1. Introduction

The incidence of urothelial cell carcinoma of the bladder accounts for >336,000 cases worldwide [1]. Approximately 75% of bladder cancer (BCa) cases are primarily non-muscle invasive BCa (NMIBC); however, of these tumours, roughly one-fourth are already early invasive with lamina propria involvement. Since the early 1960s, radical cystectomy (RC) has been the treatment of choice for the management of invasive BCa in most Western countries [2]. Improvements in surgical technique and modern perioperative care have diminished the peroperative complications rate substantially and even lowered the operative mortality rate from nearly 20% to <2% [3–5]. Today, pelvic lymph node dissection (PLND) and RC are considered the optimal therapy for invasive BCa and are regarded superior to
radiation therapy (RT) or organ-conserving surgery, with local tumour control and ultimate cure of cancer as endpoints [6]. This article scopes the indications and the results of contemporary cystectomy series and their impact on overall survival (OS), recurrence-free survival (RFS), and disease-specific survival (DSS).

2. Evidence acquisition

We searched the database of the US National Library of Medicine (PubMed) for relevant medical articles using the Medical Subject Headings invasive bladder cancer or radical cystectomy with restrictions to English-language publications. We reviewed the article title and abstract for their content regarding the topic indication and outcome of radical cystectomy for bladder cancer. Additionally, we screened relevant guidelines for the topic cystectomy for bladder cancer.

3. Evidence synthesis

3.1. Diagnosis of invasive bladder cancer

The mainstay of correct diagnosis and proper initial treatment of invasive BCa is transurethral resection (TUR) of the bladder. The specimen from different fractions must be sent to the pathologist in separate portions to enable a correct diagnosis. Cauterisation should be avoided as much as possible during the resection to prevent tissue damage. The resection material must include the muscular layer and should be as complete as possible without bladder perforation. Tumour visibility and completeness of resection may be aided by fluorescence-guided cystoscopy, although this diagnostic modality is not available everywhere [7]. Adequate sampling of muscularis propria is important, as studies have documented the risk of understaging of invasive lesions at 50–70% in the absence of muscularis propria [8,9]. Even with muscularis in the specimen, understaging rates are reported between approximately 20% and 30% after single TUR based on cystectomy pathology [8,10].

In an effort to ease and improve pathology reproducibility, the World Health Organisation (WHO) and the International Society of Urologic Pathologists (ISUP) developed the WHO/ISUP consensus classification of urothelial neoplasms in 1998 [11]. This system updated the 1973 WHO numerical grading. Consequently, invasive bladder tumours, virtually all of which are poorly differentiated and classified as grade 3 according to the 1973 WHO criteria, are referred as high grade under the WHO/ISUP classification. The impact of this change in grading on oncologic outcome of BCa patients is not yet fully understood [12,13], although both grading systems contribute independent information regarding disease progression [14].

For staging purposes, computerised tomography and magnetic resonance imaging are used to assess clinical tumour stage prior to surgery. The purpose of preoperative staging of invasive BCa is to assess the extent of local tumour invasion and detect lymph node involvement (LNI) and tumour spread to distant organs. However, clinical staging of BCa is still related to a significant staging error.

3.2. Clinical relevance of a secondary transurethral resection for early invasive bladder tumours

Correct local tumour staging is extremely important, because it directly affects the treatment modality. A second TUR should always be performed when the initial resection has been incomplete, for example, when multiple and/or large tumours are present or when the pathologist has reported the lack of muscle tissue in the specimen. For all cases of newly diagnosed early invasive (T1G3) tumours, a secondary TUR should be performed 4–6 wk after the primary TUR is strongly recommended for two reasons. First, a repeat TUR of the previous resection site 4–6 wk after the initial resection will provide more accurate staging information, particularly because the probability of understaging of such tumours ranges from 20% to 70% depending on the presence of muscle fibres in the sample. If muscle is absent from the initial TUR, repeat resection is mandatory because of the well-known high rate of understaging [9]. Even with muscularis propria sampling at first resection, several reports have documented occult T2 disease in up to 10% of second resections [10,15,16]. A second TUR often upstages T1 lesions and provides additional pathologic information that can alter the therapeutic management [9,17]. Furthermore, repeat resection is mandatory in the management of all early invasive tumours penetrating the basal membrane [18].

