



## Guideline 3-20

A Quality Initiative of the  
Program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO)

### Complex surgery and perioperative systemic therapy for genitourinary cancer of the retroperitoneum

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An assessment conducted in January 2026 deferred review of Guideline 3-20. This means that the document remains current until it is assessed again next year. The PEBC has a formal and standardized process to ensure the currency of each document ([PEBC Assessment & Review Protocol](#))

Guideline 3-20 is comprised of 5 sections. You can access the summary and full report here:

<https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/60501>

- Section 1: Guideline Recommendations
- Section 2: Recommendations and Key Evidence
- Section 3: Guideline Methods Overview
- Section 4: Systematic Review
- Section 5: Internal and External Review

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# Complex surgery and perioperative systemic therapy for genitourinary cancer of the retroperitoneum

*This is a quick reference guide and provides the guideline recommendations only. For key evidence associated with each recommendation, the systematic review, and the guideline development process, see the Full Report.*

## GUIDELINE OBJECTIVES

To provide guidance on aspects of complex retroperitoneal surgical technique, including extent of resection and timing of surgery with respect to chemotherapy, and to investigate what other considerations are necessary to ensure safe surgery in this group of patients.

## TARGET POPULATION

This guideline applies to people with metastatic testicular cancer, T3b or T4 or node positive and metastatic renal cell cancer and T3, T4 or node positive upper tract urothelial cancer[1].

## INTENDED USERS

This guideline is intended for genitourinary surgeons involved in retroperitoneal surgery, clinicians involved in the care of cancer patients who have received retroperitoneal surgery, and doctors referring patients for retroperitoneal surgery.

## RECOMMENDATIONS

### Renal cell cancer and surgery

Recommendation 1
<ul style="list-style-type: none"><li>• Cytoreductive nephrectomy (CN) has been the standard of care in patients with metastatic clear-cell renal cancer who present with the tumour in place. <b>Immediate CN should no longer be considered the standard of care in patients diagnosed with intermediate and poor risk when medical treatment is required.</b></li><li>• Removal of the primary tumour should only be considered after review at multidisciplinary case conferences (MCC) and in certain situations such as high tumour load and symptoms from the primary tumour.</li></ul>

### Renal cell cancer and venous tumour thrombus

Recommendation 2
All patients with metastatic renal cell carcinoma and venous tumour thrombus should be considered for surgical intervention, irrespective of the extent of tumour thrombus at presentation. This is endorsed from Ljungberg et al., 2015 [4].

### Renal cell cancer and metastasis-directed therapy

Recommendation 3
Metastasis-directed therapy can be considered in selected patients with a limited number of metastases and a long disease-free interval. Endorsed from Gallardo et al., 2018 [5] and Escudier et al., 2016 [6].

### Renal cell cancer and adjuvant systemic therapy

Recommendation 4
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Adjuvant therapy following surgically resected high-risk clear cell carcinoma is not recommended. Endorsed from Bex et al., 2017 [7], Karakiewicz et al. [8] and Gallardo et al. [5].

## Upper tract urothelial cancer and surgery

### Recommendation 5

- Once a decision regarding radical nephroureterectomy (RNU) has been made the procedure should be carried out as soon as possible, preferably within 28 days [15].
- A delay between diagnosis of an invasive tumour and its removal may increase the risk of disease progression.
- Endorsed from Rouprêt et al., 2017 [16].

#### *Radical nephroureterectomy*

- Open RNU with bladder cuff excision is the standard treatment for high-risk upper tract urothelial cancer (UTUC). RNU must comply with oncological principles; that is, preventing tumour seeding by avoidance of entry into the urinary tract during resection.
- Resection of the distal ureter and its orifice is performed because there is a considerable risk of tumour recurrence in this area. After removal of the proximal ureter, it is difficult to image or approach it by endoscopy.
- Several techniques have been considered to simplify distal ureter resection, including pluck technique, transurethral resection of the intramural ureter, and intussusception. Ureteral stripping is not recommended.

#### *Laparoscopic radical nephroureterectomy*

- Retroperitoneal metastatic dissemination and metastasis along the trocar pathway following manipulation of large tumours in a pneumoperitoneal environment have been reported in few cases. Several precautions may lower the risk of tumour spillage:
  - Avoid entering the urinary tract
  - Avoid direct contact between instruments and the tumour
  - Laparoscopic RNU must take place in a closed system.
  - Avoid morcellation of the tumour and use an endobag for tumour extraction
  - The kidney and ureter must be removed *en bloc* with the bladder cuff
  - Invasive or large (T3/T4 and/or N+/M+) tumours are contraindications for laparoscopic RNU until proven otherwise.
- Laparoscopic RNU is safe in experienced hands when adhering to strict oncologic principles. There is a tendency toward equivalent oncological outcomes after laparoscopic or open RNU.
- Endorsed from Rouprêt et al., 2017 [16].

## Upper tract urothelial cancer and lymph node dissection

### Recommendation 6

- The role of retroperitoneal lymph node dissection (RPLND) in UTUC is undetermined and specifically the template is not standardized. These decisions should be made preferably in an MCC and based on stage, expertise, and imaging.
- Endorsed from Rouprêt et al., 2015 [17].

