



# Pacient s „open abdomen“ na JIP

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**CHIRURGICKÁ KLINIKA**

FAKULTNÍ NEMOCNICE  
HRADEC KRÁLOVÉ



# THE TREATMENT OF GENERAL SEPTIC PERITONITIS.<sup>1</sup>

By ANDREW J. McCOSH, M.D.,

OF NEW YORK,

SURGEON TO THE PRESBYTERIAN HOSPITAL.

THE object of this paper is not to give an account of the various methods which have been employed in the treatment of septic peritonitis, neither is it to dwell on the results of treatment as recorded in the statistics of different surgeons, but simply to state the conclusions which have been derived from my own experience in the treatment of these cases. My remarks will apply solely to that form commonly known as diffuse or general septic or suppurative peritonitis, where the infection, unlimited by adhesions, has extended to all parts of the peritoneal cavity. Intraperitoneal collections of pus, if walled in by adhesions, no matter how numerous or how extensive they may be, are not considered, neither are cases of tubercular peritonitis.

McCosh II AJ. The treatment of general septic peritonitis.  
Ann Surg. 1897;25:687-97.

# Hlavní indikace / „damage control surgery“

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1. Trauma
2. Peritonitida, abdominální seps
3. Akutní pankreatitida
4. Nitrobřišní hypertenze

→ kontrola krvácení, infekce, dekomprese,  
snadný opakovaný vstup

X

Nekrotizující fasciitida



# Multicentre prospective study of fascial closure rate after open abdomen with vacuum and mesh-mediated fascial traction

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<sup>1</sup>Vascular Centre and <sup>2</sup>Department of Surgery, Skane University Hospital, Lund University, Malmö, <sup>3</sup>Department of Vascular Surgery, Uppsala University, Uppsala, and Departments of Surgery, <sup>4</sup>Falun Hospital, Falun, and <sup>5</sup>Gävle Hospital, Gävle, Sweden

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Letalita „open abdomen“ při trvání nad 5 dnů je 30%

**Background:** Damage control surgery is commonly used in both trauma and non-trauma situations. Several techniques for temporary abdominal closure have been developed. The main objective of this study was to evaluate the fascial closure rate in patients after vacuum-assisted wound closure and mesh-mediated fascial traction (VAWCM) for long-term OA treatment, and to describe complications.

**Methods:** This prospective study included all patients who received VAWCM treatment between 2006 and 2009 at four hospitals. Patients with anticipated OA treatment for fewer than 5 days and those with non-midline incisions were excluded.

**Results:** Among 151 patients treated with an OA, 111 received VAWCM treatment. Median age was 68 years. Median OA treatment time was 14 days. Main disease aetiologies were vascular (45 patients), visceral surgical disease (57) and trauma (9). The fascial closure rate was 76.6 per cent in intention-to-treat analysis and 89 per cent in per-protocol analysis. Eight patients developed an intestinal fistula, of whom seven had intestinal ischaemia. Intestinal fistula was an independent factor associated with failure of fascial closure (odds ratio (OR) 8.55, 95 per cent confidence interval 1.47 to 49.72;  $P = 0.017$ ). The in-hospital mortality rate was 29.7 per cent. Age (OR 1.21, 1.02 to 1.43;  $P = 0.027$ ) and failure of fascial closure (OR 44.50, 1.13 to 1748.52;  $P = 0.043$ ) were independently associated with in-hospital mortality.



