Genitourinary Symptoms
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Abstract
Genitourinary symptoms may significantly impact on quality of life. Identifying the underlying cause will help guide management. In the palliative setting, understanding the goals of treatment, the prognosis of the patient, and
their wishes will help with decisions regarding the various treatments that may be available.

1 Introduction

Genitourinary symptoms are common in patients with pelvic malignancies. These include gynecological, urological, and colorectal malignancies as well as metastases from other neoplasms. Nonmalignant conditions occurring in patients with malignancy may require management in the palliative care context.

Genitourinary symptoms may not be readily volunteered by patients to medical and nursing personnel. Patients may be embarrassed to discuss symptoms such as urinary frequency and/or incontinence. Identifying patients who may be at risk of developing these symptoms may enable early investigation and management. Specific questions should be asked at the time of consultation or scheduled nurse reviews. The use of questionnaires may help measure the subjective grade of symptoms (e.g., Lent-Soma patient questionnaire; Livsey et al. 2002).

The history of the diagnosis, staging, surgery, and treatment, together with the posttreatment symptoms, may indicate the likely pathophysiology. New onset symptoms including fevers, evidence of inflammation, infection, or self-detected masses may lead to the diagnosis. The severity of symptoms may be graded using scales such as CTCAE (National Cancer Institute 2009).

A careful general, speculum, pelvic, and/or rectal examination in the clinic is mandatory. Urine or high vaginal swabs for culture or collection of urine or smears for cytology may be helpful. Biopsy in the clinic should be undertaken with caution.

An examination under anesthesia with consideration of cystoscopy, sigmoidoscopy, and biopsy may be indicated. Biopsy within the radiation field should be undertaken with extreme caution as healing may be impaired and new fistula formation can occur.

Renal ultrasound or CT pyelogram may be helpful with renal tract abnormalities. Magnetic resonance imaging (MRI) and FDG positron emission tomography (PET) may be required to differentiate recurrent disease from posttreatment complications. Interpretation of PET scans can be difficult as both recurrent tumor and inflammation will result in increased uptake of radiolabeled glucose.

Good communication with the patient regarding the cause of symptoms, potential treatment/management options, and the anticipated outcome of proposed treatment with the revised long-term prognosis may reduce anxiety and help manage patient expectation. For example, urinary symptom flare may occur a year after SBRT for prostate cancer and resolve to baseline by 2 years (Woo et al. 2014). Patients undergoing permanent implant prostate brachytherapy may expect resolution of urinary symptoms by 12 months, but there may be a symptom flare shortly after the implant (Ryuta et al. 2012; Talcott et al. 2003).

Ongoing follow-up at three monthly intervals with monitoring of the nature and severity of symptoms in the patient record will aid assessment. More frequent assessment may be required.

2 Vaginal Dryness

Itching, burning, irritation of genital skin, vaginal discharge, and pain may accompany this symptom. Associated urinary symptoms of frequency and urgency may also be present. Radiotherapy-related vaginal dryness may be associated with vaginal narrowing and shortening.

Atrophic vaginitis due to reduction in systemic estrogen may be physiological or treatment-related secondary to chemotherapy, endocrine therapy, or radiotherapy. Approximately 40% of women experience vaginal dryness following pelvic radiotherapy (mostly grade 1–2) (Kirchheiner et al. 2014).

Endocrine therapy such as tamoxifen or aromatase inhibitors may be associated with severe or very severe vaginal dryness in 48% of patients (Chin et al. 2009).

Pelvic, speculum, and vaginal examination will generally reveal dry, atrophic, and thinning vaginal mucosa with areas of inflammation. Petechial hemorrhages and contact bleeding may be
present. A thick white discharge may indicate yeast infection. A gray-yellow discharge is often present with bacterial vaginosis. Microscopy and culture of specimens will guide management.

Vaginal yeast infections should be treated with topical application of antifungal cream or antifungal tablets. Treatment of the gastrointestinal reservoir with single dose of oral fluconazole at the time of topical treatment will reduce the risk of recurrent candidiasis.

Bacterial vaginosis can be treated with antibiotics after collection of a high vaginal swab for culture and antibiotic sensitivity.

