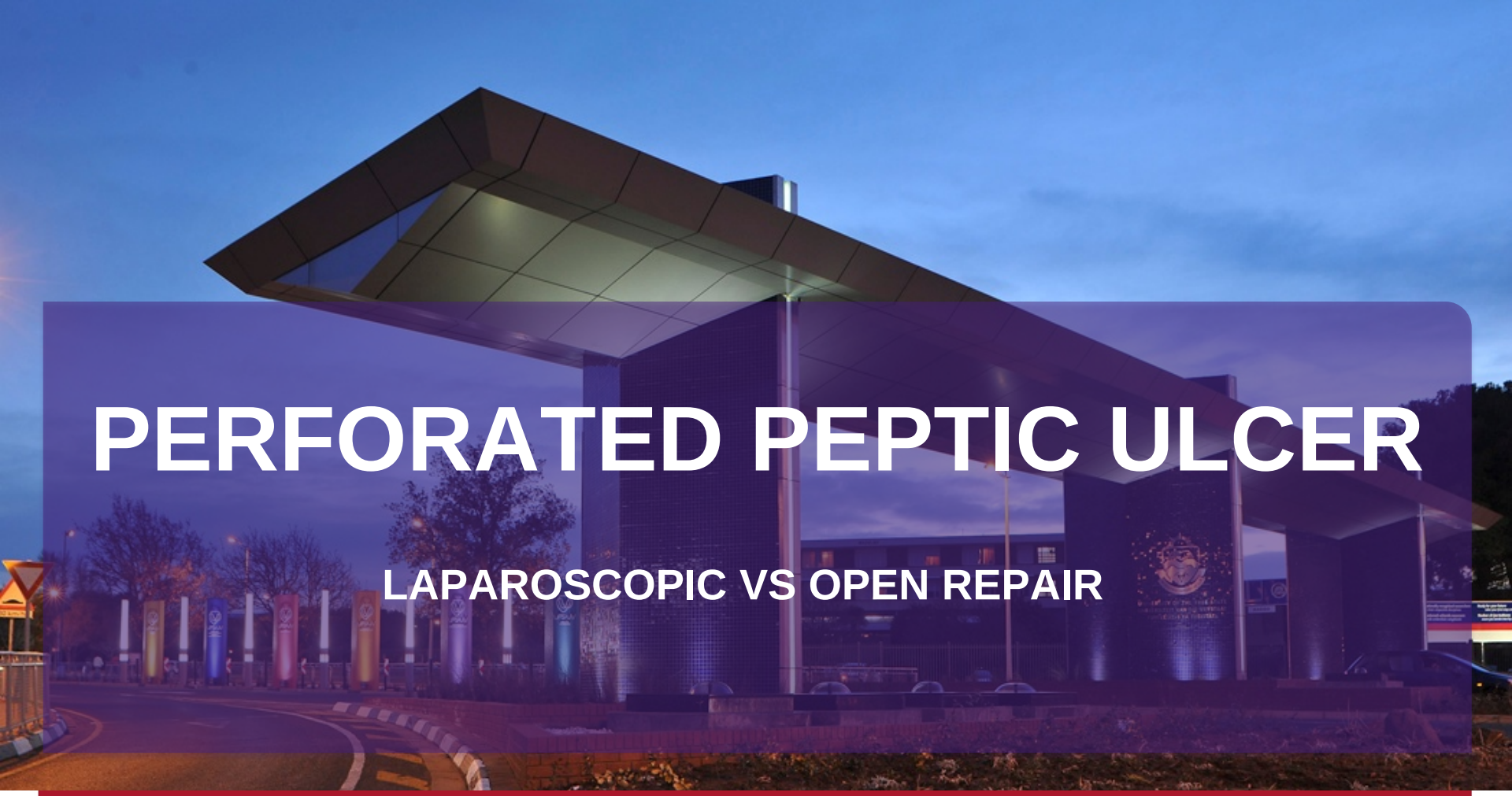


PERFORATED PEPTIC ULCER

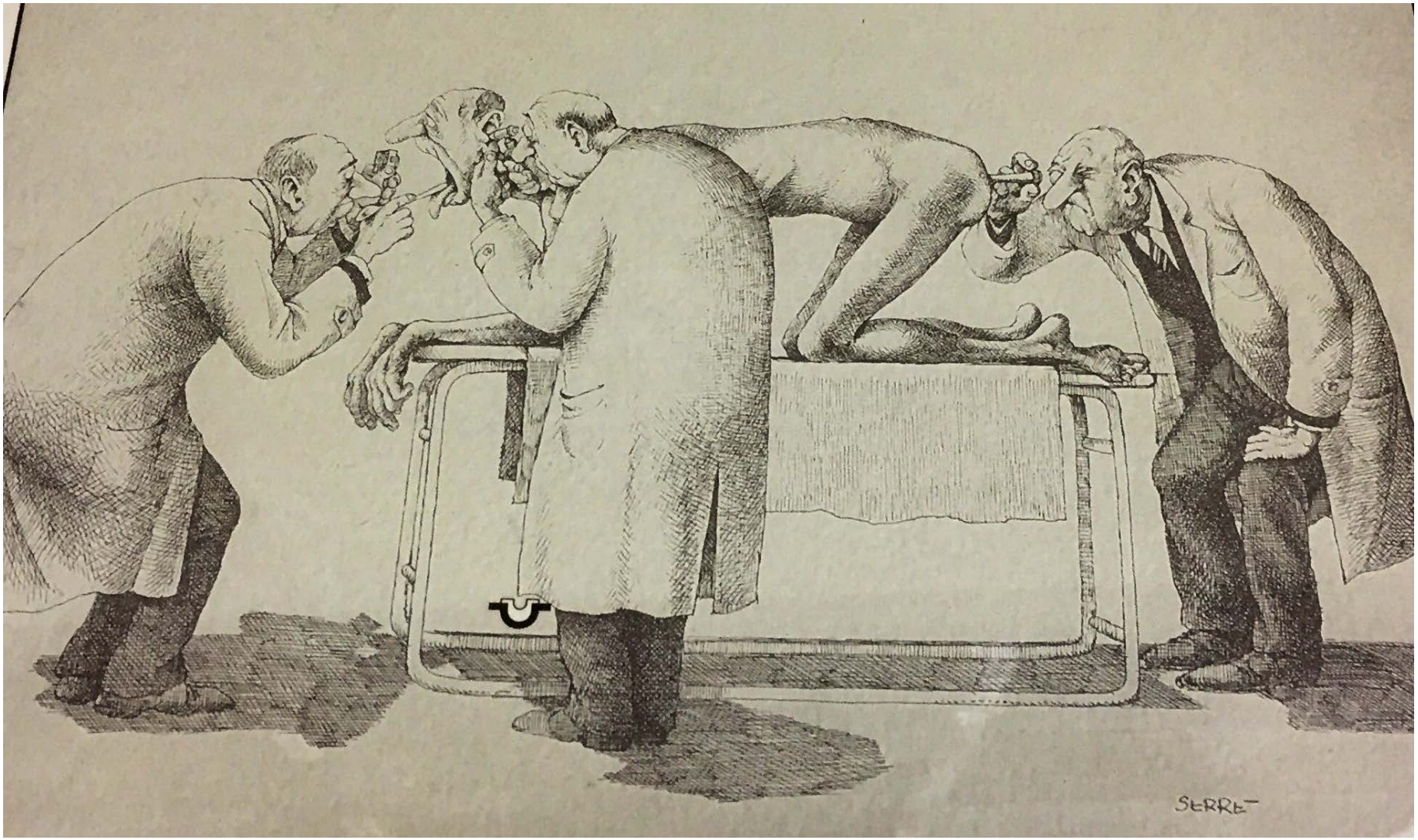
LAPAROSCOPIC VS OPEN REPAIR

T: +27(0)51 401 9111 | info@ufs.ac.za | www.ufs.ac.za

LIZELLE HUMAN

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE



Fibro-opticians tend to treat the hole in the patient, instead of the patient as a whole

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

A 58 YR FEMALE PATIENT PRESENT WITH A PERFORATED PEPTIC ULCER….

- As surgeon you need to answer a few questions:

