



Case report

Cystoscopy-assisted laparoscopic partial cystectomy for muscle-invasive bladder cancer: Initial experience in Cipto Mangunkusumo Hospital, Jakarta

Hafizar^{a,*}, Agus Rizal A.H. Hamid^a, Meilania Saraswati^b

^a Department of Urology, Cipto Mangunkusumo General Hospital, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia

^b Department of Anatomical Pathology, Cipto Mangunkusumo General Hospital, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia

ARTICLE INFO

Keywords:

Bladder cancer

Cystoscopy

Laparoscopy

ABSTRACT

Introduction: We report the experience with patients of urachal adenocarcinoma of the bladder, a rare malignancy in the urinary bladder, treated with laparoscopic partial cystectomy.

Aim: Solitary transitional cell carcinoma (TCC) of the dome/anterior wall of the bladder in some cases. As compared to radical surgery, partial cystectomy has a lower morbidity rate and similar oncological outcomes. We present our experience with laparoscopic partial cystectomy (LPC) in patients with urachal adenocarcinoma.

Case presentation: Until being admitted to the hospital, a 60-year-old woman had been suffering from painless, sporadic gross hematuria for the previous year. Her physical examination was undistinguished. Computed tomography revealed an enhancing firmly bordered mass on the anterior-superior aspect of the bladder wall. The patient then underwent cystoscopy and laparoscopic partial cystectomy simultaneously.

Conclusion: Based on our first experience in LPC, we suggest that cystoscopy assisted LPC is a reasonable and safe procedure with fewer complications and does not extend the operating time. The procedure's effectiveness hinges on the patient's selection. However, many cases needed to emphasize the effectiveness and safety of LPC.

1. Introduction and importance

Bladder cancer is one of the most commonly diagnosed cancers in both men and women around the world. It is ranked 10th of all malignancies, with an overall age-standardized occurrence rate (per 100,000 people/years) is 9.0 for male and 2.2 for female [1]. This cancer affects both men and women in Indonesia, with incidences rising by up to 15% per year over the last decade. Transitional cell carcinoma (78.8%) is the most common histopathological form detected, followed by squamous cell carcinoma (10.2%), adenocarcinoma (8.6%), and sarcoma (8.6%) (2.4%) [2].

In terms of treatment, radical cystectomy remains the most successful alternative for patients with invasive organ-limited bladder cancer. Partial cystectomy can be used in certain cases of solitary transitional cell carcinoma (TCC) of the dome or anterior bladder wall, such as small unifocal tumors, bladder diverticulum with solitary tumors in it, no concurrent carcinoma in situ (CIS), or localized urachal adenocarcinoma, with lower morbidity and comparable oncological outcomes

when compared to radical surgery [3,4].

Traditional open partial cystectomy can now be done laparoscopically as well, thanks to advances in urological laparoscopy in recent decades. Nezhat identified the first laparoscopic partial cystectomy (LPC) for bladder endometriosis infiltrating in 1993. In 2006, Milhoua et al. and Wadhwa et al. reported success using LPC to treat urachal adenocarcinoma [5,6].

Patients with urachal adenocarcinoma of the bladder, a rare malignancy of the urinary bladder, were treated with laparoscopic partial cystectomy, according to our findings. This study was conducted using SCARE guidelines.

2. Case presentation

In the year leading up to her admission to the hospital, a 60-year-old woman complained of intermittent, painless gross hematuria, indefinite lower abdominal pain, and sometimes dysuria. The patient was referred from a hospital in Pangkal Pinang with the abdominal ultrasonography

* Corresponding author at: Department of Urology, Cipto Mangunkusumo General Hospital, Pangeran Diponegoro Street No. 71, Kenari, Senen Subdistrict, Central Jakarta District, Jakarta 10430, Indonesia.

E-mail address: hafizar.sr@gmail.com (Hafizar).

<https://doi.org/10.1016/j.ijscr.2021.106083>

Received 24 March 2021; Received in revised form 27 May 2021; Accepted 3 June 2021

Available online 10 June 2021

2210-2612/© 2021 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

result, divulged a solid mass adjacent and entangled from the dome of the bladder. The patient has no history of smoking. Except for a lower abdominal midline scar from a previous hysterectomy with bilateral salpingo-oophorectomy procedure in the late 1990s, her physical examination was unremarkable. The patient had a cystoscopy and a transurethral resection of the bladder (TURB) in January 2018, and the mass was biopsied. The anatomical anatomy of the specimen revealed a urothelial carcinoma with myxoid stroma, with a mucinous adenocarcinoma as a differential diagnosis.