A second advantage of repeat TUR is the gain in prognostic information. Although upstaging of T1G3 lesions to pT2 disease or higher automatically selects patients for definitive radical therapy, Herr and colleagues demonstrated that evidence of T1 disease on repeat TUR may portend future muscle invasion [19]. Of 92 T1 patients with residual T1 disease at second resection, 82% progressed to muscle invasion at 5 yr. In contrast, of 260 T1 patients without lamina propria invasion on second TUR, only 19% progressed at 5 yr. Based on these data, residual T1 BCa on repeat TUR is recognised as a negative prognostic factor and a potential trigger for immediate cystectomy in these patients.

3.3. Timing and delay of radical cystectomy for bladder cancer

Retrospective analysis of patients with a clear indication for radical surgery of locally advanced BCa revealed that a further delay of treatment beyond 3 mo from primary diagnosis caused a significantly increased frequency of extravesical disease (81% vs 52%) [20]. A delay of definitive therapy by RC may not only alter the oncologic outcome but also the type of urinary diversion. In a series of patients with clinically organ-confined urothelial cancer of the bladder, the average time from the primary diagnosis of BCa to cystectomy was 12.2 mo for patients who received an ileal neobladder and 19.1 mo for patients with an ileal conduit. The average delay from diagnosis of invasive disease to surgery was substantial, with 3.1 mo in neobladder and even more with 15.1 mo in ileal conduit patients [21]. Similar results have been observed in another series of 247
patients, where superior RFS and OS rates were observed in those patients treated within a 3-mo period compared to other cystectomy candidates with more delayed surgery [22]. A contemporary cohort of 214 consecutive patients who presented with clinical T2 BCa was analysed by Lee et al with respect to time to cystectomy, pathologic stage, DSS, and OS. A significant DSS and OS advantage was observed in patients undergoing cystectomy by \(<93\) d compared to \(>93\) d [23].

A cystectomy delay \(>3\) mo apparently undermines patient survival, probably through the development of micrometastases, because local stage progression is not apparent at this point. Most delays in surgery are avoidable and should be minimised. Despite the need for second opinions and the impact of busy surgical schedules, clinicians must take care to schedule patients efficiently and complete the surgical treatment within this proposed time frame.

3.4. General indication for radical cystectomy in patients with bladder cancer

Traditionally, RC is recommended for the majority of patients with muscle-invasive BCa (T2-T4a, N0-Nx, M0) with a curative intent [6]. Other well-accepted indications include high-risk and recurrent noninvasive bladder tumours, bacillus Calmette-Guérin (BCG)-resistant carcinoma in situ (CIS), high-risk T1G3, and extensive papillary disease that cannot be managed with TUR and intravesical therapy alone. So-called salvage cystectomy is indicated for nonresponders to conservative therapy; recurrences after bladder-sparing approaches; nonurothelial carcinomas (some of these tumours respond even less to neoadjuvant chemotherapy and RT); and with an often palliative intent for patients with recurrent gross haematuria, local pain, and urgency as well as fistula formation to the bowel as a result of locally advanced BCa (see section 3.11). There is some evidence that a palliative cystectomy, even in very old patients, may decrease the overall morbidity as well as lower the frequency of hospital admittance and total time of hospital stay.

3.5. Oncologic outcome of early cystectomy for high-risk non-muscle-invasive urothelial carcinoma of the bladder

The management of patients with early invasive BCa is often discussed as controversial among urologists. Some centres advocate conservative management for patients who present with high-grade urothelial carcinoma (UC) extending into submucosal tissue (T1) and even for patients with unifocal muscle-invasive tumours (T2a), whereas others recommend immediate cystectomy at first presentation with any high-grade, early invasive T1 tumour.

The recurrence and progression rate of NMIBC is strongly associated with tumour grade and invasion into the lamina propria. The progression to T2 tumours varies from 6% to 25% in Ta and from 27% to 48% in T1 tumours of all grades. The high understaging error in Ta/T1 tumours of 35% to 62% presented in large cystectomy series is partly the result of the unconfirmed maximum tumour stage of recurrent tumours and the lack of a secondary TUR performed before cystectomy [6,24,25]. The latter can identify 24–49% of T2 tumours diagnosed initially as non–muscle-invasive tumours [9,17].

