

Surgery of the Urinary System

Kidney Surgery – nephrectomy, open / closed, partial / total

Pre-op: teaching- type of surgery, rationale, length, anesthesia, expectations; bowel prep; allow to communicate concerns/fears

Post-Op: depends on type, and extent; IV, catheter, drains, pulmonary toileting, pain medication

Nephrectomy

surgical removal of the kidney (whole or part)

Simple Nephrectomy – removes kidney but not the adrenal gland, surrounding fat or fascia

Radical Nephrectomy – kidney, adrenal gland, perirenal fat, upper ureteral and fascia

Laparoscopic Nephrectomy

Nephrolithotomy – removal of calculus through opening in parenchyma

Pyelolithotomy – removal of calculus through opening in renal pelvis

Pyeloplasty – repair renal pelvis

Nephrostomy – opening to provide temporary or permanent drainage; incision made into the pelvis to place a catheter to drain renal pelvis, catheter anchored with sutures, catheter exits through skin – flank

Percutaneous Nephrostomy – insertion of catheter through the skin into the renal pelvis; temporary or permanent urinary drainage

Percutaneous Nephrolithotomy – nephroscope through the skin into the kidney, instruments used to remove/break up stones (stone basket, stone grasper)

Post-op Care:

- Basic
- Emphasis on:
 - Prevention of hemorrhage – VS, monitor for restlessness, CBC, diaphoresis, drains catheters
 - Ventilation – location of incision (diaphragm), pain with breathing, pulmonary toileting, splint, ambulation, fluids, monitor temperature, IS
 - Adequate output – patency of tubes, strict I&O, encourage fluids, assess for hemorrhage
 - Prevention of complications: paralytic ileus, thrombophlebitis
 - Care of urinary drains and dressings: patency, UO qhr, never clamp nephrostomy tubes; notify MD if bright red bleeding noted, assess color and consistency of urine
 - Care of drsg: drainage, follow orders, note s/sx infection

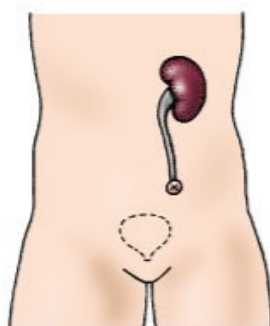
Urinary Diversion:

Indications for urinary diversion: invasive bladder tumor, pelvic malignancy, birth defects, strictures or trauma to ureters or urethra, neurogenic bladder, chronic infections

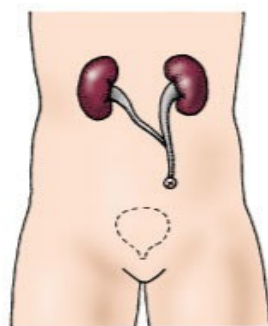
Preoperative care

- Body image
- Wound, Ostomy, & Continence Nurse
- Teach basic information
- Teach care of the urostomy – give reassurance initially nurse to care for, will teach patient and/or family how to care for it
- Physical preparation:
 - o Same as any other abd surgery
 - o Liquid diet; bowel prep
 - o Intestinal antibiotics – neomycin
 - o NPO after midnight
 - o Pre-op prep: labs, EKG
 - o Teach post-op expectations
- Stoma location: located before surgery (lying, sitting, and standing)
 - o Need smooth, even surface (pouch adhesion)
 - o Site free from scars, skin folds, bony prominences

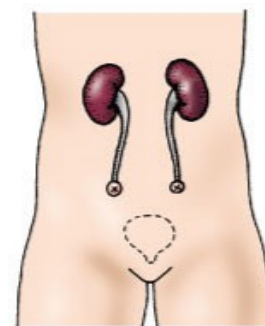
Ureterostomies divert urine directly to the skin surface through a ureteral skin opening (stoma). After ureterostomy, the client must wear a pouch.



Cutaneous ureterostomy

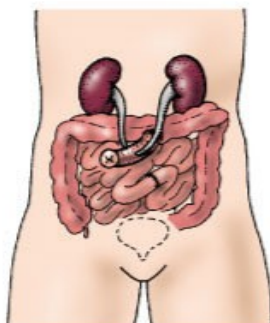


Cutaneous ureteroureterostomy

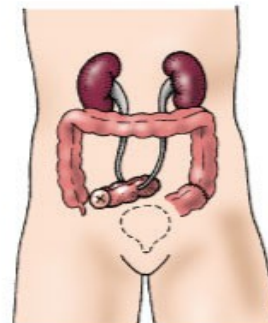


Bilateral cutaneous ureterostomy

Conduits collect urine in a portion of the intestine, which is then opened onto the skin surface as a stoma. After the creation of a conduit, the client must wear a pouch.