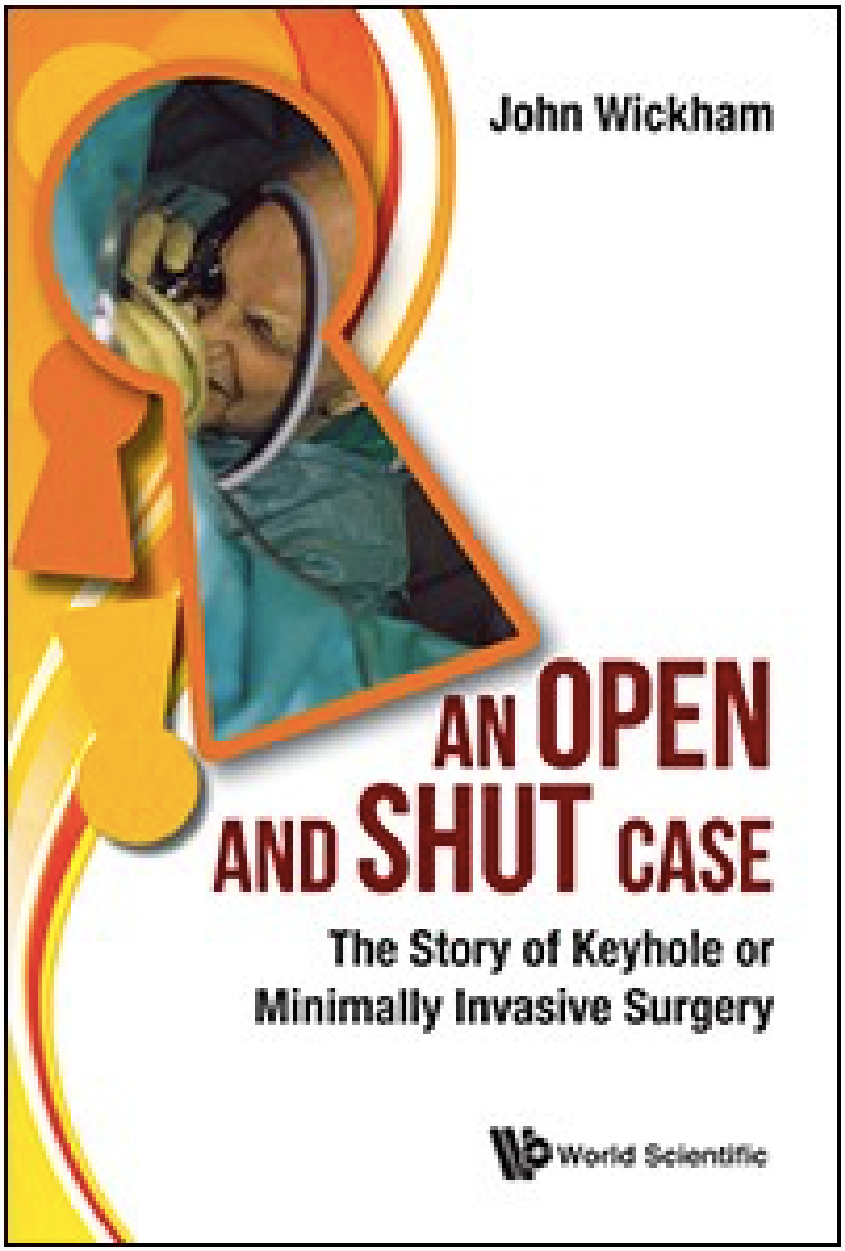
1. Does the patient need surgery?

2. Is an omental plication enough?

3. Is the patient stable enough to undergo definitive treatment? Which definitive surgery is indicated?

4. Should the surgery be done laparoscopic or open?

UFS UV



FOCUS

- 2018
- COMPARABLE
- MINIMAL RISK
- EARLIER RECOVERY
- LESS COMPLICATIONS
- LESS PAIN
- SAFE
- LESS WOUND SEPSIS

UFS UV

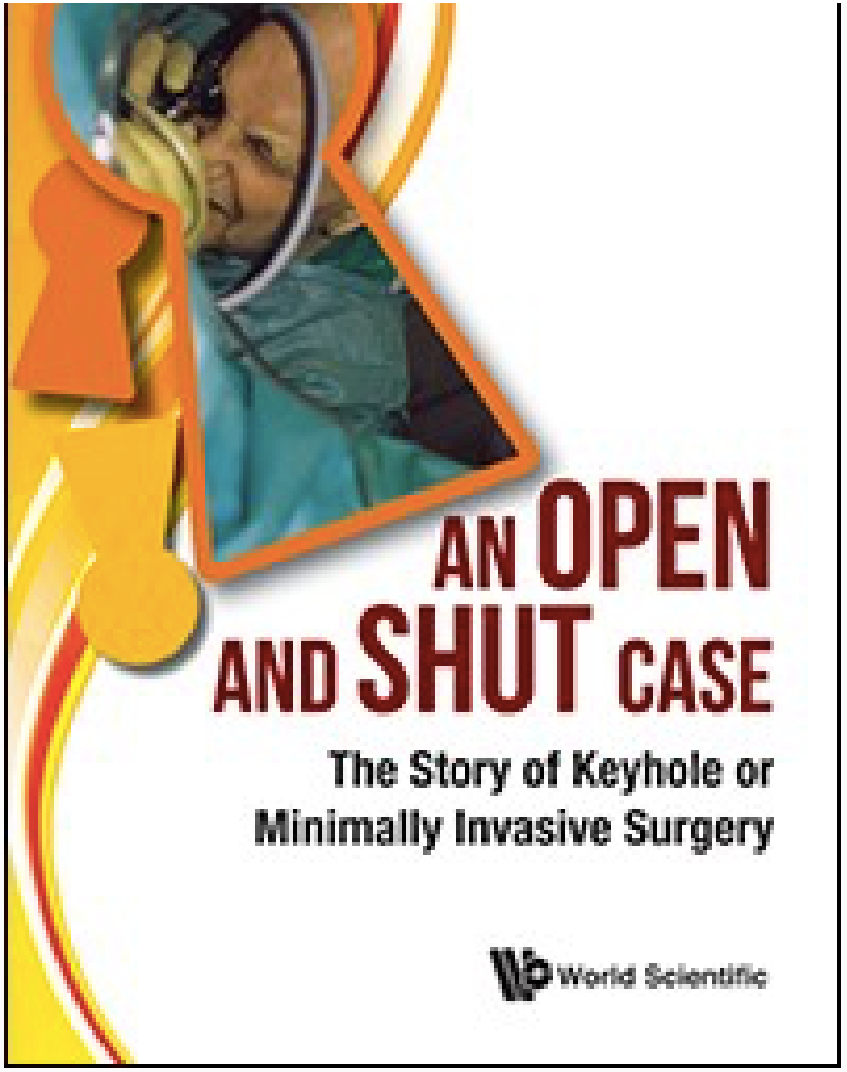
Br J Surg. 1990 Sep;77(9):1006.

