

Demand vs. Planned Relaparotomy

Jacques Goosen

Department of Surgery

University of the Witwatersrand



Why Bother?

- Heuristics are simple, efficient rules which people often use to form judgments and make decisions.
- They are mental shortcuts that usually involve focusing on one aspect of a complex problem and ignoring others.
- Heuristic thinking often leads to fatal errors, mostly fatal for the patient.

- Planned re-laparotomy was introduced (1983) to enable repeated debridement and washout of residual necrotic or inflammatory material, thereby suppressing the inflammatory response to limit progression to multiple organ failure. The definition of “adequate peritoneal cleansing” remains elusive.

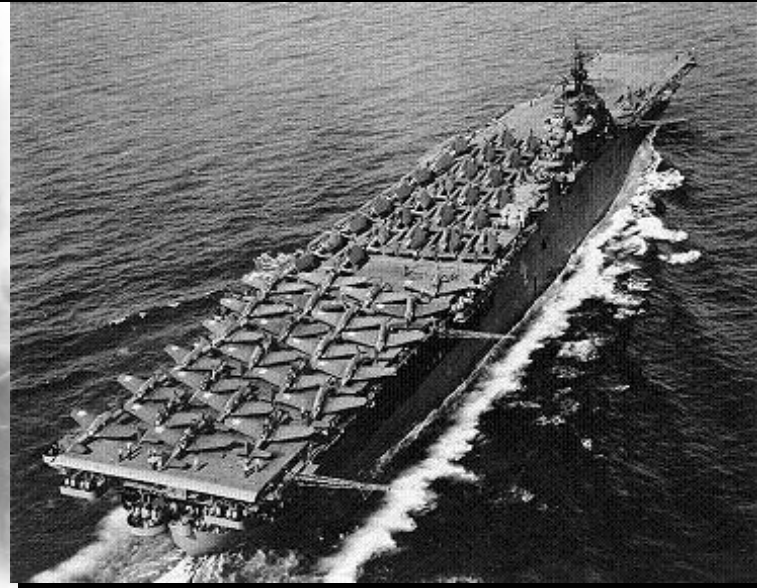
Damage Control Surgery for Trauma.

Are we really saving lives?

- Damage Control Laparotomy for trauma originated in 1981 with the aim of controlling haemorrhage and contamination to enable physiological restoration followed by definitive repair in a stable patient.
- Indications were based on combination(s) of hypo perfusion, hypothermia, acidosis and coagulopathy.
- Evidence that supports the efficacy of damage control surgery with respect to traditional laparotomy in patients with major abdominal trauma (remains) limited.
- [Cirocchi R¹, Montedori A, Farinella E, Bonacini I, Tagliabue L, Abraham I. Damage control surgery for abdominal trauma. Cochrane Database Syst Rev. 2013 Mar 28;\(3\).](#)

Damage Control Surgery: Rationale

- Surgery limited to stopping the bleeding and contamination in physiologically compromised patients, to allow physiological stabilization
- Applicable to any physiologically unstable patient



Non-trauma Damage Control Laparotomy

A Logical Extension?

- .A “logical extension from pathophysiological principles in trauma to haemorrhage and sepsis.
- The benefits of this strategy depend on careful patient selection.
- Damage control surgery has been performed for a wide range of indications, but most frequently for uncontrolled bleeding during elective surgery, haemorrhage from complicated gastroduodenal ulcer disease, generalized peritonitis, acute mesenteric ischaemia and other sources of intra-abdominal sepsis”.
- [Weber DG](#)¹, [Bendinelli C](#), [Balogh ZJ](#). Damage control surgery for abdominal emergencies. [Br J Surg](#). 2014 Jan;101(1):e109-18

Definitive Studies?

Not Yet!

- Lamme B, Boermeester M, Belt E, Van Till J, Gouma D, Obertop H. Mortality and morbidity of planned relaparotomy versus relaparotomy on demand for secondary peritonitis. *Br J Surg*. 2004 Aug; 91(8): 1046-54
- Van Ruler O, Mahler CW, Boer KR, et al. Comparison of on-demand vs. planned relaparotomy strategy in patients with severe peritonitis. A randomized trial. *JAMA* 2007; 298:865–73.
-showed that mortality and morbidity were not statistically significant, but number of laparotomies, resource utilization and healthcare-related costs were significantly less in the demand relook laparotomy group compared to the planned relaparotomy group.

Evidence or Poor Inclusion?

- Analysis of results showed) possible exclusion of those who needed planned relook laparotomy the most,
- a surprisingly high rate of “negative” relaparotomies on both groups (60% planned, vs 30% demand), relaparotomy rate of 44% in the demand relaparotomy group,
- A type ii error (95% confidence interval -5% worse or 20% better) suggesting no benefit where in fact there was benefit.
- “The results of the study may not be generalizable to the sickest patients, those with so much contamination, necrosis or physiological instability that abbreviation of the index operation, repeat laparotomy and delayed closure are deemed imperative by the surgical team.
- Brasel K, Hameed M, Sarr M, for the members of the Evidence-Based Reviews in Surgery Group*. CAGS and ACS Evidence-based Reviews in Surgery. 28: Comparison of on-demand and planned relaparotomy for secondary peritonitis. *Canadian Journal of Surgery*. 2009;52(1):56-58..

