Complications

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Impact of complications

- Organ failure
- Death
- Stress
  - To patients
  - To treating clinician
    - Self
    - Hostile colleagues & employers
- Time & effort
- Litigation
- Damage of professional reputation

Varughese et al., ANZJOG 2014

- Impact of complications on
  - Sleep 80%
  - Family and social relationships 55%
  - Physical health 48%
- O&G specialists wish they could talk to someone they trust when a complication happens (80%).

What is great surgery all about?

1. Decide
   - Risk assessment
   - Decide on technique
2. Surgical skills
   - Dissect anatomically
   - Apply techniques

Great surgeons …

- Recognize complications
- Diagnose a non-complication
- Minimize risk for complications
- Get themselves in the best position to handle complications

Ureteric injury

Cases

44 y.o. female
Total Laparoscopic hysterectomy &
McCall to uterosacral ligaments 7 days ago

#1

Loses clear fluid from the vagina, soaking pads

#2

Some pain L side, still on analgesia

#3

Can't tell

Incidence trends

Laparoscopic gynaecological surgery 64% of all injuries to urinary collecting system [1,2]

- LACE trial: No difference between open and laparoscopic arm (accreditation of surgeons)
- Robotic surgery: will increase ureteric injury rate

– General surgery 26%
  - Laparoscopic colorectal surgery also associated with an increase in iatrogenic ureteric injury
– Urological surgery 11%

[1] Bai SW et al: Int Urogynecol J Pelvic Floor Dysfunct 2006;17:360
[2] Parpala-Sparman et al.: Scand J Urol Nephrol 2008; 42:422

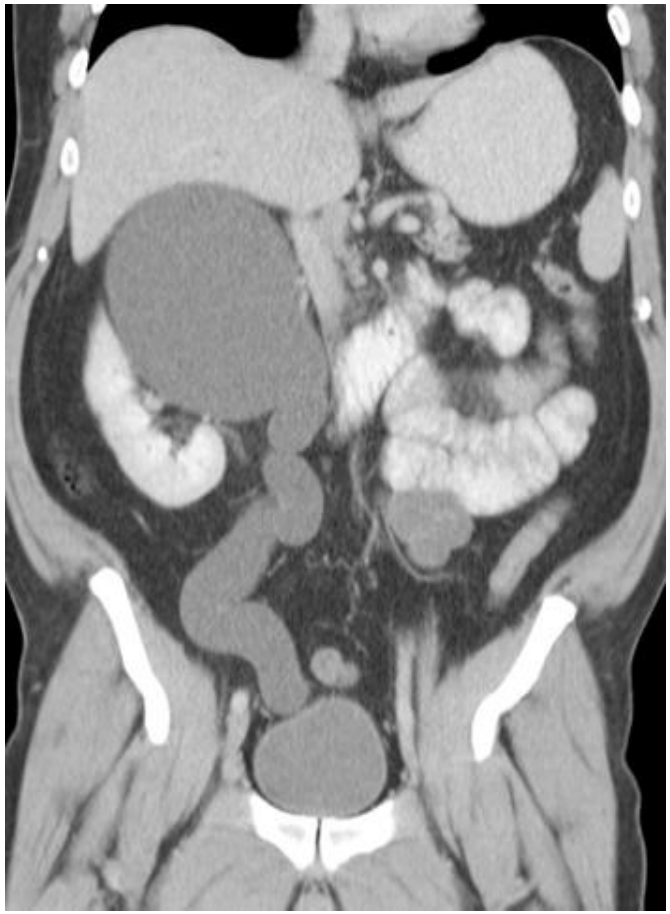
Issues

1. Incidence (low but not rare)
   a. Gen. literature: 0.5% to 1.5% for benign gyn surgery
   b. SurgicalPerformance.com* [1]
      - Hysterectomy 1.2%
      - Pelvic floor repair 0.7%
      - Endometriosis surgery 0.4%
      - Salpingo-oophorectomy 1.4%
2. High impact [2]
   a. Sepsis, urinoma
   b. Fistulae, stricture
   c. Renal failure (loss of kidney)
   d. Death