Besides the risk of understaging, the relatively high recurrence and progression rates associated with conservatively treated T1G3 BCa makes cystectomy an attractive option for these patients. There are several advantages to this approach. First, cystectomy provides the most definitive chance for cure. Table 1 lists the contemporary series in which T1 tumours were treated immediately or early with RC. DSS for these patients ranges between 80% and 90%, which is probably underestimated by the fact that patients in these retrospective series were likely selected to undergo cystectomy because of adverse pathology (eg, multifocality, concomitant CIS, tumours \(>3\) cm in size). Second, patients understaged by imaging and TUR will also be appropriately treated. Although restaging TUR refines local cancer staging, approximately 13% of patients will still be understaged even after re-TUR [26]. Third, cystectomy allows pelvic lymphadenectomy. Because up to 18% (Table 1) of T1 patients have positive lymph nodes, cystectomy can be both diagnostic and therapeutic procedures regarding nodal metastases.

Early decisions towards cystectomy should therefore be considered based on tumour multiplicity, size, concomitant CIS, and urothelial tumour of the prostatic urethra [34]. Although the percentage of patients with primary Ta/T1 tumours and the indication for cystectomy in Ta/T1 tumours is not specified in large cystectomy series, the 10-yr RFS is approximately 80% [6,24,35,36]. Risk stratification involves assessment of progression and local failure risk by conservative treatment. This is particularly

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<th>Table 1 – Outcomes of T1G3 bladder cancer patients treated with immediate or early radical cystectomy</th>
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<td>No. of patients</td>
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<tr>
<td>Herr and Sogani [27]</td>
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<td>Dutta et al. [8]</td>
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<td>Thalmann et al. [28]</td>
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<td>Masood et al. [29]</td>
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<td>Bianco et al. [30]</td>
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<td>Lambert et al. [31]</td>
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<td>Gupta et al. [32]</td>
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<td>Denzinger et al. [33]</td>
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BCG = bacillus Calmette-Guérin; DSS = disease-specific survival; NR = not reported.
important, because a number of series have demonstrated
that delays in cystectomy can lead to worse outcomes even
in patients with early invasive tumours. Wiesner and
colleagues noted worse pathologic outcomes in patients
with NMIBC (86% T1) when the number of TUR procedures
has increased [37]. It is hypothesised that the delay to
definitive, radical surgery with increasing endoscopic
interventions may have contributed to the increase in
tumour progression. Herr and Sogani have studied 307
high-risk BCa patients, of whom 90 underwent cystectomy
for relapse. DSS was greatest in those undergoing cystect-
omy <2 yr after BCG initiation compared to those whose
cystectomy was performed >2 yr after BCG induction [27].
Lambert et al also noted poorer DFS and DSS in a cohort of
patients undergoing cystectomy for T1G3 carcinoma after
They postulated that the decrease in survival was the result
of higher and perhaps inappropriately prolonged use of
intravesical therapy in the modern era [31].

These studies point out the danger of delaying cystec-
tomy in high-grade pT1 carcinoma where indicated and the
need to risk-stratify such T1 patients, if possible. Identifying
candidates at high risk for progression is helpful in selecting
patients who should undergo early cystectomy. The need
for such a strategy has been recognised by a recent
international consensus panel on T1 BCa that subclassified
T1 tumours into high-risk and low-risk variants based on
multifocality, associated CIS, tumour location (dome or
anterior bladder wall), or residual T1 disease on restaging
TUR [38]. Any of these factors would classify a T1G3 lesion
as ‘high risk.’ The presence of two or more of these risk
factors at T1G3 diagnosis identifies candidates who must be
advised to undergo immediate cystectomy [33,39]. Like-
wise, identification of significant tumour (T1 or higher) at
first cystoscopic follow-up (BCG refractory) or prostatic
urethral disease at any point during follow-up identifies
candidates for early cystectomy. An updated treatment
algorithm for newly diagnosed T1G3 tumours based on
this information was recently proposed in a literature analysis
by Kulkarni et al. [40]. It supports a bladder-preservation
regimen in patients without overt risk factors while helping
to identify those individuals at risk for progression in whom
immediate or early cystectomy should be performed.

3.6. Indication for radical cystectomy in patients with
carcinoma in situ

Usually, primary CIS confined to the bladder is treated with
intravesical BCG, resulting in a complete response rate of
83–93% [41,42]. Approximately 50% of patients develop
recurrent disease with muscle invasion or extravesical
tumour [41,43]. Between 11% and 21% of such patients die
of disease within 5–7 yr after an initial complete response to
BCG treatment [41,44]. Nonresponders or incomplete
responders have an even higher risk of tumour progression:
33–67% [45,46]. It has been shown that tumour recurrence
at 9 mo despite BCG therapy is associated with a 30% chance
of invasive tumours and death of disease [47]. Cystectomy
as definitive treatment should therefore be performed in
BCG patients with an incomplete response of CIS at 9 mo,
high-grade papillary or invasive tumour recurrence within
the bladder, as well as extravesical recurrence.