Laparoscopic treatment of perforated peptic ulcer.

Mouret P[1], François Y, Vignal J, Barth X, Lombard-Platet R.

Author information

PMID: 2145052



Describe 1990

Wide acceptance

Many surgical armamentarium

Smaller incisions, less wound sepsis, possible less surgical stress…..

STILL NOT THE GOLD STANDARD

DECISION MAKING

- Laparoscopic expertise of the surgeon

- Conclusion: more RCT needed….

UFS UV

UFS UV

JSLS Journal of the Society of Laparoendoscopic Surgeons

JSLS. 2013 Jan-Mar; 17(1): 15–22.
doi: 10.4293/108680812X13517013317752

Link to Publisher's site

PMCID: PMC3662736
PMID: 23743368

Meta-analysis of Laparoscopic Versus Open Repair of Perforated Peptic Ulcer

Stavros A. Antoniou, MD, George A. Antoniou, MD, PhD, Oliver O. Koch, MD, Rudolph Pointner, MD, PhD, and Frank A. Granderath, MD, PhD

- Not benefit proven for:
  - Mortality
  - Morbidity
  - Re-operation rate

Int J Surg. 2016 Sep;33 Pt A:124-32. doi: 10.1016/j.ijsu.2016.07.077. Epub 2016 Aug 5.

Laparoscopic versus open repair for perforated peptic ulcer: A meta analysis of randomized controlled trials.

Tan S[1], Wu G[2], Zhuang Q[1], Xi Q[1], Meng Q[1], Jiang Y[1], Han Y[1], Yu C[3], Yu Z[4], Li N[5].

No significant difference between the primary outcomes:

- Overall post operative complication rate
- Mortality
- Re-operation rate

UFS UV

Int J Surg. 2016 Sep;33 Pt A:124-32. doi: 10.1016/j.ijsu.2016.07.077. Epub 2016 Aug 5.

Laparoscopic versus open repair for perforated peptic ulcer: A meta analysis of randomized controlled trials.

Tan S[1], Wu G[2], Zhuang Q[1], Xi Q[1], Meng Q[1], Jiang Y[1], Han Y[1], Yu C[3], Yu Z[4], Li N[5].

- Subcategory laparoscopic evaluation similar
  - Repair site leak rates
  - Intra-operative abscess
  - Post-operative ileus
  - Pneumonia
  - UTI

Int J Surg. 2016 Sep;33 Pt A:124-32. doi: 10.1016/j.ijsu.2016.07.077. Epub 2016 Aug 5.

Laparoscopic versus open repair for perforated peptic ulcer: A meta analysis of randomized controlled trials.

