

Original Research Article

Complications of radical cystectomy for bladder cancer

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ABSTRACT

Background: Radical cystectomy with pelvic lymph node dissection is the standard treatment for muscle-invasive bladder cancer. With the advent of improved surgical techniques and postoperative management, the complications and mortality rates have reduced. The present study was done to analyse the perioperative, early and late complications following radical cystectomy for bladder tumor.

Methods: This is a prospective observational study of patients who underwent radical cystectomy for invasive bladder tumor from February 2016 to November 2017. Radical cystectomy was done through midline transperitoneal approach. Urinary diversion was done by ileal conduit. All patients were followed at 6th week, 3rd month, 6th month, and at 1 year.

Results: Total 21 patients underwent radical cystectomy, 17(80.95%) were males and 4 (19.04%) females. The median age was 60 years, ranging from 40 to 73 years. The most common age group was 60 to 75 years (52.3%). Thirteen (61.9%) patients were smokers and all were males. Painless haematuria alone was most common presentation (of bladder tumor) seen in 15 (71.4%) patients. Early complications were seen in 8 (38.09%) patients, most common early complication was urinary leak 2 (9.5%) patients, other early complications were bowel leak, wound dehiscence, pelvic collection, burst abdomen, prolonged ileus, subacute intestinal obstruction, acute kidney injury and sepsis seen in one (4.25%) patient each. Late complications were seen in 4 (19.04%) patients. Pelvic recurrence was the most common late complication seen in 2 (9.55%) patients. Ureteric stricture was seen in one patient (4.75%) for which percutaneous nephrostomy and antegrade DJ stenting was done. Among the histopathological variants of tumor 20 (95.25%) patients had high grade variants and only one (4.75%) had low grade papillary urothelial carcinoma. Among the high grade variants most common pathology was urothelial carcinoma in 17 (80.9%) patients.

Conclusions: Radical cystectomy remains the main stay of treatment in muscle-invasive bladder cancer. This is relatively safe procedure with minimal morbidity and mortality.

Keywords: Bladder cancer, Morbidity and mortality radical cystectomy

INTRODUCTION

Radical cystectomy with pelvic lymph node dissection (PLND) is the standard treatment for muscle-invasive bladder cancer, a procedure popularized initially by Whitmore and Marshall.¹ The advent of improved surgical techniques, anesthesia care and postoperative management has lowered the high complications and

mortality rates previously associated with this operation.^{2,3}

The highest incidence of transitional cell carcinoma is in the 7th decade. Around 20-40 percent of transitional cell carcinomas consist of a muscle invasion, initially or in progress. Radical cystectomy with urinary diversion remains the standard treatment. Unrecognized distant

metastases resulting in decreased survival occur in almost half of patients with high-grade tumours who undergo cystectomy.^{2,4} Radical cystectomy provides excellent local control of the primary tumor and should include the bladder and surrounding perivesical soft tissue, prostate, and seminal vesicles in men and the ovaries, uterus/cervix, and anterior vagina in women.

It entails simultaneous surgery on urinary tract, intestines and lymphnodes; hence, complications frequently occur after this extensive procedure. The present study was done to analyse the perioperative, early and late complications following radical cystectomy for bladder tumor, and to know the pathology and outcomes of bladder tumor after radical cystectomy.

METHODS

This is a prospective observational study conducted at Gandhi General Hospital in the Department of Urology from February 2016 to November 2017 for a period of 22 months. Total number of patients who underwent radical cystectomy for invasive bladder tumor during the study period were included. Patients with large tumor and recurrent tumor were also included in the study. Patients with inoperable tumors, who underwent radiotherapy, neoadjuvant chemotherapy and who lost to follow-up were excluded from the study. All patients were discussed in detail about the surgical procedure, advantages and complications of the procedure. Patients were evaluated for mental and physical ability to perform stoma care.

Basic laboratory evaluation was done in all patients which included complete blood picture, renal function tests, liver function test, and urine examination including cytology and urine culture. Radiological evaluation included, X ray KUB, ultrasonography abdomen, CECT abdomen, endoscopic evaluation and cystoscopy. Cardiac and pulmonary evaluation was done in elderly patients

Radical cystectomy procedure

All patients were advised to take liquid diet two days prior to surgery. Mechanical bowel preparation was started with PEGLEC solution one day prior to surgery. Clear oral liquids along with IV fluids were given on night prior to surgery. Two days prior to surgery antibiotic bowel preparation was done with 1g Neomycin 4 times/day plus 750mg Metronidazole 4 times/day.