3.7. Oncologic outcome of radical cystectomy for muscle-

invasive bladder cancer with negative lymph nodes

The outcome of patients undergoing cystectomy for BCa
according to a recent multi-institutional database of 888
consecutive patients undergoing cystectomy and lymph-
adenectomy for BCa revealed a mean RFS and BCa-specific
survival of 58% and 66%, respectively, at 5 yr [48]. The RFS
and OS in the largest single-centre study of 1054 male and
female patients was 68% and 66% at 5 yr and 60% and 43%, at
10 yr, respectively. Both RFS and OS were significantly
related to pathologic stage and lymph node status.
Increasing pathologic stage and lymph node–positive
disease were associated with significantly higher recurrence
rates and worse OS (p < 0.001). The 5- and 10-yr RFS
for the subgroup of organ–confined lymph node–negative
tumours were 85% and 82%, respectively, and OS at 5 and 10
yr was 78% and 56%, respectively. The 5- and 10-yr RFS and
OS for the subgroup of non–organ–confined, lymph node–
negative tumours was 58% and 55%, respectively, and 47%
and 27%, respectively [24].

In another contemporary study analysing 686 patients,
10-yr DSS and OS rates were 72.9% and 49.1%, respectively,
for organ-confined disease (defined as <pT3a) versus
33.3% and 22.8% for non–organ-confined disease [49].
Madersbacher et al have likewise reported a 5-yr RFS rate
of 76% in patients with pT1 tumours, 74% for pT2 tumours,
52% in pT3 tumours, and 36% in pT4 tumours [25]. Tumour
stage and nodal involvement were the only independent
predictors of survival [50]. Hautmann et al have reported
the results of 788 cystectomy patients who underwent
surgery without any neoadjuvant or adjuvant chemo-
therapy. The 10-yr RFS and OS rates were 59.1% and
44.9%, respectively. The rate of RFS at 5 yr was 82.5% for
pT2a tumours, 61.9% for pT2b and pT3a tumours, and 53.1%
for pT3b node-negative disease [6].

Overall, RC provides excellent local (pelvic) control for
the treatment of invasive BCa. Local and distant failure rates
(Table 2) were 4% and 9.5%, respectively, for organ-confined
tumours, 15.9% and 19.2%, respectively, for non–organ-
confined tumours in the latter series [6]. Accordingly, an
overall local pelvic recurrence rate of only 9% was observed
in the University of Southern California (USC) series
reported by John Stein in 2001. Patients with organ-
confined lymph node–negative tumours demonstrated a 6%
local recurrence rate compared with a 13% local recurrence
rate in those with non–organ–confined lymph node–
negative tumours [24].

In patients with lymph node–negative UC, excellent
survival data can be achieved as long as the tumour is
confined to the bladder, best to the inner half of the
detrusor muscle (Table 3). These data, based on a large
number of patients from several studies, support early and
aggressive surgical management, at least for any muscle-
invasive BCa.
3.8. Oncologic outcome of radical cystectomy for invasive bladder cancer and prostatic involvement

Involvement of the prostate by urothelial cancer of the bladder was first reported in 1952 by Melicow and Hollowell when they described CIS of the prostate coexistent with BCa [52]. However, in the past, most authors did not discriminate between CIS of the prostatic urethra, invasion of prostatic ducts or the prostatic stroma secondary to urethral or ductal basement membrane invasion, or a primary extravesical extension of cancer into the prostate from outside. Pagano and associates first postulated two different pathways of prostatic involvement. Tumour extension from the urethra into the prostate was classified as noncontiguous invasion, whereas direct tumour extension from the bladder wall into the prostate was defined as contiguous extension. The 5-yr OS rate of patients with pT4a disease in this series was 21.5%. A subgroup analysis of patients who showed invasion of the prostate through the urethra revealed a significantly higher 5-yr OS of 46% versus 7% in patients with a direct extension of cancer from bladder origin into the prostate [53]. Esrig et al analysed 143 patients who had prostatic involvement by UC in the cystectomy specimen and reported a 5-yr OS rate of 74.3% for CIS of the prostatic urethra versus 67% OS for tumour in prostatic ducts and an OS of only 35.8% for patients with stromal invasion of the prostate (p < 0.0001). Prostatic involvement was further associated with the primary bladder tumour stage. RFS and OS rates for patients with prostatic stromal invasion but otherwise organ-confined disease were significantly higher compared to patients with prostatic stromal invasion and primary non-organ-confined tumour [54].