Advantage: Lower surgical site infections

CONCLUSION:

More high quality RCT needed to further assess the safety and efficacy of laparoscopic repair of peptic ulcer perforations

UFS UV

ANNALS OF
SURGERY
A MONTHLY REVIEW OF SURGICAL SCIENCE SINCE 1885

Laparoscopic Repair for Perforated Peptic Ulcer

Lagoo, Sandhya A. MD, PhD

Annals of Surgery: March 2002 - Volume 235 - Issue 3 - p 320-321
Editorial

Indications for conversion to open repair

UFS UV

INDICATIONS FOR CONVERSION TO OPEN REPAIR:

- Cardiovascular instability

- Relative indications:
  - Ulcer >6mm with friable edges
  - Posterior location
  - Inadequate instrumentation
  - Need for definitive surgery (possible malignancy)

- Prognostic factors resulting in conversion
  - Shock
  - Perforation >24hrs

UFS UV

SCIENTIFIC REPORTS

OPEN

Received: 03 March 2015
Accepted: 12 August 2015
Published: 09 September 2015

An Updated Meta-Analysis of Laparoscopic Versus Open Repair for Perforated Peptic Ulcer

Chunhua Zhou[1,2,*], Weizhi Wang[1,*], Jiwei Wang[1,*], Xiaoyu Zhang[1,3,*], Qun Zhang[1], Bowen Li[1] & Zekuan Xu[1,4]

- Fewer studies comparing open with laparoscopic repair in PUD
- 24 NRS & 5 RCT
  - Pain – subjective –
    - NRS less painful recovery
    - RCT – same conclusion not reached
  - CO_2 peritoneum
    - increase risk for bacteremia, sepsis and bacterial translocation into bloodstream and pneumonia.
    - Benefit of laparoscopic surgery may be neutrilized by the disadvantage of a CO_2 pneumoperitoneum

UFS UV

SCIENTIFIC REPORTS

OPEN

Received: 03 March 2015
Accepted: 12 August 2015
Published: 09 September 2015

An Updated Meta-Analysis of Laparoscopic Versus Open Repair for Perforated Peptic Ulcer

Chunhua Zhou[1,2,*], Weizhi Wang[1,*], Jiwei Wang[1,*], Xiaoyu Zhang[1,3,*], Qun Zhang[1], Bowen Li[1] & Zekuan Xu[1,4]

- Similar incidences of:
  - Intra-abdominal abscesses or leaks
  - UTI
  - Difficulty with gastric emptying
  - GIT bleeding
  - Pleural effusions

Mortality associated patient risk

Selection bias – unstable patients - open surgery

More RCT needed

UFS UV

WHY THEN DO I RECOMMEND AN OPEN REPAIR?

PROVEN ADVANTAGE: WOUNDSEPSIS

MINIMAL INVASIVE VS MINIMAL ACCESS…

MINIMAL ACCESS …

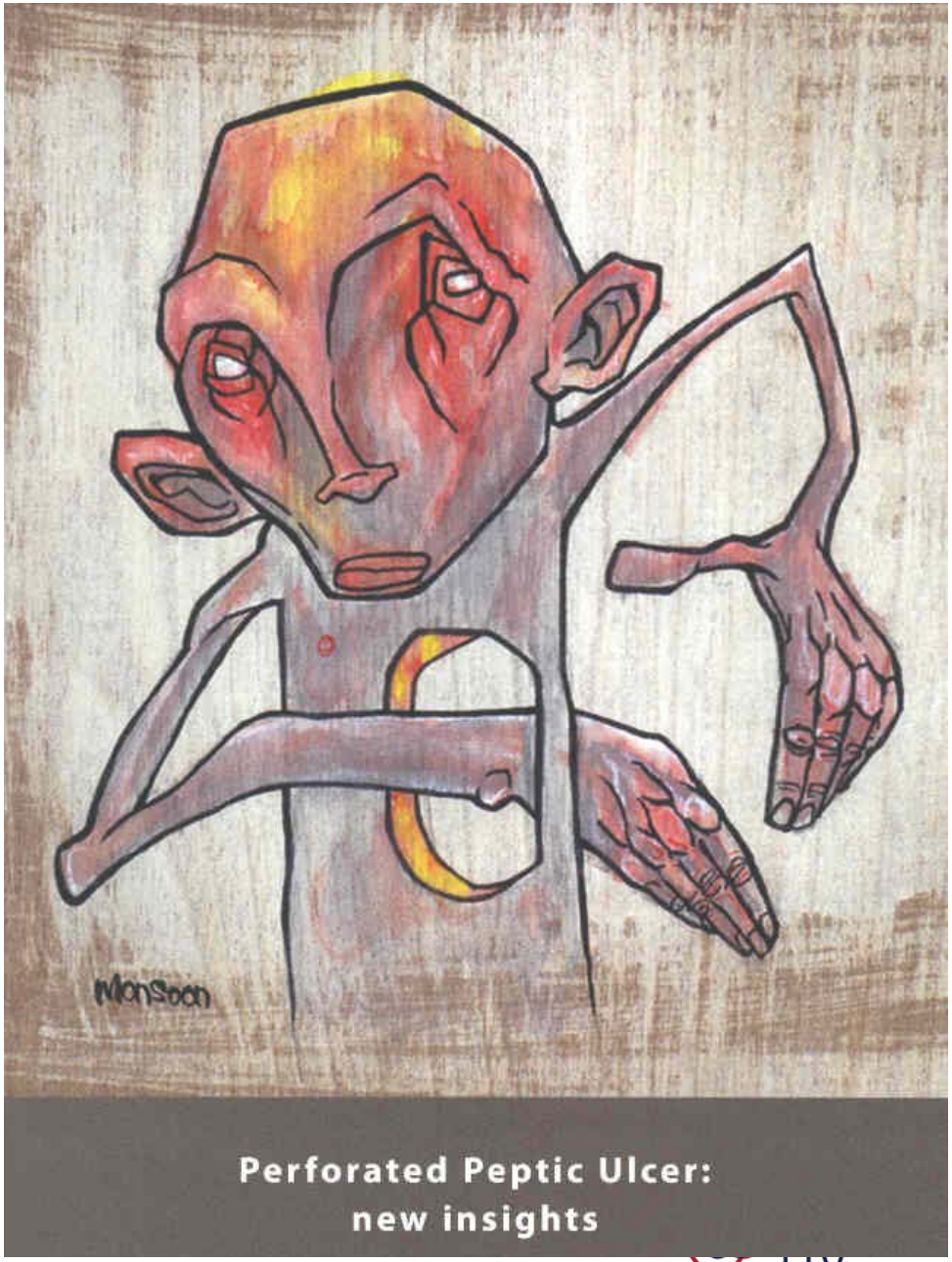
- Advantage:
  - Small incision
  - Less wound sepsis