[1] Based on 10,000 general gynaecology surgical cases (August 2014)
[2] Abboudi et al: Nat Rev Urol 2013; 10:108

Issues

3. Early recognition and repair = reduced morbidity
   a) Injury diagnosed immediately
      - Immediate repair
      - Hospital stay longer by 2 or 3 days
      - Discharge with IDC, stent
   b) Injury diagnosed 7 days after surgery
      - Delayed repair
      - Readmission to hospital
      - Unable to repair straight away - disappointment
      - Readmission for repair in 6 to 8 weeks
      - Loss of function (nephrectomy)
      - Legal considerations



Radiopaedia.com

Early vs. late diagnosis

Only one third of ureteric injuries are diagnosed early [1]

Diagnosed intraoperatively:

- Open surgery 43%
- Laparoscopic 12% [2]
  - Diathermy (thermal) injuries present late.

[1] Dobrowolski Z et al: BJU Int 2002; 89:748.
[2] Selzman & Spimak: J Urol 1996; 155:878

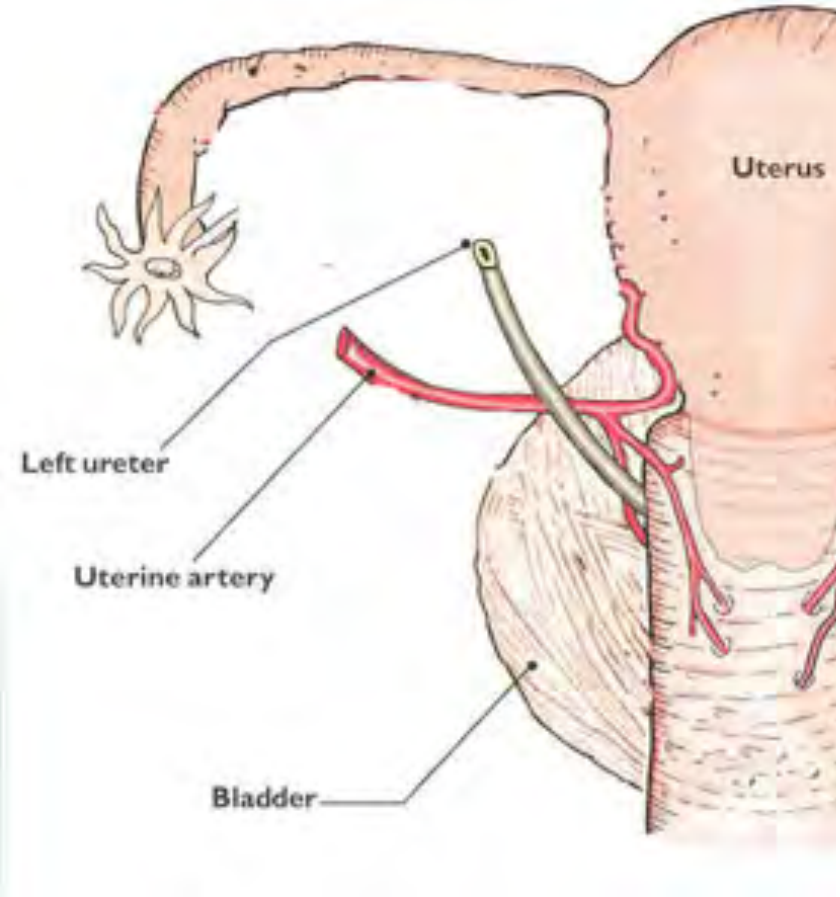
Management

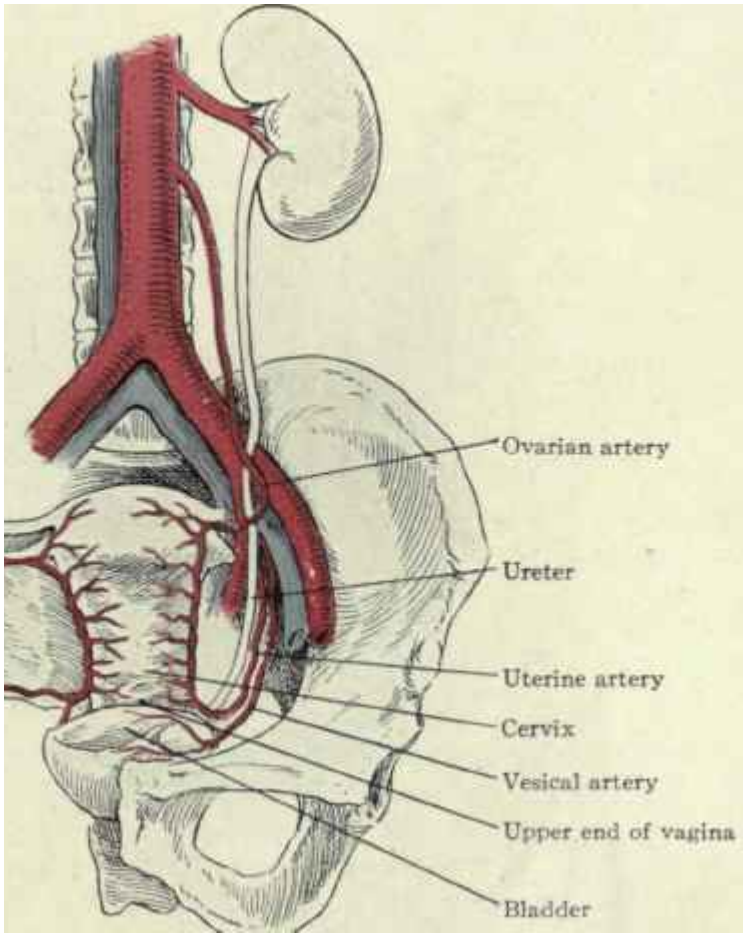
Prevention

Diagnosis (intra/post)

Management (intra/post)

Course of ureter (distal 1/3)





Note: IP ligaments; uterine vessels; closure vaginal cuff

Prevention

- Anatomy + Orientation
  - Medical imaging
  - Ability to correct anatomy, orientation
- Intraoperative identification of ureter
