

Introduction

Urinary bladder (UB) sampling in radical cystectomy specimens usually involves taking three or more full-thickness strips of UB, oriented either randomly or in sagittal planes and including areas of interest. Pathological diagnostic information required for adequate clinical follow-up is often adequate; however, pathological assessment of the anatomical relationship of the urothelial carcinoma (UC) with the remaining UB is challenging.

A new technique to map and sample the entire urinary bladder is proposed. It enables identification of the anatomical relationship of the tumor and remaining urinary bladder.

Materials and Methods

Fifty radical cystectomy specimens:

- 39 from men and 11 from women
- 9 for superficial UC and 41 for muscle invasive UC

The grossing technique is as follows.

1. Each bladder specimen is bisected in the transverse plane
2. The bladder is fixed without tissue stretching in 10% buffered formalin for at least 24 hours
3. After fixation, the bladder is serially sectioned in the horizontal plane, from neck to dome in 5-10 mm sections
4. Sections are arranged, photographed, and mapped
5. At least one entire ring is submitted in toto for histological examination
6. All representative areas or areas of interest are submitted for histological examination

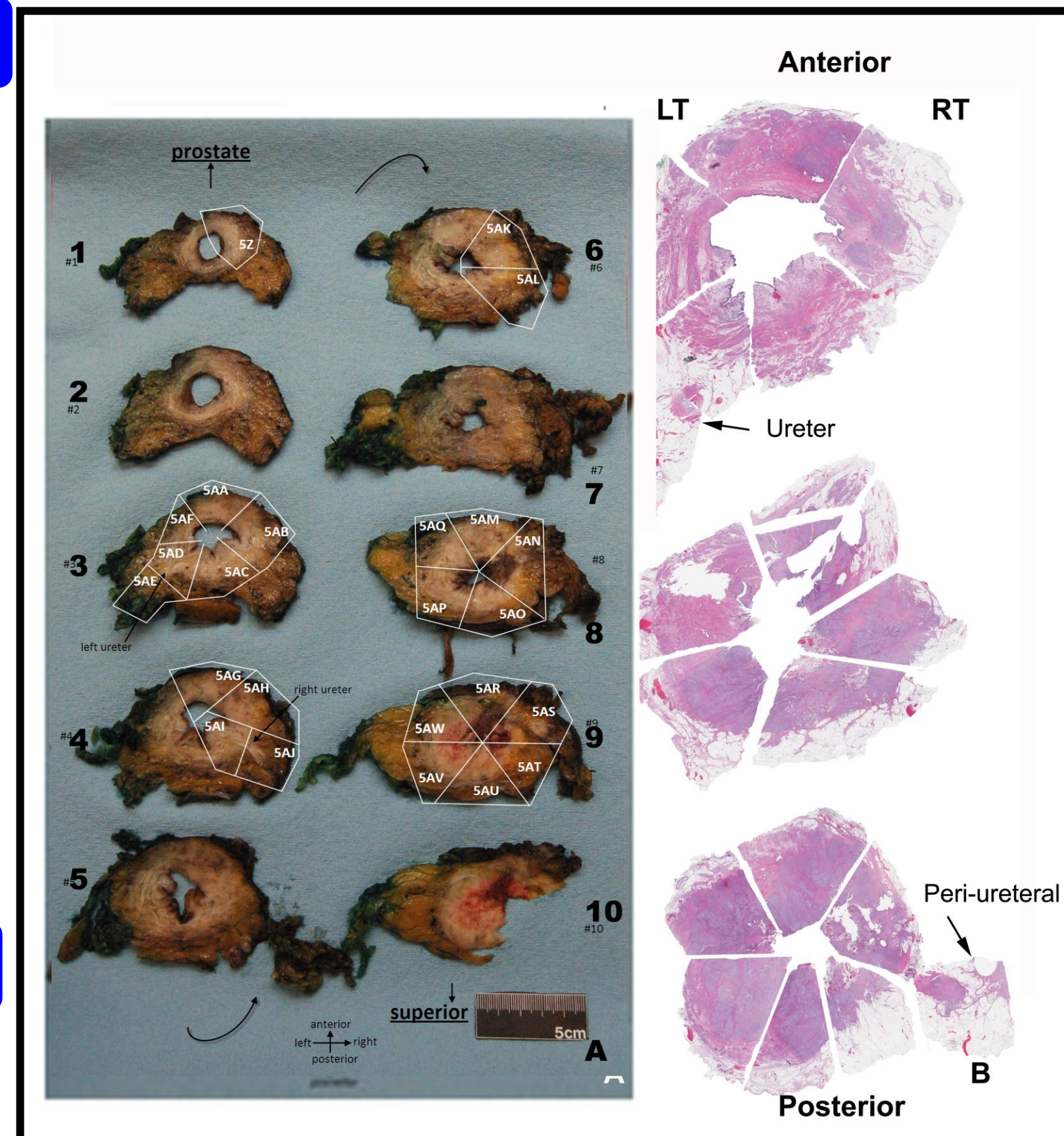
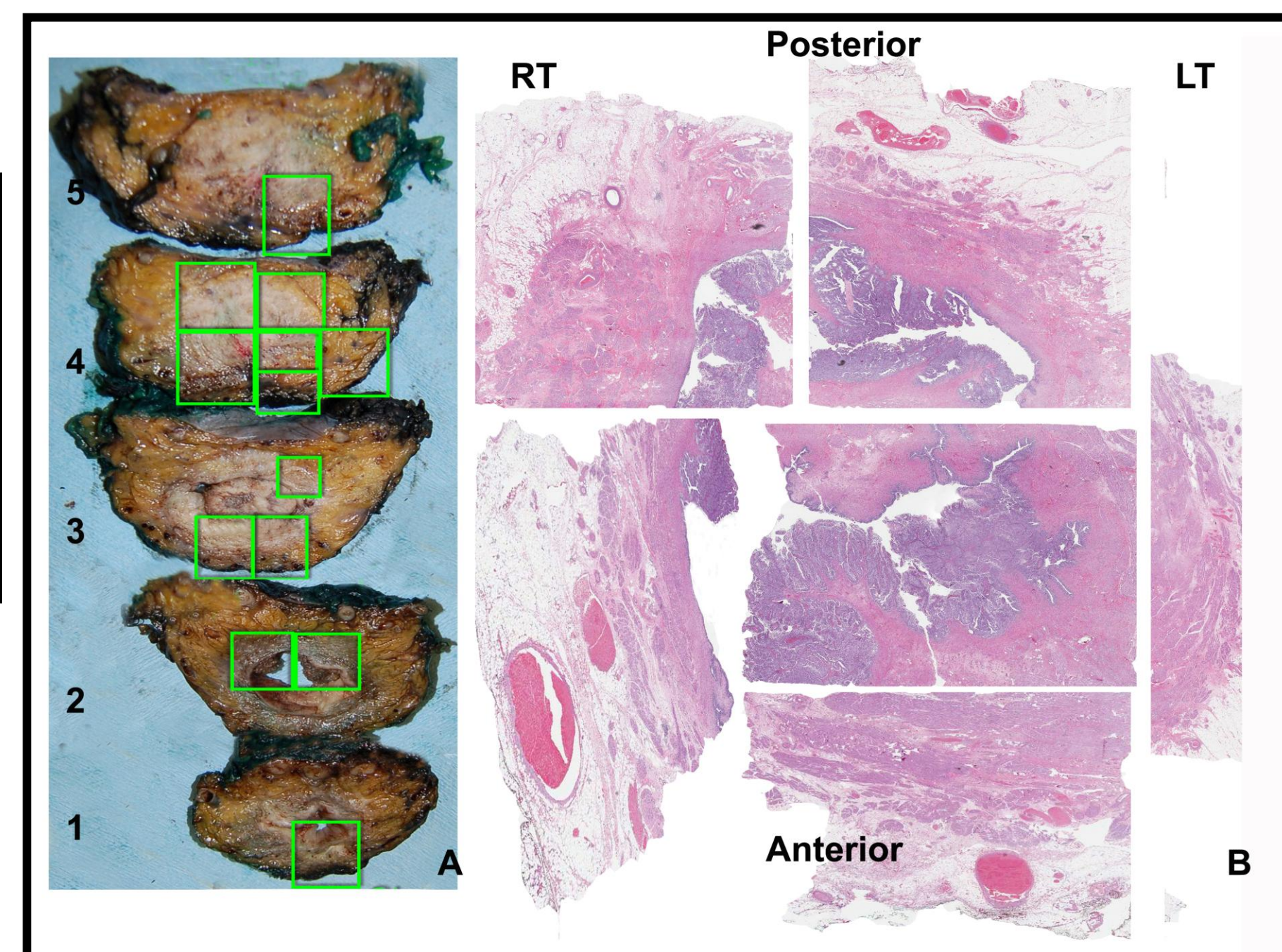


