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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

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



National Cancer Institute, 201

Cellular Classification

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



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.

> American Association for Canœr Research 2011

Research - Fluid intake

Total fluid intake	# with bladder cancer		
<1290 ml	61		
1290-1674 ml	54		
1675-2050 ml	57		
2051-2531 ml	47		
>2531ml	33		

American Association for Canœr 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





All Things Considered? Pros Pros



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 crusting 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



Prevalence of Continent Diversions

	No. of Cystectomies	Period	Neobladder	Continent Cutaneous Pouch	Conduit
Ann Arbor, MI	643	02/1995-09/2004	45.1%	1.4%	53.5%
Bern	327	01/1999-09/2004	54.0%	3.0%	37.0%
Dallas, TX	228	01/1999-09/2004	30.0%	6.0%	64.0%
Kobe, Japan	87	02/1989-09/2004	46.0%	2.3%	10.3%
Los Angeles	1359	08/1971-12/2001	51.6%	25.8%	22.3%
Lund, Sweden	119	01/2000-09/2004	28.6%	31.1%	40.3%
Mansoura, Egypt	3157	01/1980-01/2004	39.1%	3.5%	34.4%
Ulm, Germany	1209	01/1986-09/2004	66.2%	0.5%	22.6%
Total	7129		46.9%	7.6%	32.7%

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

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."

Quality of Life

Kikuchi et al. 2006

- No difference
- Gray and Beitz 2005
- Continent diversions <u>may</u> provide a higher reported QOL

Gerharz et al. 2005

No difference

Dutta et al. 2002

- Neobladder <u>marginally better</u> than urostomy
- Confounded by age

Cutaneous Continent Diversion

AKA...

- Continent Urostomy
- Indiana Pouch





Pre-Operative Teaching

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

Continent Cutaneous Considerations







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 <u>distilled</u> 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

Daytime	Nighttime	
Week 1 Every 2 hours	Every 3 hours	
Week 2 Every 3 hours	Every 4 hours	
Week 3 Every 4 hours	Every 5 hours	
Week 4 Every 5 hours	Every 6 hours	
Week 5 Every 5-6 hours	None	

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



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

Treatment:

Antibiotics (Flagyl)

Prevention: Irrigation Fluid intake



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
- <u>www.hdis.com</u>
- <u>www.humanicare.com</u>
- 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 McGinnis, 2004

Orthotopic Neobladder Voiding Diary

Bladder Diary



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

Psychological issues

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



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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