Case Report

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# Robotic Excision of a Huge Seminal Vesicle Cyst, Including Intracystic Papillary Adenoma, Saving Fertility

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A seminal vesicle cyst is a rare disease, and an intracystic papillary adenoma within the seminal vesicle is extremely rare. The diagnosis and treatment of these diseases are challenging because of the limited data. This paper presents a robotic excision of a huge seminal vesicle cyst, including an intracystic papillary adenoma, preserving fertility in a 40-year-old man.

**Keywords:** Papillary adenoma; Seminal vesicles; Robot

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Intracystic papillary adenoma arising from a huge cyst of the seminal vesicle is an extremely rare benign tumor. Few reports of the diagnosis and treatment of this rare disease have been published. This paper reports the resection of a cyst of a seminal cyst and the successful removal of an adenoma using a robot in an unmarried man. In particular, normal semen examination findings were secured after surgery, preserving fertility.

## CASE REPORT

An unmarried 40-year-old man (167.2 cm, 56.1 kg, body mass index 20.07 kg/m$^2$) presented with urinary frequency and lower abdominal pain. He also complained of intermittent bloody ejaculation. He had two abdominal operations for a duodenal perforation and left inguinal hernia when he was 16 and 20 years old, respectively. A laboratory examination of blood samples revealed 3.58 ng/ml testosterone and 1.13 ng/ml prostate-specific antigen. Urinalysis revealed no red or white blood cells on the high-power field. His ejaculated volume for semen analysis was 1.2 ml. The sperm count was 64×10$^6$/ml. Sperm with normal morphology and motility accounted for 70% and 15%, respectively. He had 35 ml of residual urine after voiding. Pelvic magnetic resonance imaging scans revealed an 8.6 cm size thick-walled cystic lesion with internal hemorrhage in the pelvic cavity, the superior portion of the prostate gland (Fig. 1). The lesion originated from the left seminal vesicle. A small hyperintense nodule was observed at the anterior wall of the cyst. Multiple enlarged lymph nodes were also noted in both inguinal areas. A seminal vesicle cyst associated with a tumor was suspected, and the operation was performed.

A robot-assisted laparoscopic excision was performed via the transperitoneal approach. Four ports were placed more cephalad than the traditional configuration of transperitoneal robot-assisted radical prostatectomy. Adhesiolysis of the bowel was needed because he had previously undergone two abdominal operations. The huge seminal vesicle cyst was dissected and excised (Fig. 2). Approximately 200 ml of wine-colored fluid was aspirated from the cyst. The left seminal vesicle, including the cyst and vas, was resected, saving the right seminal vesicle and vas. During the excision, a papillary mass with a broad base was detected in the cyst and removed with cold scissors. The remnant cystic wall and a normal seminal vesicle stump were closed with 3-0