These studies have demonstrated that patients with organ-confined tumours and prostatic invasion arising in the urethra exhibit better survival rates than one would expect from real pT4a tumours with contiguous prostate involvement through the bladder wall. The first group of patients can achieve long-term survival rates comparable to those without prostatic involvement. UC limited to the mucosa or ducts of the prostate does not worsen the prognostic impact to the primary bladder tumour stage, and even stromal invasion does not itself confer a poor prognosis as long as the primary bladder tumour is organ confined and surgical margins are negative.

3.9. Oncologic outcome of radical cystectomy for bladder cancer with lymph node involvement

Regional lymph node status has consistently been found to be one of the strongest predictors of survival. Cystectomy patients found to have positive pelvic lymph nodes at the
time of PLND have a poor prognosis, but considerable variation exists among the reported survival rates. Radical surgery in combination with a meticulous PLND (Fig. 1) may provide good long-term survival in some cases, and patients most likely to benefit from radical surgery are those with favourable primary tumour stage and/or limited or microscopic LNI [55–58].

Long-term survival rates of 25% and 21% for patients with positive nodes were reported at 5 and 10 yr, respectively. Survival also appeared to be a function of the extent of local disease with a 5-yr OS of 52% for organ-confined tumours (pT0–pT3a, TNM 1998) and 17% for non–organ-confined tumours (pT3b–pT4b, TNM 1998). Survival was inversely related to the extent of pelvic node involvement in this series. Among patients with a single positive node (pN1), 33% survived after 5 yr, whereas only 22% with pN2 (two to five lymph nodes involved) disease, and no patient in the pN3 category (multiple nodes >3 cm) survived 5 yr [58].

According to the USC series, patients with lymph node–positive disease demonstrated significantly worse survival and higher recurrence rates compared to those with no LNI (p < 0.001). The RFS and OS for 246 patients (23%) with lymph node–positive disease at 5 and 10 yr was 35% and 34%, respectively, and 31% and 23%, respectively. Survival rates in this group of patients with lymph node–positive disease could be stratified further by the primary bladder tumour (T stage) and by the total number of lymph nodes involved. Patients with fewer than five positive lymph nodes had significantly higher survival rates than those with five or more lymph nodes involved (p < 0.003). Similarly, patients with lymph node–positive disease and organ-confined primary bladder tumours had significantly higher survival rates than lymph node–positive patients with non–organ-confined primary bladder tumours (p < 0.004) [24]. Accordingly, from a Memorial Sloan-Kettering Cancer Centre series of 688 patients 10-yr DSS and OS rates of 27.7% and 20.9%, respectively, in node-positive patients were reported [49].

Herr et al analysed the outcome of patients with grossly node–positive BCa after PLND and RC [59]. Included in this study were 83 patients treated with surgery alone (without neoadjuvant or adjuvant chemotherapy), presenting N2–3 disease. Analysing the outcome after 10 yr, 20 patients (24%) survived, and 64 patients (76%) died of disease. Thus, there is evidence that even a substantial number of patients with grossly node–positive BCa may have a chance of cure with RC through PLND. However, based on recent results of systemic therapy, neoadjuvant chemotherapy would be preferable in patients with clinically suspected LNI.

A variety of recent studies hypothesised a chance of long-term survival in patients with lymph node–positive disease. Table 3 summarises the results of five large studies of patients treated with RC, including subgroups of patients with nodal involvement. Data from these analyses highlight that patients with lymph node–positive disease may experience a 5-yr RFS of approximately 30% (20.9–35%) [6,24,25,49,51]. However, in the surgery-only series reported by Hautmann et al, patients with positive lymph nodes had a rather poor prognosis compared to those without LNI. Of patients with positive lymph nodes, as much as 85.4% progressed within 10 yr, and 68% of all recurrences were attributable to distant metastasis. In face of these poor RFS rates in patients with node-positive diseases, the authors emphasised the importance of future randomised trials to test the true efficacy of systemic therapies in combination with RC in such patient cohorts [6].

In summary, PLND and RC appear to benefit a small but significant number of patients with node-positive BCa and should be performed especially in cases wherein the tumour is still organ confined. Based on the experience reported in the literature, an overall cure rate of about 25% can be expected for such patients. Because PLND renders every fourth patient tumour free, a planned cystectomy should not be abandoned in the face of microscopic lymph node metastases at frozen section.