Treatment of non-infective vaginitis should start with water-based vaginal moisturizers or lubricants such as Replens or KY gel which are available “over the counter.” They may be effective in short-term relief of symptoms.

Hormonal treatment may be considered if there is no relief with the use of vaginal moisturizers and lubricants. Hormonal treatment may be given in the form of creams, pessaries, or tablets, applied directly into the vagina three to four times weekly.

In certain endocrine-responsive breast and endometrial cancers, hormonal replacement therapy is contraindicated. However, in a patient with severe vaginal dryness, the benefits of topical low-dose estrogen in alleviating symptoms adversely impacting on quality of life may outweigh the risks. Systemic absorption is low, but discussion with informed consent regarding possible low-dose absorption of estrogen which may potentially exacerbate or reactivate cancers is mandatory. In the palliative setting with limited life expectancy, quality of life considerations may override any potential exacerbation of hormone-responsive cancers.

4 Vaginal Bleeding

This may be normal physiological (menstrual) or pathological. Menstrual bleeding may be regular or irregular. Intermenstrual bleeding requires gynecological assessment as it may be secondary to gynecological pathology.

Benign causes include hormonal or hematologic abnormalities, benign tumors such as polyp or fibroids, local trauma, pregnancy-related bleeding, or medications (e.g., warfarin). The presence of foreign bodies should be excluded. In the setting of malignancy, common causes are primary or recurrent carcinoma of the uterus, cervix, or vagina, local invasion from a pelvic malignancy such as colorectal cancer, metastases from other sites, or treatment-related bleeding (primarily from surgery or radiotherapy).

History and examination, including examination under anesthetic, will usually confirm the diagnosis. An urgent gynecological review may be helpful.

Investigations include full blood count, coagulation profile, and directed biochemistry. Pelvic ultrasound should include transvaginal imaging for adequate resolution where possible. A CT and/or MRI can clarify the diagnosis. Histology from an appropriate biopsy will assist in confirming the etiology.
In the presence of active hemorrhage, the patient may need urgent support with intravenous fluids and transfusion if anemic. The underlying cause should be treated. In the case of heavy bleeding, tranexamic acid (1 g tds, oral or intravenous) may be used. Vaginal packing can temporarily slow vaginal or cervical bleeding. After insertion of a urethral catheter, a speculum is passed and the vagina packed with wide ribbon gauze coated with antibacterial cream. The packing should be removed after 24 h due to the risk of infection. For malignancy, radiotherapy should be started as soon as possible and is effective in reducing bleeding due to cancer (Kim et al. 2013). Treatment may be given with relatively low risks of toxicity using 3D CRT, IMRT, or brachytherapy. Depending on the prognosis of the patient, a “standard” fractionation regime or a hypofractionated regime may be used.

6 Pelvic Pain

Pelvic pain is a common symptom in patients with malignancy and in otherwise well patients (see Chapter X). In the acute situation, narcotic and nonnarcotic pain relief may be required until other measures can relieve the pain.

For acute pelvic pain in the setting of malignancy (primary or metastatic), radiotherapy is an effective treatment (Kim et al. 2013). As radiotherapy may take 1–2 weeks to improve pain, medical management of pain with analgesics will usually be required. Modern radiotherapy techniques (3D CRT, IMRT) are effective in relieving pain due to bone metastases (with overall RR of 58–91% with short-course radiotherapy) with acceptable toxicity (Chow et al. 2007; Caravatta et al. 2012).

7 Urinary Problems

Urinary frequency and urgency may be distressing for patients who may be coping with other symptoms related to their condition such as pain and nausea. Irritating urinary symptoms may cause sleep disturbances and depression in addition to their effect on the patient’s quality of life (see chapter on “Sleep Difficulties”). Severe incontinence and problems such as vesicovaginal fistula may result in total social isolation.

8 Dysuria

Dysuria may occur due to nonmalignant causes such as urinary tract infection, inflammation or trauma or malignant causes such as tumor invasion of the urinary tract or its nerve supply or from pressure effects from extrinsic bladder compression. Bladder outlet obstruction may be secondary to tumor infiltration or to inflammatory or fibrotic sequelae of treatment.