On the anterior-superior side of the bladder wall, contrast-enhanced computed tomography of the abdomen and pelvis showed an enhancing strongly bordered mass with a scale of approximately $5 \times 4 \times 3,5$ cm. There is no evidence of the mass infiltrating or adhering to the surrounding organs (Fig. 1). The patient underwent a cystoscopy and a laparoscopic partial cystectomy at the same time in May 2018. The operation takes 170 min and results in a 25 mL blood loss. The pathological examination revealed an adenocarcinoma of the bladder muscle fibres as the final result. The surgical margin was without blemishes. Three days after surgery, the patients were discharged.

The procedure was performed under general anesthesia and the patient was put in modified lithotomy. Small incision was made 1 cm supraumbilical with an 11 mm trocar and deepened layer by layer as port one inlet (camera port). The peritoneum insufflated with a positive pressure of 12 mmHg CO₂. Three inlet ports created on the left and right sides of the pararectal as a working port (11 mm port) and one finger above the right functioning port's anterior superior iliac spine (ASIS) (5 mm port) (Fig. 2). Adhesions of omentum and peritoneum released with the help of harmonics. The patient's position changed to 30° Trendelenburg.

The urachus was attempted to be identified, but it was not found because it had been removed during a previous surgery. While releasing the bladder from peritoneal deflection, the tumor was identifying on the bladder dome (Fig. 3). Cystoscopy performed simultaneously with the insertion of sheath 22.5 Fr lens 70°; there was no spillage of the fluid used to distend the bladder into the peritoneal cavity. No other pathological features were found, except the papillary mass on the bladder dome with a size of 10×10 mm (Fig. 4). The incision margin was made 1 cm from the tumor with the help of cystoscopy guiding and marked with the help of a harmonic hook. The cut-off border of the bladder tumor was cutting with a scalpel harmonic following the previous incision border. The tumor mass may be fully eliminated. The cystoscopy sheath was removed, and the bladder defect was closed in two

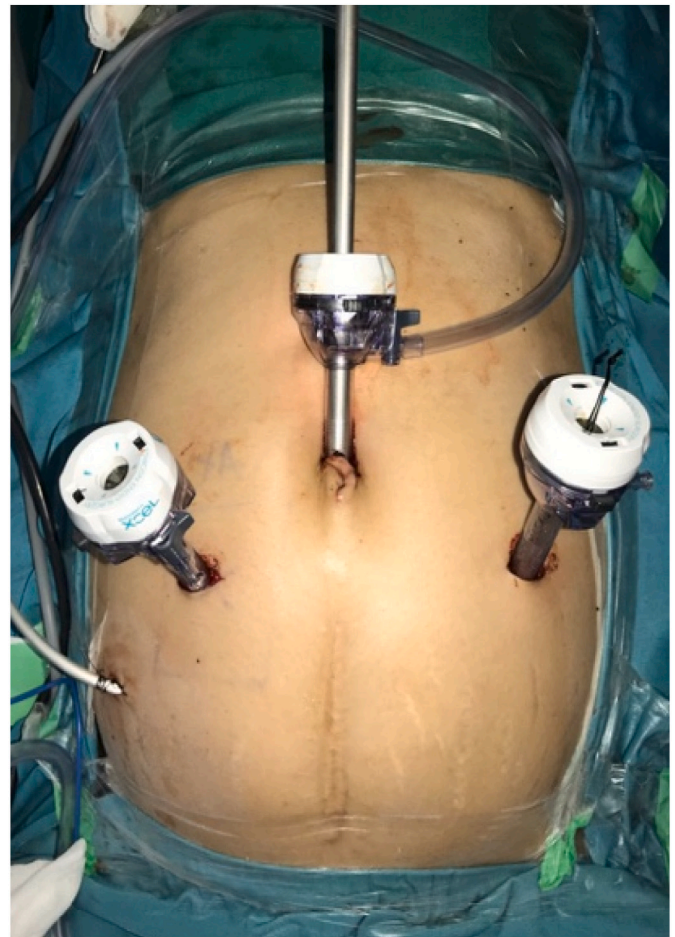


Fig. 2. Three inlet working ports.

layers with absorbable sutures, with the mucosal layer using 3/0 plain catgut and the seromuscular layer using 3/0 vicryl (Fig. 5).