Fig 1. A) Serial horizontal sections of the urinary bladder in 10 rings

B) Reassembling of microscopic sections from rings at levels 3, 8 and 9 showing invasive carcinoma with extensive perivesical invasion, involvement of bladder wall with limited tumor at trigone level, complete dome and extension to anterior wall. The left side of the bladder was free of invasive carcinoma at level 3 and partially at level 8. Note sections of the left ureter free of invasive carcinoma and the right ureter with invasive carcinoma

Fig 2. A) Serial horizontal sections of the urinary bladder in 5 rings, with mapping

B) Reassembling of microscopic sections from ring at level 4 showing multiple superficial papillary carcinomas, predominantly on the left side. Note the tumor is larger at the dome than at the trigone level



Results

In comparison to the traditional “tissue strip” method, there was no increase in number of sections for microscopic examination:

- 12 ± 5 sections for “tissue strips” method,
- 11 ± 5 sections for ring mapping method.

Conclusion

Horizontal sectioning without stretching improves pathologic examination of the urinary bladder in radical cystectomy.

Opening the urinary bladder from the anterior surface allows a panoramic view of the mucosa; however, tissue retraction and hardening impair visualization of anterior and lateral mucosae.

Prostate sectioning is facilitated by horizontal bladder sectioning because all sections of bladder, prostate and ureter are taken in the same plane.

The advantages of our ring mapping method are:

- a) ease and consistency of sampling that support microscopic-macroscopic correlation;
- b) readiness to determine depth of invasion in gross examination,
- c) better assessment of tumor greatest diameter, deepest level of invasion, topographic location, multifocality, and extension of tumor extension into perivesical tissue and adjacent organs;
- d) feasibility for mapping the neoplastic lesion and re-examination for further sampling;
- e) sampling may involve up to 50% UB mucosa in routine sections.

References

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