



Bladder Cancer Advocacy Network

Surgical Management of Invasive Bladder Cancer

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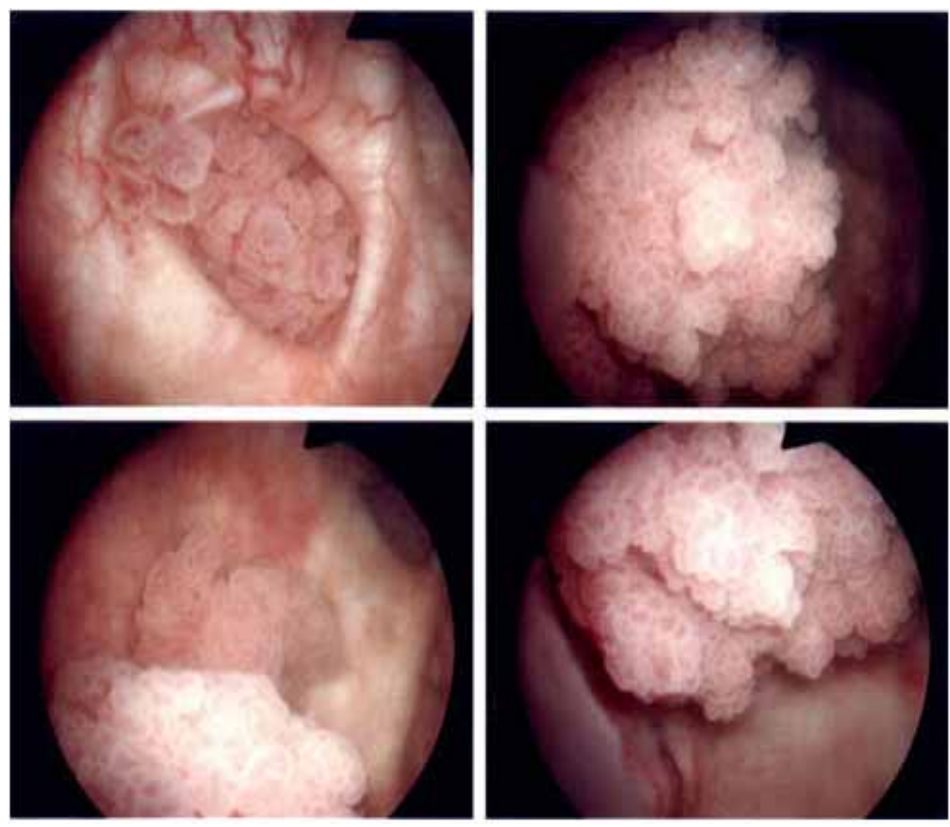
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October 13, 2007

Invasive Bladder Cancer



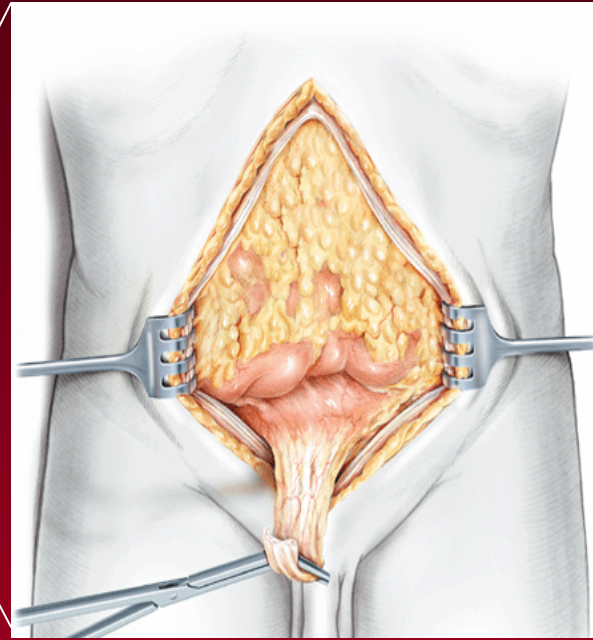
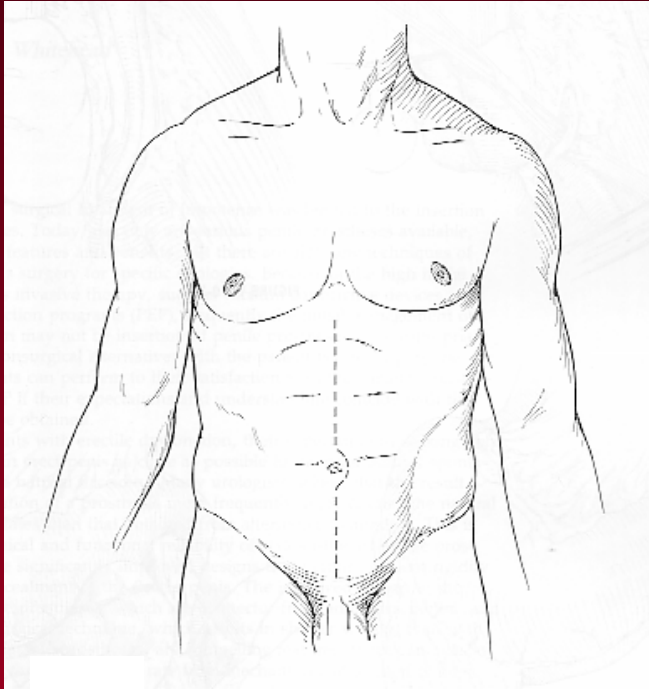
Cystoscopic view of papillary bladder cancer

- **Lethal disease if not treated appropriately**
- **Surgery remains the cornerstone of therapy**

Surgery for Bladder Cancer

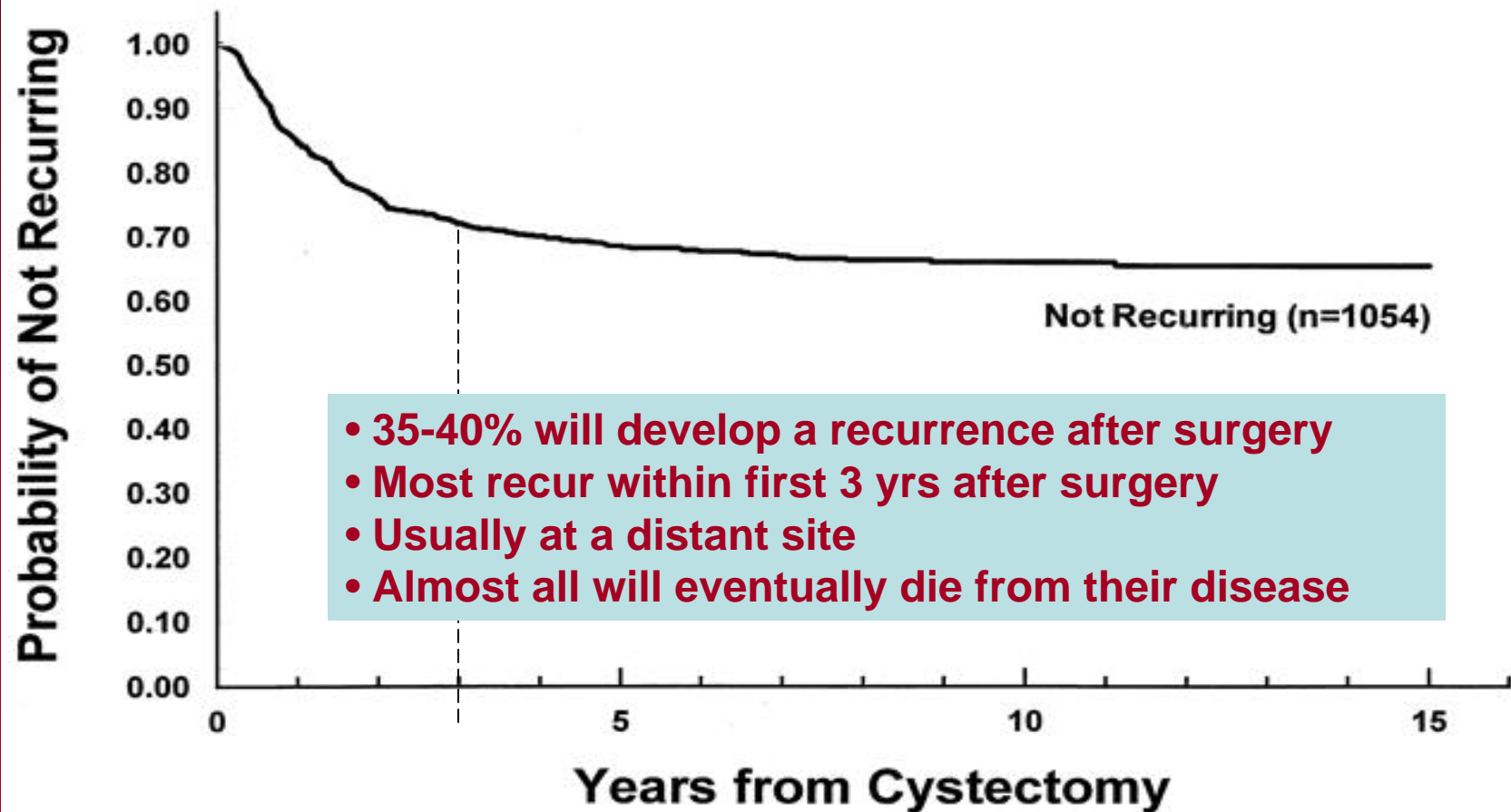
- **Radical Cystectomy**
 - Removal of bladder with surrounding fat
 - Prostate/seminal vesicles (males)
 - Uterus/fallopian tubes/ovaries/cervix (females)
 - \pm Urethrectomy
- **Pelvic Lymphadenectomy**
 - More is better
- **Urinary Diversion**
 - Ileal conduit
 - Continent cutaneous reservoir
 - Orthotopic neobladder