A two-way Foley catheter of 20 Fr installed, and the balloon expanded with 15 mL water. The peritoneal deflection was disrupted and vicryl 3/0 sutured to the anterior side of the peritoneum..

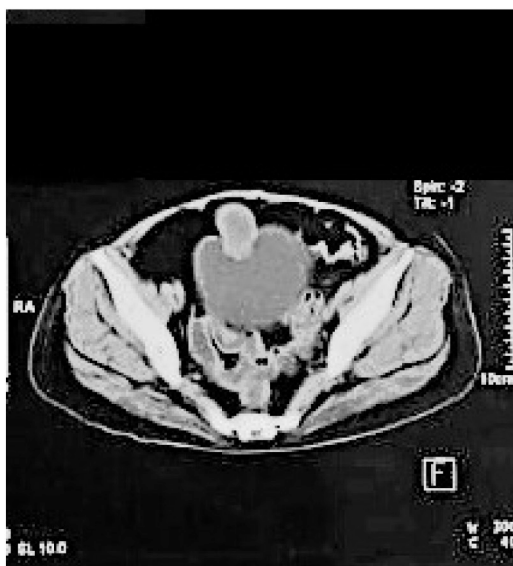


Fig. 1. Preoperative computed tomography demonstrates the bladder mass: (A) axial view, (B) sagittal view.



Fig. 3. Tumor protruding into the bladder dome.

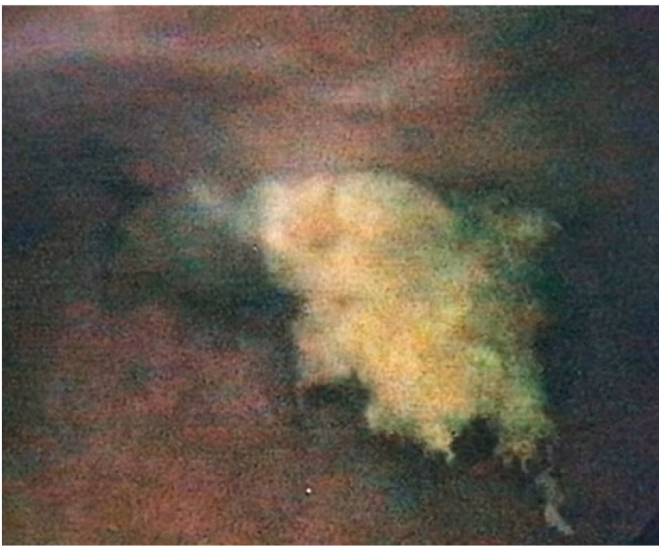


Fig. 4. Cystoscopy displayed papillary mass on the bladder dome.

Nasogastric tube (NGT) of 18 Fr was inserted as a drainage tube to the pelvic floor through the working port over the right ASIS. Via the previous supraumbilical incision, the entire specimen (Fig. 6) was removed. Both port facilities were shut down in a normal manner. Intravesical chemotherapy, doxorubicin, installation has given after the procedure.

During postoperative care, no significant complaints found, and the patient was discharged three days later with the urethral catheter installed. Histopathological results came out seven days postoperatively and showed an adenocarcinoma, not otherwise specified (NOS), derived from the urachus that invades to the muscle fibres of the bladder (Fig. 7). The patient underwent retrograde cystography before having her urethral catheters removed fourteen days after being released from the hospital, and no urinary extravasation was discovered (Fig. 8). Associated with histopathological findings, patients consulted to the haematology division of the Internal Medicine Department for adjuvant chemotherapy.

After completing 6 cycles of gemcitabine-cisplatin chemotherapy, precisely ten months after LPC, the patient was evaluated with flexible cystoscopy to determine if there was a recurrence of the tumor. Scar

tissue in the bladder dome and the former tumor resection region from the previous operation were the only anomalies discovered. Narrow-band imaging (NBI) also performed, and no hypervascularity found in the previous tumor bed (Fig. 9A). As well as on the next evaluation five months later, no recurrence marks found in flexible cystoscopy (Fig. 9B).