- Pneumoperitoneum

  Chinchau et all
  - Bacterial translocation

  Naesgaard et al
  - Increase pneumonia

  Increase risk if prolonged peritonitis



MINIMAL ACCESS …

Physiological effects of a pneumoperitoneum

cardiovascular	Respiratory	Others
↓ Venous return	↓ lung volumes FRC	↓renal function
↓cardiac output	↑ airway resistance	↑ risk of regurgitation
↑ SVR	↓ pulmonary compliance	↑ ICP
↓ BP	↑ airway pressure	↓ CPP
Brady/tachycardia	↑risk of barotraumas	
	↑ V/Q mismatch	

UFS UV

MINIMAL ACCESS …

Metabolic effects of CO_2 insufflation during pneumoperitoneum

Respiratory	Cardiovascular	Others
• Hypercarbia & Acidosis • Pneumothorax • Atelectasis • Subcutaneous emphysema • Pneumomediastinum • Pleural effusion	• Arrhythmias • Hypotension • Cardiac arrest • Deep-vein thrombosis • Pulmonary oedema • Myocardial infarction • Gas embolism	• Shoulder pain • Retinal haemorrhage • Oliguria • Transient ischemic attack • Bowel ischemia/oedema • Hypothermia • Necrotizing fasciitis • Tumour inoculation