# The open abdomen, indications, management and definitive closure

Federico Coccolini<sup>1\*</sup>, Walter Biffi<sup>2</sup>, Fausto Catena<sup>3</sup>, Marco Ceresoli<sup>1</sup>, Osvaldo Chiara<sup>4</sup>, Stefania Cimbanassi<sup>4</sup>, Luca Fattori<sup>5</sup>, Ari Leppaniemi<sup>6</sup>, Roberto Manfredi<sup>1</sup>, Giulia Montori<sup>1</sup>, Giovanni Pesenti<sup>5</sup>, Michael Sugrue<sup>7,8</sup> and Luca Ansaloni<sup>1</sup>

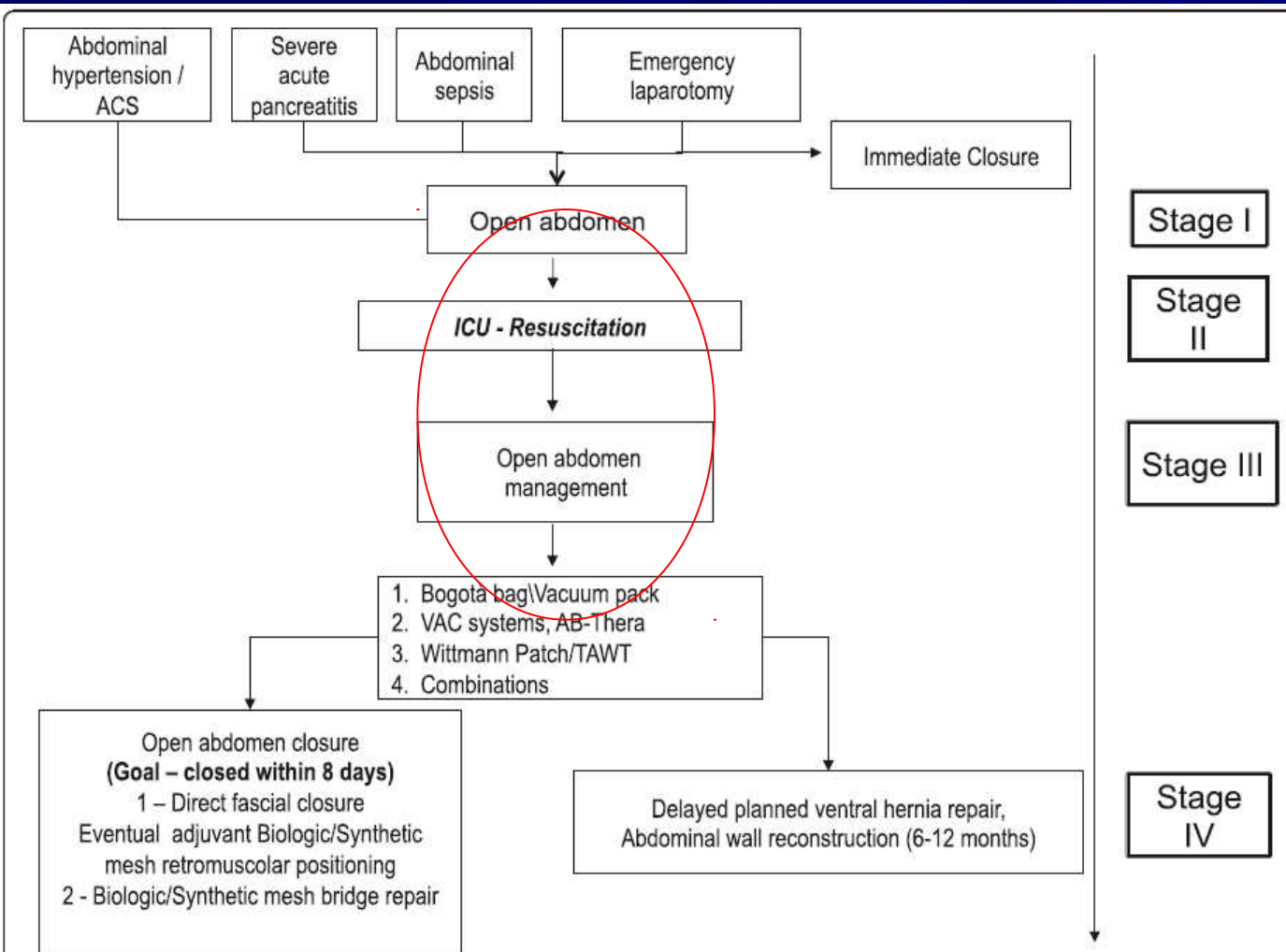


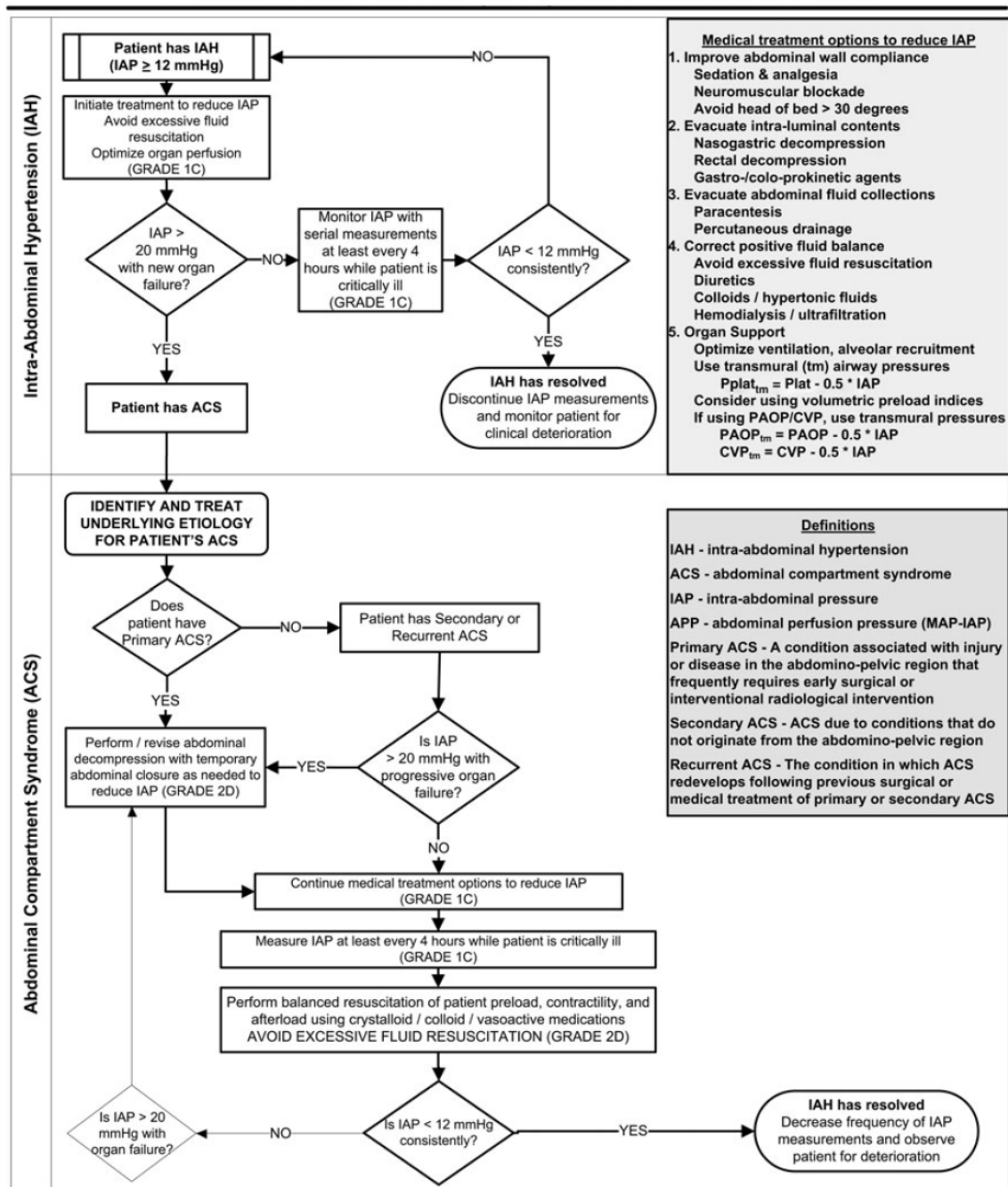
Fig. 1 Schematic flow-chart for the treatment of the open abdomen