Radical Cystectomy

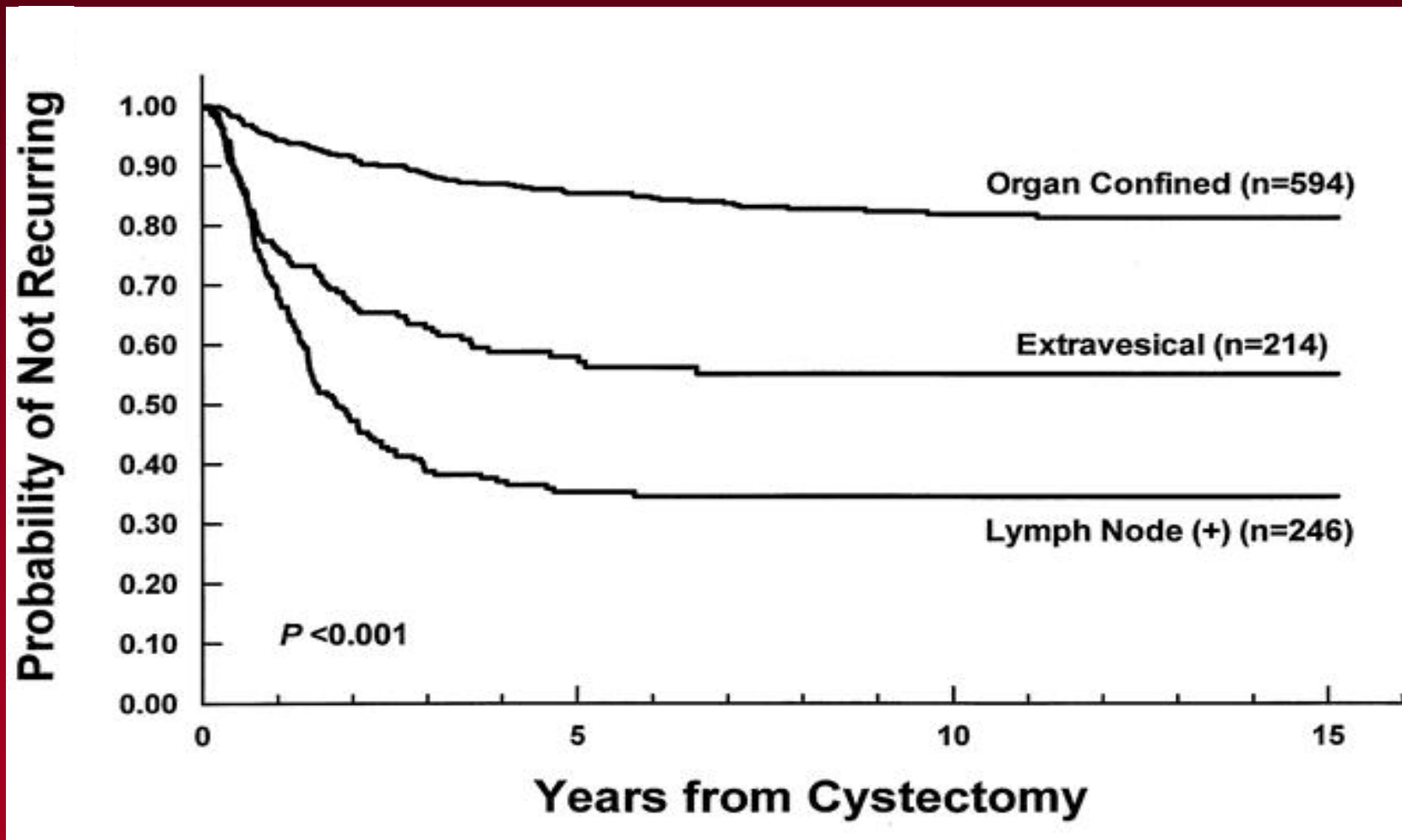


- **Midline incision**
- **Thorough intraabdominal exploration (rule out metastatic disease)**
- **Assess resectability of bladder**

