

Urine diversion after radical cystectomy

Essay

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Summary and conclusion

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Summary

Radical cystectomy with pelvic lymphadenectomy is the standard treatment for muscle-invasive bladder cancer (stage T2 and above). Long-term, disease-free survival rates of up to 70 percent can be achieved if pathology shows no extravesical diseases.

Almost of patient undergo Radical cystectomy require urinary diversion, The goals of urinary diversion after cystectomy have evolved from simple diversion and protection of the upper tracts to functional and anatomic restoration as close as possible to the natural preoperative state.

Ileal conduit diversion remains the method most commonly used in conjunction with radical cystectomy for reconstructing the urinary tract. It is technically easier than continent reconstruction. However, several studies confirm a high incidence of upper urinary tract complications.

For continent urinary diversion, a tapered or stapled ileal segment or the appendix should be used as the outlet. Most reconstructive surgeons have abandoned the continent Kock ileal reservoir, largely because of the significant complication rate associated with the intussuscepted nipple valve.

Summary and conclusion

The orthotopic reservoir should be considered today the gold standard with which other forms of diversion are compared. Orthotopic diversion can be safely offered to both male and female patients undergoing cystectomy. In addition, data suggest that an option of a neobladder diversion may decrease the physician's reluctance to perform cystectomy earlier for bladder cancer at a more curable stage and increase the patient's acceptance. With this form of diversion, we hope that patients with bladder cancer as well as their physicians may be encouraged toward earlier and more aggressive forms of therapy with cystectomy, when cure and ultimately survival are greatest.

After urinary diversion close follow up to the patient help to detect early and late complications and give us the chance to manage any of these complications.

Conclusion

Urinary diversion has reached a new level. The ultimate goal of urinary reconstruction has become not only to create a means to divert urine and protect the upper urinary tract, but also to provide patients with a continent means to store urine and allow for volitional voiding through the native urethra. These advances in urinary diversion have been made in an effort to give patients a normal lifestyle with a positive self-image following removal of the bladder.

Good selection for type of urine diversion is the corner stone to achieve good results .

- If patient is Fit for orthotopic diversion we must do.
- if unfit for orthotopic diversion with normal upper urinary tract we can do continent non orthotopic diversion(continent cutaneous or continient to the colon).
- if unfit for orthotopic diversion with dilated upper urinary tract or has bad general condition we can do Conduit or Trans-ureteroureteral with single stoma.

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Aim of The Work

Introduction

Bladder cancer is the fourth most common cancer in men and the eighth most common in women. It is primarily found in older persons, with approximately 80 percent of new cases occurring in persons 60 years or older. Bladder cancer is about three times more common in men (one in 27) than women (one in 85). It is more prevalent in white persons; however, because of delayed diagnosis, mortality rates are higher in black persons (**Sharma et al., 2009**).

Currently, the most commonly used staging system allows for a precise and simultaneous description of the primary tumor stage (T stage), the status of lymph nodes (N stage), and metastatic sites (M stage). Staging errors exist when one compares the clinical stage (that based on physical examination and imaging) with the pathologic stage (that based on removal of the bladder and regional lymph nodes). Overstaging is relatively uncommon, but clinical understaging may occur in up to 53% of patients (**Dutta, 2001**).

Radical cystectomy with pelvic lymphadenectomy is the standard treatment for muscle-invasive bladder cancer (stage T2 and above). Long-term, disease-free survival rates of up to 70 percent can be achieved if pathology shows no extravesical diseases.(**Huang and Stein,2007**).

Aim of The Work

Patients with bladder cancers require urinary diversion. ; it is most often performed by incorporating various intestinal segments into the urinary tract. Virtually every segment of the gastrointestinal tract has been used to create urinary reservoirs or conduits. No single technique is ideal for all patients and clinical situations as well as on renal function, individual anatomy, and personal preference. An ideal method of urinary diversion would most closely approximate the normal bladder: it would be non-refluxing, low pressure, continent, and non absorptive. **(Allareddy et al., 2006).**

The goals of urinary diversion after cystectomy have evolved from simple diversion and protection of the upper tracts to functional and anatomic restoration as close as possible to the natural preoperative state. This evolution of urinary diversion has developed along 3 distinct paths: incontinent, cutaneous diversion (conduit); continent, non orthotopic diversion (pouch) which involves continent cutaneous and continent to the colon; and, most recently, continent, urinary diversion to the intact native urethra (neobladder, orthotopic reconstruction). **(Hautmann et al., 2007).**

The most commonly used bowel segments for continent urinary diversion are either ileum or a combination of terminal ileum and ascending colon. Ensuring that all continent diversions store and empty urine at low pressures is paramount. High storage and voiding pressures ultimately cause high-pressure reflux nephropathy and may result in renal failure; therefore, all bowel segments used for continent

Aim of The Work

diversion, with the exception of their use in the direct ureterosigmoidostomy procedure, are initially detubularized. The bowel segments are then refashioned in a more spherical shape, which increases capacity and decreases luminal pressure by a magnitude of 3- to 4-times lower than the original segmental pressure.(**Monti et al., 2003**).