- Positioning of the patient (lithotomy, stirrups)
- Familiarity of the team
- Stenting makes no difference [1]

[1] Kuno et al.: Urology 1998; 52: 1004

Intraoperative diagnosis

- Ureterolysis
- Cystoscopy
- Ureteric catheter
  - Retrograde pyelogram*
- Anterior cystotomy + stent*

Intraoperative diagnosis = reduces the problem!

*By friendly urologist

Ureterolysis

1. Open retroperitoneum at the level of pelvic brim
2. Pull peritoneum medially
3. Select which part of the ureter to dissect
   - Start from cephalad towards caudal
4. Incise tissue above ureter (develop plane)
5. Dissect longitudinally & laterally
6. Continue until ureter turns lateral (tunnel)

Ureterolysis

http://youtu.be/zm_aTun73nQ

Cystoscopy

- Very simple procedure
- AAGL guidelines (2013) (laparoscopic hysterectomy)
- Does not exclude all injuries to urinary tract
- Water for distension
- Usually no dye required
  - Indigocarmin if necessary
  - Methylene blue is not useful (allergic reactions, metabolised prior to excretion)
- Cystoscopy does not detect all injuries to urinary collecting system
- Higher rates of ureteric injuries are found in studies that used cystoscopy routinely.
  - True incidence is higher
  - Some injuries go undetected/asymptomatic