Radical Cystectomy OUTCOMES



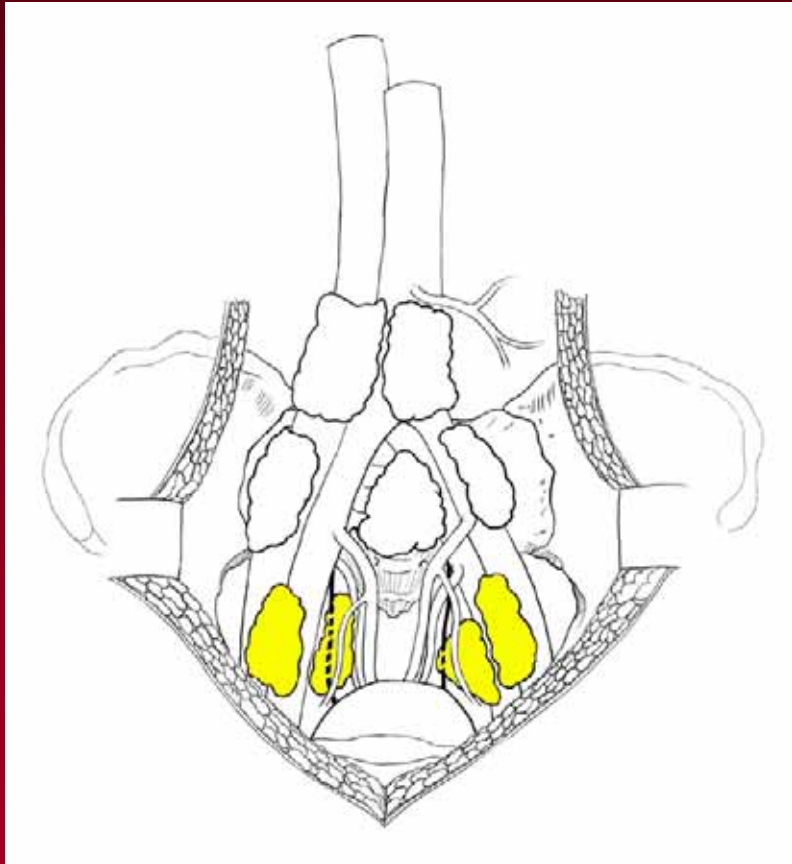
Radical Cystectomy OUTCOMES



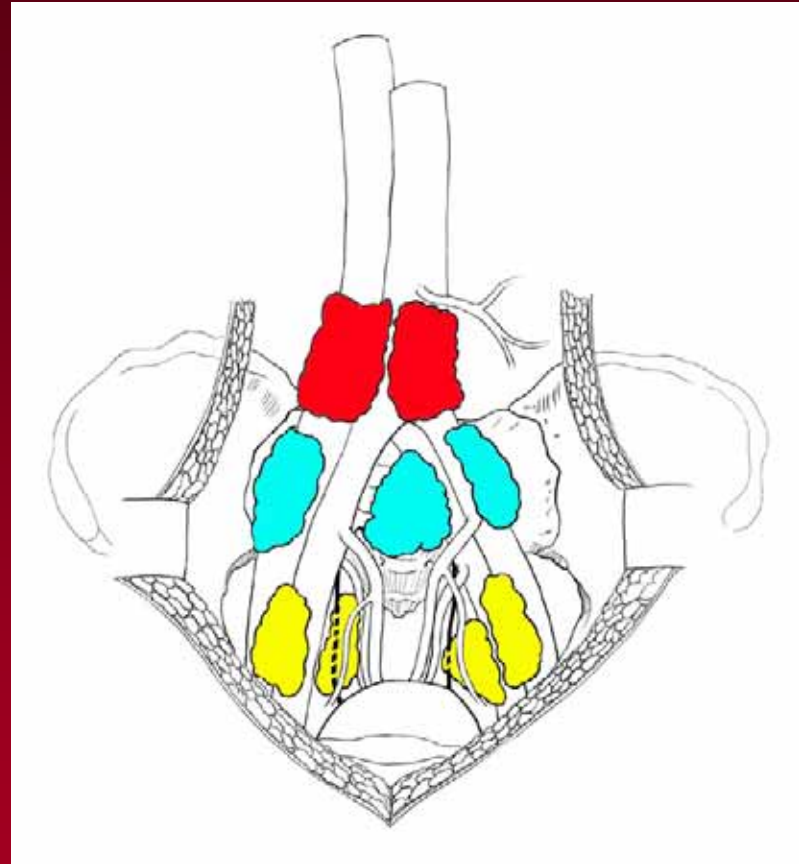
Pelvic Lymphadenectomy

- ~25% have LN involvement at cystectomy
- **Accurate staging**
 - Assessment of prognosis
 - Adjuvant therapies (chemotherapy, clinical trials)
- **Therapeutic benefit**
 - Removal of micrometastatic disease