Urinary diversion was done by ileal conduit in all the cases. Midline transperitoneal approach was preferred. For ileal conduit, a segment of 15cm in length was selected 15 to 20cm from the ileocecal valve. The isolated ileal segment was placed caudal, and an ileoileostomy was performed, right ureter and left ureter were isolated and anastomosis was done to isolated ileal conduit in anti-peristaltic manner by Wallace technique.

Ileal stoma was placed in right iliac fossa at pre-operatively marked stoma site.

Postoperative management

All cases post operatively were managed by catheterization of conduit with 18Fr Foley catheter, nil per oral, naso gastric tube aspiration, intravenous fluids, maintenance of electrolyte balance, antibiotics, analgesics for 5 days, then soft diet was started.

Conduit irrigation was done three times a day with normal saline. Catheter in the conduit was removed on 2nd post-op day and ostomy bag was connected, drains were removed on 5th day when output was less than 30ml. Ureteric splints were removed after 7th post op day.

Follow up

All patients were followed at 6th week, 3rd month, 6th month, and at 1 year, with urine examination, renal function test and ABG. Metastatic status was evaluated before surgery and tumors staged using the Tumors-Node-Metastasis classification.

RESULTS

Total 22 patients underwent radical cystectomy during the study period, one patient was lost to follow up. Hence 21 patients were included in the study, 17 (80.95%) were males and 4 (19.04%) were females, with male to female ratio of 4.25:1. The median age at presentation was 60 years, ranging from 40 to 73years. The most common age group at presentation was 60 to 75years (52.3%) followed by 50-59year (28.6%) and 40-49years (19.04%). Thirteen (61.9%) patients were smokers and all were males. Painless haematuria alone was most common presentation seen in 15 (71.4%) patients followed by hematuria with dysuria seen in 5 (23.8%). Dysuria alone was seen in only one (4.75%) patient.

Early complications

Early complications were seen in 8 (38.09%) patients, most common early complication was urinary leak seen in 2 (9.5%) patents, other early complications were bowel leak, wound dehiscence, pelvic collection, burst abdomen, prolonged ileus, subacute intestinal obstruction, acute kidney injury and sepsis seen in one (4.25%) patient each. Most of the complications were managed conservatively.

Pelvic collection required ultrasound guided aspiration and wound dehiscence was managed by daily dressings followed by secondary suturing. Burst abdomen required reoperation. Most of the patients required two to three units of blood transfusion during the surgery and immediate postoperative period. On the third day serum proteins were checked and albumin was administered if low.

Late complications

Late complications were seen in 4(19.04%) patients. Recurrence was the most common late complication seen in 3 (14.28%) patients, pelvic recurrence in 2 (9.5%) patients and distant recurrence (liver) in one (4.75%) patient. Ureteric stricture at right urereroileal anastomosis was seen in one patient (4.75%). For the patient with ureteric stricture, percutaneous nephrostomy done, and antegrade DJ stenting was done. Adjuvant chemotherapy given to both local recurrence and distant recurrence.

Pathology of tumor

Among the histopathological variants of tumor 20 (95.25%) patients had high grade variants and only one (4.75%) had low grade papillary urothelial carcinoma. Among the high-grade variants most common pathology was urothelial carcinoma in 17 (80.9%) patients followed by squamous cell carcinoma in 2 (9.5%) patients and spindle cell sarcoma in one (4.75%) patient.

Pelvic lymph node involvement was seen in six patients (28.5%). All the patients with pelvic lymph node involvement received adjuvant chemotherapy. Three patients (14.28%) who had recurrence were positive for lymph nodes. No deaths were recorded during the study period.