Exposure of inflamed or irritated skin to urine in the perineal region (e.g., from radiotherapy or infection) can cause dysuria. It is important to identify the cause of the symptoms to deliver appropriate management (Table 1).
Combined treatment modalities, such as surgery and radiotherapy, may increase the risks of urinary complications (Erekson et al. 2009). Partial cystectomy may be required during surgical treatment and the residual bladder capacity further compromised by subsequent radiotherapy or chemotherapy (especially cyclophosphamide).

### Urinary Tract Infections/Urinary Frequency

Urinary tract infections should be treated on the basis of antibiotic sensitivities. Long-term urinary catheters should be changed every 3–6 months during treatment. Urinary alkaliniizers may improve urgency symptoms. In patients with recurrent urinary tract infections, prophylactic low-dose antibiotics or antibacterial agents such as hexamine hippurate (Hiprex) may be useful.

Management of fluid intake, including avoidance of caffeine, diuretics, and fluids in the evening, should be advised. Bladder training and pelvic floor exercises should be recommended.

Botulinum toxin type A (Botox) injections may be useful in overactive bladder causing urinary frequency, urgency, and urge incontinence. In rare circumstances, nerve stimulation devices implanted under the skin may be required.

Ring pessaries may be used for uterovaginal prolapse. Topical estrogen and vaginal moisturizers such as Replens are indicated for urogenital atrophy. As above, consideration of potential systemic absorption of estrogen may need to be balanced against the patient’s quality of life in the patient with endocrine-responsive cancer.

Anticholinergics together with urinary alkaliniizers may help relieve symptoms of dysuria. Surgery for stress incontinence should be considered very carefully, particularly in the

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**Table 1** Urinary problems in palliative care

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Potential cause</th>
<th>Investigation</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysuria</td>
<td>Infection (UTI)</td>
<td>MSSU</td>
<td>Change catheter if present Antibiotics as per sensitivities</td>
</tr>
<tr>
<td></td>
<td>Inflammation</td>
<td></td>
<td>Urinary alkaliniizer</td>
</tr>
<tr>
<td>Urinary urgency</td>
<td>Bladder instability</td>
<td>Urodynamics</td>
<td>Behavioral modification, antimuscarinic drugs, botulinum toxin, neurostimulatory devices</td>
</tr>
<tr>
<td>UTI</td>
<td>Bladder instability</td>
<td>MSSU</td>
<td>Antibiotics</td>
</tr>
<tr>
<td>Bladder inflammation</td>
<td>Bladder diary</td>
<td></td>
<td>Bladder training</td>
</tr>
<tr>
<td>(post RT)</td>
<td>Bladder contracture/partial cystectomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nocturia</td>
<td>Nocturnal fluid intake</td>
<td>Fluid diary</td>
<td>Restrict fluids after 1700</td>
</tr>
<tr>
<td>Bladder instability</td>
<td>Urodynamics</td>
<td></td>
<td>As per urinary urgency</td>
</tr>
<tr>
<td>Continuous urine</td>
<td>Vesicovaginal fistula</td>
<td>Cystogram</td>
<td>IDC/SPC</td>
</tr>
<tr>
<td>loss per vagina</td>
<td>Ureretovaginal fistula</td>
<td>CT intravenous</td>
<td>Cystoscopy and trial of ureteric stent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pyelogram</td>
<td>Reimplantation of ureter if feasible</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>Dystonic bladder</td>
<td>Ultrasound for</td>
<td>IDC or intermittent self-catheterization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>residual volumes</td>
<td></td>
</tr>
<tr>
<td>Outlet obstruction</td>
<td>Examination +/− cystoscopy</td>
<td></td>
<td>Self-catheterization or IDC/SPC</td>
</tr>
<tr>
<td>Neurogenic bladder</td>
<td>US for pre-voiding and residual volumes</td>
<td></td>
<td>Trial of oxybutynin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDC or self-catheterization</td>
</tr>
</tbody>
</table>

post-radiotherapy pelvis. Urodynamic pressure/flow profiling prior to any surgical intervention is mandatory.