Pelvic Lymphadenectomy

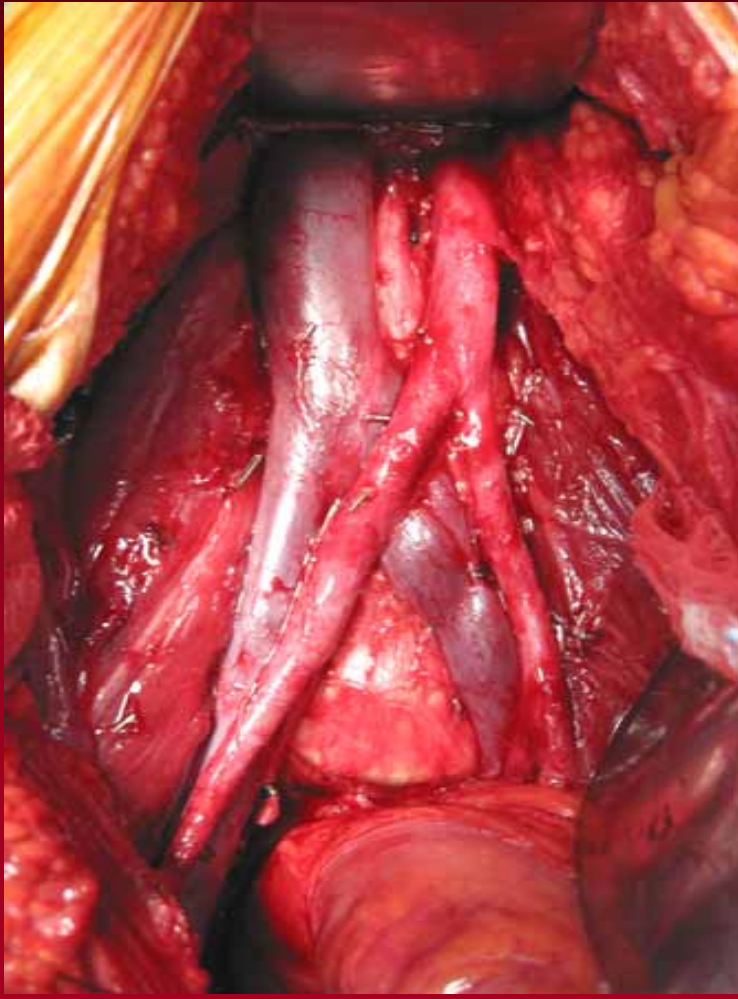


Standard LND

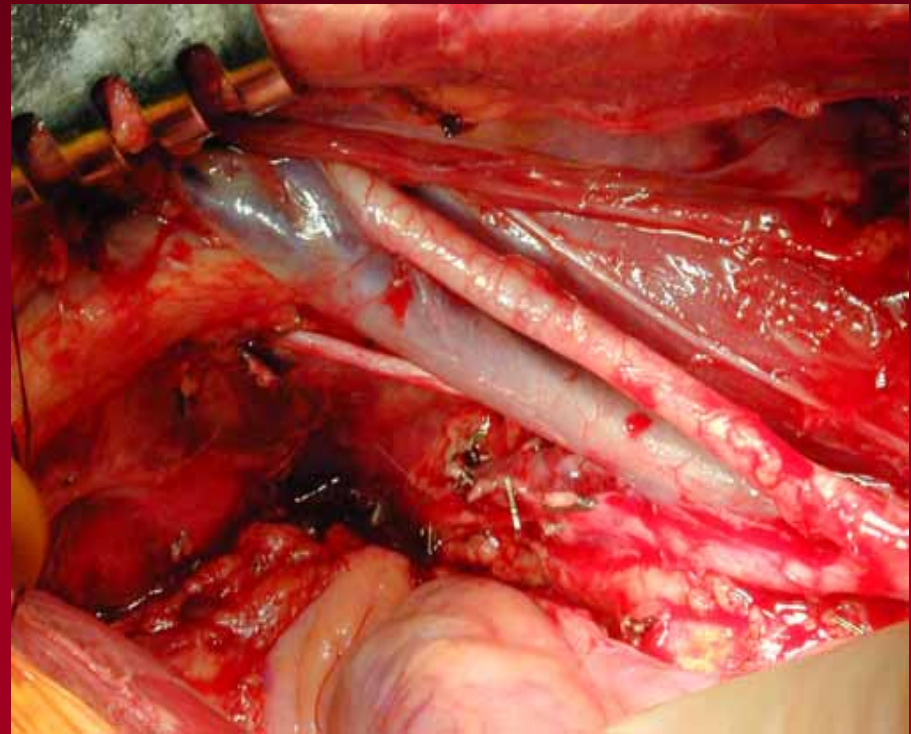


Extended LND

Pelvic Lymphadenectomy

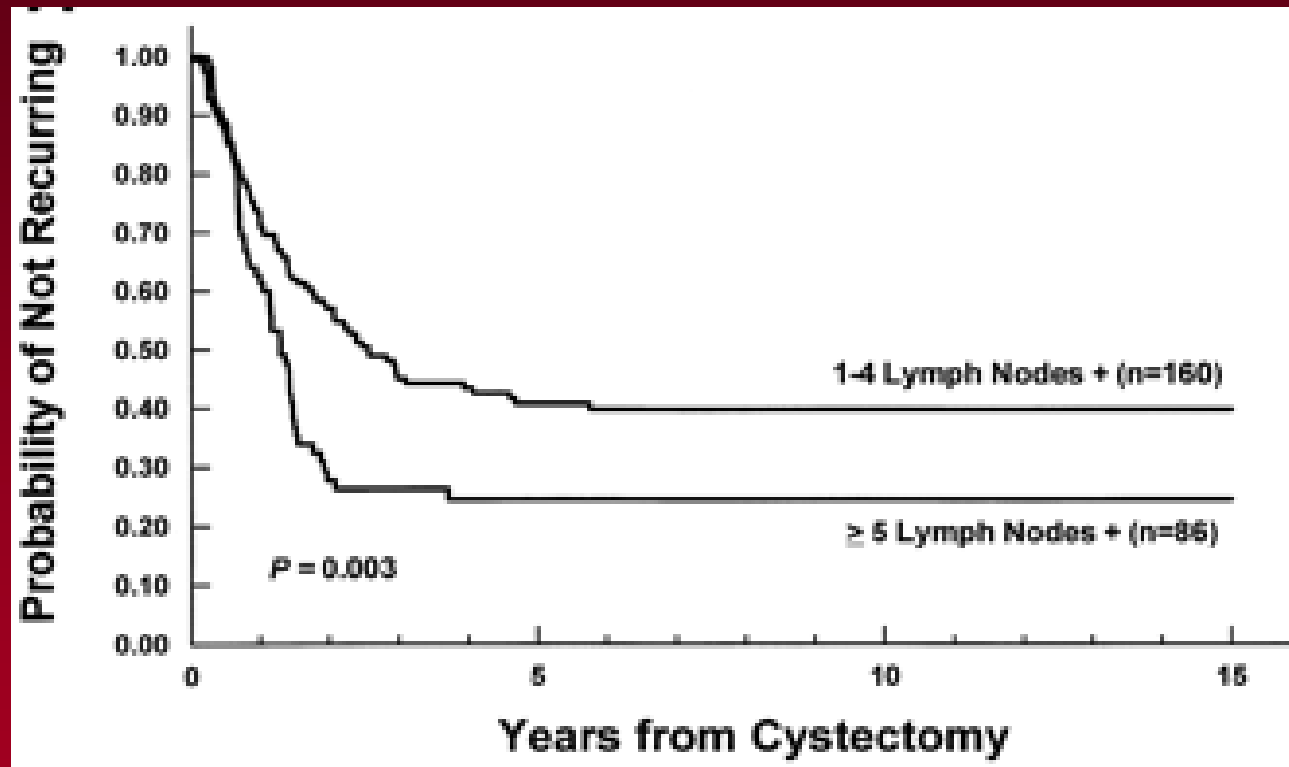


Extended Lymph Node Dissection



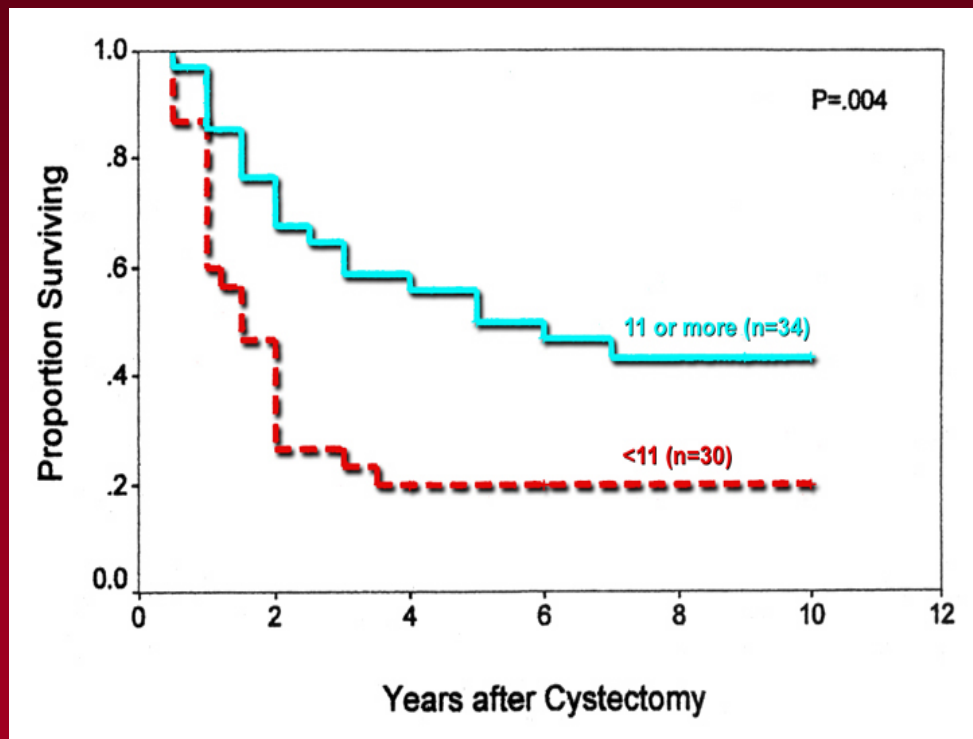
Standard Lymph Node Dissection

Pelvic Lymphadenectomy PROGNOSTIC FACTORS



Pelvic Lymphadenectomy

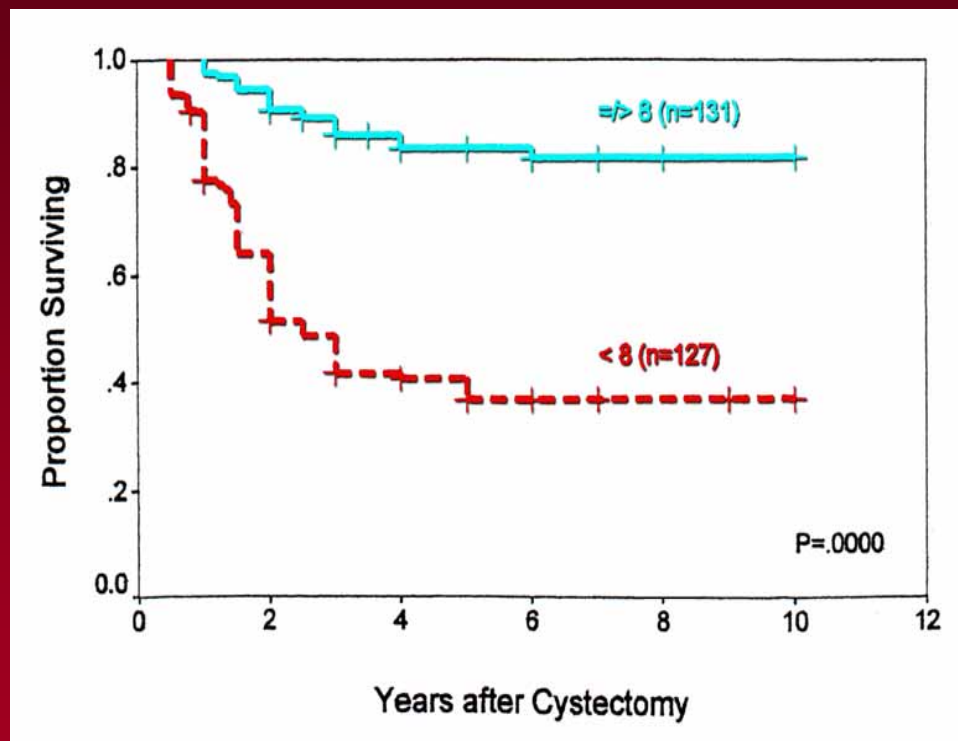
BENEFIT FOR NODE POSITIVE DISEASE



- Removing more lymph nodes may improve survival
- Possibly curative for those with low volume nodal involvement
- Better local control
 - Less positive margins
 - Lower pelvic recurrence

Pelvic Lymphadenectomy

BENEFIT FOR NODE NEGATIVE DISEASE

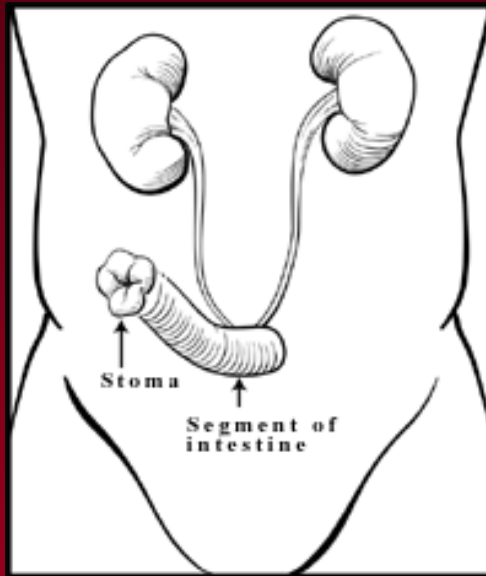


- Removing more lymph nodes may improve survival
- Even if no apparent involvement
- Removal of micrometastases