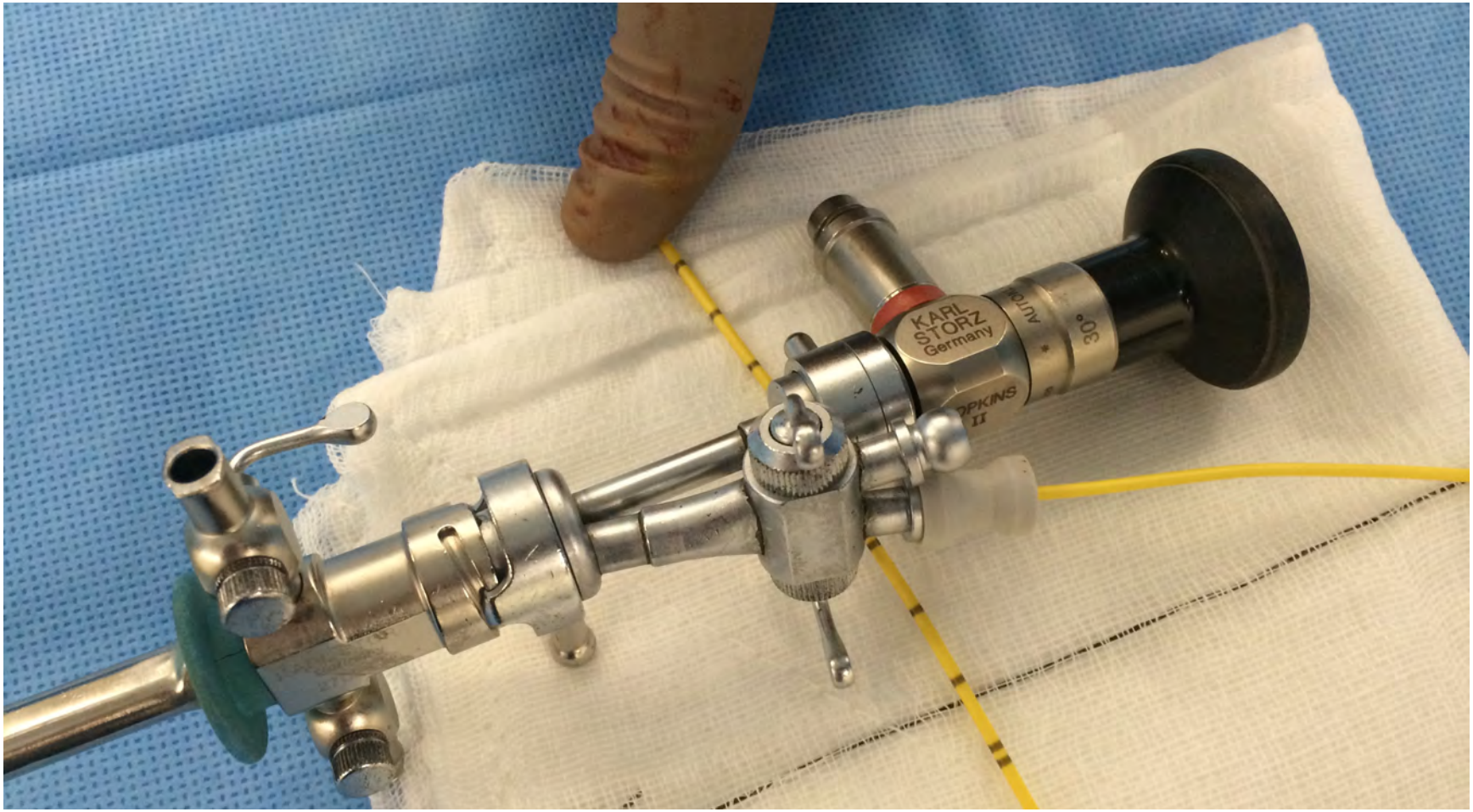
Cystoscopy w. Indigocarmine

http://youtu.be/LbZUdehT8Wo

Ureteric catheter

For diagnosis only.
Is not a ureteric stent!