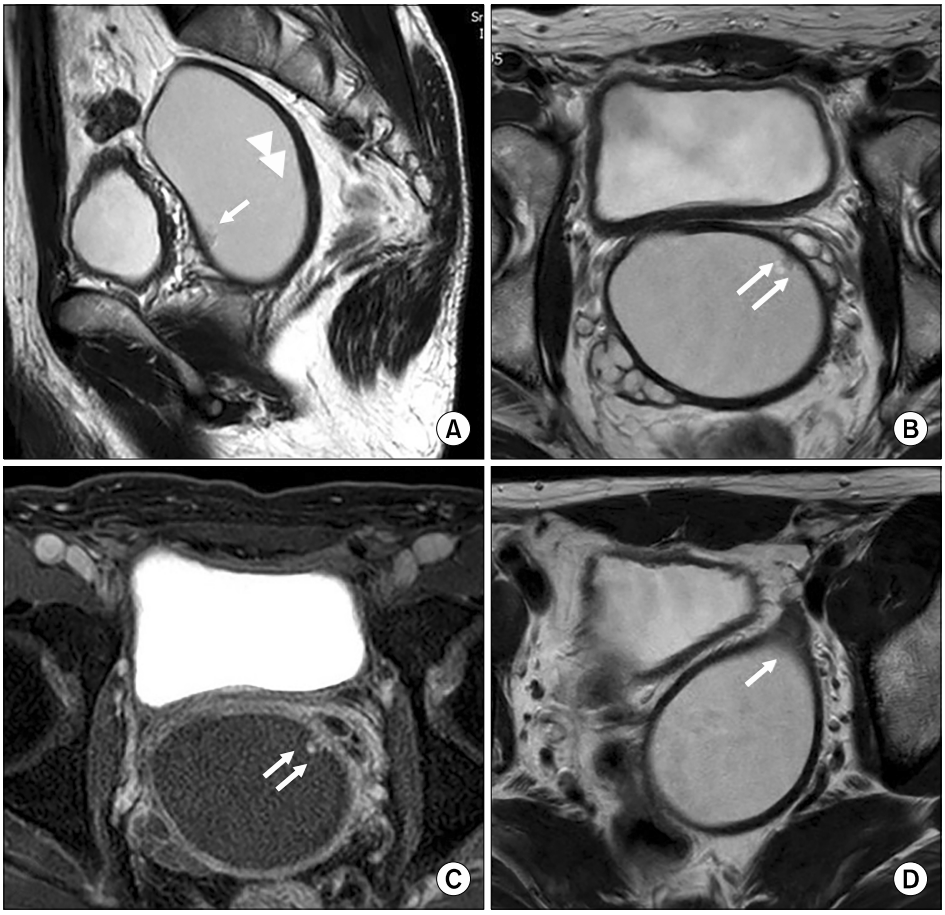


**Fig. 1.** Magnetic resonance images of a 40-year-old man. (A) The sagittal T2 weighted image showed a large T2 hyperintense cyst with a thickened T2 hypointense wall (arrowheads). A small T2 hyperintense nodule was shown at the anterior wall (arrow). (B) An axial T2 weighted image showed a large T2 hyperintense cyst with several T2 mild hyperintense polypoid nodules (arrows). (C) An enhanced axial T1 weighted image showed enhancing papillary lesions (arrows). (D) An axial T2 weighted image showed that the lesion originated from the left seminal vesicle (arrow).

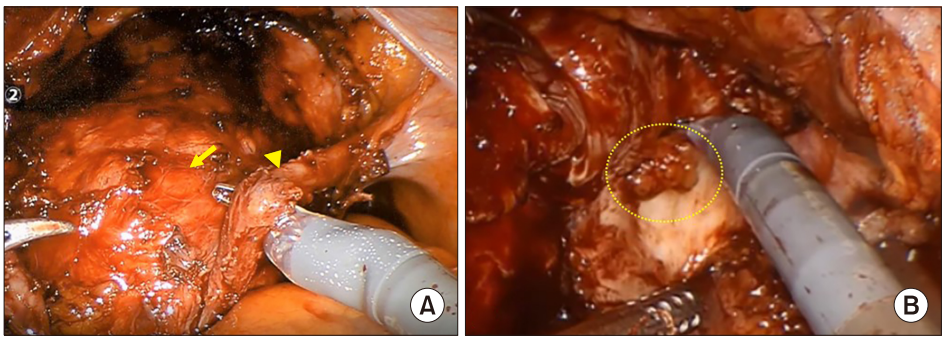


**Fig. 2.** Surgical findings of robotic surgery. (A) Dissected seminal vesicle cyst (arrow) and left vas (arrowhead) were presented. (B) A papillary mass with a broad base (circle) was shown at the cystic wall.

V-Loc sutures (Covidien) in a running, continuous fashion. The specimen was extracted through the 12 mm supraumbilical port using the laparoscopic pouch. The surgery time and estimated blood loss were 205 minutes and 203 ml, respectively. The patient was discharged on postoperative day seven without complications.

The submitted specimen consisted of several fragments of the cystic wall and a separately submitted small papillary mass. The histopathological result was a 27 g seminal vesicle cyst, and large amounts of amorphous material (13,660/μl of white blood cells and 13,000/μl of red blood cells) were detected in the cystic fluid. A 0.5 g small papillary mass found in the cyst was diagnosed as an intracystic papillary adenoma. The mass was lined with single-layered cuboidal to columnar epithelial cells on the surface, while the myxoid stroma contained multiple microcystic to tubular glandular structures. The epithelial cell lining had minimal cytologic atypia and inconspicuous mitotic activity (Fig. 3).