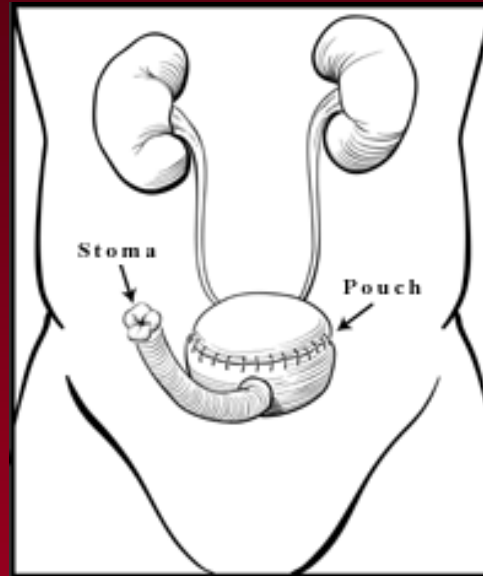
Urinary Diversion

- Use of **intestinal segment** to bypass/ reconstruct/ replace the normal urinary tract
- **Goals:**
 - Storage of urine without absorption
 - Maintain low pressure even at high volumes to allow unobstructed flow of urine from kidneys
 - Prevent reflux of urine back to the kidneys
 - Socially-acceptable continence
 - Empties completely
- “Ideal” diversion has yet to be discovered

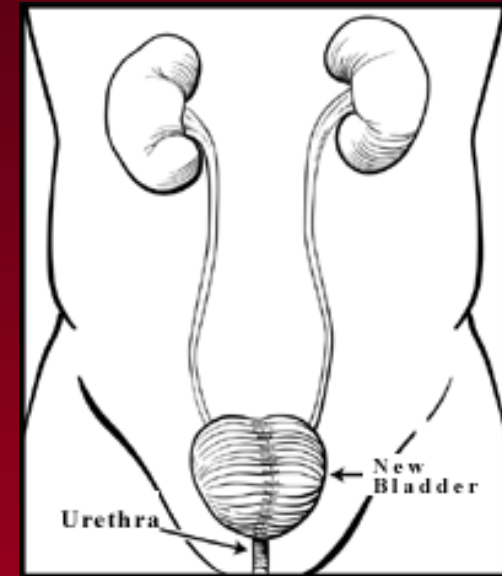
Types of Urinary Diversion



ILEAL CONDUIT
(incontinent
diversion to skin)



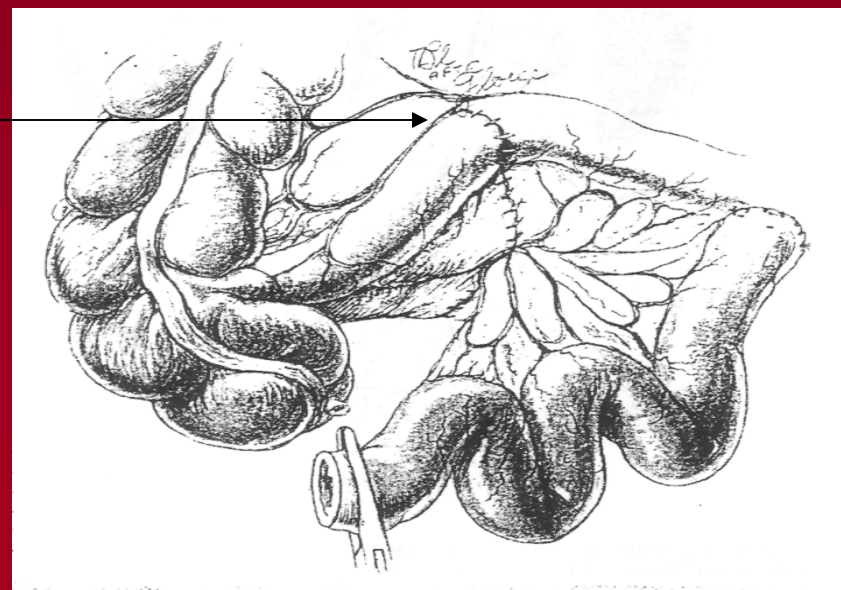
**CONTINENT
CUTANEOUS
RESERVOIR**
(continent diversion
to skin)



**ORTHOTOPIC
NEOBLADDER**
(continent diversion
to urethra)

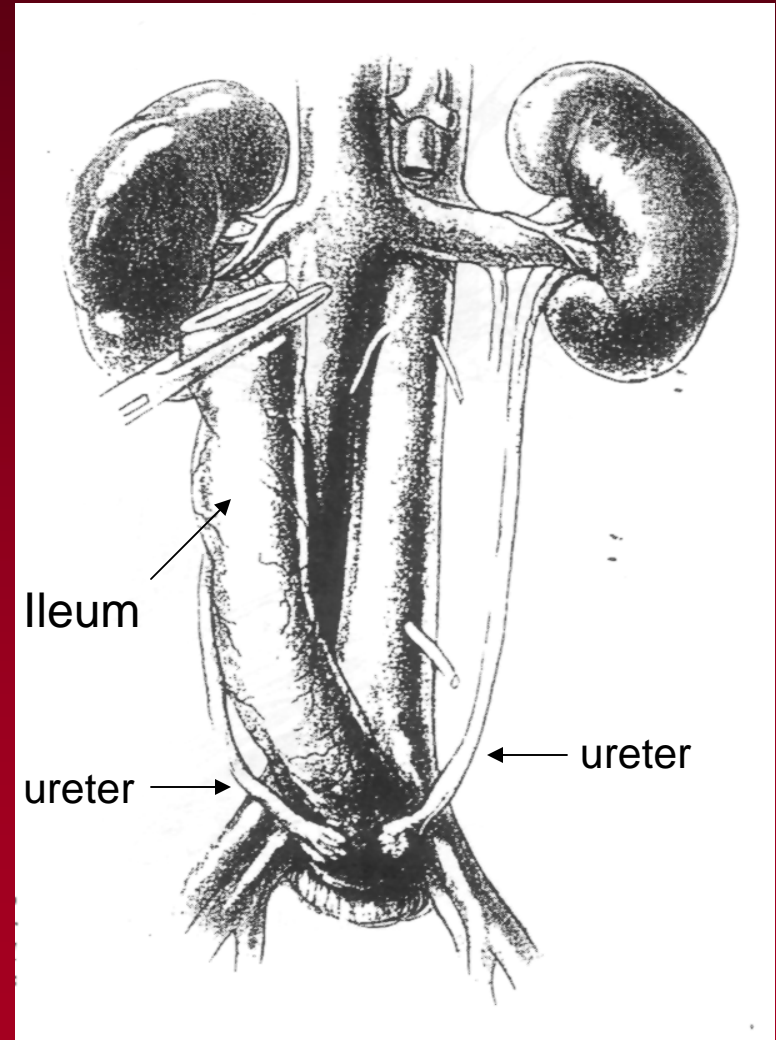
Ileal Conduit

- 15-20 cm of small intestine (ileum) is separated from the intestinal tract
- Intestines are sewn back together (re-establish intestinal continuity)



Ileal Conduit

- Ureters are attached to one end of the segment of ileum
- Natural peristalsis of intestine propels urine through the segment
- Other end is brought out through an opening on the abdomen



Ileal Conduit

ADVANTAGES

- **Simplest to perform**
- **Least potential for complications**
- **No need for intermittent catheterization**
- **Less absorption of urine**

DISADVANTAGES

- **Need to wear an external collection bag**
- **Stoma complications**
 - **Parastomal hernia**
 - **Stomal stenosis**
- **Long-term sequelae**
 - **Pyelonephritis**
 - **Renal deterioration**

