

# Laparoscopic Bladder -Conserving Surgery: Case Series

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## Abstract

**Introduction:** Advanced laparoscopic intracorporeal suturing skills and the availability of laparoscopic vascular instruments have enabled organ-conserving surgeries as an alternative option for select patients. This intervention optimizes the advantages of minimal access surgery, upholds quality of life, improves patient's body image and preserves function. **Methods:** We present our experience in this series of three patients with bladder tumours who underwent laparoscopic bladder-conserving surgery at Grey's Hospital. **Results:** Patients' mean age was 51 years. The

mean tumor size was 6.0cm. All the procedures were completed laparoscopically without open conversion. There were no significant intraoperative and post-operative complications. All resections had negative margins. **Conclusion:** Laparoscopic surgery in organ-preservation is critical, viable and safe in select patients attending Grey's Hospital. It offers reduced morbidity, nerve preservation for potency and maintains bladder function.

**Key Words:** Bladder tumour, Minimal access surgery, Laparoscopic bladder-sparing surgery

## Introduction

Advanced laparoscopic intracorporeal suturing skills and the availability of laparoscopic vascular instruments have enabled organ-conserving surgeries to be available as an alternative option for select patients (1,2). This intervention optimizes the advantages of minimal access surgery, upholds quality of life, improves patient's body image and preserves function (3,4). The indications for partial cystectomy can be malignant or benign disease. The main malignant indication being a single, primary, muscle-invasive, or high-grade bladder cancer that does not involve the bladder trigone, vesical neck, or posterior urethra which can be resected with adequate surgical margins (3,4). Other malignant indications include adenocarcinoma arising from urachal duct remnants, leiomyoma of the bladder, significant co-morbidity precluding radical cystectomy, and in rare occasions patient's choice (2,6,7). Benign indications include resection of bladder diverticula, cavernous hemangiomas, ulcerative interstitial cystitis, colovesical fistula, vesicovaginal fistula, and localized endometriosis of the bladder. Recently three patients with rare

bladder tumors were operated in our institution: two leiomyomas and one urachal adenocarcinoma. All three patients had laparoscopic partial cystectomies with curative intent. The aim of this study is to report our initial experience with laparoscopic organ-preserving bladder surgery at Grey's hospital.

## Methods

In the past six months, the department had performed various laparoscopic urological surgeries for a week on a monthly basis. In three bladder tumors organ-conserving procedures were performed.

Two patients who had the surgery for leiomyoma were middle-aged males (52 and 56 years) in excellent health presenting with LUTS and microscopic hematuria. Their physical examination was non-revealing. Cystoscopy showed lateral and anterior bladder wall masses covered with normal bladder mucosa (Figure 1). CT scan demonstrated in both, homogenous solitary mass protruding into urinary bladder without enlarged lymph nodes. Their sizes were 4.0 and 6.0 cm (Figure 2).

Figure 1: Urachal cancer involving the bladder as viewed on cystoscopy

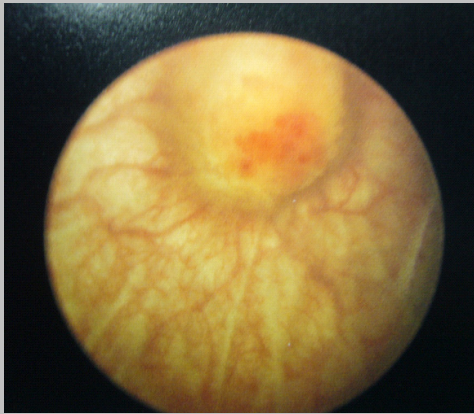
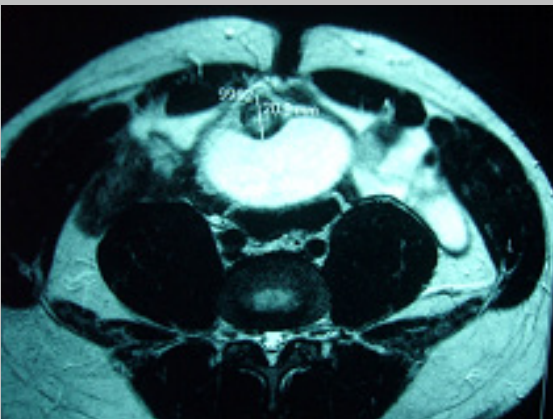
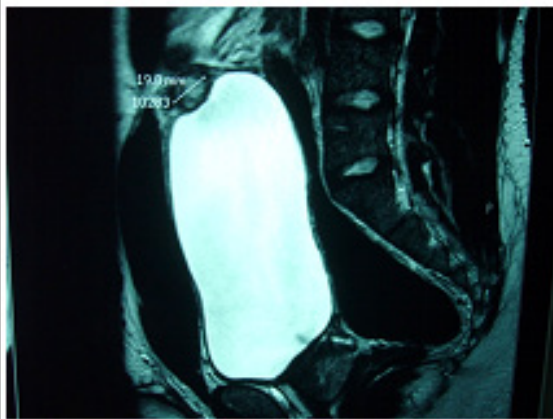
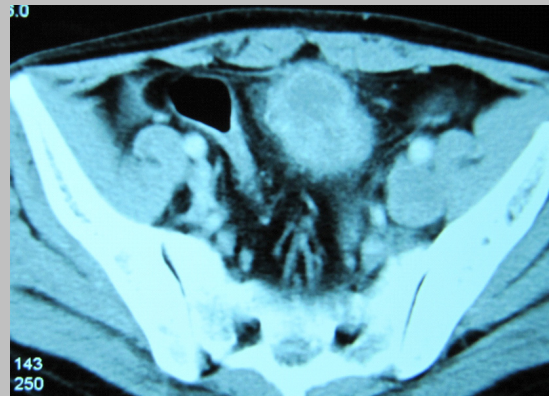