Ureteric catheter



Ureteric catheter

http://youtu.be/0FxNXuHugog

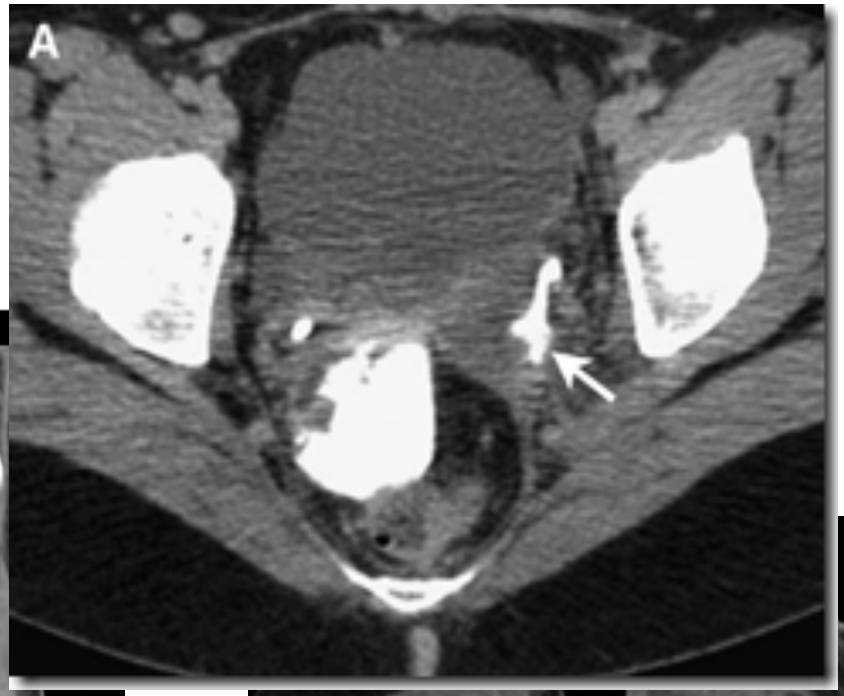
Intraoperative management ~ type of problem

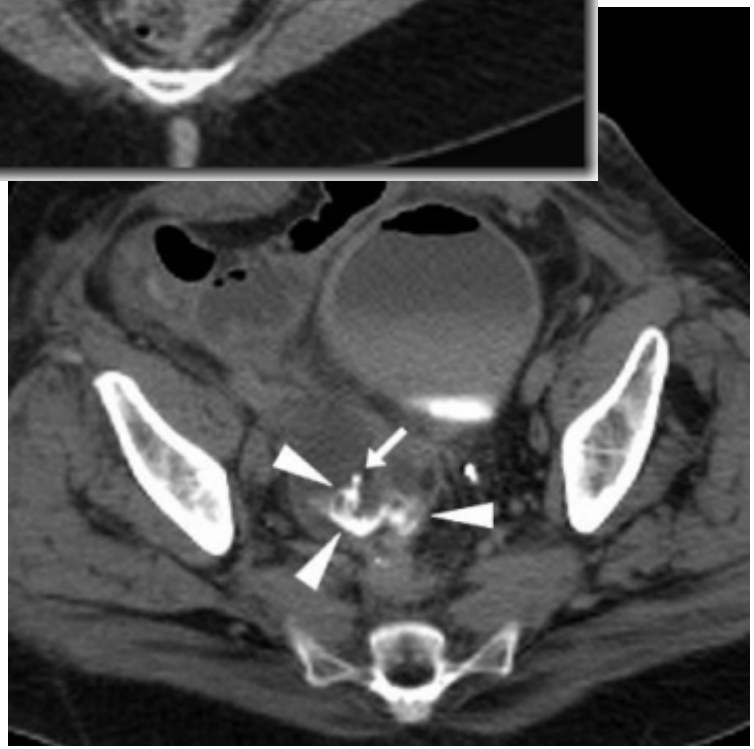
- Re-scope
  - Release a suture
- Stent alone
  - Through ureteric injury
  - Cystoscopically
  - Cystotomy + retrograde stent
- Suture over stent
- Re-implantation + posas hitch
- Boari flap

Postoperative diagnosis

- Symptomatic
  - Fever, pain
  - Loss of fluid from vagina (bed is wet when waking in the morning, bladder empty)
- 3 to 7 days postop.
- Triple phase CT with or without i.v. contrast (late images at or after 20 min)
  - sensitivity/specificity unclear