3.10. Overall or disease-specific survival as an end point of outcome for cystectomy patients?

The majority of older cystectomy series analysing the outcome of BCa patients have consistently used OS rather
Surgery in these patients is an invasive treatment and can be accompanied by several debilitating symptoms, including repeated bleeding, chronic local pain, severe dysuria, and obstruction of the lower and upper urinary tract. Declining statistical differences between OS and DSS were observed with increasing tumour burden.

For patients with advanced bladder tumours (clinical stage T4b, invading the pelvic or abdominal wall), RC is usually not a curative option. However, treatment of these patients does remain a clinical challenge, and surgery should always be considered on the basis of an individual decision. Urinary diversion using intestinal segment with or without cystectomy is a therapeutic but palliative option. Besides surgery, these patients are potential candidates for other treatment modalities, such as palliative chemotherapy or RT, repeated TUR, arterial embolisation, or best supportive care. Inoperable locally advanced tumours may be accompanied by several debilitating symptoms, including repeated bleeding, chronic local pain, severe dysuria, and obstruction of the lower and upper urinary tract. Surgery in these patients is an invasive treatment and carries a substantial risk of morbidity. It is usually performed for the relief of symptoms such as pain, recurrent bleeding, urgency, and fistula formation.

A retrospective study analysed older patients aged >75 yr who received RC with either curative or palliative intent. Analysis revealed that elderly people have a higher risk of perioperative morbidity and mortality, especially those with advanced pelvic malignancies who have undergone palliative cystectomy. The indications for palliative cystectomy were advanced pelvic malignancies with severe irritating voiding symptoms, pain, and recurrent haematuria requiring repeated blood transfusions.

Advanced muscle-invasive BCa is often associated with ureteral obstruction at the level of the intramural section of the ureter or by enlarged pelvic lymph nodes. Bilateral ureteral obstruction, or unilateral obstruction with a solitary functioning kidney, may result in end-stage renal insufficiency. El-Tabey et al retrospectively reviewed the records of BCa patients who presented with bladder cancer, hydronephrosis, and subsequent uraemia. Patients with inoperable locally advanced bladder tumours were treated with permanent nephrostomy tubes to relieve obstruction. In 10 patients (26.3%) who underwent surgery, palliative cystectomy without lymphadenectomy was carried out for advanced nodal involvement in four patients and locally advanced disease infiltrating the lymphadenectomy in six patients. In all patients, local pelvic recurrence was reported within the first year of follow-up. Another small study reported the postoperative outcome of primary RC in T4 BCa patients. The authors concluded that primary cystectomy for the treatment of T4 BCa was technically feasible and had a tolerable therapy-related morbidity and mortality.

In another recent study, a bladder-preservation strategy was investigated in a total of 24 old patients with a mean age of 81 yr (range: 68–92) with muscle-invasive BCa who had refused surgery or were not eligible for cystectomy. Patients were followed for a mean time of 680 d, and all patients complained of frequency, urgency, and severe nocturia. The second most frequent complication was bleeding, which required salvage cystectomy in seven cases. The mean readmission rate was eight per patient, and the mean time spent at the hospital was 109 d (range: 13–253). The bladder-preserving strategy failed to be successful in most cases, and complications led to salvage cystectomy in nearly half of the cases.

In summary, palliative cystectomy will rarely extend OS but can relieve severe symptoms such as recurrent bleeding from the tumour and urinary obstruction with renal insufficiency and may avoid repeated hospital admissions.

### 4. Conclusion

Risk-stratification of patients with BCa based on pathologic features at initial TUR or at the time of recurrence can select those most appropriate for RC early. Immediate or early RC should be offered as the treatment of choice to all patients with primary or recurrent tumours at high risk for progression (recurrent or multifocal high-grade T1 tumours, failures...
of BCG treatment, and muscle-invasive BCa). RC does offer excellent RFS and DSS rates as well as optimal local tumour control in patients with organ-confined disease. Tumour control in non–organ-confined tumours is still satisfactory, with long-term RFS rates of about 50%. For node-positive disease, surgery may still be curative in approximately one-fourth of patients. For patients with inoperable locally advanced tumours, primary RC is usually not a curative option. However, the indication for a palliative cystectomy or radical surgery in very old patients is, beside oncologic outcome, also based on relief of symptoms in these patients.

Conflicts of interest

The authors have nothing to disclose.

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References


