What Necessitates Urinary Diversions?
- Invasive bladder cancer
- Hostile neurogenic bladder
- Interstitial or radiation cystitis
- Congenital abnormalities
- Intractable incontinence

Bladder Cancer Facts
- 6th most common cancer in U.S.
- New cases: 73,510
- Deaths: 14,880
- 3x more common in men

Cellular Classification
- Transitional cell arising from uroepithelium-90%
- Squamous cell-6-8%
- Adenocarcinoma-2%

History of Diversion Surgery
- 1851- Ureteroproctostomy (Simon)
- 1878- Ureterosigmoidostomy (Smith)
- 1950's- Ileal loop (Bricker)
- 1959- Ileal neobladder (Camay)
- 1970's to early 80's- Koch and Indiana
- Late 80's- Orthotopic diversion

Bladder Cancer Facts

National Cancer Institute, 2012

Cellular Classification

National Cancer Institute, 2012
What are the related risk factors?

Genetic/Molecular
- Gender
- Age
- Race
- Birth Defects

Other Related Risk Factors

Chemical/Environmental
- Arsenic in drinking water
- Nitrates/Nitrites
- Coal
- Aromatic Amines
- Cigarette smoke!
- Dyes
- Rubber

More Related Risk Factors

Chronic Irritation
- Chronic bladder infection
- Indwelling catheters
- Low fluid intake
- Pelvic radiation

Signs and Symptoms of BC
- Painless hematuria
- Frequency
- Urgency
- Irritative voiding
- Low back pain
- Tumors (70/30)

Research - Fluid intake

In a prospective study of 47,909 men over a twenty year period, a high intake of fluids was associated with a reduced risk of bladder cancer after control for potential risk factors.

<table>
<thead>
<tr>
<th>Total fluid intake</th>
<th># with bladder cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1290 ml</td>
<td>61</td>
</tr>
<tr>
<td>1290-1674 ml</td>
<td>54</td>
</tr>
<tr>
<td>1675-2050 ml</td>
<td>57</td>
</tr>
<tr>
<td>2051-2531 ml</td>
<td>47</td>
</tr>
<tr>
<td>&gt;2531 ml</td>
<td>33</td>
</tr>
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</table>

American Association for Cancer Research 2011
Urinary Diversion Options
- Urostomy (ileal conduit)
- Continent Cutaneous Urostomy
- Orthotopic Neobladder

Non-continent vs. Continent
- Non-continent
  - Ureterostomy
  - Ileal Conduit
- Continent
  - Indiana Pouch (continent cutaneous)
  - Orthotopic Neobladder

Surgical Selection Factors
- Availability of surgeon and O.R.
- Age of patient
- Comorbidities
- Renal function

Surgical Selection Factors
- Location of tumor
- Sphincter competence
- Hx of pelvic radiation
- Hx of bowel disease

Surgical Selection Factors
- Manual dexterity
- Mental status
- Weight
- Patient preference

Pre-Operative Teaching
- Understanding of procedure(s)
- Stoma site marking by WOC Nurse
- Pouching system or catheter care
- Pelvic muscle exercises
- Intimacy Issues
What is a Urostomy?

AKA...
• Ileal conduit
• Bricker diversion
• Turnbull loop

Pros
• Shorter surgery
• Lowest operative complications
• Less metabolic side effects

Cons
• Wear a pouch
• Higher rate kidney infections
• 19% chronic diarrhea
• Skin complications

Potential Problems
• Stomal complications
• Asymptomatic bacteriuria
• Progressive renal deterioration
• Stones are more common

Peristomal Skin Complications

Tricks of the Trade
• Change pouch 1st thing in morning
• Skin must be 100% dry
• Less is best!!
Post-Operative Teaching

**Incontinent Urostomy**
- Pouching system/night drainage
- Emptying pouch
- Skin care and crustling technique
- Fluid needs (8-10 cups/day)
- Signs and symptoms of UTI

**Pouching Considerations**
- Needs may change
- Convexity and belt if needed
- Leakage and odor is not acceptable

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**Prevalence of Continent Diversions**

- Duke: 60% ileal conduits, 40% internal continent pouches (2012)

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**Surgical Outcomes**

The Cochrane Library, 2009, Issue 1
- 25 studies 1966-2005
- 4 studies met criteria
- “This review did not find enough evidence to show which surgical options are the most effective.”

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**Quality of Life**

Krauchi et al. 2006
- No difference

Gray and Beitz 2005
- Continent diversions may provide a higher reported QOL

Gerharz et al. 2005
- No difference

Dutta et al. 2002
- Neobladder marginally better than urostomy
- Confounded by age

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**Cutaneous Continent Diversion**

AKA...
- Continent Urostomy
- Indiana Pouch

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Pre-Operative Teaching

• Intermittent catheterizations
• Irrigation technique
• Stoma site marking and care
• Need for drains
• Possibility of continence mechanism failure (pouch needed)

Continent Cutaneous Considerations

Pros

• Lowest kidney infection rate
• No pouch

Cons

• Highest re-operative rate
• Metabolic acidosis
• Relentless catheterizing

Early Post-op Care/Teaching: CCU

• Stabilization of tubes/drains
• Containment of stent drainage
• Use of leg bag/bedside drainage
• Catheter irrigation procedure
• Ambulation and fluids!
Catheter Irrigation

- Not a sterile procedure
- Instill 60 ml saline and pull fluid back
- Repeat until clear of mucus plugs
- Irrigate q 8-12hr or as ordered
- Wash and reuse supplies

“D” day MUSTS!