The Debate Continued

A New Name:

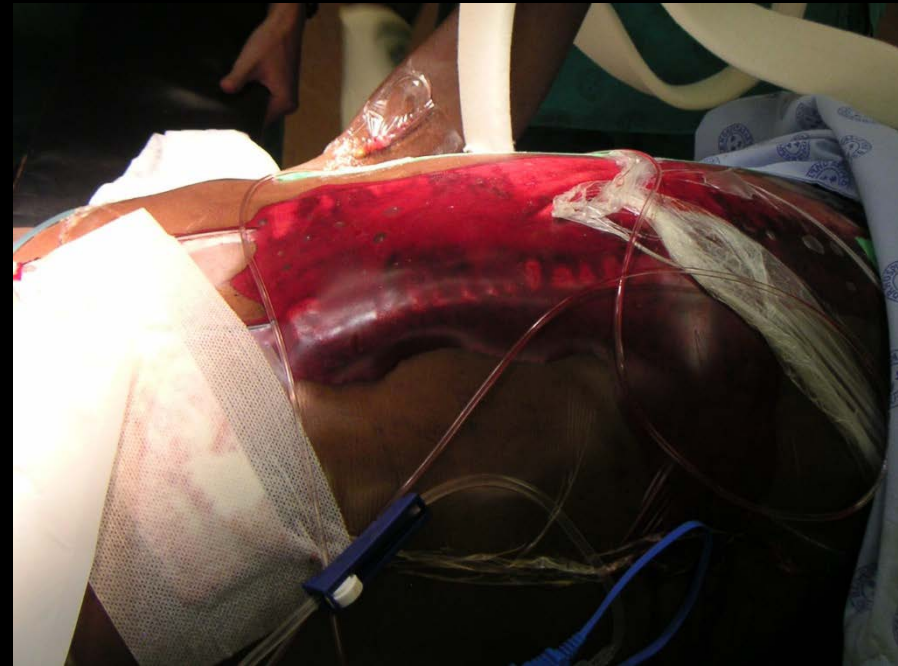
Damage Control for Non-Trauma

- [Vogler J 4th](#)¹, [Bagwell L](#)², [Hart L](#)³, [Holmes S](#)⁴, [Sciaretta J](#)¹, [Davis JM](#)¹. Rapid Source-Control Laparotomy: Is There a Mortality Benefit? [Surg Infect \(Larchmt\)](#). 2017 Oct;18(7):787-792. 2015 National Surgical Quality Improvement Project (NSQIP) database for all patients treated with either RSCL or PFC. This retrospective cohort analysis demonstrated that RSCL is associated with higher odds of death in general surgical patients with intra-abdominal infection.
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- Becher RD, Peitzman AB, Sperry JL, et al. Damage control operations in non-trauma patients: defining criteria for the staged rapid source control laparotomy in emergency general surgery. *World Journal of Emergency Surgery : WJES*. 2016;11:10

No conclusive evidence

Coagulopathy of Sepsis

- Simmons J, Pittet J-F. The Coagulopathy of Acute Sepsis. *Current opinion in anaesthesiology*. 2015;28(2):227-236.
- TEG correlate well with critical illness scores
- The more septic you are, the more you ooze.



Oedema, intra-abdominal hypertension:
Updated Consensus
Kirkpatrick AW, Roberts DJ, De Waele J
Intensive Care Med. 2013 Jul;39(7):1190-
206

Measure it while closing!



[Peoc'h K¹](#), [Nuzzo A¹](#), [Guedj K¹](#), [Paugam C¹](#), [Corcos O¹](#).

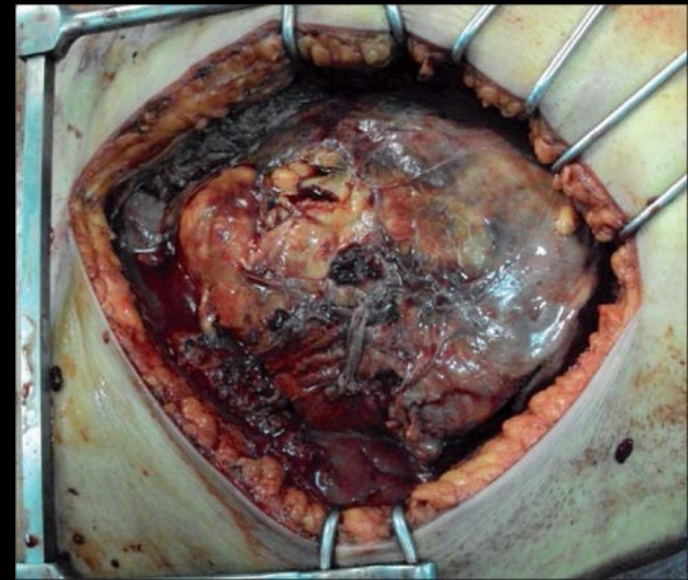
Diagnosis biomarkers in acute intestinal ischemic injury: so close, yet so far. [Clin Chem Lab Med.](#) **2017 Aug 25.** -2017-0291.

