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CASE REPORT

Duplicated vas deferens as an incidental finding during indirect inguinal hernia repair: A case report and literature review

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ABSTRACT

Duplication of vas deferens is an anomaly that is generally encountered during inguinal hernia repair, orchiopexy, radical prostatectomy, varicocelectomy, and vasectomy. The estimated rate of this anomaly in the United States is 0.01%. This anomaly may predispose to iatrogenic vas deferens injury during inguinal hernia repair. Embryological point of view suggests that the duplication of the mesonephric duct system could result in duplicated vas deferens. Failure to recognize this anomaly may lead to injury, obstruction, or spermatic granuloma. Furthermore, it is important to identify duplicated vas deferens during vasectomy to avoid failure of the procedure. Identification of duplicated vas deferens is important during inguinal hernia surgery, vasectomy, and varicocelectomy. Herein, we report a case of duplicated vas deferens during open indirect inguinal hernia repair.

Keywords: duplicated vas deferens, inguinal hernia, iatrogenic injury of vas

INTRODUCTION

Duplication of the vas deferens is an anomaly that is usually encountered during inguinal hernia repair, orchiopexy, radical prostatectomy, varicocelectomy, and vasectomy.[1] The rate of this anomaly in the United States is estimated to be approximately 0.01%.[1] Identification of the vas deferens during inguinal hernia repair is essential and mandatory to avoid injury.[2] The anomaly of duplication of the vas deferens should be brought to the attention of surgeons to avoid injury.[2] Duplication of the vas deferens may be associated with other renal anomalies.[3,4] Herein, we report a case of duplicated

Figure 1. Intraoperative identification of duplicated vas deferens. The white arrows point to the duplicated structures.

vas deferens discovered during open indirect inguinal hernia repair.

CASE

A 59-year-old male presented with a right symptomatic reducible inguinal hernia. The patient had no abdominal or urinary symptoms. His previous medical history was uneventful. On clinical examination, a reducible small-sized right inguinal hernia with normal testes was found. The patient had a colonoscopy as a screening test 4 months prior to the surgery, and the result of the procedure was unremarkable. The patient underwent open right indirect inguinal repair (Lichtenstein procedure) under general anesthesia. During dissection of the indirect inguinal hernia sac, two tubular structures were identified as the vas deferens (Figure 1). Examination of the scrotum showed a single testes and epididymis; both vas deferens communicated with the epididymis. We followed the two vas deferens from the deep inguinal ring until they fused in the epididymis of the testis.
We performed the Lichtenstein procedure, and the patient tolerated the procedure without postoperative complications. He was discharged the next day and followed up 2 weeks post-operation as a surgical outpatient. The patient reported no complaints during his outpatient visit, and no complications related to the procedure were noted. Due to the financial status of the patient, we were unable to perform a CT scan or MRI of the pelvis to assess whether the duplication was bilateral or unilateral.

DISCUSSION

Duplication of the vas deferens is rare and may predispose a patient to iatrogenic vas deferens injury during inguinal hernia repair.[2,5] Duplication of the vas deferens can be explained from an embryological point of view.[6] The vas deferens has been suggested to develop from the mesonephric (Wolffian duct) duct system.[6] Duplication of this system could lead to duplicated vas deferens.[6] The anomaly may also be associated with renal anomalies and cystic fibrosis.[3]

The term 'duplicated vas deferens' should be differentiated from 'double vas deferens'; here, the first term refers to the identification of two separate vas deferens in the spermatic cord while the latter

Table 1. Classification of poly-vas deferens.

Type I	'Duplicated' vas deferens in the spermatic cord with no polyorchidism
Type II	Multiple vas deferens with polyorchidism
Type III	False poly-vas deferens, including 'double' vas deferens, and ureter draining into the ejaculatory system

Table 2. Included articles in the search for similar cases.

Author	Patient's age (years)	Procedure
Breitinger (1)	63	Right inguinal hernia repair
Chintamani (2)	31	Right inguinal hernia repair
Sirasangandle (3)	cadaver	Right inguinal dissection
Liang (4)	56	Right inguinal hernia repair
Karaman (6)	1	Left inguinal hernia repair
Khandelwal (9)	27	Left inguinal hernia repair
Saadeldin (10)	33	Left spermatic cord during vasectomy
Shariat (11)	58	Left side during radical prostatectomy
Erdemir (12)	19	Left spermatic cord dissection during varicocelectomy
Akay (13)	22	Left spermatic cord during varicocelectomy
Lee (5)	22	Left spermatic cord during varicocelectomy
Terawaki (7)	1	Left undescended testes orchidopexy
Estrada (8)	33	Bilateral during varicocelectomy

term describes an ectopic ureter draining into the ejaculatory system and is often associated with ipsilateral renal dysgenesis.[5] In 2012, Liang proposed a classification for poly-vas deferens (Table 1).[4]

We reviewed the literature in PubMed and found 13 cases with full articles similar to our case. Articles that only had an abstract and no full text were excluded from our review. Table 2 summarizes all included articles in this work. The diagnosis of duplicated vas deferens was established intraoperatively in all cases.[1–13] Terawaki reported the duplication of the vas deferens and epididymis,[7] and Estrada reported a bilaterally duplicated vas deferens discovered during a vasectomy.[8] Identification of the vas deferens in inguinal hernia repair surgery is important to avoid injury; failure to do so can lead to infertility.[2] Identification of the vas deferens during vasectomy is also important to avoid failure of the procedure. [12] Some delayed post-operative complications of iatrogenic vas deferens injury include chronic pain and spermatic granuloma.[1] These complications can be explained by the antigenic nature of extraluminal spermatozoa, where it can form a nodule around the defect of the extravasation.[1] This nodule could lead to chronic pain and may require microscopic exploration and re-anastomosis of the injured vas deferens.[1]

CONCLUSION

Duplicated vas deferens is a rare anomaly. Failure to recognize this anomaly may lead to injury, obstruction, infertility, spermatic granuloma, and chronic pain. Identification of the vas deferens is important during inguinal hernia surgery and varicocelectomy. In particular, identification of the vas deferens is important during vasectomy to avoid failure of the procedure.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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