10 Urinary Incontinence

Urinary Incontinence is the involuntary leakage of urine. Urinary incontinence reduces mental and physical quality of life with attendant anxiety, reduced sense of well-being, self-esteem, ability to socialize, sleep disturbances, falls, and skin breakdown (Avery et al. 2013; Smith 2016) as well as impacting on caregivers. Urinary incontinence is more common in women (23–55%) (Botlero et al. 2009; Hunskaar et al. 2004), with increasing frequency with age, and may be temporary or chronic.

Stress incontinence is provoked by increased abdominal pressure (coughing, exertion etc.), while urge incontinence is caused by bladder instability and is marked by involuntary loss of urine after a sudden and strong urge to void. Patients may have mixed urge and stress incontinence. Overflow incontinence occurs when the bladder becomes overfull due to outlet obstruction, poor bladder tone, medication or neurological issues.

Causes of incontinence may be multifactorial, and genetic factors may increase the susceptibility to incontinence (Richter et al. 2015; Campeau et al. 2011) (Table 2).

A careful clinical history is required. A medication list may also aid the diagnosis. A physical assessment including mental status, mobility, obesity, abdominal, pelvic, perineal, and neurological examination will aid treatment. Lower limb edema suggests a component of cardiac failure. Pelvic examination may reveal a palpable bladder, uterovaginal prolapse, pelvic masses, and poor pelvic floor muscle tone. Rectal examination, including prostate examination in a male, can also assist in evaluating pelvic pathology including loss of anal sphincter tone with neurologic pathology. Examination should include urinalysis and measurement of post voiding residual bladder volumes, either with a catheter and measuring device or by ultrasound. Semiautomatic devices may give an inaccurate measurement of residual volumes in the context of obesity and where other pelvic pathology is present.

Incontinence may be exacerbated by extrinsic compression of the bladder, intravesical tumor, or tumor involvement of autonomic and/or somatic innervation of the bladder. The presence of a ureterovaginal or vesicovaginal fistula may be interpreted by the patient as incontinence but is intractable to conventional management. A careful history will usually provide a tentative diagnosis of fistula, and this can be confirmed with a careful speculum and/or imaging with a CT IVP or cystogram.

In women with urinary incontinence, treatment will depend on the underlying etiology. In stress incontinence (triggered by increased intra-abdominal pressure due to coughing, sneezing, Valsalva maneuver, etc.), pelvic floor muscle training may improve continence (Dumoulin and Hay-Smith 2014). Bladder training and/or anticholinergic agents may also help urge incontinence.

Urodynamic studies (bladder pressure profiles obtained during bladder filling) will demonstrate bladder irritability, which can be improved with muscarinic receptor antagonists. These studies require insertion of a urinary catheter for measurement of flow/pressure profiles and bladder

<table>
<thead>
<tr>
<th>Type</th>
<th>Cause</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>Urogenital atrophy</td>
<td>Vaginal estrogen</td>
</tr>
<tr>
<td></td>
<td>Urethral sphincter incompetence</td>
<td>Suburethral sling procedure Suburethral bulking agents</td>
</tr>
<tr>
<td></td>
<td>Excessive intra-abdominal pressure</td>
<td>Cough suppressants, avoid straining</td>
</tr>
<tr>
<td>Urge</td>
<td>Urinary tract infection</td>
<td>Antibiotics</td>
</tr>
<tr>
<td></td>
<td>Bladder instability</td>
<td>Oxybutynin</td>
</tr>
<tr>
<td>Overflow</td>
<td>Neurogenic</td>
<td>Intermittent self-catheterization SPC/IDC</td>
</tr>
<tr>
<td></td>
<td>Pharmacologic</td>
<td>Review medication</td>
</tr>
<tr>
<td></td>
<td>Outlet obstruction (e.g., stricture/ prostatic)</td>
<td>SPC/IDC Consider urethral dilatation</td>
</tr>
</tbody>
</table>
stability at different filling volumes. A Cochrane review showed that urodynamic studies changed clinical decision-making but may not lead to higher continence rates. It found that there was no statistical significant difference in continence rates between women receiving treatment guided by urodynamic studies compared with women assessed by history and clinical findings (Clement et al. 2013).

Cystoscopy/imaging may be indicated if the presence of a fistula is suspected.

Conservative treatment should be used before considering more invasive treatments. Absorbent incontinence pads may be sufficient for small volume incontinence. Behavioral therapy including timed voiding, modification of high fluid intake, and bladder training (delaying voiding to increase bladder capacity where small frequent voids have become established) may be helpful.