3. Discussion

In both benign and malignant diseases, partial cystectomy is a bladder-preserving procedure that involves cutting off a portion of the bladder wall.^{4,7} It is an alternative for radical cystectomy in carefully selected patients who don't have CIS and have suitable masses [8]. The primary malignant sign is for bladder cancer that is solely primary, muscle-invasive, or high-grade and does not encircle the bladder trigone, bladder collar, or posterior urethral and can be resected with sufficient surgical edges. Partial cystectomy is indicated in patients with adenocarcinoma secondary to urachal duct remnants and other signs such as patient preference and severe comorbidity that prohibit radical cystectomy. All benign symptoms include bladder diverticulum resection, cavernous hemangioma, ulcerative interstitial cystitis, colovesical fistulas, vesicovaginal fistulas, and localized bladder endometriosis [9]. It is possible to avoid the complications of a radical cystectomy, and bladder-sparing surgery can be used to maintain continence and erectile function [10].

In a study published in 1993, Henly et al. found no difference in survival between 30 patients treated with open partial cystectomy and patients treated with radical cystectomy [3,11]. Ashley et al. analyzed 130 patients with urachal masses and discovered that the presence of hematuria and age over 55 were the most effective predictors of malignancy. About 66 of the patients had cancer and were surgically treated, but there was no improvement in survival that could be attributed to the surgical technique (partial cystectomy versus radical cystectomy) [3,12].

Urachal carcinoma is the rarest of all bladder tumors, accounting for just 1% of all cases. Adenocarcinoma is its significant cell pathology. The disease is normally diagnosed at a late stage, and the prognosis for these patients is low. Regardless of surgical technique, the outcome of urachal adenocarcinoma is closely related to the clinical stage until a negative margin is reached [3]. Urachal adenocarcinoma, also referred to as primary adenocarcinoma of the urinary bladder, may appear as a lesion on the bladder dome. Bladder preservation surgery is a popular surgical treatment choice for this disease. Patients with a single tumor on the bladder dome and no signs of systemic bladder complicity, such as CIS, are likely to benefit from this therapy [10]. In our case, the procedure was not only in terms of selecting the right patient but also the patient's own will to had bladder sparing treatment.

With the worldwide development of urological laparoscopy, it is no surprise anymore that this surgery can likewise effectively done laparoscopically. Bladder endometriosis was the first case that managed with this technique in 1993. The bladder was resected and sutured laparoscopically using the monopolar electrode [9]. Mariano et al. described six bladder TCC patients who had partial cystectomy laparoscopically. There was no need for an open conversion, and the average operative time was 205 min. They also recorded a 200-mL blood loss during the operation and four days of postoperative treatment on average. One of the patients in their research developed cardiovascular disease later on [3,13]. Their average operating time was not substantially different from our first instance, which lasted 170 min. Estimated blood loss during operative time in our first case was 25 mL, and no significant complications found. We used cystoscopy assistance to mark the extent of tumor incision. This technique was beneficial and did not prolong operating time nor increase morbidity to the patient. It did not contradict the findings of Nerli RB et al., who suggested leaving a 1.5 to 2 cm margin around the tumor before removing it [14].

Intravesical doxorubicin was given 24 h after surgery since the tumor had been obliterated and there was no evidence of a leak after bladder

