Single Port Surgery: What We Have Learned So Far

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No Disclosures

Single Port Surgery

- A.K.A.
  - Single Incision Laparoscopic Surgery (SILS)
  - One Port Umbilical Surgery (OPUS)
  - Single Port Access (SPA) Surgery
  - Single Site Surgery
  - eNOTES
  - Natural orifice transumbilical surgery (NOTUS)
Evolution in Surgery

• Open

• Laparoscopy

• Single Port & NOTES

Natural Orifice Translumenal Endoscopic Surgery

STOMACH

COLON

BLADDER

VAGINA
L.E.S.S.

- L - Laparo
- E - Endoscopic
- S - Single-Site
- S - Surgery

LESS: What have we learned?

Overview:
- Instrumentation
- Examples in urology
- Needs for future
LESS

- Pioneered in general surgery
- Goal: further reduce morbidity
- Type of laparoscopic surgery
- Permits safer procedural development
- Instrumentation
  - Traditional laparoscopic
  - Purpose built
  - Endolumenal (applicable to NOTES)

LESS Ports

- Standard lap ports
- R port
- p Navel
LESS: Clinical Experience with Robot

LESS: Clinical in Urology

• Initial descriptions:
  • Dr. Caddedu (UTSW), Dr. Rane (UK)
  • Drs. Desai, Kaouk, and Gill (CCF)
  • Dr. Ponsky and Cherullo (CWRU)

• Multiple procedures described
• Op times / complications: OR 2X longer, complications comparable
**LESS in Urology:**
**Pure Laparoscopic or Robotic**

- Radical nephrectomy
- Donor nephrectomy
- Pyeloplasty
- Renal cryotherapy
- Renal biopsy
- Ileal ureter reconstruction
- Radical prostatectomy
- Umbilical simple prostatectomy
- Intravesical simple prostatectomy
- Cystectomy
- Sacrocolpopexy
- Varicocelectomy

**LESS**

- Our initial experience:
  - Pyeloplasty, cyst decortication, simple nephrectomy
  - Technique: standard laparoscopy & daVinci S
  - Longer operative times
  - More cumbersome than standard laparoscopy or robotics
LESS Nephrectomy
LESS Nephrectomy

LESS surgery: Problem
LESS Radical Nephrectomy
LESS Partial Nephrectomy

LESS Bilateral Pyeloplasty
LESS: Ileal Ureter

Does Size of Single Site Incision Really Matter?

• 2 cm periumbilical incision vs. 7 cm periumbilical incision

• Does extending an incision for extraction have any advantages?
LESS Radical Nephrectomy: Oncologic Principles & Extract Incision

- Intact extraction satisfies American Joint Committee on Cancer requirements, morcellation does not
- Morcellation makes margin determination & staging difficult
- Muscle-splitting extraction incision: not significant increased morbidity

Kaouk & Gill  Rev Urol 4: 38-42

Lap Nephrectomy: Intact vs Fragmented Extraction

- Pilot study
- Compared intact extraction (n=5) to fragmented extraction (n=7)
- No significant difference:
  - Narcotic requirement
  - Length of stay
  - Activity level
  - Complications

86 Year Old Female
8.5cm Left Lower Pole Renal Mass

From L. Ponsky
Downsides of LESS

• Technically demanding
• Instrument clashing
We else have learned about.....

The missing links

Endolumenal robot

Direct Drive

Endo Samurai
Back to the Future?

Needlescopic

Operating Laparoscope

Other Technologies

Navigation

Flexible endoscopes

Image overlay
Magnetic Capsule Endoscopes

Gettman & Swain Eur Urol epub, 2009

Magnetic Anchor & Guidance System

Zelis et al: J Urol 2007; 178:288
Future of LESS: Summary

- Feasibility shown in surgery & urology
- Must pass scrutiny by public
- Prove benefit vs. conventional MIS:
  - Less pain
  - Complications
  - Cost
  - Effectiveness
  - Cosmesis

Future of LESS: Summary

- Multiple opportunities for technical improvement
- Need appealing learning curve
- Unknown if LESS will evolve to NOTES but:
  - Carefully evaluate all new technologies
  - Push for new ways to achieve MIS for patients
Thanks!

The End