Pelvic floor muscle training requires prolonged effort with some benefit after some months of training. Physiotherapist-directed pelvic floor exercises can augment voluntary muscle control. Benefit is not sustained without continuing use. Topical vaginal estrogen may improve mucosal integrity in postmenopausal women with vulvovaginal atrophy.

Pharmacologic methods for bladder instability include anticholinergics which may be administered orally or transdermally. The lowest effective dose should be used, and full benefit may take 4 weeks to achieve. Troublesome side effects include dry mouth, impaired gastric emptying, and constipation. They should not be used in patients with a history of urinary retention or narrow-angle glaucoma.

Surgical options require careful assessment, taking the underlying pathophysiology, previous treatment including surgery and radiotherapy, and disease prognosis into account.

Botulinum toxin type A (Botox) injections can reduce bladder instability with improved continence rates. The duration of response is limited and repeated administration is necessary (Owen et al. 2016). Neuromodulation, in which leads from a nerve stimulation device are tunneled through the S3 foramen, has been shown to provide a 28–63% cure rate for urge incontinence (National Institute for Care and Excellence Guidelines 2013). Potential complications of this surgical procedure include pain, lead migration, and bowel dysfunction. Symptoms recur on stopping treatment.

In women, injection of silicone into the external urethral sphincter can augment continence. Suburethral sling procedures should be reserved for women with severe stress incontinence as recurrence rates are significant and their efficacy is limited in the postradiation pelvis (Tommaselli et al. 2015; Habashy et al. 2017).

More invasive surgical procedures such as augmentation cystoplasty or creation of a urinary diversion stoma should only be considered in very limited circumstances in the palliative care setting.

Severe intractable urinary incontinence may be sufficiently socially isolating that catheterization is warranted. Women may be taught to self-catheterize up to eight times per day. Silicone urethral catheters with collection bags strapped to the leg can be worn under clothing. These catheters should be changed every 3 months and the catheter bags changed at least weekly.

Where a urethral catheter is not feasible, a suprapubic catheter can be inserted into the bladder through the skin above the pubic symphysis. They are available with introducer kits and can be inserted into a full bladder with local anesthetic under aseptic conditions. Care is needed to ensure adequate bladder filling prior to insertion, and ultrasound may be used to guide placement.

Suprapubic catheters may cause less pain than urethral catheters, but care should be taken to avoid infection, hemorrhage, or bowel injury. The catheter will need to be changed at intervals, depending on the type of catheter. Patients with suprapublic catheters may still leak from the urethra. Bladder spasms can be an issue.

Bladder Spasms

Spasms occur when the bladder muscle (detrusor) contracts suddenly and severely, causing the patient to feel the urge to urinate. Severe bladder spasms may cause urinary incontinence by
forcing urine from the bladder. Bladder spasms may cause cramping pain which may be severe, and some patients experience a burning sensation.

Causes of bladder spasm include infection, indwelling catheters, previous bladder surgery or pelvic radiotherapy, and bladder cancer. Certain foods such as caffeine, alcohol, spicy foods, and preservatives can exacerbate this symptom. Neurological causes include multiple sclerosis, strokes, spinal cord injury, and degenerative neurological conditions.

Immediate relief of severe spasms can be achieved with hyoscine butylbromide injection 20 mg intramuscularly. Underlying causes should be addressed. Antibiotics should be given for UTI and anti-inflammatory agents for radiation-induced bladder spasms. Oral medications to reduce spasm include oxybutynin, tolterodine, solifenacin, and tricyclic antidepressants such as imipramine hydrochloride, alpha-blockers, terazosin, and doxazosin.

The patient should practice timed voiding (e.g., every 1.5–2 h) and avoid trigger foods or drinks. Pelvic floor exercises can be helpful as can regular analgesics.

Invasive techniques include the use of TENS devices which provide electrical stimulation through the skin. Injection of Botox into the bladder wall at cystoscopy may provide relief for 2–3 months. Patients then require a second injection which may be effective for 6 months (National Institute for Care and Excellence Guidelines 2013). Side effects include urinary retention requiring a catheter and increased frequency of urinary tract infections. Onset of relief takes approximately 1 week.