Ureter Leaks



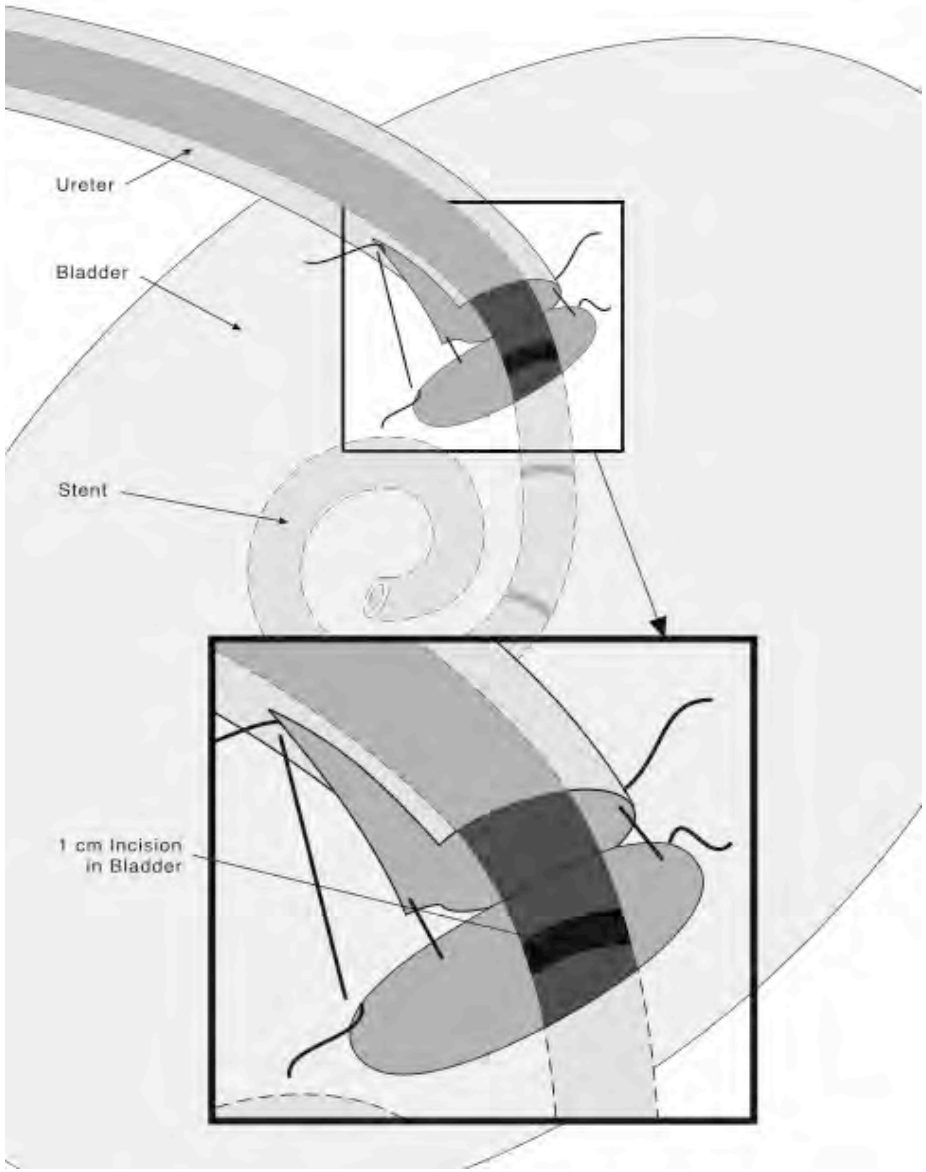


Treatment

- Exclude complex fistula (check contralateral side and bladder for patency and intactness)
- Stent (retrograde)
- Nephrostomy + anterograde stent
- Re-implantation + posas hitch
- Boari flap

Principles of re-implantation

- Tension-free
- Well vascularized
- Water-tight
- Spatulation
- Non-permanent sutures (Vicryl 4.0 or 5.0)
- Anti-reflux not important in adults
- Stent
- Drain



Hackethal A et al. Int J Gynecol Cancer 2013
[21 cases of re-implantation]

Complications

If you have a visceral injury every 1 to 2 years -

Is that a lot? Or is it little?