Figure 2: Leiomyoma of the bladder as seen on sagittal and axial CT scans



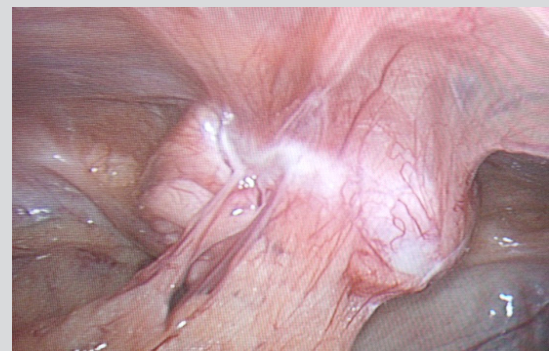
3). There was no evidence of lymph node or organ involvement. There was no carcinoma-in-situ (CIS) demonstrable in all the random biopsies taken during cystoscopy.

Figure 3: Pelvic CT scan showing a calcified bladder mass



The operations were done through transabdominal approach (Figure 4). In each case we assessed operating time, blood loss, completeness for tumor excision (grossly and histologically) and functional integrity by imagery. The specimens were retrieved intact entrapped in an impermeable bag.

Figure 4: Urachal cancer as viewed on diagnostic laparoscopy



The mean tumor size was 6.0cm. All the procedures were completed laparoscopically without open conversion. There were no significant intraoperative and post-operative complications. Operating time ranged between 70 to 90 minutes. The estimated average blood loss was 100mls. According to the staging CT scan and biopsy report the urachal tumor was staged Sheldon IIIa (involving urinary bladder). All the resections were confirmed R0 (negative margins). Intracorporeal suturing technique was employed in all the procedures (Figures 5 and 6). Hospital stay was 3 days for all patients and cystogram done at day 14 during catheter removal were negative for leakage (Figure 7).

The third patient was 45year old male with no co-orbidities presenting with urinary frequency, microscopic hematuria and abdominal pain. Physical examination was positive for infraumbilical mobile mass, with no periumbilical discharge. Cystoscopy revealed bladder dome tumor and biopsy was consistent with urachal adenocarcinoma. CT scan showed bladder dome tumor extending from posterior level of umbilicus (8.0 by 6.0cm) (Figure

Figure 5: Partial removal of carcinomatous bladder dome

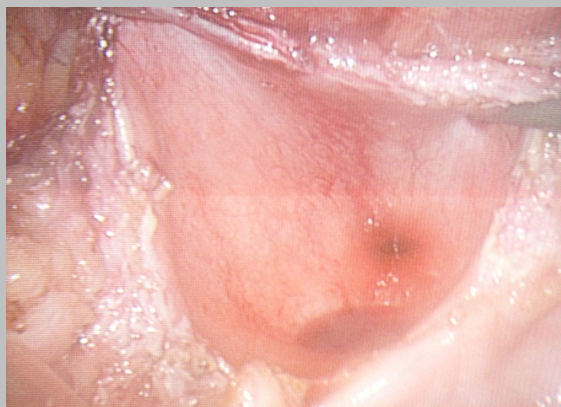


Figure 6: Intra-corporeal suturing of the bladder defect.

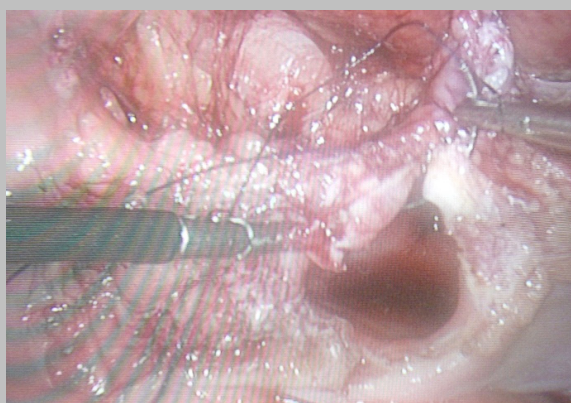
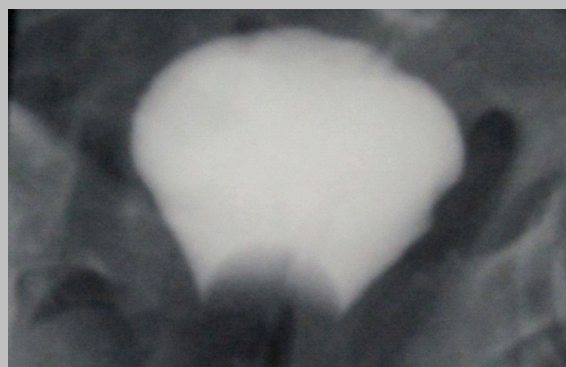


Figure 7: Cystogram at 14 days post-op did not show any leakage.