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- No adequate predictive studies
- What will survive?
- What will die?
- No option but to come back



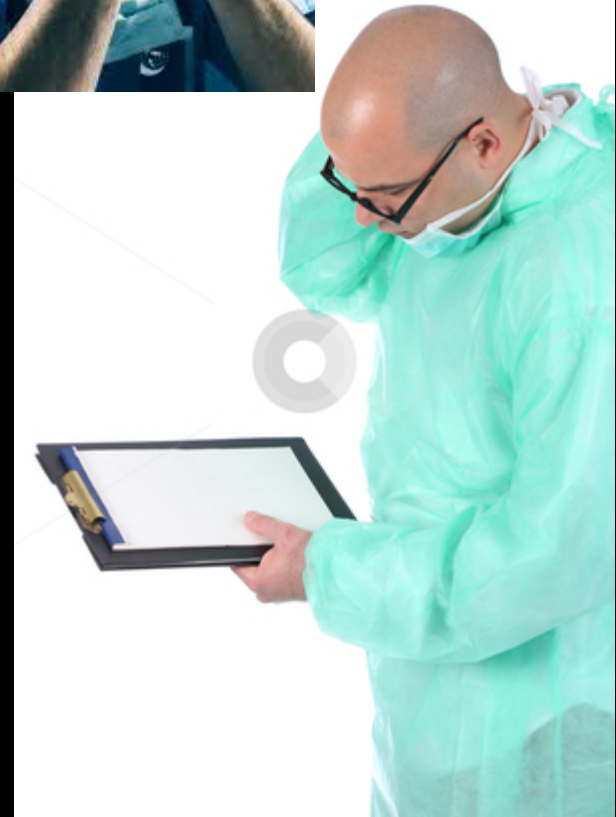
Diagnosing Necrotizing Fasciitis

- [Bechar J¹](#), [Sepehripour S¹](#), [Hardwicke J¹](#), [Filobbos G¹](#). Laboratory risk indicator for necrotising fasciitis (LRINEC) score for the assessment of early necrotising fasciitis: a systematic review of the literature. [Ann R Coll Surg Engl](#). 2017 May;99(5):341-346.....
- Factors included in the LRINEC Score are: C-reactive protein, white cell count, erythrocyte count, haemoglobin, pain, fever, tachycardia, acute renal failure.



The Decision!

- The greater the risk, the higher the indication for planned re-laparotomy.
- Planned re-laparotomy has the same mortality as those subjected to demand re-laparotomy.
- Risk factors and indicators for mortality and morbidity in intra-abdominal infections include should assist decision-making



Analyze the Risk Factors!

- Shirah GR, O'Neill PJ. Intra-abdominal Infections. Surg Clin North Am. 2014 Dec; 94(6):1319-33.
- Patient factors (advanced age, immunosuppression, malignant disease, and pre-existing medical comorbidities) or disease factors
- High-risk scores (such as ASA, APACHE, SOFA scores)
- Delay in intervention (usually >24 h), inability to obtain source control, and an IAI that is healthcare associated (rather than community acquired)
- Pre-operative functional status, independent vs dependent
- Disease specific scores of which none have good accuracy, prediction ability, nor validity and generalizability.



Risk For Anastomotic Leak



- ASA Score ≥ 3 , use of inotropes / acidosis, male sex, obesity, blood loss > 100 ml, pre-operative blood transfusion, peri-operative steroid and non-steroid anti-inflammatory drugs, number of stapler firings, operative time, surgeon experience, intra-abdominal hypertension / compartment syndrome, and serial inflammatory markers.

WSES Sepsis Severity Score

- Sartelli M, Abu-Zidan FM, Catena F, et al. Global validation of the WSES Sepsis Severity Score for patients with complicated intra-abdominal infections: a prospective multicentre study (WISS Study). *World Journal of Emergency Surgery : WJES*. 2015;10:61.
- The sepsis severity score has a very good ability of distinguishing those who survived from those who died. The overall mortality was 0.63 % for those who had a score of 0–3, 6.3 % for those who had a score of 4–6, 41.7 % for those who had a score of ≥ 7 . In patients who had a score of ≥ 9 the mortality rate was 55.5 %, those who had a score of ≥ 11 the mortality rate was 68.2 % and those who had a score ≥ 13 the mortality rate was 80.9 %.

My Conclusion

Planned relook for:

- Absolute indications +
 - Age > 70
 - Functional dependence
 - Co-morbidities ≥ 3
 - Lactate >3 / septic shock
 - Abnormal TEG
 - APACHE ≥ 20
- Measure the pressure when closing

Conclusions

- The default is to perform a definitive laparotomy for generalized secondary peritonitis, provided that risk factors from mortality and morbidity are constantly searched for, that conversion to planned re-laparotomy take place based on those considerations.
- The mortality of demand re-laparotomy, if performed, is similar a strategy of planned re-laparotomy. The risk remains in not actively seeking the risk factors, and delaying the decision to perform the re-laparotomy.