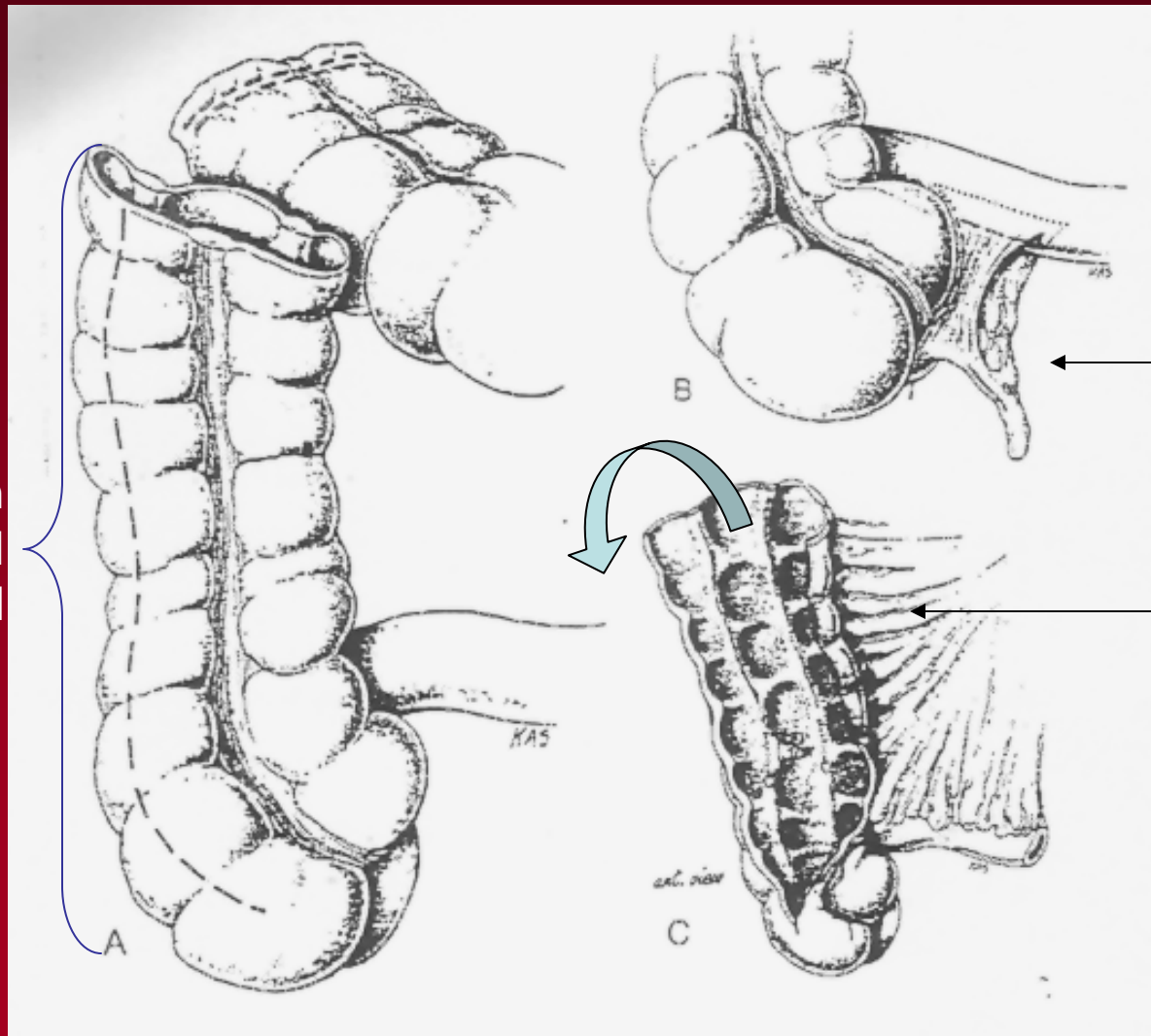
Continent Cutaneous Reservoir

- **Many variations (same theme)**
 - Indiana Pouch, Penn Pouch, Kock Pouch...
- **All use various parts of the intestine**
 - ileum, right colon most commonly
- **Reservoir**
 - “Detubularized” intestine- low pressure storage
- **Continence mechanism**
 - Ileocecal valve (Indiana)
 - Flap valve (Penn, Lahey)
 - Intussuscepted nipple valve (Kock)

Continent Cutaneous Reservoir

INDIANA POUCH

Right colon
and distal
ileum isolated



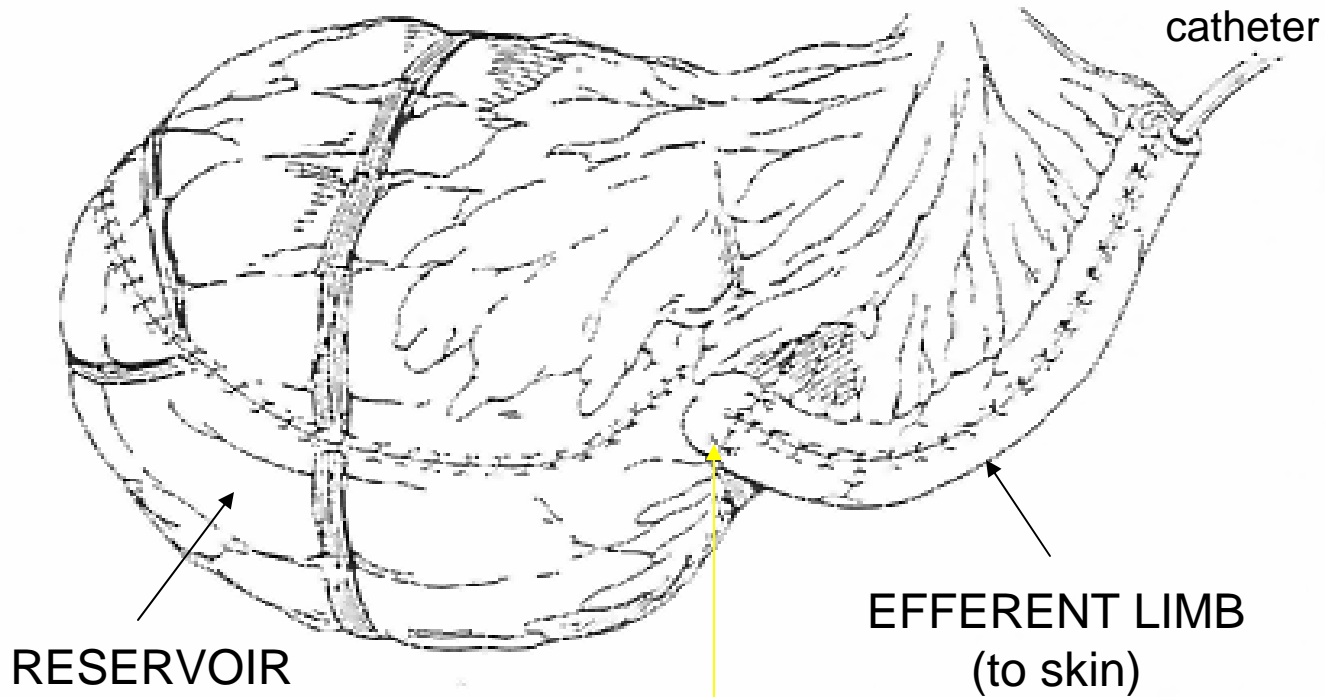
Appendix
removed

Right colon is
opened
lengthwise and
folded down to
create a
sphere

Continent Cutaneous Reservoir

INDIANA POUCH

Ureters attached to back of reservoir (not shown)



Continence maintained
by ileocecal valve

Continent Cutaneous Reservoir

ADVANTAGES

- No external bag
- Stoma can be covered with bandaid

DISADVANTAGES

- Most complex
- Need for regular intermittent catheterization
- Potential complications:
 - Stoma stenosis
 - Stones
 - Urine infections


