequently had a right herniotomy via an inferior groin crease incision. Intraoperative findings were a patent processus vaginalis and a fluid-filled tunica vaginalis. During separation of the processus vaginalis from the other contents of the spermatic cord, two separate similar-sized vas deferens were isolated (Fig. 1).

High ligation and division of the patent processus vaginalis was done, taking care to avoid injury to any of the cord structures. Intraoperative examination of the scrotum revealed a single testis and epididymis. The procedure was well tolerated and there were no postoperative complications. The patient subsequently had an abdominopelvic ultrasound scan which revealed no abnormalities.

Discussion

Anomalies of the vas deferens are rare with an estimated overall incidence of less than 0.05% in the general population. These may present as absence, ectopia, hypoplasia, diverticulum and duplication [5, 6]. Duplications are rare and only few cases have been reported in literature. It may be, however, that the estimated incidence is under-reported and the anomaly under-recognized [7]. A review of literature from 1948 till date showed that only 33 cases have been reported worldwide [1–31]. Of

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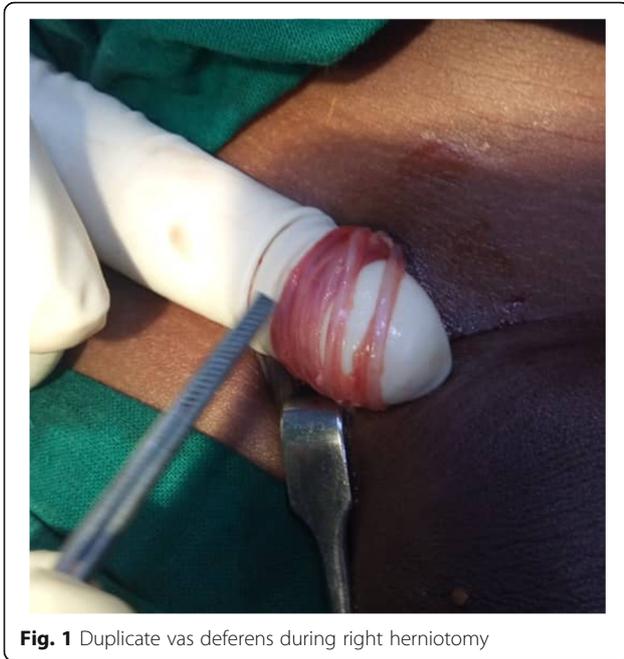


Fig. 1 Duplicate vas deferens during right herniotomy

these, only 9 cases were documented to have been detected in the paediatric age group. Our report is the 10th documented case in children. Duplicate vas is encountered usually during surgical procedures that involve inguinal exploration. Of the cases detected in children, 6 were discovered during orchidopexy, 2 during inguinal herniotomy and 1 during exploration for suspected right ectopic ureter (Table 1). The ages at surgery ranged between 7 months and 15 years and 7 of the patients had bilateral exploration. Of the 7 patients who had bilateral exploration, 5 had bilateral duplications of the vas deferens. Two of the surgeries were complicated by transection of the vas deferens, 2 patients had crossed

testicular ectopia, 1 patient had ipsilateral renal agenesis and 2 patients were not evaluated for associated anomalies (Table 1).

Where available, intraoperative Doppler can help differentiate between the vas deferens and a vascular structure [7]. Previous reports have shown association between duplicate vas deferens and cystic fibrosis, unilateral renal agenesis and other renal anomalies [1] [3] [8].

Abdominopelvic ultrasound scan in the index patient demonstrated no abnormalities.

The embryogenesis of this anomaly is unclear. The vas deferens originates from the proximal vas precursor which is the central part of the mesonephric duct. Duplication of the fetal mesonephric ducts possibly gives rise to duplication of the vas deferens, while duplication of the proximal vas precursor presumably gives rise to partial duplication of the vas deferens at the level of the inguinal canal [5]. Liang et al. proposed a classification system for the poly-vasa deferentia [4]. Type I describes duplicated vas deferens in the spermatic cord with no polyorchidism. Type II refers to multiple vas deferens with polyorchidism. Type III is a false poly-vasa deferentia where an ectopic ureter drains into the ejaculatory system. Based on this classification, the index patient had a Type I poly-vasa deferentia.

Due to the rarity of this condition, inadvertent injury of the vas deferens during surgeries involving exploration of the spermatic cord may occur [1, 15, 26].

Conclusion A deliberate identification of the vas deferens is compulsory during surgeries involving manipulation of the spermatic cord in order to avoid injury. If duplication of the vas deferens exists and this is not detected, the chance of iatrogenic injury is increased. It is

Table 1 Reports of duplications of the vas deferens in children

Author	Year	Age in years	Procedure	Complication	Associated anomalies	Side	Bilateral exploration
This report	2019	3	Inguinal herniotomy	None	None on US	Right	No
Karaman	2010	1	Orchidopexy	None	None on US	Left	Yes
Kutiyanawala	1998	3	Bilateral orchidopexy	None	None on US	Bilateral	Yes
Mege	1997	4	Orchidopexy	None	Not evaluated	Bilateral	Yes
Mege	1997	4	Orchidopexy	None	Not evaluated	Left	Yes
Barrack	1994	10 months	Orchidopexy	None	Crossed testicular ectopia	Bilateral	Yes
Binderow	1993	2	Inguinal herniotomy	Transected	None on US and IVP	Left	No
Tolete-Velcek	1988	10	Orchidopexy	None	Crossed testicular ectopia on US	Bilateral	Yes
Tolete-Velcek	1988	7 months	Inguinal herniotomy	Transected	None on US	Bilateral	Yes
Koyanagi	1972	15	Exploration for suspected right ectopic ureter	Nil	Ipsilateral renal agenesis	right	No

also important that surgeons carrying out these surgeries are aware of the existence of this anomaly.

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Consent for publication

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Competing interests

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