12 Macroscopic Hematuria

Hematuria may originate in the upper or lower urinary tract. Causes include urinary infections, urinary calculi, renal tract neoplasms, and surgical trauma (e.g., following instrumentation or injury to the renal tract). Infections require antibiotic use (usually oral) with change of catheter. Renal calculi may require lithotripsy or surgery. Posturgical hematuria will often settle with conservative management including use of a large three-way indwelling catheter with the capacity for bladder irrigation. Tranexamic acid (1 g tds orally or i.v. will usually reduce blood loss).

Hemorrhagic cystitis may follow chemotherapy (especially cyclophosphamide). Radiation may cause an acute cystitis with hematuria, urinary frequency, and bladder spasms. Late radiation cystitis may occur many years after radiotherapy and is related to the dose and volume of bladder irradiated. Anticoagulation may increase the risk of hematuria.

Gross hematuria is psychologically distressing for patients. Clot-induced acute urinary retention is an emergency and may require emergency department presentation for insertion of urinary catheter to relieve the obstruction and for bladder irrigation. Patients may require blood transfusion for anemia if there is significant blood loss.

Assessment should include a history and examination including vital signs, abdominal/pelvic masses, rectal/prostate examination in males, and gynecological examination in females. Suspected renal parenchyma disease should result in referral to a nephrologist or urologist. Urinary microscopy, culture, and cytology with a full blood count are mandatory. Urinary tract ultrasound and cystoscopy may be required. CT and MRI imaging should be performed with care due to potential toxicity of contrast agents.

Treatment should be directed to the underlying cause. Palliative radiotherapy for renal tract tumors is effective in achieving hemostasis in 75–80% of patients (Mohamed et al. 2015; Cameron et al. 2015). Gogna et al. reported on patients with locoregionally progressive hormone-refractory prostate cancer treated with palliative split-course radiotherapy (Gogna et al. 2012) with gross hematuria resolving in seven out of nine patients, five out of seven patients being able to have their urinary catheters removed, and four out of four patients had their ureteric stents removed. Tranexamic acid can reduce severe hematuria. Dose reduction is recommended in the presence of renal impairment. Tranexamic acid has been reported to cause ureteric obstruction due to clots where bleeding originates from the kidneys (Vujkovac 2006).
13 Urinary Retention

Inability to empty the bladder completely may be chronic or acute.

Acute urinary retention causes severe pain and is a medical emergency. Chronic urinary retention causes mild discomfort or pain, lower abdominal distension, difficulty initiating the flow of urine, weak urinary flow, and feeling of incomplete bladder emptying. Chronic unrelieved obstruction may cause distension of the urinary tract proximal to the site of obstruction with injury to the kidneys or bladder musculature and innervation. It may also predispose to urinary tract infections. Lower abdominal pain and distension may or may not be accompanied by a sensation of a need to urinate. Chronic urinary retention may result in constant discomfort, slow urinary flow, urinary frequency, and a sensation of incomplete bladder emptying.

Causes include tumor masses causing obstruction (e.g., prostatic hypertrophy or cancers of the prostate, cervix, vagina, or vulva cancers obstructing the urethra). Surgical denervation may occur during radical hysterectomy or prostatectomy.

On examination, the patient may be distressed and agitated. The bladder may be palpable superior to the pubic symphysis. Insertion of a catheter (urethral or suprapubic) will provide a measurement of the residual volume, a specimen for urinalysis, and relief of discomfort. Urinary tract ultrasound should not delay treatment of the symptomatic patient but can provide imaging of the upper renal tract after correction of the acute problem.

While acute urinary retention is most appropriately treated with a temporary catheter, chronic retention may require either a long-term urethral or suprapubic catheter or intermittent self-catheterization. The frequency of self-catheterization is determined by the degree of retention (residual volume after voiding) and will generally be one to six times per day. Residual volumes under 100 ml do not require self-catheterization.

14 Ureteric Obstruction

Obstruction may be unilateral or bilateral. Unilateral obstruction may lead to impairment of renal function or renal failure if bilateral obstruction is present.