Contemporary
UROLOGY

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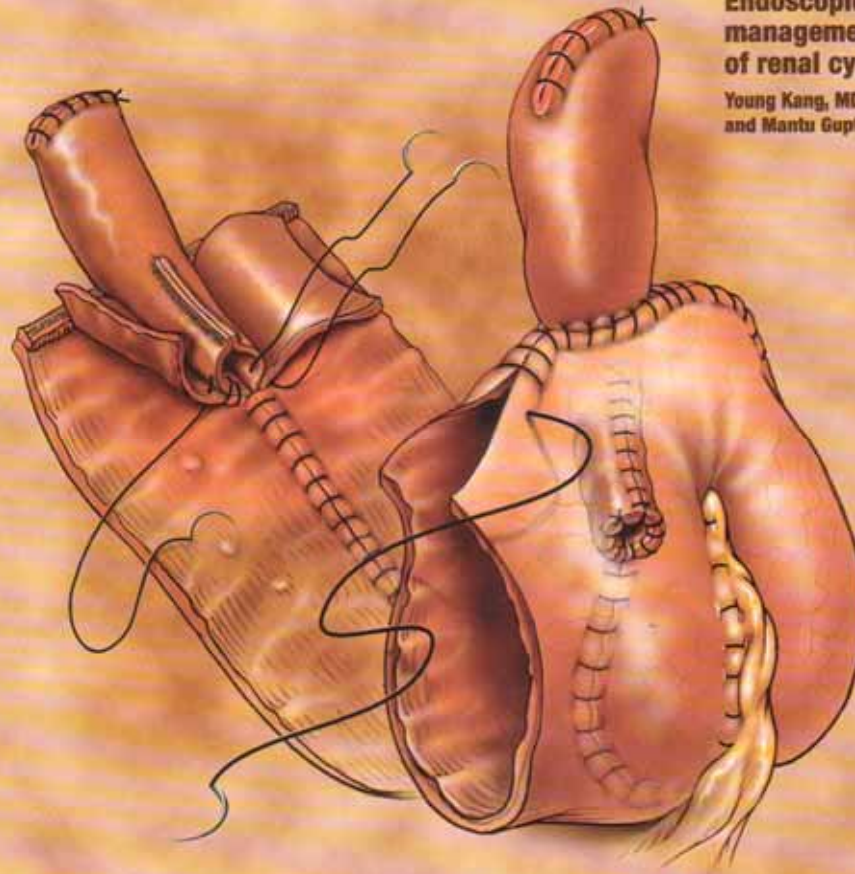
NOVEMBER 2001 VOL. 13, NO. 11

**Prostate size
and cancer
detection**

Koji Okihara, MD, and
R. Joseph Babelan, MD

Endoscopic 
**management
of renal cysts**

Young Kang, MD,
and Mantu Gupta, MD



**Orthotopic urinary
diversion**

The new gold standard?

John P. Stein, MD, and Donald G. Skinner, MD

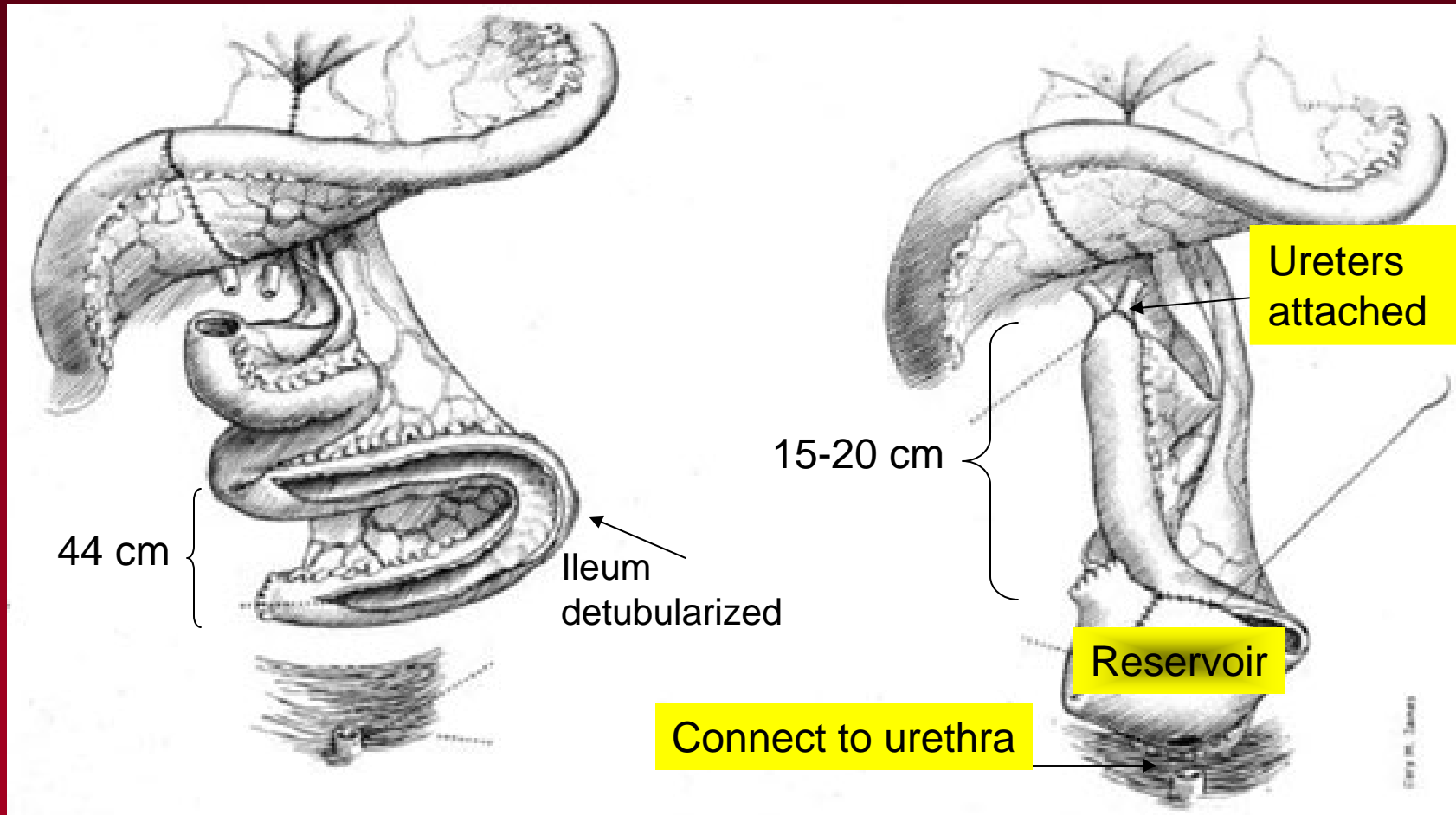
Orthotopic Neobladder

- **Currently the diversion of choice**
 - Studer, T-Pouch, Hautmann, Ghoniem, etc.

COMPONENTS:

- ***Internal reservoir*** – detubularized ileum
- ***Connect to urethra (“efferent limb”)***
 - Urethral sphincter provides continence
- ***“Afferent Limb”*** – ureteral connection
 - Antirefluxing (T-Pouch, Kock)
 - Low pressure isoperistaltic limb (Studer)