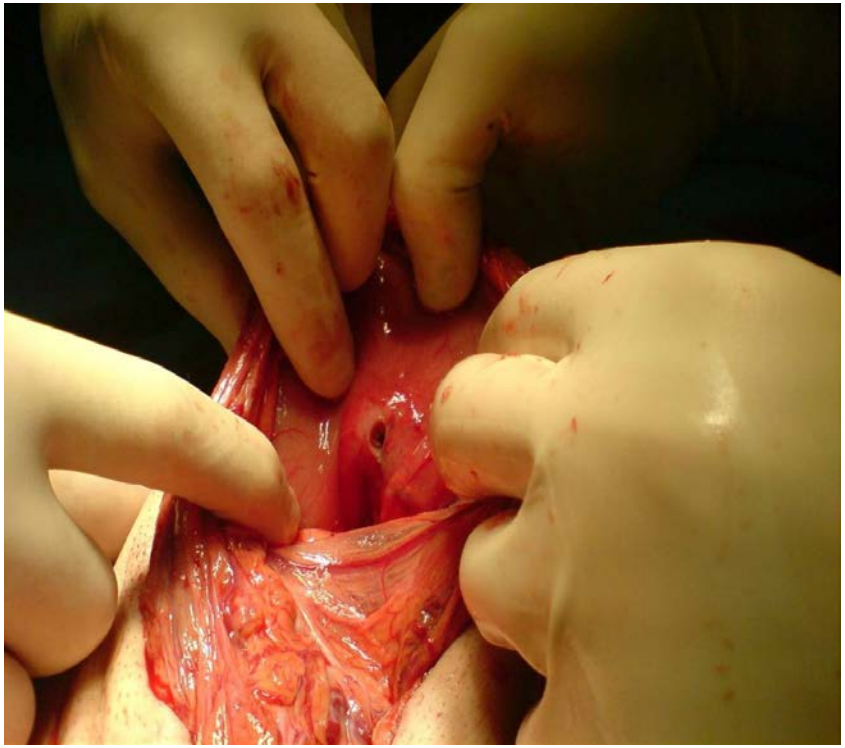
UFS UV

OPEN IS BETTER…

HIGH RISK PATIENTS

- Shelat et al
- Kuwabara et la

- Recommendation:
  - Boey score >3
  - Age >70
  - Perforation >24 hours



UFS UV

IN SUMMARY:

- Further randomized trials are considered essential to determine the relative effectiveness of laparoscopic and open repair of PPU

- **Current literature fail to suggest a advantage in laparoscopic surgery for PPU regarding:**
  - Abdominal septic complications
  - Pulmonary complications
  - Re-operations
  - Mortality or morbidity

- Only proven difference:
  - Woundsepsis rate

UFS UV

UFS UV

WHY THEN DO I RECOMMEND AN OPEN REPAIR?

Cochrane Database Syst Rev. 2013 Feb 28;(2):CD004778. doi: 10.1002/14651858.CD004778.pub3.

Laparoscopic repair for perforated peptic ulcer disease.

Sanabria A[1], Villegas MI, Morales Uribe CH.

- No statistically significant difference:
  - Septic intra-abdominal complications
  - Pulmonary complications
  - Post-operative ileus
  - Mortality

UFS UV

WHY THEN DO I RECOMMEND AN OPEN REPAIR?

PNEUMOPERITONEUM WITH CO_2 INSUFFLATION

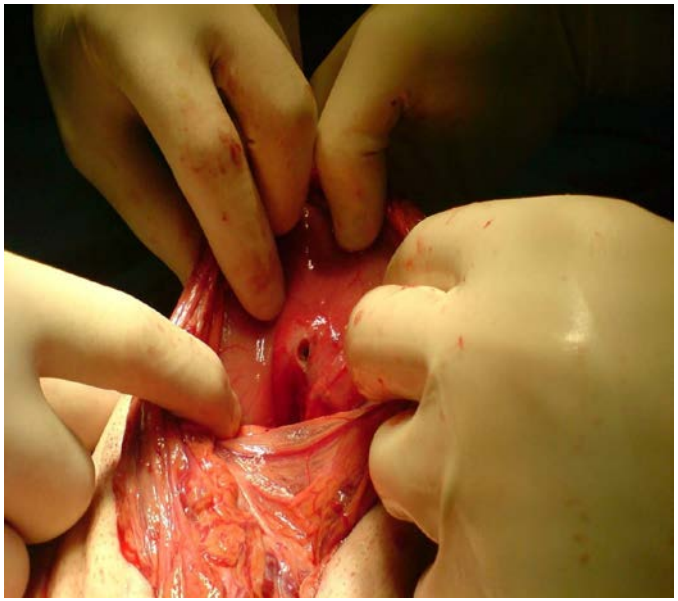
HAVE MAJOR

METABOLIC AND PHYSIOLOGICAL EFFECT

SURGERY IN A RESOURCE RESTRICTED ENVIRONMENT

- 70 yr female with a perforated peptic ulcer >24hours, renal impairment, known with cardiac failure…

- High Boey score



DANISH CLINICAL REGISTER OF EMERGENCY SURGERY

- Limiting surgical delay is of paramount importance in treating patients with PPU
- Cohort study including 2668 patients
- Showed that every hour of delay from admission to surgery was associated with an adjusted 2-4% decreased probability of survival compared with the previous hour

WHY OPEN REPAIR?
ESPECIALLY IN A RESOURCE RESTRICTED ENVIROMENT

In our setting:

A prolonged laparoscopic case might help the patient in front of us to get a better cosmetic result or mobilise earlier…. but at what cost?

Our theatre time is precious, every second count

Every hour of delay
might impact on the survival of your next patient

- Alternative options can safe life with similar outcomes:
  - ERAS….
  - Vac dressing over high risk wounds…

UFS UV

WHY OPEN REPAIR?
MAYBE WE CAN CHANGE THE FUTURE….

By doing a laparotomy and omental patch: every intern or doctor that can do a laparotomy can save a life.

By saving a life surgically –
a junior doctor might just fall in love with surgery and maybe become the next Charles McBurney

UFS UV

WHY OPEN REPAIR?
MAYBE WE CAN CHANGE THE FUTURE….

