Abstract  We report a 45-year-old Japanese male with seminal vesicle tumor resected by robotic surgery. Histopathological examination of the tumor revealed a benign schwannoma. This patient was discharged after three days, and there were no complications such as hydronephrosis or sexual dysfunction. In this case, robot-assisted surgery provided safe and minimally-invasive treatment for the seminal vesicle schwannoma.

Key words: seminal vesicle tumor, schwannoma, robotic surgery

Introduction
Recently, indications for robotic surgery have been rapidly expanding. However, there are not so many case-reports of seminal vesicle tumor resected with the robotic surgery system. We herein report a robot-assisted resection of seminal vesicle schwannoma. Schwannoma is typically a benign tumor originated from peripheral nerve systems. And, Schwannoma rarely locates in genitourinary lesions. To our knowledge, this is the first case-report of the seminal vesicle schwannoma resected with robot-assisted surgery.

Case Presentation
A 45-year-old Japanese male was referred to our hospital with an asymptomatic tumor in seminal vesicle lesion, which was incidentally detected by abdominal ultrasonography (Fig. 1). Magnetic resonance Imaging (MRI) of pelvis shows neoplasm in the right seminal vesicle (Fig. 2). A trans-rectal ultrasound guided biopsy of seminal vesicle tumor detected that the tumor was schwannoma because of spindle cells and S-100 positivity. And

Fig. 1 Ultrasonography shows a low echoic mass in the dilated seminal vesicle

Fig. 2 T2-weighted MRI of pelvis indicates a lobulated intermediate signal mass in the right seminal vesicle lesion
then, he underwent robot assisted resection of seminal vesicle tumor using the da Vinci S surgical system in December 2014. Operative position was supine, steep Trendelenburg. In addition, temporary double-pigtail ureteral stents were previously placed so as to identify the ureter. At first, supra-umbilical open laparoscopy was performed with 12mm trocar, and intra-abdominal pressure of 10mmHg was created. After observation of the abdominal cavity, 4 robotic trocars and 1 assistant trocar were positioned (Fig. 3). After setting the trocar positions, we transected the right part of the vesical peritoneum and identified the ipsilateral vas deferens and seminal vesicle tumor. Seminal vesicle tumor was sutured and lifted up in order to peel off the surrounding tissues. Hem-o-locks were applied to control the vascular supply, and the tumor was completely resected. After making sure of hemostasis, we sutured peritoneum and extracted the tumor through the 15mm port (Fig. 4). After all, console time was 1 hour and 53 minutes, and blood loss was 150ml. The patient was discharged in a good condition after three days of the surgery.

The tumor size was 2.6×4.8×4.2cm, and histopathological examination revealed a benign schwannoma (Fig. 5, 6). There were no adverse effects such as sexual dysfunction or hydro-nephrosis after surgery. Besides, there is no recurrence in this two and a half years.

Fig. 3  Positioning of trocars for the robotic surgery

Fig. 4  Procedure of surgery
(A) Transecting the upper part of retro-vesical peritoneal reflection (B) Peeling off the surroundings of the tumor (C) Lifting up the tumor with suturing (D) Cutting off the vascular supply with Hem-o-lok (E) Dissecting seminal vesicle tumor
Schwannoma, a benign neoplasm arising from Schwann cells in a nerve sheath, are often found in heads, necks and limbs. Schwannomas in retroperitoneal lesion are rare (0.7-2.7%)\(^1\), especially schwannoma arising from seminal vesicle is extremely rare. This is the seventh reported case in the literatures\(^2\). Seminal vesicle schwannomas are usually asymptomatic and found incidentally like this case. A few cases present abdominal complaints, lower back pain\(^3\) and hydro-nephrosis when the tumors grow huge and compress the surrounding organs\(^2\). Schwannomas show iso-dense lesions on CT\(^4\), and hyper-intense lesions on T2-weighted MRI\(^5\). Since schwannomas are not sensitive to chemotherapy and radiotherapy in general, surgical resection is preferred as the curative treatment\(^6\). Open surgery is not recommended currently, because seminal vesicle locates the deep retroperitoneal space. And it may occur complications such as surrounding organs injuries or sexual dysfunctions. Some authors reported that laparoscopic surgery of seminal vesicle tumor was better treatment with minimal postoperative complications and shorter hospitalization\(^7\). However, da Vinci surgical system have the advantages over conventional laparoscopy. Firstly, in a small and deep working space such as retroperitoneal lesion, we can easily manipulate instruments and precisely move them with 7 degrees of freedom, which decreases blood loss and neurological damage. Then, traction-free dissection for the neurovascular bundles preserves potency\(^8\). Secondly, 3-dimensional imaging and higher magnified binocular visions provide the appropriate surgical plane to the surgeons. Incomplete excision is noticed as the most common cause of recurrence\(^9\). Finally, a shortened learning curve gives the higher reproducibility\(^10\). Previous reported cases of robot assisted surgery for seminal vesicle tumors are shown...
in Table 1, and we summarized patient age, tumor size, console time, blood loss, pathology and post-operative clinical course. The duration of hospital stays were very short in almost cases. The median postoperative day is 3 [range:1-5] (excluding two malignant cases and paraganglioma case). There were no postoperative complications except only one case (The case reported by Tosev had a second-degree hydronephrosis as a temporary complication). As Table 1 shows, we can use robotic systems in the cases of various-sized seminal vesicle tumors. Therefore, we recommend the robot-assisted resection for the patients with seminal vesicle schwannoma.

**Conclusion**

We report a case of seminal vesicle schwannoma resected with robotic systems, and there were no complications after the surgery.

**Ethical standards**

Robot-assisted resection of seminal vesicle schwannoma was approved by ethical committee of The Fraternity Memorial Hospital (Approval Number: 140), and we obtained informed consent from this patient before surgery. Besides, the medical expense of this case was not covered by insurance.

Conflict of interest

We declare that there are no conflicts of interest.

### References