## Discussion

The confidence of expanding and applying advanced laparoscopic surgery has resulted from the advancement in intracorporeal suturing skills and the availability of laparoscopic vascular instruments(1). The initial case was performed for bladder endometriosis in 1994 and employed the standard technique of using absorbable sutures to close the defect and allow free catheter drainage of the bladder for at least one week (8). Since then the indications

have expanded to include various malignant and benign conditions. The most important malignant indication being a single, primary, muscle-invasive, or high-grade bladder cancer that does not involve the bladder trigone, vesical neck, or posterior urethra which can be resected with adequate surgical margins (3,4). Partial cystectomy requires strict criteria for optimal outcome. In this institution primary, solitary T2 (or high grade T1) lesion amenable to complete resection, absence of CIS and urachal tumor or tumor in diverticulum form the most important basis for bladder conserving surgery. Laparoscopic partial cystectomy has been employed in the treatment of pheochromocytoma schwannoma and endocervicosis of the urinary bladder (9-11). In other fields too, gynecologists specializing in laparoscopy have been confident in repairing both intentional (for endometriosis, vesico-vaginal fistula, embedded ovarian remnants) and unintentional cystotomies for several years (11).

Robotic assisted laparoscopic partial cystectomy has also been done and especially in the treatment of urachal adenocarcinoma with an excellent outcome (5). A group from Brazil has published the only series of partial cystectomy for transitional cell carcinoma of the bladder, reporting an operative time of 205 min with minimal blood loss and R0 resection margins (1,13). One patient has required salvage chemotherapy in the 30-month follow-up. Laparoscopic partial cystectomy still remains uncommon due to concern regarding tumor cell spillage and subsequent seeding in the uncontrolled environment (13).

## Conclusion

Laparoscopic surgery in organ-preservation is critical, viable and safe in select patients attending Grey's Hospital. It offers reduced morbidity, nerve preservation for potency and maintains bladder function.

## References

1. Hong SH, Kim JC, Hwang TK. Laparoscopic partial cystectomy with en bloc resection of the urachus for urachal adenocarcinoma. *Int J Urol.* 2007;14(10):963-5
2. Gopalan A, Sharp DS, Fine SW, et al. Urachal carcinoma: A clinicopathologic analysis of 24 cases with outcome correlation. *Am J Surg Pathol.* 2009;33(5):659-68
3. Tavora F, Epstein JI. Bladder cancer, pathological classification and staging. *BJUI.* 2008;102:1216-20
4. Sharma S, Ksheersagar P, Sharma P. Diagnosis and treatment of bladder cancer. *Am Acad Fam Phys.* 2009;80(7):717-23

5. Spiess PE, Correa JJ. Robotic assisted laparoscopic partial cystectomy and urachal resection for urachal adenocarcinoma. *Intern Braz J Urol.* 2009;35(5):609
6. Sudhakar PJ, Malik N, Malik A. Leiomyoma of bladder. *Saudi J Kidn Dis Transpl.* 2008;19(2):232-5
7. Goluboff ET, O'Toole K, Sawczuk IS. Leiomyoma of the bladder: report of a case and review of the literature. *Urology.* 1994;43(2):238-41
8. Ferzli G, Wenof M, Giannakakos A, et al. Laparoscopic partial cystectomy for vesical endometrioma. *J Laparoendosc Surg.* 1993;3:161-5
9. Kozlowski PM, Mihm F, Winfield HN. Laparoscopic management of bladder pheochromocytoma. *Urology.* 2001;57:365-8
10. Geol H, Kim DW, Kim TH, et al. Laparoscopic partial cystectomy for schwannoma of urinary bladder: Case report. *J Endourol.* 2005;19:303-6
11. Nada W, Parker J, Wong F, et al. Laparoscopic excision of endocervicosis of the urinary bladder. *J Am Assoc Gynecol Laparosc.* 2000;7:135-7
12. Nezhat CH, Siedman DS, Rottenberg H. Laparoscopic management of intentional and unintentional cystotomies. *J Am Assoc Gynecol Laparosc.* 1996;3:S3-4
13. Mariano MB, Tefilli MV. Laparoscopic partial cystectomy in bladder cancer — initial experience. *Int Braz J Urol.* 2004;30:192-8
14. Andersen JR, Steven K. Implantation metastasis after laparoscopic biopsy of bladder cancer. *J Urol.* 1995;153:1047-8