## Upper tract urothelial cancer and distant metastases

### Recommendation 7

- There is no oncologic benefit for RNU in patients with distant metastatic UTUC except for palliative considerations.
- Endorsed from Rouprêt et al., 2017 [16].

## Upper tract urothelial cancer and systemic treatment

### Recommendation 8

- Adjuvant systemic treatment is recommended for resected high-risk UTUC
- Given the challenges of renal compromise in the postoperative setting, consideration for neoadjuvant chemotherapy is recommended to be made in the setting of a multidisciplinary case conference.

## Testicular cancer and surgery

### Recommendation 9

#### Residual tumour resection - Seminoma

- A residual mass of seminoma should not be primarily resected, irrespective of the size, but investigated by imaging investigations and tumour markers.
- In patients with residuals of >3 cm, fluorodeoxyglucose-positron emission tomography (FDG-PET) should be performed in order to gain more information on the viability of these residuals. In patients with residuals of <3 cm, the use of FDG-PET is optional.
- In patients with post-chemotherapy masses >3 cm, PET can be considered. In the absence of tumour growth or PET avidity, surveillance is recommended. Many patients with PET-avid residual lesions will not progress so follow-up imaging and/or a biopsy to confirm residual disease are prudent.
- Patients who progress post-systemic treatment have disease that is difficult to cure and must be managed by a multidisciplinary team.
- Patients with persistent and progressing human chorionic gonadotropin (hCG) elevation after first-line chemotherapy should immediately proceed with salvage chemotherapy. Progressing patients without hCG progression should undergo histological verification (e.g., by biopsy or mini invasive or open surgery) before salvage chemotherapy is given.
- When RPLND is indicated, this should be performed. Patients must be treated at highly specialized referral centres that perform RPLND surgery, hepato-pancreatic-biliary surgery, neurosurgery, and vascular surgery, as residuals from seminoma may be difficult to remove due to intense fibrosis. Preservation of ejaculatory function should be made in these cases whenever technically feasible.
- Endorsed from Albers et al., 2016 [22].

### Recommendation 10

#### Non-seminoma

- Residual post-chemotherapy tumour resection is highly recommended in all patients with a residual mass >1 cm in the short axis at cross-sectional computed tomography imaging.
- Patients after salvage chemotherapy or high-dose chemotherapy in first or subsequent salvage situations harbour viable tumour at a much higher rate. Therefore, there is a consideration to perform surgery in salvage patients even with residual disease <1 cm.

- If residual surgery is indicated, all areas of primary metastatic sites must be completely resected within two to six weeks of completion of chemotherapy. If technically feasible, a bilateral nerve-sparing procedure should be performed. There is growing evidence that template resections with unilateral preservation of nerves yield equivalent long-term results compared with bilateral systematic resections in all patients. The mere resection of the residual tumour (so-called lumpectomy) should not be performed.
- In persistent larger-volume retroperitoneal disease, all areas of primary metastatic sites must be completely resected within six weeks of completion of chemotherapy. If technically feasible, a nerve-sparing procedure should be performed.
- Laparoscopic RPLND may yield similar outcomes to the open procedure in very selected cases of very low residual disease and in very experienced hands, but it is not recommended outside a specialized laparoscopic centre.
- Endorsed from Albers et al., 2016 [22]

### Testicular cancer and quality and intensity of surgery

#### Recommendation 11

- In patients with intermediate or poor risk and residual disease >5 cm the probability of vascular procedures is as high as 20%. This surgery must therefore be referred to specialized centres capable of interdisciplinary surgery (hepatic resections, vessel replacement, spinal neurosurgery, thoracic surgery).
- Endorsed from Albers et al., 2016 [22]

### Testicular cancer and salvage surgery

#### Recommendation 12

Surgery of resectable disease after salvage treatment remains a potentially curative option in all patients with any residual mass following salvage chemotherapy. Endorsed from Albers et al., 2016 [22].

### Testicular cancer and retroperitoneal lymph node dissection

#### Recommendation 13

- Nerve-sparing RPLND should be performed only by an experienced surgeon.
- It is preferable that this surgery take place in a specialized centre with laparoscopic and robot-assisted expertise.
- Patients with residual testicular cancer (not necrosis or teratoma) in resected retroperitoneal nodes should be assessed for systemic treatment by a medical oncologist.
- Endorsed from Albers et al., 2016 [22]

### Complex genitourinary surgeries of the retroperitoneum and surgical volumes

#### Recommendation 14

Given evidence that higher-volume centres are associated with lower rates of procedure-related mortality, patients should be referred to higher-volume centres for surgical resection.

### Renal cell cancer with venous thrombectomy and surgical volumes

#### Recommendation 15

The Working Group members recommend that renal cell cancer with venous thrombectomy take place with additional perioperative services as outlined in Recommendation 16.

### **Safe surgery**

#### **Recommendation 16**

Complex retroperitoneal surgery often requires surgery on great vessels. These procedures should be performed in centres with sufficient support to prevent or manage complications such as appropriate vascular and cardiac services, interventional radiology, and level 3 intensive care units.