Fertility preservation in cases of laparoscopic treatment of seminal vesicle cysts

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KEY WORDS

infertility ◗ laparoscopy ◗ seminal vesicle

ABSTRACT

Seminal vesicle cysts can cause sub- or infertility. Minimally invasive techniques have the advantage of preserving the *vas deferens* by the treatment of symptomatic cases. After reviewing the published articles, only a few of them presented data on fertility before and after surgery. The authors now report the successful treatment of two patients with seminal vesicle cysts, in which laparoscopic cyst removal resolved the symptoms, preserving fertility and erectile function. Due to the rarity of seminal vesicle cysts, preoperative examinations and treatment modalities should focus not only on the relief of symptoms but also on the preservation of fertility and erectile function.

INTRODUCTION

Seminal vesicle cysts can be acquired or congenital – the latter is generally associated with other developmental anomalies of the genitourinary tract [1]. The combination of a seminal vesicle cyst and ipsilateral renal agenesis is called Zinner syndrome. When these are not detected in early childhood, the seminal vesicle cysts are discovered upon symptoms such as: inflammation; voiding dysfunction; abdominal, pelvic, or post-coital pain; hematuria; hematospermia; and sub- or infertility. Due to efficient diagnostic techniques, symptomatic cases are usually recognized and treated properly; however, the surgical removal of the seminal vesicle cyst may become necessary in these patients. Recent publications have presented efficient and minimally invasive surgical treatment of the disease in complicated situations [2, 3, 4]. According to the Medline database, 23 authors presented 35 standard laparoscopic or robot-assisted seminal vesicle cyst removals as of April 2010. However, only a few articles presented data on fertility. In light of our successfully resolved cases we would like to stress the importance of preserving fertility in patients of fertile age, and why publishing data such as this in the future is worthwhile.

Patient 1

A 31-year-old man with a history of cardiac arrhythmia, right renal agenesis with normal renal function, and recurrent urinary tract infections. He has two children. Ultrasonography (US) detected a 28x32mm seminal vesicle cyst on the right side. After an unsuccessful transrectal ultrasound-guided puncture, a transurethral resection (TUR) of the verumontanum temporarily resolved the symptoms for five years. Pelvic magnetic resonance imaging (MRI) and renal scintigraphy showed an enlarged right seminal vesicle, a dilated right ureter, and the absence of the right kidney. Because of repeated failure of other treatment options, a transperitoneal laparoscopic nephroureterectomy with removal of the seminal vesicle was performed. During the procedure the patient was placed in the Trendelenburg position. The same transperitoneal approach with five ports used for radical prostatectomy was applied. After insufflation of the peritoneum with CO2 to 12 mm Hg, the rectovesical peritoneum was transversely incised. The right seminal vesicle and the ampulla of the *vas deferens* were identified and carefully dissected sharply with limited use of bipolar coagulation. The seminal vesicle was deflated, sectioned, and its orifice over the ampulla was closed with two stitches. The ureter entered the bladder lateral to the seminal vesicle. It was freed cranially after mobilizing the colon. A hypoplastic kidney was found at the usual kidney location, which was removed *en bloc*. The specimens were removed in a bag through the camera port. The operation time was 195 minutes, and the estimated blood loss was 300 ml. Histological examination showed seminal vesicle occlusion and hypoplastic right kidney. The patient was free of symptoms 24 months after the procedure, and his sperm count was normal (Table 1).

Patient 2

A 25-year-old man had appendectomy in his medical history. He did not have children. He presented with lower abdominal pain for one year and recurrent epididymitis. Semen analysis revealed asthenozoospermia. Abdominal ultrasound and computed tomography (CT) showed a large (58 mm) right seminal vesicle cyst and absence of the right kidney. Due to the persistent symptoms and the size of the cyst, a transperitoneal laparoscopic procedure was performed. After the nephroureterectomy, we removed the seminal vesicle cyst with the control of the right *vas deferens* using the aforementioned technique, but in this case the bladder was filled with methylene blue for better exposure. The operation time was 285 min., and blood loss was 200 ml. Histological examination revealed obstructive degeneration of the kidney and seminal vesicle cyst. Eighteen months after the surgical intervention the patient had no complaints. The control semen analysis presented the same motility and a recovery of sperm concentration (Table 1).

DISCUSSION

After the successful treatment of two patients with Zinner syndrome we were able to prove with internationally used questionnaires and semen analysis that laparoscopic removal of seminal vesicle cysts can resolve symptoms while preserving fertility and erectile function. After reviewing the published standard laparoscopic or robot-assisted cases we found that the symptoms disappeared in the majority of patients but only a few papers reported data on fertility. Sperm analysis was performed in two cases before the operation, but the authors did not record sperm count or motility after cyst removal. One of McDougall's patients had hypospadiasis and left cryptorchidism in his medical history and semen analysis revealed azoospermia before the operation. Among the three reported patients, none had erectile problems after the procedure but the methodology of the registration was not described [5]. In the paper of Selli, a patient with normal sperm

Table 2. Patients' data one week before and 18 months after operation

		Age (yrs)	IPSS	QL	IIEF-5	semen volume (ml)	pH	Sperm conc. (M/ml)	Sperm motility (%)	Sperm vitality (%)	Sperm normal morph. (%)
Patient 1	Before operation	36	13	6	25	3	7.9	22	45	90	6
	18 months after operation	38	3	1	25	2	7.8	50	55	95	6
Patient 2	Before operation	25	7	6	24	2.7	7.6	30	35	90	8
	18 months after operation	27	0	0	24	1.5	7.8	70	35	90	5

Abbreviations: yrs – years, IPSS – International Prostate Symptom Score, QL – Quality of Life, IIEF – International Index of Erectile Function, conc. = concentration, WBC = White Blood Cell, morph. = morphology

count was presented, but he did not have any children yet [6]. In another three articles the drained fluid was analyzed – in one case spermatozoa and in two cases normal sperm cells were found [7, 8, 9]. Other authors reported patients having children in three cases [4, 6, 10]. Only two patients had one child before the operation. One patient fathered a child between successful laparoscopic removal and a robot-assisted removal of bilateral seminal vesicle cysts [4]. In the majority of the reported cases the authors made some efforts during the procedure to preserve fertility, but this may not be successful in some complicated situations like serious congenital malformations or chronic inflammations. Sixteen of the 35 reported patients were in the most active sexual period of their lives (16-39 years), and five more patients were in the fifth decade. Only four of all these cases had at least data from cystic fluid regarding sperm morphology, the others did not. However, with a disease such as this, which changes the anatomy of the reproductive tract and can affect fertility, it is considerable to perform and report semen analysis and erectile function. Also, limited use of bipolar coagulation, careful dissection, and the administration of methylene blue for better exposure might be key factors in the preservation of fertility during these procedures. Large cohort studies are limited because of the low number of cases, thus gaining as much experience as possible is essential in order to set up guidelines for the proper treatment of these patients. Andrologists and urologists alike must keep these rules in mind, because they are the ones who meet and treat these patients in the vast majority of the cases.

CONCLUSION

In cases of symptomatic and complicated seminal vesicle cysts, a surgical procedure should be considered. The advantages of laparoscopic and robotic approaches include the possibility of preserving erectile function and fertility during seminal vesicle cyst removal. Registration of fertility parameters is of utmost importance in young patients. Due to the rarity of seminal vesicle cysts, preoperative examinations and treatment modalities should focus not only on the relief of symptoms but also on the preservation of fertility and erectile function, which have hardly been reported in the reviewed cases. Such data would reveal the real advantages of laparoscopy over other treatment options and could serve as a guide for how and when to treat these patients.

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