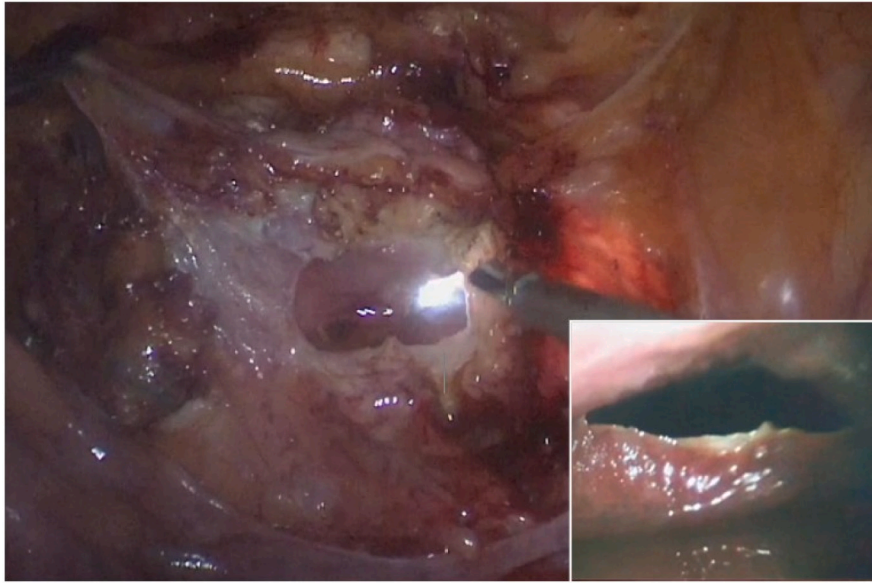


Fig. 5. Simultaneous cystoscopy while the tumor was excised.



Fig. 6. Tumor that had been removed.

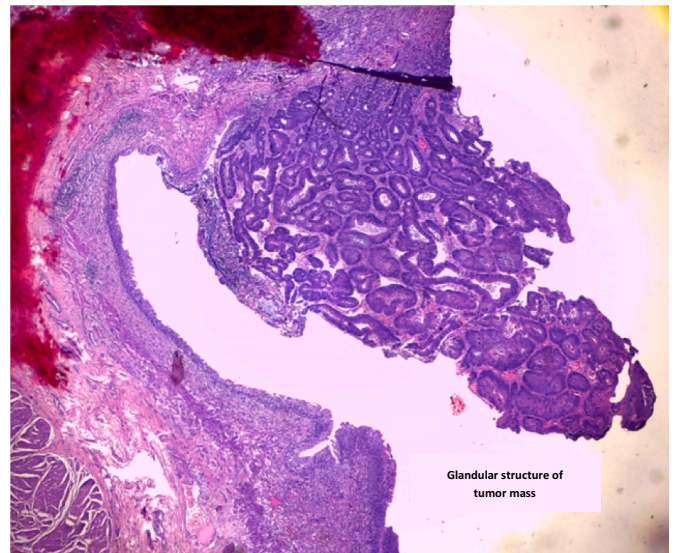


Fig. 7. Histopathological results showed an adenocarcinoma.

suturing. Intravesical chemotherapy has been shown to reduce the recurrence rate by about 35% after five years [15]. There were no signs discovered before or after the intravesical chemotherapy was administered. Adenocarcinoma, NOS, derived from the urachus that invades to the muscle fibres of the bladder was the histopathological finding of the resected bladder tumor. The treatment was continued with adjuvant chemotherapy for 6 cycles with gemcitabine-cisplatin, despite no proven role for adjuvant chemotherapy for urachal carcinoma [15,16].

Since adenocarcinomas of the urinary bladder and transitional cell carcinoma of the bladder have similar clinical features, numerous studies have used a 5-fluorouracil-based adjuvant chemotherapy regimen with varying results. In the treatment of urothelial

(transitional) cell carcinoma, gemcitabine plus cisplatin (GC) has shown to be as effective as methotrexate, vinblastine, doxorubicin, and cisplatin (MVAC), while having less side effects. Patients with advanced/metastatic disease who receive chemotherapy and/or radiation can achieve disease-free survival [17,18]. Another research by Collins et al. found that patients who received chemotherapy lived an average of 3.6 years (range 0.6–10.8 years), compared to patients who did not receive chemotherapy who lived an average of 2.6 years (range 0–15.2 years) [19].

On March and August of this year, a versatile cystoscopy technique was used to assess the patient's response to chemotherapy. No abnormalities found during the procedure. The patient discharged on the same day after the procedure, and the patient submitted complaints during the follow-up time. LPC has been the treatment of choice for urachal adenocarcinoma for many years [7]. Real tissue dissection is possible with the laparoscopic procedure, although the well-known advantages of decreased blood loss, shorter hospital stays, and quicker healing are maintained [5]. Because of its superior surgical guidance, which



Fig. 8. Cystography displayed no urinary extravasation.