Depends on

- Number of cases per annum?
- What type of surgical procedure?
- Risk factor profile

Assess your surgical performance

Current

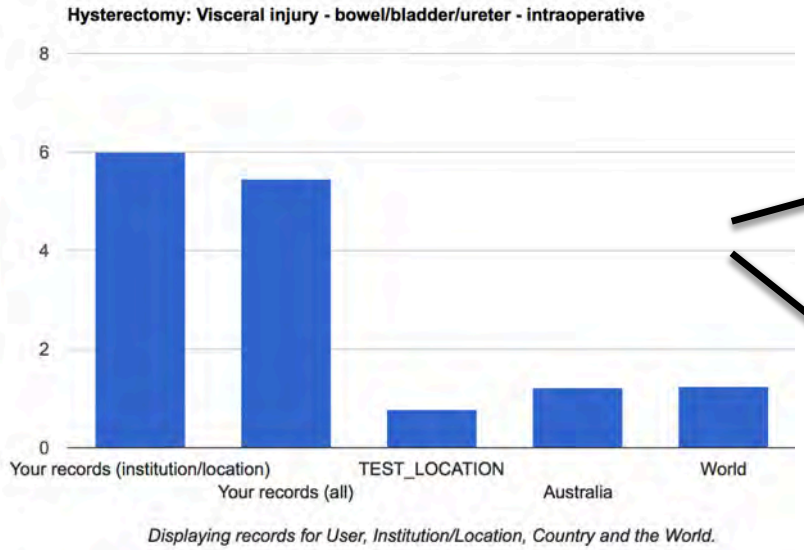
- Retrospectively
- By others
- Based on most recent one or two mishaps

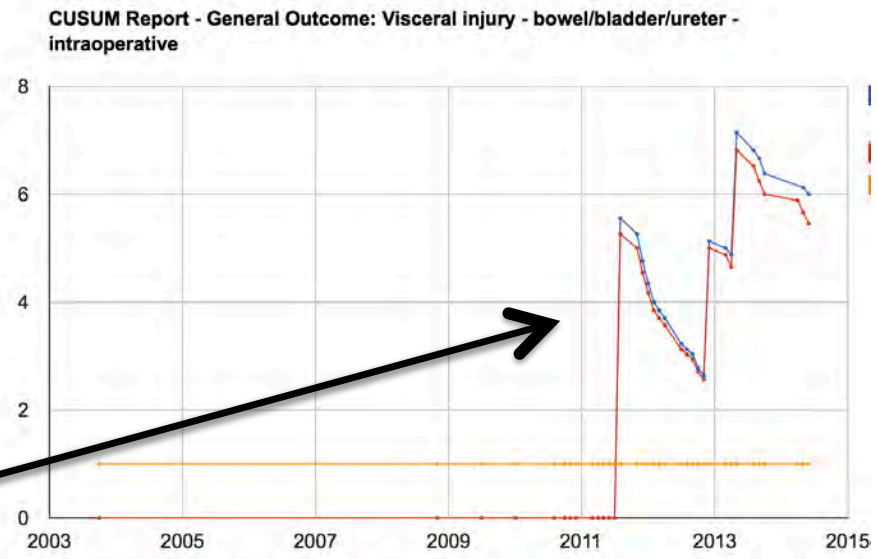
Desired

- Prospectively
- By yourself, confidentiality
- Based on entirety of your cases

1. Self-measured; 2. Take influence yourself; 3. Protects from litigation

Visceral injury





www.SurgicalPerformance.com

Summary

1. Assess
   - Intra & Postop. Assessment (ureterolysis, cystoscopy, triple phase CT +/-iv contrast)
2. Learn basic skills
   - To dissect anatomically (ureterolysis)
   - To recognize trouble (intraoperative diagnosis)
3. Self management & maintain reputation
   - Complications are part of normal life
   - Self assessment allows monitoring, learning, enhances conversation with patient and protects from being attacked.

MCQ Test

1. If intraoperatively a problem with the urinary collecting system is suspected, the investigations I commence include:

a) Ureterolysis
b) Resect the part of affected ureter and get someone to re-implant it into the bladder
c) Cystoscopy +/- ureteric catheter +/- retrograde pyelogram
d) Ask a urologist to place a stent
e) Triple phase CT scan +/- i.v. contrast before discharge

MCQ Test

1. If postperatively a problem with the urinary collecting system is suspected, the investigations I commence include:

a) Take a history & examine the patient
b) Consider a cystoscopy, triple phase CT +/- i.v. contrast
c) Take the patient back to OT and perform a ureterolysis
d) Hand over to a urologist

Thanks for your interest

Slides can be downloaded at
www. obermair. info