Thank You
Dankie

T: +27(0)51 401 9111 | info@ufs.ac.za | www.ufs.ac.za

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA

UFS
UV

WHY OPEN REPAIR?

All human life is

precious.

UFS UV

LITERATURE

George A. Antoniou, MD, PhD, Oliver O. Koch, MD, Rudolph Pointner, MD, PhD, and Frank A. Granderath, MD, PhD. Meta-analysis of Laparoscopic Versus Open Repair of Perforated Peptic Ulcer. JSLS. 2013 Jan-Mar; 17(1): 15–22. doi: 10.4293/108680812X13517013317752

•Tan S[1], Wu G[2], Zhuang Q[1], Xi Q[1], Meng Q[1], Jiang Y[1], Han Y[1], Yu C[3], Yu Z[4], Li N[5]. Laparoscopic versus open repair for perforated peptic ulcer: A meta analysis of randomized controlled trials. Int J Surg. 2016 Sep;33 Pt A:124-32. doi: 10.1016/j.ijsu.2016.07.077. Epub 2016 Aug 5.

•Chunhua Zhou,[1,2,*] Weizhi Wang,[1,*] Jiwei Wang,[1,*] Xiaoyu Zhang,[1,3,*] Qun Zhang,[1] Bowen Li,[1] and Zekuan Xu[a,1,] An Updated Meta-Analysis of Laparoscopic Versus Open Repair for Perforated Peptic Ulcer. Sci Rep. 2015; 5: 13976. Published online 2015 Sep 9. doi: 10.1038/srep13976

•Crofts TJ, Park KG, Steele RJ, et al. A randomized trial of nonoperative treatment for perforated peptic ulcer. N Engl J Med. 1989;320(15):970–973

•Druart ML, Van Hee R, Etienne J, et al. Laparoscopic repair of perforated duodenal ulcer. A prospective multicenter clinical trial. Surg Endosc. 1997;11(10):1017–1020 [PubMed]

•Katkhouda N, Mavor E, Mason RJ, et al. Laparoscopic repair of perforated duodenal ulcers: outcome and efficacy in 30 consecutive patients. Arch Surg. 1999;134(8):845–850 [PubMed]

•Thompson AR, Hall TJ, Anglin BA, Scott-Conner CE. Laparoscopic plication of perforated ulcer: results of a selective approach. South Med J. 1995;88(2):185–189 [PubMed]

•Naesgaard JM, Edwin B, Reiertsen O, et al. Laparoscopic and open operation in patients with perforated peptic ulcer. Eur J Surg. 1999;165(3):209–214 [PubMed]

•Blomgren LG. Perforated peptic ulcer: long-term results after simple closure in the elderly. World J Surg. 1997;21(4):412–415 [PubMed]

•Salomone Di Saverio1*†, Marco Bassi7†, Nazareno Smerieri1,6, Michele Masetti1, Francesco Ferrara7, Carlo Fabbri7, Luca Ansaloni3, Stefania Ghersi7, Matteo Serenari1, Federico Coccolini3, Noel Naidoo4, Massimo Sartelli5. Diagnosis and treatment of perforated or bleeding peptic ulcers: 2013 WSES position paper. World Journal of Emergency Surgery 2014, 9:45 http://www.wjes.org/content/9/1/45

•Babu A, Raikhy A, Ghosh H, Sarathi Nayak P, Bhartia A, et al. Laparoscopic Repair of Duodenal Perforation by “Hanging Method” -Technique and Benefits, J Minim Invasive Surg Sci. 2017 ;6(2):e13964. doi: 10.5812/minsurgery.13964.

•Shelat VG, Ahmed S, Chia CL, Cheah YL. Strict Selection Criteria During Surgical Training Ensures Good Outcomes in Laparoscopic Omental Patch Repair (LOPR) for Perforated Peptic Ulcer (PPU). Int Surg. 2015; 100(2): 370-5[DOI][PubMed]

• Kuwabara K, Matsuda S, Fushimi K, Ishikawa KB, Horiguchi H, Fujimori K. Community-based evaluation of laparoscopic versus open simple closure of perforated peptic ulcers. World J Surg. 2011; 35(11): 2485-92[DOI][PubMed]

•Song KY, Kim TH, Kim SN, Park CH. Laparoscopic repair of perforated duodenal ulcers: the simple "one-stitch" suture with omental patch technique. *Surg Endosc.* 2008; 22(7): 1632-5[DOI][PubMed]

•Sanabria A, Villegas MI, Morales Uribe CH. Laparoscopic repair for perforated peptic ulcer disease. *Cochrane Database Syst Rev.* 2013; (2)[DOI][PubMed]

UFS UV