Diversion into a noncontinent conduit has been used for more than 40 years with excellent reliability and minimal morbidity(**Steinberg and Curti, 2010**).

The bowels most commonly used for noncontinent conduit diversion are 15-25 cm of ileum, colon, and, least often, jejunum bowel segments. These segments usually lend themselves to easy mobilization on a vascular pedicle, which allows for ureter anastomosis at the proximal end and stoma formation on the abdominal wall (most often in the right lower quadrant) at the distal end. In order to promote drainage and to minimize urine reflux, ensuring that the urine flows in a peristaltic manner relative to bowel segment motility is important . (**Farnham and Cookson, 2004**).

Aim of the Work

To revise and discuss the commonly used methods of diversion of urine after radical cystectomy , protocols applied for each diversion and possible effects of these modalities, with detailed discussion of the selection criteria. The follow up schedule and the result of each type of diversion and complications will be discussed in details

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Karim Abd EL Aziz

Epidemiology and Pathology of urinary bladder cancer

Bladder cancer is the fourth most common cancer in men and the eighth most common in women. It is primarily found in older persons, with approximately 80 percent of new cases occurring in persons 60 years or older. Bladder cancer is about three times more common in men (one in 27) than women (one in 85). It is more prevalent in white persons; however, because of delayed diagnosis, mortality rates are higher in black persons (**Sharma et al., 2009**).

The most well-established risk factor for bladder cancer is cigarette smoking, although the association is not as strong as that observed between smoking and respiratory tract cancers. Although it is well recognized that cigarette smoking is the most important risk factor for bladder cancer on a population basis, additional factors play a role in modifying the risk of smoking-related bladder cancer. ((**kirkali et al., 2005**).

Occupation is the first known and, on a population level, second most important risk factor for bladder cancer. It has been estimated that occupational exposures may account for as much as 20% of all bladder cancer. Exposure to naphthylamine, 4-aminobiphenyl (ABP), and benzidine, principally among workers in the textile dye and rubber tire industries, are the only specific agents that have been unequivocally associated with bladder cancer. Because of strict regulations, these specific chemicals are now banned from the workplace and contribute

minimally to the current incidence of bladder cancer in Western countries. However, many other strong candidates for bladder carcinogens still exist, such as orthotoluidine, which is used now in the manufacture of dyes, rubber chemicals, pharmaceuticals, and pesticides.(**Markowitz and Levin, 2004.**).

Types of cancer bladder:

1-Transitional cell carcinoma :

In western countries, about 90% of bladder tumors are transitional cell carcinoma (TCC) (**Macvicar, 2000**).

Staging:

Accurate pathologic staging requires knowledge of the basic histology of the organ in question. In the urinary bladder, transitional epithelium (urothelium) overlies a basement membrane and lamina propria, which is composed of connective tissue and vascular and neural structures. Until recently, few pathologists and urologists realized that adipose tissue may be present within the lamina propria and muscularis propria. The lamina propria, in turn, is enveloped by a muscularis propria, with its thick but poorly oriented muscle bundles. In transurethral biopsy material, the tissue chips are frequently poorly oriented (not cut perpendicular to the bladder wall). This fact by itself may make it difficult to establish depth of invasion. Also, it is evident that the urinary bladder wall thickness is not uniform. In fact, even in the bladder that is not distended, the lamina propria is much attenuated (and consequently, the muscularis propria is closer to the epithelial

surface) in the area of the trigone and bladder neck and adjacent to the ureteral orifices (**Eble et al., 2004**).

The American joint committee on cancer-union international contre le cancer (AJCC-UICC) TNM (tumor, node, metastasis) staging system proposed the currently used staging system. CIS comprises a flat neoplasm that is confined to basement membrane. Stage Ta tumors are lesions confined to the urothelial mucosa that extend papillary fronds surrounding a central fibrovascular stalk into the lumen of the bladder. Stage T1 are tumors penetrating into, but not beyond the lamina propria. Stage T2 tumors extend into the superficial (T2a) and deep (T2b) muscularis propria. Stage T3 tumors extend either microscopically (T3a) or macroscopically (T3b) into perivesical fat. Stage T4 tumors extend into contiguous organs or the pelvic side wall. Nodal (N) or regional and distant metastasis (M) are also included in this system, Overstaging is relatively uncommon, but clinical understaging may occur in up to 53% of patients (**Dutta, 2001**).

The following table show TNM Classification of urinary bladder cancer :