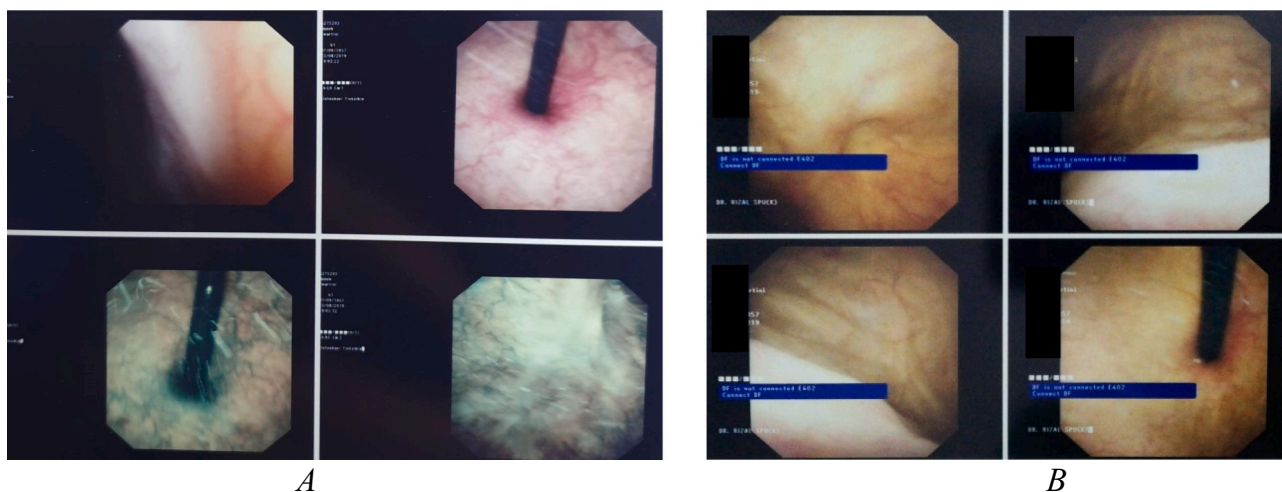


Fig. 9. (A) & (B) No abnormality found during two consecutive flexible cystoscopy evaluation.

involves 3-dimensional magnified visualization and 7 degrees of articulation, LPC is also done with a robot. This allows for fine resection and subtle intracorporeal suturing anastomosis of the bladder with minimal adversity [7].

4. Conclusion

We assume cystoscopy assisted LPC is a reasonable and secure procedure with less complications and no additional operating time, based on our initial LPC experience. Patient selection is key to the procedure's success. However, many cases needed to emphasize the effectiveness and safety of LPC.

Ethical approval and informed consent

This study has been approved by Ethical Committee of Faculty of Medicine Universitas Indonesia, Jakarta [ND-1109/UN2.F1/ETIK/PPM.00.02/2020]. Consent to publish has been signed and obtained from the subject.

Declaration of competing interest

Authors declared no competing interest.

Acknowledgments

Faculty of Medicine Universitas Indonesia, Jakarta, Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

Ethical approval

This case report has been exempted from ethical approval by Universitas Indonesia Ethical Committee.

Funding

This study was funded by "PUTI Q3" grant from Faculty of Medicine Universitas Indonesia, Jakarta.

Author contribution

HZ carried out the data collection, analyzing the data and drafted the manuscript. AR participated in the design of the study and MS helped to draft the manuscript. All authors have read and approved the manuscript.

Guarantor

Hafizar M.D.

Research registration number

N/A.

Consent

The patient and his parents have given their consent in order for us to publish this case.