Causes include extrinsic obstruction by tumor (e.g., prostate, cervix, ovarian, colon), nodal metastases, retroperitoneal fibrosis, and postsurgical or radiotherapy strictures.

Intrinsic obstruction may be due to tumor or calculi.

Unrelieved bilateral obstruction (or unilateral obstruction with impaired renal function of the contralateral kidney) may cause rapidly progressive renal failure, drowsiness, loss of consciousness, and death.

Patients with ureteric obstruction may be asymptomatic or may present with classical loin to groin pain. They may show signs of sepsis and renal impairment/renal failure. Symptoms include nausea and vomiting, poor urine output, and hematuria. Patients may develop dehydration due to nausea and vomiting.

Examination may reveal signs of dehydration and reduced consciousness. Abdominal examination will often reveal unilateral or bilateral renal angle tenderness. Ultrasound may confirm a dilated renal collecting system. A CT nephrogram will confirm the obstruction and the transition point.

Renal cortical thinning on CT imaging may reflect chronic obstruction. Creatinine levels should be checked prior to imaging as contrast is not usually used in the presence of raised creatinine to avoid worsening of renal function. In some circumstances, aggressive prehydration may reduce the potential for damage to renal parenchyma (Sadat 2014).

Management will depend on the underlying condition, treatment history, and the patient’s life expectancy. Electrolyte disturbances such as raised potassium may need to be treated urgently with resonium given orally or rectally. Fluid balance will require careful management. Antibiotics may be given for infection where appropriate. Analgesia may be prescribed for pain (care must be taken with nonsteroidal anti-inflammatory...
agents and dose adjustment of narcotic analgesia in the setting of impaired renal function/renal failure may be necessary).

Treatment to relieve obstruction should be carefully considered in the context of the patient’s prognosis. If the prognosis is poor and relieving the obstruction will not improve the patient’s quality of life, the option of not relieving the obstruction should be considered. This option should be discussed with the patient, together with a description of what the procedure for relieving obstruction involves, the potential toxicities, and complications weighed against the benefits that may be achieved by relieving the obstruction in the context of the patient’s remaining lifetime.

If the decision is made to relieve the obstruction, cystoscopy with insertion of a ureteric stent to relieve the blockage may provide short-term benefit. If a retrograde ureteric stent(s) cannot be passed, unilateral or bilateral percutaneous nephrostomy tubes may be inserted by an interventional radiologist to relieve obstruction until the underlying cause is treated. Antegrade stents may be passed percutaneously. Complications associated with percutaneous nephrostomies and those of stent placement include retroperitoneal hemorrhage, hydrothorax, pneumothorax, and intraperitoneal urinomas. Patients find percutaneous stents cumbersome to manage with the attendant skin irritation, urine leakage, and risk of dislodgement. Complications such as infection, irritation with urinary frequency, dysuria, hematuria, urinary incontinence, and pain may also occur. They may require repositioning and may migrate. Stents will require changing at 3–6 monthly intervals if left in situ.

Ureteric stenting is reasonable in newly diagnosed patients, in whom there is a reasonable likelihood of tumor regression with either radiotherapy, chemotherapy, or surgery. Targeted radiotherapy may be considered if there is an obstructing malignant lesion that can be identified. The use of image-guided radiotherapy and modern radiotherapy techniques enables accurate targeting of the obstructing lesion with less toxicity to surrounding normal tissues. As with ureteric stenting, patients need to be informed of the potential toxicities and the benefits of relieving the obstruction.

More invasive procedures such as urinary diversion have a limited role in the palliative setting, except in the occasional patient who would be anticipated to have a significant life expectancy with treatment of the underlying condition.

**15 Ureterovaginal Fistula and Vesicovaginal Fistula**

These are abnormal tracts between the ureter or bladder and the vagina, causing uncontrolled discharge of urine through the vagina. They may be associated with other symptoms such as pelvic pain, vaginal bleeding, and infection. Constant urine exposure to the skin may cause skin irritation. As the patient is incontinent, this is a cause of significant morbidity. As well as impacting on the patient’s emotional and psychological well-being, it may result in total social isolation.