After surgery, the symptoms of urinary frequency and lower abdominal pain disappeared, and an early morning erection was possible. Semen analysis performed three months after surgery showed that the amount was 2.3 ml,

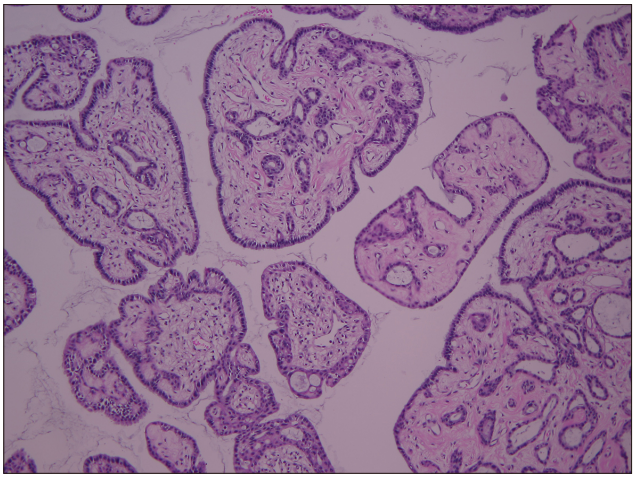

Fig. 3. Microscopic findings of the intracystic papillary adenoma. The submitted specimen consisted of several fragments of the cystic wall and a separately submitted small papillary mass. The small papillary mass was lined with single-layered cuboidal to columnar epithelial cells on the surface, while the myxoid stroma contained multiple microcystic to tubular glandular structures. The lining epithelial cells have minimal cytologic atypia and inconspicuous mitotic activity (H&E stain, ×100).

and 80% and 20% of the sperm had normal morphology and motility, respectively. During 30 months of follow-up after surgery, the patient showed no evidence of recurrence on imaging studies.

This report was approved by the Wonkwang University Hospital Institutional Review Board (WKUH 2022-10-004-002). The patient provided informed consent for the publication of this case.

## DISCUSSION

A seminal vesicle cyst is a rare lesion, manifesting in less than 0.005% of the population [1,2]. Although most cysts are small and asymptomatic, they can cause hematuria, hematospermia, postcoital discomfort, and lower urinary tract symptoms when they grow and affect the surrounding organs [3]. In particular, primary tumors in the seminal vesicle occur very rarely. Malignant primary seminal vesicle tumors include cystosarcoma phyllodes, adenocarcinoma, sarcoma, carcinoid, and primary seminoma [4]. Benign tumors include cystadenomas, hydatid cysts, papillary adenomas, and amyloid depositions. According to recent reports, even cystadenomas may arise in the remnants of the Mullerian duct system [5]. An intracystic papillary adenoma is a very rare benign tumor, and it has been discovered incidentally in the seminal vesicle cyst [6]. It represents a unique histological entity in which the papillary components are distinguished from a cystadenoma of the seminal vesicle [7]. Typical microscopic findings are papillary growth patterns in which most cells exhibit a bland morphology, scattered larger atypical nuclei with a degenerative appearance. Chromatin staining reveals a lack of mitotic activity.

Since a few cases of benign tumors have been reported, there are few accurate guidelines for treatment. Some authors argue for aspiration or marsupialization, but the lesions are very large and multilocular, so these procedures are useless [8]. In the end, it is recommended to consider surgical treatment depending on the symptoms. If surgical treatment is required, extensive abdominal or perineal incision and dissection are inevitable because the vesicle is located anatomically deep in the pelvic cavity. Many complications, such as blood vessel or nerve damage, can occur after surgery. In particular, men who want to remain fertile have technical difficulties because it is recommended to leave one of the seminal vesicles if possible. Therefore, a minimally invasive treatment method that successfully treats it deep within the pelvic cavity using laparoscopy has been developed. The laparoscopic excision of seminal vesicle disease is an effective surgical procedure with minimal operative complications and rapid recovery [9]. On the other hand, surgical techniques such as sutures were difficult, and robotic surgery was attempted to overcome them [10]. Even a huge 17.9 cm cyst could be easily sutured after resection using a robot [11]. Because magnified images of the robot are available, men who need to maintain fertility can leave a normal seminal vesicle and remove only the cystic mass.

This paper presented a rare case of an intracystic papillary adenoma of the seminal vesicle, a unique histological entity differentiated from cystadenoma. The case was treated successfully using a minimally invasive technique with a robot, and his fertility was preserved.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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## AUTHOR CONTRIBUTIONS

I.Y.S. participated in data collection and wrote the manuscript. T.H.O. participated in the review design and coordinatation and helped to draft the manuscription.

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