Andrew W. Kirkpatrick  
Derek J. Roberts  
Jan De Waele  
Roman Jaeschke  
Manu L. N. G. Malbrain  
Bart De Keulenaer  
Juan Duchesne  
Martin Bjorck  
Ari Leppaniemi  
Janeth C. Ejike  
Michael Sugrue  
Michael Cheatham  
Rao Ivatury  
Chad G. Ball  
Annika Reintam Blaser  
Adrian Regli  
Zsolt J. Balogh  
Scott D'Amours  
Dieter Debergh  
Mark Kaplan  
Edward Kimball  
Claudia Olvera  
The Pediatric Guidelines  
Sub-Committee for the  
World Society of the Abdominal  
Compartment Syndrome

## Intra-abdominal hypertension and the abdominal compartment syndrome: updated consensus definitions and clinical practice guidelines from the World Society of the Abdominal Compartment Syndrome

IAP > 20mmHg = 27cm H<sub>2</sub>O  
+/- APP < 60 mmHg  
+ nová orgánová dysfunkce či  
selhání  
+ neúspěch konzervativních  
opatření u sekundárního ACS:  
evakuace střevního obsahu  
evakuace intraabdominální  
tekutiny  
optimalizace hemodynamiky  
zlepšení compliance břišní  
stěny

## INTRA-ABDOMINAL HYPERTENSION (IAH) / ABDOMINAL COMPARTMENT SYNDROME (ACS) MANAGEMENT ALGORITHM





# Komplikace „open abdomen“

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1. Velká ranná plocha – ztráta tekutiny a bílkovin
2. Proteinový katabolizmus, negativní dusíková bilance
3. Otevřená dutina břišní – riziko infekce a poranění
4. Střevní fistulace
5. Fibrozní plastické změny „frozen abdomen“
6. Retrakce fascie, ventrální hernie

Snaha o uzávěr včetně fascie do 8 dnů.



# I. Rychlá hemodynamická optimalizace

1. Adekvátní perfuze splachnické oblasti
2. Včasné vysazení katecholaminů
3. Včasná mobilizace tekutin

British Journal of Anaesthesia 113 (5): 740–7 (2014)  
Advance Access publication 9 September 2014 · doi:10.1093/bja/aeu300