Orthotopic Neobladder

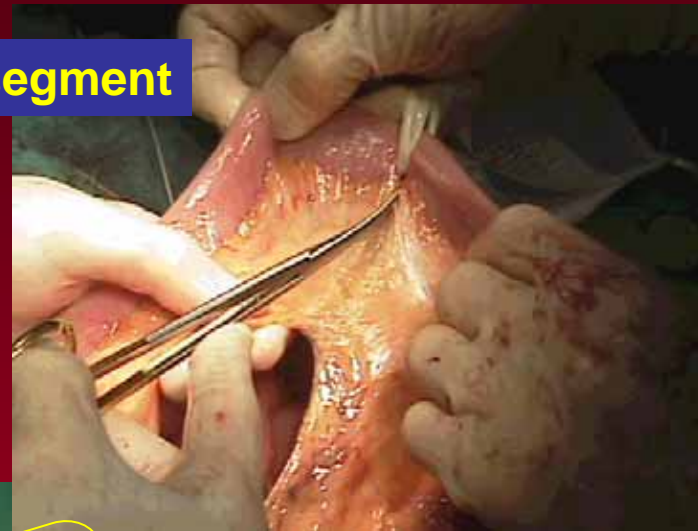


STUDER ILEAL NEOBLADDER

Orthotopic Neobladder



Isolation of ileal segment

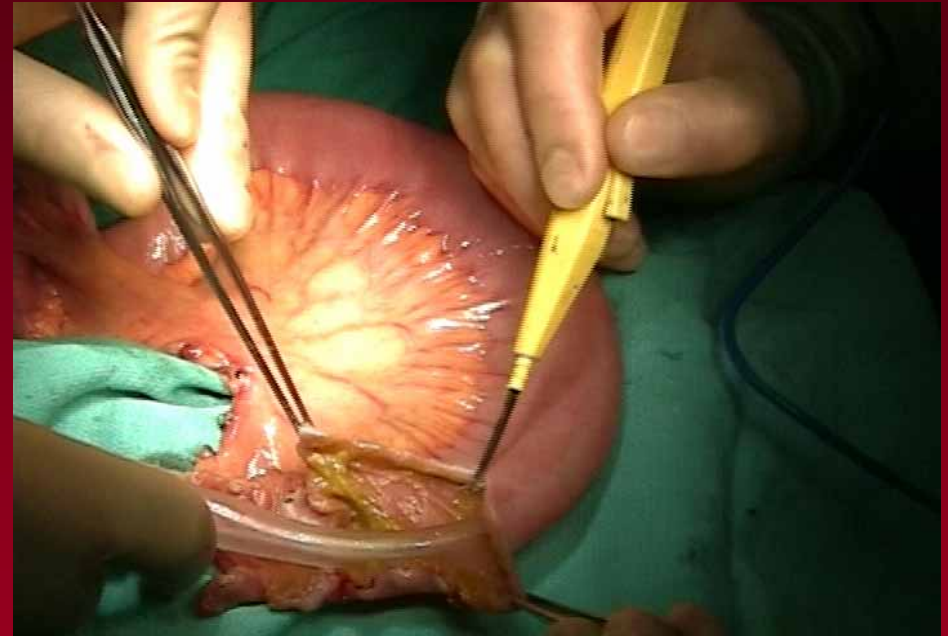
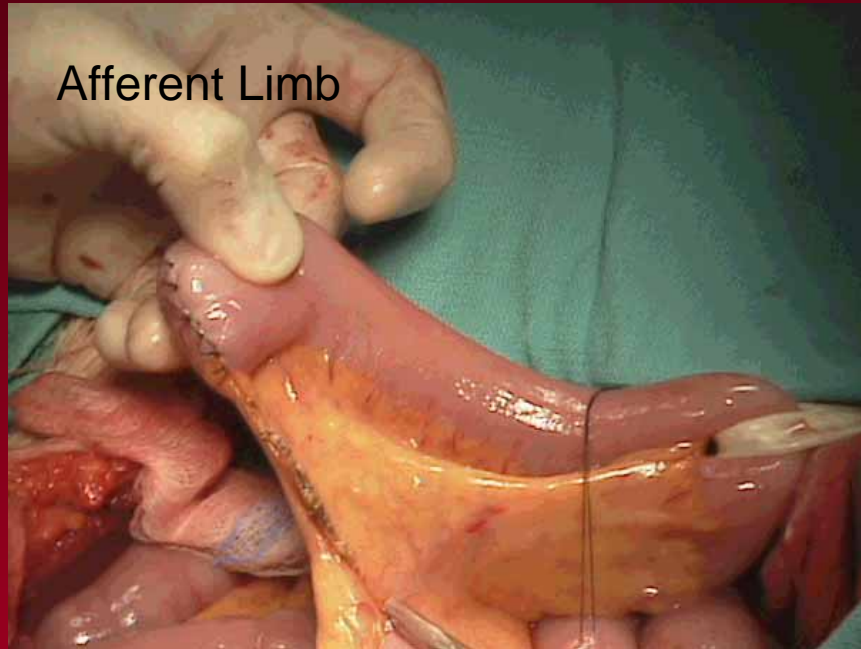


15-20 cm

22 cm

22 cm

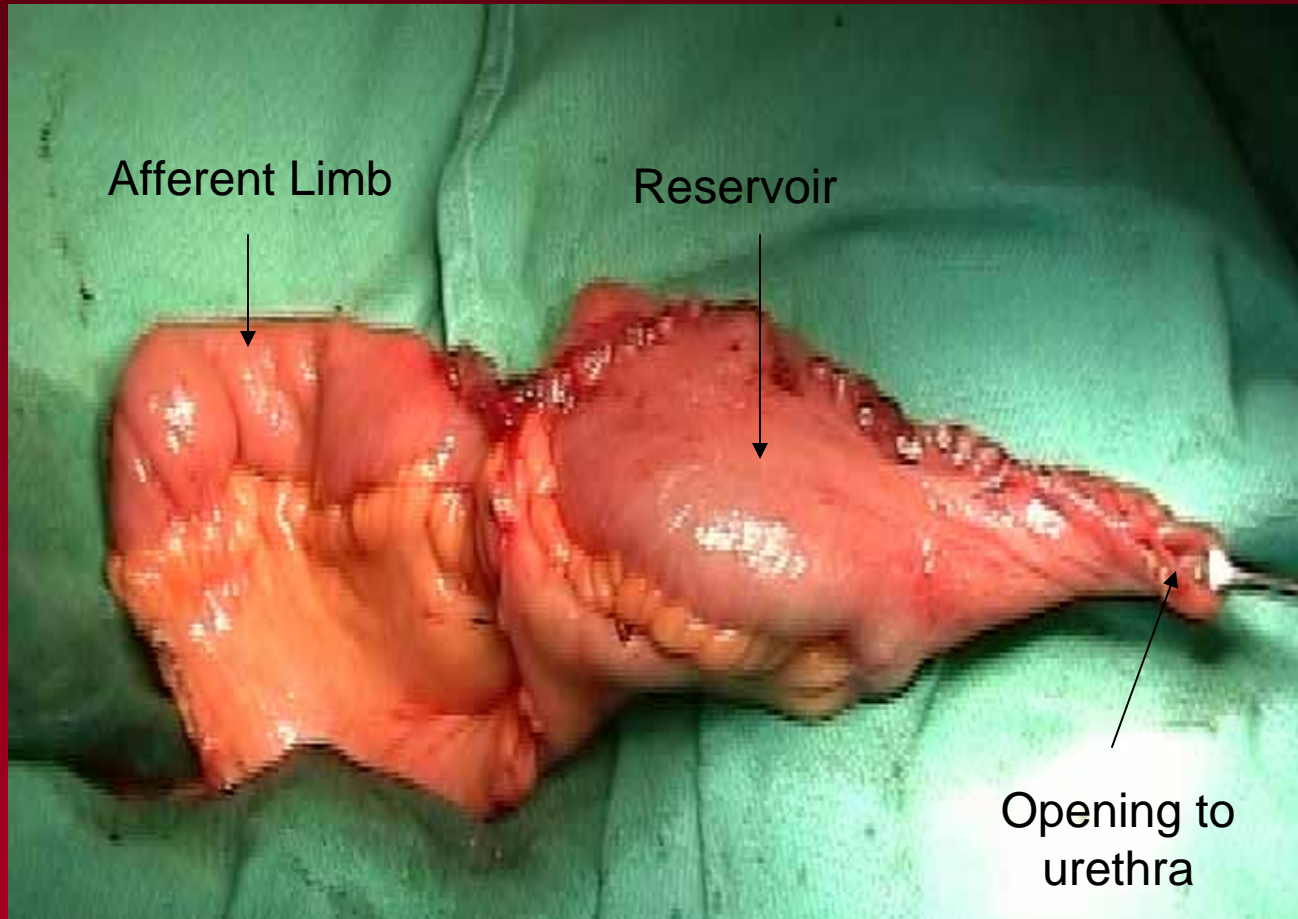
Orthotopic Neobladder



Detubularization of ileum



Orthotopic Neobladder



Orthotopic Neobladder

ADVANTAGES

- No external bag
- Urinate through urethra
- May not need catheterization

DISADVANTAGES

- Incontinence (10-30%)
- Retention (5-20%)
- Risk of stones, UTI's
- Need to “train” neobladder

Choice of Urinary Diversion

- **Disease Factors**
 - Urethral margin
- **Patient Factors**
 - Kidney function / liver function
 - Manual dexterity
 - Preoperative urinary continence/ urethral strictures
 - Motivation
- **Surgeon Factors**
 - Familiarity with various types of diversions

Urinary Diversions

- Enterostomal therapist is ***CRITICAL*** for success
- Urinary diversions require lifelong follow-up
 - Imaging (kidneys/ureters/diversion)
 - Labs (electrolytes, acid-base, B12 levels)
 - Cancer follow-up (surveillance imaging, cytology)

Conclusions

- **Surgery is the cornerstone of treatment for invasive bladder cancer**
- **Accurate staging (after surgery) is the most important determinant of prognosis**
- **A properly performed lymph node dissection makes a difference**
- **Choice of urinary diversion must be individualized for optimal outcomes**