- Fluid intake (2L)
- S/S of UTI
- Preparation of pouch activation
- Supplies for home

Saline for use at home

- One-gallon bottle of distilled water
- 8 measured teaspoons of salt
- Keep saline in the refrigerator
- Bring to room temp before use
- Discard after one month

Pouchogram: CCU

Activation Teaching: CCU

- Scheduled intermittent catheterizations
- Catheter care and purchasing
- Options for covering stoma to protect clothing
**Activation Teaching: CCU**
- Need for Medic Alert Identification
- S/S of pouchitis and UTI
- On-going support of family and WOC Nurse

**Post-Activation Catheterization Schedule**

<table>
<thead>
<tr>
<th>Daytime</th>
<th>Nighttime</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td><strong>Week 5</strong></td>
</tr>
<tr>
<td>Every 2 hours</td>
<td>Every 5-6 hours</td>
</tr>
<tr>
<td>Every 3 hours</td>
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</tr>
<tr>
<td>Every 4 hours</td>
<td>Every 5 hours</td>
</tr>
<tr>
<td>Every 5 hours</td>
<td>Every 6 hours</td>
</tr>
<tr>
<td><strong>Week 2</strong></td>
<td><strong>Week 6</strong></td>
</tr>
<tr>
<td>Every 3 hours</td>
<td>None</td>
</tr>
<tr>
<td>Every 4 hours</td>
<td>Every 5 hours</td>
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<tr>
<td>Every 5 hours</td>
<td>Every 6 hours</td>
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<tr>
<td><strong>Week 3</strong></td>
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<tr>
<td>Every 5 hours</td>
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</tr>
<tr>
<td>Every 6 hours</td>
<td>Every 5 hours</td>
</tr>
<tr>
<td>Every 7 hours</td>
<td>None</td>
</tr>
<tr>
<td><strong>Week 5</strong></td>
<td><strong>Week 9</strong></td>
</tr>
<tr>
<td>Every 6 hours</td>
<td>None</td>
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<tr>
<td>Every 7 hours</td>
<td>Every 5 hours</td>
</tr>
<tr>
<td>Every 8 hours</td>
<td>None</td>
</tr>
</tbody>
</table>

**Continent Cutaneous Pouch Care**

- **Catheterize**
  - 12-16Fr coude catheter
  - Q2hr during day and q3hr at night
  - Ultimately Q4-6hr day, Q8hr night
  - Measure and record output

**Continent Cutaneous Pouch Care**

- **Irrigate**
  - 60 ml saline if needed to remove mucous from pouch
  - Daily and prn

**Orthotopic Neobladder**

- Ileal pouch in native anatomical location
- AKA...
  - Studer diversion
Pre-Op Teaching

- Stoma site marking and care
- Intermittent self catheterizations
- Need for drains
- Possibility of incontinent stoma based on intraoperative findings

Orthotopic Neobladder

Pros
- Cosmesis
- No stoma
- Independently void
- Cost effective

Cons
- Delayed continence
- Urinary retention
- Metabolic acidosis
- Catheterize

Early Post-op Care/Teaching: NB

- Tube stabilization
- Catheter irrigation procedure
- Use of leg bag/bedside drainage
- Ambulation and fluid needs

“D” Day MUSTS!

- Fluid intake (2L)
- S/S of UTI/ pouchitis
- Preparation of pouch activation
- Supplies for home

Orthotopic Neobladder Pouchogram
Activation Teaching: NB

- Catheterization schedule to check PVR (goal < 100 ml)
- Irrigation of pouch
- Voiding on a schedule
- Kegel exercises
- S/S of UTI/pouchitis

Pouchitis

Symptoms:
- Fever
- Bacteriuria
- Pouch pain

Prevention:
- Irrigation
- Fluid intake

Treatment:
- Antibiotics (Flagyl)

Activation Teaching: NB

Voiding

- Q2hr day and Q3hr at night
- Ultimately Q 4hr day & Q 8hr night
- Valsalva, Credè method, sit on toilet
- Measure and record output

Crede Maneuver

Activation Teaching: NB

Catheterization
- 12-16Fr coude catheter
- Post-void residuals

Irrigation
- 60 ml saline if needed to remove mucus from pouch.
- Frequency varies

Early Incontinence is Normal and Expected

- Management
- Introduce products available
  - www.hdis.com
  - www.humanicare.com
- Local medical suppliers
Pelvic floor muscle (Kegel) exercises

**Instruction**
- Do exercises 3 times a day
- Work up to 20 repetitions each exercise period
- Start by doing exercises lying down

Kegel Exercise Instruction
- To begin squeeze 1 second, relax for 5 seconds. Do this 10 times
- Squeeze for 5 seconds and relax for 10 seconds. Do this 10 times
- In 2 wks increase the squeeze from 5 to 8 seconds. Repeat 20 times
- In 2 weeks squeeze for 10 seconds

Tomaselli and McGirn, 2004

Sexual Dysfunction Issues
- Incidence is high with cystectomy surgery
- Erectile dysfunction and dyspareunia may occur after any radical perineal surgery
- Patient/partner may need counseling

Kegel Exercise Instruction
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Tomaselli and McGirn, 2004

Psychological issues
- Change in body image
- Grief over loss of body functions
- Cancer survivorship
- Depression

Bladder Diary

<table>
<thead>
<tr>
<th>Time</th>
<th>Voided</th>
<th>Adverse effects</th>
<th>Urinary frequency</th>
<th>Sphincter tone</th>
<th>Leakage</th>
<th>Bladder capacity</th>
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References
References


Kikuchi E et al. Assessment of Long-Term Quality of Life Using the FACT-BL Questionnaire in Patients with an IC, CR, or ON. JJCO 2006; 36(1):712-716

References

Patient Resources

http://www.uoaa.org/ostomy_info/
http://www.uoaa.org/ostomy_info/
http://bcan.org
http://www.wocn.org
http://www.ostomysecrets.com
http://www.options-ostomy.com
http://www.trianglebcs.org