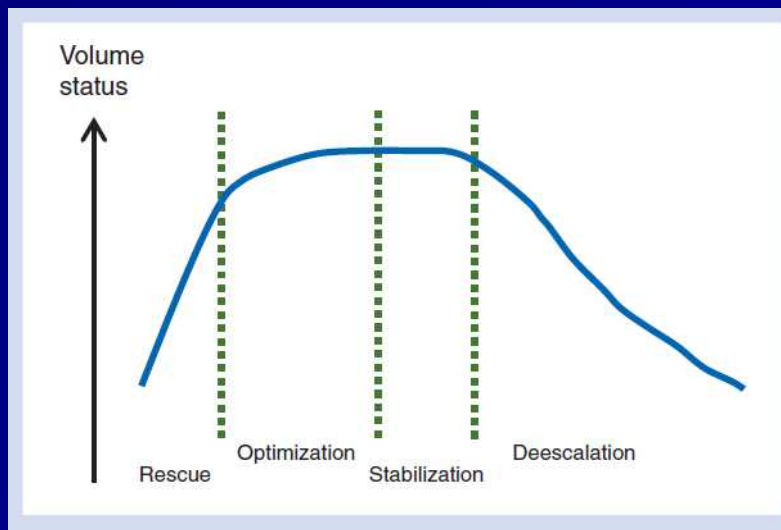
BJA

## SPECIAL ARTICLES

### Four phases of intravenous fluid therapy: a conceptual model†

E. A. Hoste<sup>1,2</sup>, K. Maitland<sup>3,4</sup>, C. S. Brudney<sup>5</sup>, R. Mehta<sup>6</sup>, J.-L. Vincent<sup>7</sup>, D. Yates<sup>8</sup>, J. A. Kellum<sup>9</sup>, M. G. Mythen<sup>10</sup>  
and A. D. Shaw<sup>11</sup> for the ADQI XII Investigators Group

Průměrná délka pozitivní bilance 2 dny





## II. Optimální ošetřování laparostomatu

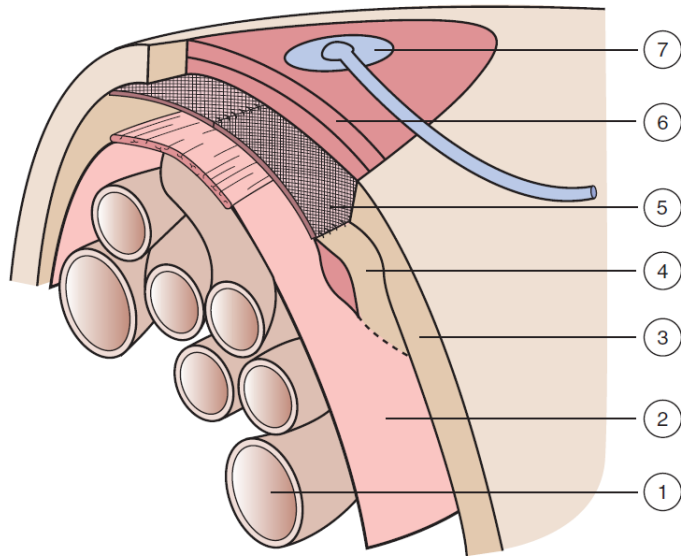
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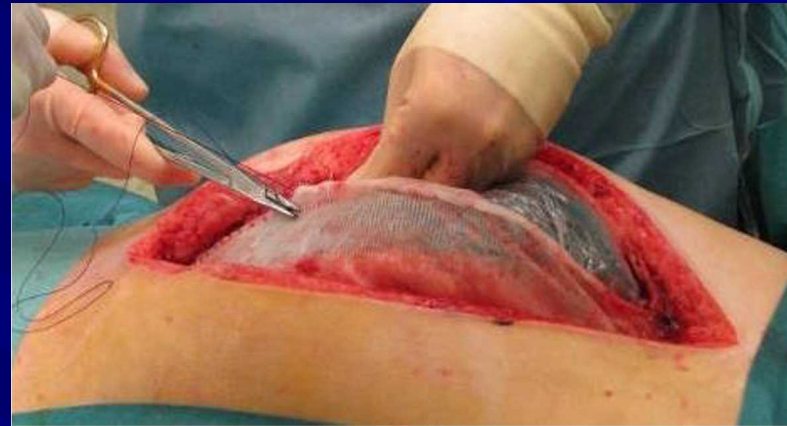
1. Přetrvávající infekce
2. Pokračující retence tekutin
3. Sedace
4. Arterficiální ventilace
5. Imobilizace
6. Proteinový katabolismus
7. Intolerance enterální výživy
8. Střevní paralýza
9. Multiorgánová dysfunkce
10. Vysoké riziko úmrtí

# VAWCM – „vacuum-assisted wound closure and mesh-mediated fascial traction“

Vacuum and mesh for closure of open abdomen



**Fig. 1** Vacuum-assisted wound closure and mesh-mediated fascial traction technique: 1, bowel; 2, visceral protective layer; 3, abdominal wall; 4, abdominal wall fascia; 5, polypropylene mesh, consisting of two mesh halves, sutured to the fascia laterally and to each other in the midline; 6, two pieces of polyurethane foam placed on top of the mesh and subcutaneously between the wound edges; 7, tubing set with an interface pad attached to an opening in the self-adhesive drapes and connected to the vacuum source