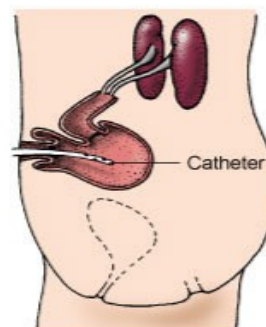


Ileal (Bricker's) conduit



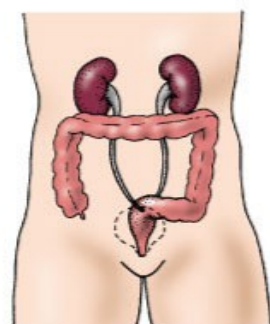
Colon conduit

Ileal reservoirs divert urine into a surgically created pouch, or pocket, that functions as a bladder. The stoma is continent, and the client removes urine by regular self-catheterization.

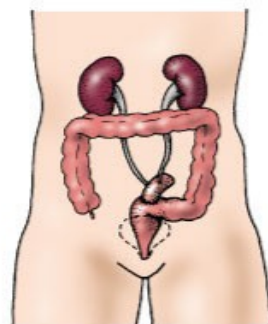


Continent internal ileal reservoir (Kock's pouch)

Sigmoidostomies divert urine to the large intestine, so no stoma is required. The client excretes urine with bowel movements, and bowel incontinence may result.



Ureterosigmoidostomy



Ureteroileosigmoidostomy

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Cutaneous Ureterostomy

One or Both Ureters; initially stoma's are pink but they will turn pale in several weeks

Complications: stoma stenosis, hydronephrosis, infection, renal damage, pyelonephritis (reflux from stoma to the kidney)

Ileal Conduit

- Ureters excised
- Transplanted into one end of a segment of the ileum that has been resected
- One end of the ileum sutured closed and the other end used to create a stoma
- Ileal segment = passageway

Continent Urostomy (Indiana Pouch, Kock Pouch, Mainz Pouch, Florida Pouch)

- Loops of intestine anastomosed together

- Ureters connected to the pouch above a valve
- Valve placed in intestinal segment leading to stoma – urine reservoir created.
- Stoma placed in lower abdomen; flush to skin
- Intermittent self-catheterization; q4-6 hrs

-Indiana Pouch:

Ileum and cecum
 Intermittent self-catheterization
 Scheduled to increase the time interval to allow the reservoir to increase in storage capacity
 STRICT schedule
 No external appliance

Stomas

- Stomas should be bright red in color
- Peristalsis
- Early complications:
 - o Anastomosis breakdown – in GI tract
 - o Leakage from anastomosis (ureteroileal or ureterosigmoid)
 - o Paralytic ileus
 - o Ureter obstruction
 - o Wound infection
 - o Stoma necrosis

Camey Procedure (Orthotopic Bladder Substitution)

- Only in men
- Ileal reservoir – like ileal conduit
- “new bladder”
- Bladder capacity 300-500 mL
- c/o vague abd discomfort with need to void
- Incontinence → possible
- Intermittent catheterization

Post-op care

- Assess
- Hemorrhage – s/sx, VS
- Catheter(s) – catheters or stents through stoma – 7-14 days; hydronephrosis
- Stoma – assess q 1 hr; swelling is normal and will decrease with time- 6-8 weeks; dusky cyanotic color = compromised blood supply
- I&O – hourly x 24 hrs; appliance attached to gravity drainage; edema of stoma or anastomosis site may affect adequate drainage

■ Urine – should be pink to amber; mucous shreds = normal; pus = abnormal; assess for s/sx infection; maintain closed drainage system; monitor BUN/Cr

■ Skin care – skin integrity; prevent leakage; transparent pouch

■ Body Systems – sore throat (ET tube); IVF; electrolyte imbalances; respiratory – post op ; dvt prophylaxis; keep NPO until BS return, may have an NGT; prevent wound complications

■ Pain Management – analgesics, rest periods, diversional activities

■ Patient/ Family Education

- Proper skin care, appliance
- Stoma assessment
- Appliance care – changing q 5-7 days; stoma ↓ in size up to 8 wks post op
- Teach when to notify MD
- Resources – wound care

External Collection Devices:

Pouches-

- Collects the urine and then has an outlet or valve at the bottom - q 3-4 hrs
- Basic types of pouches:
 - Permanent pouches- can be washed and reused- soap, water, and vinegar
 - Semi-disposable pouches- fit onto a permanent disk or face plate
 - 1 piece or 2 piece disposable pouches- discard after use
- Adhere to the body with some form of adhesive to form a watertight seal
- Proper cleansing is essential for odor control, general hygiene, and prevention of stomal complications
- Potential problems: uti; problems with stoma; bleeding; lacerations; crystal formation; stenosis; hernia; prolapse

Ileal conduit:

<https://www.youtube.com/watch?v=3xSI15hhmbI>

Neo-bladder:

<https://www.youtube.com/watch?v=uU3uI-bkbpQ>