Prolonged obstructed labor is the most common cause worldwide. Tumor-related causes include direct invasion of the urinary tract together with complications of surgery and/or pelvic irradiation. Patients with bladder invasion by tumor are more likely to develop a fistula following radiotherapy. Surgery-related fistulas usually present within 7–30 days postoperatively. Those related to radiotherapy (rare with modern radiotherapy techniques) are usually a late complication, occurring 30 days to 30 years posttreatment. These may be associated with other signs of radiation-induced injury such as bladder contracture or hematuria. The risk is increased with combined modality treatment (e.g., surgery and radiotherapy).

Careful speculum examination may reveal the site and nature of fistula, but it may be difficult to distinguish clinically between induration from radiotherapy or from tumor. Examination may also reveal a concomitant rectovaginal fistula or other fistulas. Indigo carmine dye given intravenously will appear in the vagina within 30 min if a fistula is present. It may require several tampons placed in the vagina to differentiate leakage per
urethra from a fistula. An MRI scan may show the site of the fistula and confirm the cause as tumor recurrence or treatment complication.

Urine should be collected for culture via a catheter and infection treated. Biopsy of the fistula tract may be performed to confirm malignancy. An intravenous urogram or retrograde pyelogram should be performed to assess the upper urinary tract before cystoscopy is performed to examine the urethra and bladder for a potential site and evaluate the condition of the bladder for possible surgical management.

Malignant fistulas are complex conditions which should be managed in the multidisciplinary setting within a specialized unit.

Radiotherapy to the pelvis to control the tumor may allow the bladder mucosa to heal. Continuous drainage of the bladder with an indwelling catheter will facilitate healing of the bladder musculature and mucosa. Where conservative management fails, urinary diversion may be considered depending on the prognosis. This is a major surgical procedure with considerable risk of morbidity.

Vesicovaginal fistulas secondary to surgical complication should initially be treated conservatively with placement of a urinary catheter for 7–30 days to allow healing of the fistula. Similarly, placement of a retrograde or antegrade ureteric stent or a temporary percutaneous nephrostomy will facilitate healing of a ureteric defect. A major ureteric leak into the abdomen may require placement of peritoneal drain under radiological guidance. A CT intravenous pyelogram (for ureteric defects) or cystogram (for bladder defects) prior to catheter removal will confirm integrity of the renal collecting system.

Minimally invasive surgical techniques may be appropriate for intraperitoneal bladder defects if conservative management has failed.

16 Rectovaginal Fistula

Rectovaginal fistula occurs when an abnormal tract develops between the rectum and vagina (Champagne and McGee 2010). This causes uncontrolled leakage of stool and gas into the vagina. Symptoms may also include purulent vaginal discharge and pain in the pelvic region. Because of the incontinence of stool and gas through the vagina, rectovaginal fistulas have a significant impact on the patient’s quality of life and socialization.

Malignant or nonmalignant fistulae are a major cause of morbidity, either as a result of malignancy or as a complication of treatment.

The history will suggest passage of flatus or feces per vaginam. A careful speculum examination may reveal the site of leakage. Vaginal and rectal examination may also reveal the site of the fistulous opening, but small defects may be difficult to locate, particularly in the presence of induration from radiotherapy or active malignancy. A flexible sigmoidoscopy or colonoscopy should be performed. Gastrografin CT scan may show the fistula and demonstrate the cause such as a tumor. MRI scans should be performed by a radiologist with expertise in pelvic imaging and may show linear gas tracking along the fistula.

The distance from the external anal sphincter, the current disease process, and prior treatment will dictate potential treatment. Fecal diversion with a laparoscopic end colostomy is relatively low-impact surgery in patients with a reasonable prospect of medium-term survival.

Resection of the area of affected rectum with stapled reanastomosis and a protective temporary ileostomy is a more invasive option and one reserved for patients with likely survival beyond the medium term. It requires careful discussion with the patient who may have unrealistic expectations of the physical impact of major surgery.

17 Conclusion and Summary

Genitourinary symptoms are common in palliative care and may significantly impact on patients’ quality of life. Careful assessment including history and directed investigation will usually provide a diagnosis. Decisions on treatment must be made in the context of the severity of the problem, medium- and long-term prognosis, and the wishes of the patient. While many treatment options are
available, good clinical judgment, multi-disciplinary care and patient input are imperative in the decision pathway toward relieving symptoms.

References