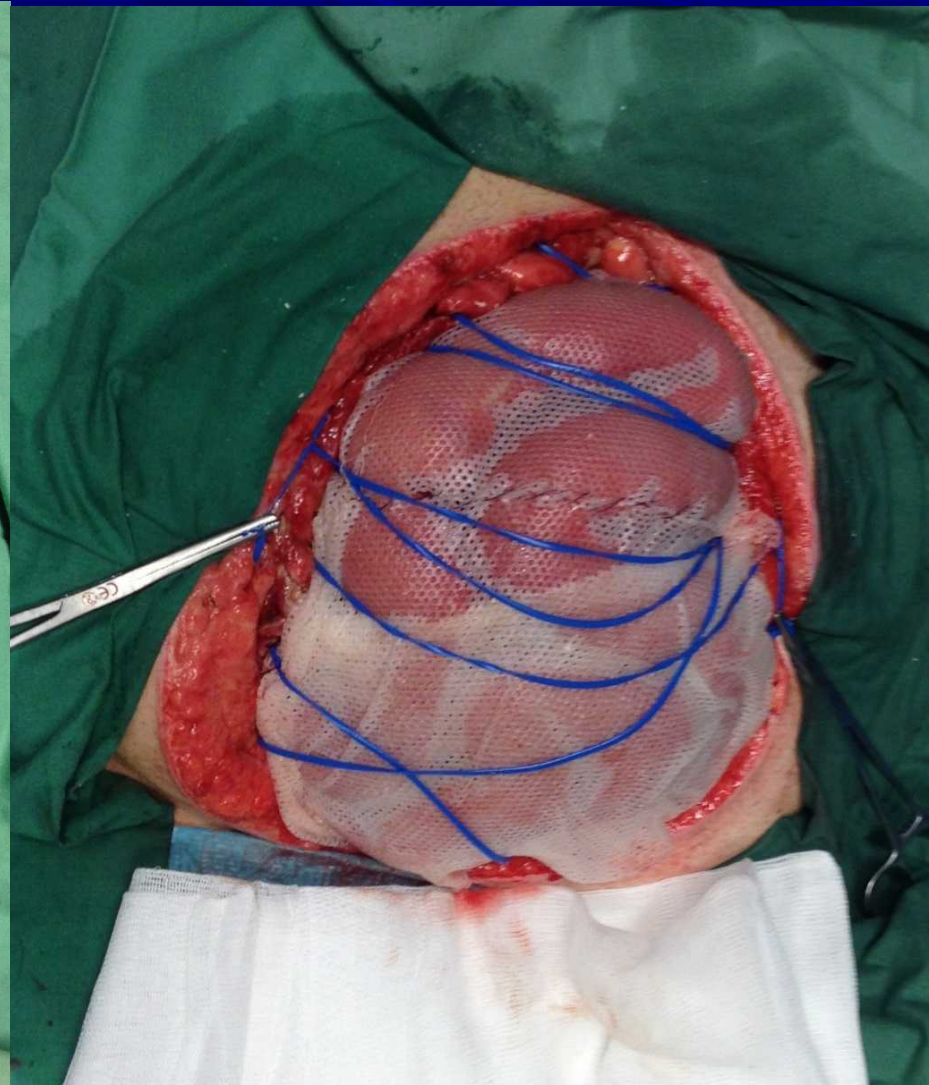
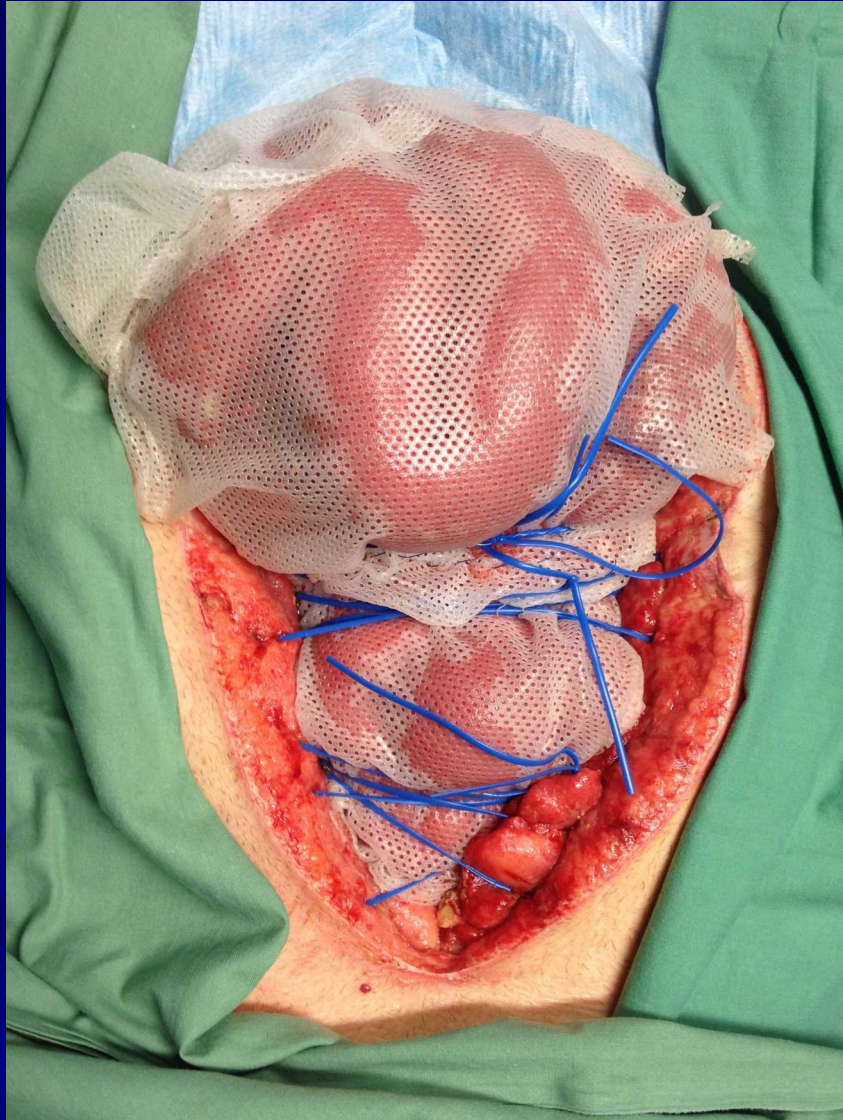
## Use of dynamic wound closure system in conjunction with vacuum-assisted closure therapy in delayed closure of open abdomen