References

- [1] J.A. Witjes, M. Bruins, E. Compérat, N.C. Cowan, G. Gakis, V. Hernández, et al., Muscle-invasive and metastatic bladder cancer, in: European Association of Urology Guidelines, 2018th ed, European Association of Urology, Arnhem, The Netherlands, 2018, pp. 7–10.
- [2] R. Umbas, F. Safriadi, C.A. Mochtar, W. Djatisoesanto, A.R.A.H. Hamid, Urologic cancer in Indonesia, *Jpn. J. Clin. Oncol.* 45 (8) (2015) 708–712. Aug.
- [3] L.L. Monteiro, W. Kassouf, Radical cystectomy is the best choice for most patients with muscle-invasive bladder cancer? | opinion: yes, *Int. Braz. J. Urol.* 43 (2) (2017) 184–187. Mar-Apr.
- [4] J.L. Gore, M.S. Litwin, J. Lai, E.M. Yano, R. Madison, C. Setodji, et al., Urologic Diseases in America Project. Use of radical cystectomy for patients with invasive bladder cancer, *J. Natl. Cancer Inst.* 102 (2010) 802–881.
- [5] P.M. Milhoua, A. Knoll, C.B. Bleustein, R. Ghavamian, Laparoscopic partial cystectomy for treatment of adenocarcinoma of the urachus, *Urology* 67 (2) (2006) 423.e15–423.e17. Feb.
- [6] P. Wadhwa, S.B. Kolla, A.K. Hemal, Laparoscopic en bloc partial cystectomy with bilateral pelvic lymphadenectomy for urachal adenocarcinoma, *Urology* 67 (4) (2006) 837–843. Apr.
- [7] D.K. Kim, J.W. Lee, S.Y. Park, Y.T. Kim, H.Y. Park, T.Y. Lee, Laparoscopy/robotics Initial Experience With Robotic-assisted Laparoscopic Partial Cystectomy in Urachal Diseases, 2010, pp. 318–322.
- [8] Edward Cherullo. Partial cystectomy. In: Joseph A. Smith J, Howards SS, Preminger GM, editors. *Hinman's Atlas of Urologic Surgery*. 3rd ed. Philadelphia: Elsevier Saunders; 2012. p. 495–9.
- [9] B.J. Challacombe, K. Rose, P. Dasgupta, Laparoscopic radical and partial cystectomy, *J. Minim. Access Surg.* 1 (4) (2005 Oct 5) 188–195. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3004121/>.
- [10] A. Singh, A. Malpani, A. Ganpule, R. Sabnis, Robotic Assisted Partial Cystectomy Using Tile-pro Feature: A Case Report 2, 2017, pp. 2–4 (Figure 1).
- [11] D.R. Henly, G.M. Farrow, H. Zincke, Urachal cancer: role of conservative surgery, *Urology* 42 (6) (1993) 635–639. Dec.
- [12] S.K. Okur, H. Pülat, O. Karaköse, I. Zihni, K.Ç. Özçelik, H.E. Eroğlu, A urachal cyst case with painful mass locates at ileal mesentery, *Case Rep. Surg.* 2015 (2015), 240362.
- [13] M.B. Mariano, M.V. Tefilli, Laparoscopic Partial Cystectomy in Bladder Cancer – Initial Experience 30, 2004, pp. 192–198 (June 1997).
- [14] R.B. Nerli, M. Reddy, A.C. Koura, V. Prabha, I.R. Ravish, S. Amarkhed, Cystoscopy-assisted laparoscopic partial cystectomy 22 (1) (2008).
- [15] T.W. Flaig, P.E. Spiess, N. Agarwal, R. Bangs, S.A. Boorjian, M.K. Buyyounouski, et al., Bladder cancer, in: NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). Version 2. Plymouth Meeting, NCCN.org, 2019, pp. BL–D 1.
- [16] Hamilou Z, North S, Canil C, Wood L, Hotte S, Sridhar SS, Soulières D, Latour M, Taussky D, Kassouf W, Blais N. Management of urachal cancer: a consensus statement by the Canadian Urological Association and Genitourinary Medical Oncologists of Canada. *CUAJ*. 2019 Jul. 23 [cited 2020Mar.25];14(3):E57–64. Available from: <https://cuaj.ca/index.php/journal/article/view/5946>.
- [17] W. Xu, B. Yu, T. Xu, Z. Xu, H. Cai, Q. Zou, Chemotherapy for primary adenocarcinoma of the urinary bladder, *Case Rep. Adv. Pharmacoepidemiol. Drug Saf.* 4 (2) (2015) 2–4.
- [18] I. Singh, R. Prasad, Primary Urachal Mucinous Adenocarcinoma of the Urinary Bladder, 2013, pp. 911–913.
- [19] D.C. Collins, K. Velázquez-Kennedy, S. Deady, A.P. Brady, P. Sweeney, D.G. Power, National Incidence, Management and Survival of Urachal Carcinoma 8, 2016, pp. 97–101.