LAPAROSCOPY IN UROLOGY
CASE REPORT

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Use of Laparoscopy in Urology

- Adrenal (adrenalectomy)
- Renal
  - Simple nephrectomy
  - Radical nephrectomy
  - Partial Nephrectomy
  - Nephroureterectomy
- Ureter
  - Pyeloplasty
  - Ureterolithotomy
  - Reimplant
  - Antireflux
  - Ureterolysis
- Bladder
  - Radical/partial Cystectomy
  - Diverticulectomy
- Prostate
  - Radical Prostatectomy
- Lap Varicocelectomy
- Lap orchidectomy/orchidopexy
- Urogynae
  - VVF repair
  - Lap Sacrocolpopexy
- Lymph nodes
  - Pelvic lymphadenectomy
  - Retroperitoneal lymphadenectomy
  - Etc....

1st Lap Radical Nephrectomy = 1991

Lap Radical Cystectomy: 1992

Lap Radical Prostatectomy: 9 cases from 1991-1998
Case Report:

- Bladder diverticulum
- Case: 68 M
  - Chronic BOO
  - Urethral stricture disease
  - Recurrent UTIs post successful DVIU
  - Large bladder diverticulum MCUG
  - No surgical hx
  - COPD, moderate BMI
Bladder diverticuli: overview

- Mucosal herniation
- SCATTERED thin muscle fibres = POOR EMPTYING
- Male > Female
- Congenital vs acquired
- Acquired → most insignificant
- Complications:
  - LUTS/Post void residual
  - UTI
  - Malignancy (incidence = 0.8-10%)
  - Stones
- Indications correction
Surgical options Bladder diverticulectomy

- 1st 1992
- Manage BOO
- Gold standard: OPEN
- Open, endoscopic, laparoscopic, robotic

Approach
- Small: incise NECK (endoscopic)
- Large: excise
  - extravesical
  - intravesical
  - or combination

Laparoscopic:
- transperitoneal
- extraperitoneal
Open Surgery: what the bosses say...

- Difficult pelvic access
- ID diverticulum
- Stuck tissue
- Bleeding
- Wound sepsis

...
Why Laparoscopy??

Benefits Nephrectomy
- Morbid subcostal incision
- Pain
- Bleeding
- Atelectasis

Benefits PELVIC access
- Radical Prostatectomy
- Radical cystectomy
- Difficult access

?? For Bladder diverticulum
- Pelvis access
- PATIENT:
  - Moderate BMI
  - Mild COPD
  - No previous surgery
  - No cardiovascular disease

PATIENT:
- Moderate BMI
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Laparoscopic BD technique

- TRANSPERITONEAL
- Ureteric catheters
- Identify diverticulum
  - Preop images/?obviously seen
  - Fill bladder
  - Flexible Cystoscope
- Incise peritoneum
- Circumferentially incise diverticulum → to neck
- Neck of diverticulum = circumscribed + excised
- NB ureter (?reimplant)
- Close cystostomy
PORTS (as per Lap RP)
Robotic (RABD) (If you have lots of money)
Advantages

Less PAIN
COSMESIS
Faster RECOVERY
Shorter HOSPITAL STAY
?? Reduced COST

MAJOR PROBLEMS

Fatal gas embolism
Pneumothorax
Electrosurgical bowel injury
Post op crepitus
Patient selection

Prior surgeries + scars
LOCATION

COMORBIDITIES

Physiologic effects CO₂ pneumoperitoneum

Acidosis → myocardium = Cardiac arrhythmias
Contraindications to Laparoscopic Surgery

- Uncorrectable coagulopathy
- Intestinal obstruction
- Significant abdominal wall infection
- Massive haemoperitoneum or haemoretroperitoneum
- Generalized peritonitis
- Suspected malignant ascites
Potential Difficulties

MORBID OBESITY

Prior Abdo or Pelvic Surgery

Fibrosis e.g. peritonitis

Iliac or Aortic aneurysm

Organomegaly

Hernia: diaphragm + umbilical

Pregnancy

Ascites
Principles and Techniques

- **PRE-OP:**
  - Bowel prep?

- **IN THE OPERATING ROOM:**
  - Set up
  - Positioning + pressure points
  - Required instruments
  - U-cath

- **PERFORMING THE PROCEDURE:**
  - Safe entry into abdomen
  - PLAN port placement
  - Watch intra-abdominal pressures (keep around 12mmHg)
Entry into peritoneal cavity

Hasson vs Veress

Adhesions
? Palmers

Veress

Supine, 10-degrees Trendelenburg
Signs of proper entry

TROCARS

• Non-cutting dilating trocars
• Spreading abdominal wall musculature
Trocar placement

- Transperitoneal vs. Extraperitoneal
- Consider:
  - Number
  - Size
  - Location/configuration
  - Skin incision
- Surgeon preference → “Triangulation”? 
- Under vision (optical trocars)
- Twisting motion → towards site
- Meticulous placement
  - ‘crossing swords’ + ‘rollover’
**Insufflant: CARBON DIOXIDE**

- **Most common**
  - Favoured
    - Colourless
    - Non-combustible
    - Very soluble in blood
    - Inexpensive
  - Potential problems
    - Absorbed CO2: COPD
    - Hypercapnia → cardiac arrhythmias
    - Stimulates Sympathetic Nervous system
Alternative Gases

**HELIUM**
- Inert, non-combustible
- Less irritating
- Useful pulmonary disease
- **GAS EMBOLISM** (blood solubility)
- EXPENSIVE

**NITROUS OXIDE**
- Less irritating
- Fewer acid-base changes + CVS effects
- CO + increase MAP, HR and CVP
- SUPPORTS COMBUSTION

- NOT in use: O2 + RA
- Xenon, argon, krypton: (not widely adopted)
Blood loss + Transfusion rates

- Lap RN/Nephro-U: low rate transfusion (3% to 12%)
- Lap/Robotic radical prostatectomy = low rate (experienced centres → 2.5 %)
- More extensive:
  - partial nephrectomy, RC, radical nephrectomy WITH ICV thrombectomy
  - Experienced centres: Lap partial nephrectomy rates = 6-7%
- ISSUES:
  - Vision
  - Converting to open...
TAKE HOME MESSAGES

- Bladder diverticulum
- Place for Open vs Laparoscopic
- LAPAROSCOPY in urology:
  - Nephrectomy
  - Pelvic surgery
- Patient selection
- SURGEON PREFERENCE
- Knowledge
- SKILL
References