DISCUSSION

In India, according to the reports of the National Cancer Registry Programme, the overall incidence rate of the urinary bladder cancer is 2.25% (per 100,000 annually): 3.67% among males and 0.83% for females.⁵

Radical cystectomy and PLND has become the principal treatment for muscle -invasive bladder cancer. It is the gold standard for local control and survival of muscle invasive tumors. The aim of the procedure is to remove all cancer in the bladder, pelvis, and regional lymph nodes with a wide soft tissue margin. The plane of dissection is the musculoskeletal boundaries of the pelvis. With the improvement in surgical technique and postoperative care, complications have come down and survival has improved.

In present study, the most common age of presentation was 60-75 years (54.8%) which is similar to study by Zebic N et al, (61%) and Horowitz D et al (62%).^{6,7} The median age of presentation in present study was 60 years comparable to studies by Taylor JA et al, Dhar N et al.^{8,9} Dobbs RW et al, with median age of 66, 61 and 67 years respectively.¹⁰ In Gupta et al, a series of 561 bladder cancer patients treated between 2001 and 2008 at SGPGI, Lucknow, the mean age was 60.2±4.4years (range: 18-90 years old).¹¹

The commonest mode of presentation in present study was painless hematuria (71.4%) followed by both

hematuria and dysuria (23.8 %) in comparable to study by Kumar V et al, where 55% presented with frank hematuria and 20% with irritative bladder symptoms.¹² In study by Dobbs RW et al, 78.1% presentation with gross hematuria and 4.1% with LUTS.¹⁰

The ratio of males to females in present study was 4.25:1, similar to the study by Horowitz D, et al, Pichler R et al, and Fedeli U et al, with male to female ratio of 3.6:1, 4.5:1 and 5:1 respectively.^{7,13,14} However, in Gupta et al, series, male to female ratio was 8.6:1.¹¹

The early complication rate in present study was 38.09%. Several studies evaluated the perioperative condition of elderly patients undergoing radical cystectomy, Navon et al, studied 21 patients aged >75 years who had a radical cystectomy with early complications rate of 28%.¹⁵ The early complication rate in this study was similar to Figueroa et al, which reported the early complication rate of 29%, Chang et al, 28%, Liguori et al, 35%, and March Villabha et al, 45%.¹⁶⁻¹⁹ However, other studies reported higher rates of early complication, Game et al, 64% and Lance et al, 60%.^{20,21}

Similar to Tan WS et al, the most common early complication in present study was urine leak.²² Burst abdomen was seen in one patient (4.75%). In present study the late complication rate was 19%, which was similar in comparison to Game et al, 25%, Gupta et al, 12.2%, Mendiola et al, 17 %, Yamanaka et al, 21% and Clark et al, 22%.^{11,20,23-25} However other studies reported higher rates of late complication like May et al, 35%, Saika et al, 42% and Lance et al, 45 %.^{21,26,27}

In most large series perioperative mortality of radical cystectomy was 2-5%. In present study no deaths were recorded. Similar to present study, no deaths were recorded by Chang et al, Lance et al, and Saika et al.^{17,21,27} This may be related to the small number of patients in present study and a smaller number of comorbidities in the patients included in the study.

A study by Srinivas V et al, reoperation rate was 2-10%.²⁸ In present study it was 4.75%, one patient who developed burst abdomen required reoperation. One patient who developed ureteric stricture was managed by percutaneous nephrostomy, and antegrade stenting. Rest of the complications were managed conservatively.

Recurrence rate in present study was 14.28% which was higher compared to Gaitonde KA et al, with recurrence rate of 4.7%.²⁹ However, the pattern of recurrence in present study was similar to Koh DM et al, with pelvic recurrence being most common, seen in 66.66% and 55% respectively.³⁰

The incidence of loco-regional recurrence in node positive disease after surgery, in this study was 50%. In modern series, the loco-regional recurrence in node positive disease after surgery was 20%, and the same in

node negative disease was 15%. One patient presented with distant recurrence (4.75%) and the organ involved was liver, similar to study by Koh DM et al (19%).³⁰

Radical cystectomy is a relatively safe procedure when performed meticulously and in organ confined disease.

CONCLUSION

Radical cystectomy remains the main stay of treatment in muscle-invasive bladder cancer. This is relatively safe procedure with minimal morbidity and mortality in selected patients. Complications are less and survival is better with bladder confined disease compared to nonorgan confined disease. Urinary diversion procedures with ileal conduit is satisfactory. Pathological nodal status can prognosticate local recurrence.

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