A. E. Salman · F. Yetişir · M. Aksoy ·  
M. Tokaç · M. B. Yildirim · M. Kiliç

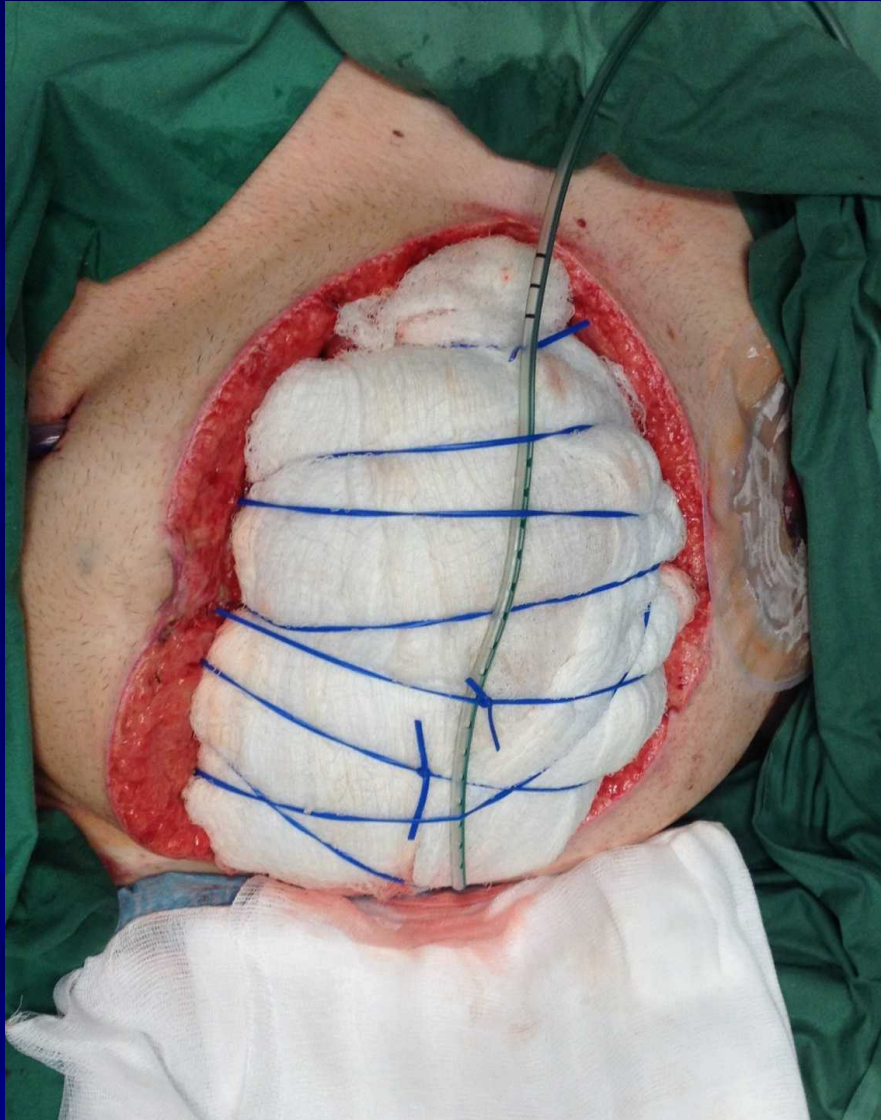




# Dynamická sutura







# III. Nutriční podpora

1. Proteinový katabolizmus okolo 20g N + 2g/litr peritoneálního transudátu
2. Kombinovaná parenterální a enterální výživa
3. Imunonutrice s výhodou

*Cheatham ML, Safcsak K, Brzezinski SJ, Lube MW. Nitrogen balance, protein loss, and the open abdomen. Crit Care Med. 2007;35(1):127–31.*



## Feeding the Open Abdomen: [1]

Collier, Bryan;Guillamondegui, Oscar;Cotton, Bryan;Donahue, Rafe;et al  
*JPEN, Journal of Parenteral and Enteral Nutrition*; Sep-Oct 2007; 31, 5; ProQuest Central  
pg. 410

0148-6071/07/3105-0410\$03.00/0

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## Original Communications

### Feeding the Open Abdomen

Bryan Collier, DO†; Oscar Guillamondegui, MD†; Bryan Cotton, MD†; Rafe Donahue, PhD\*;  
Andrew Conrad, BS‡; Kate Groh, BS‡; Jill Richman, BS‡; Todd Vogel, MD, MPH§; Richard Miller, MD†; and  
Jose Diaz, Jr, MD†

*From the \*Department of Biostatistics, Section of Surgical Sciences, and †Division of Trauma and Surgical Critical Care, Vanderbilt University Medical Center, Nashville, Tennessee; ‡Vanderbilt University School of Medicine; and the §University of Washington, Harborview Medical Center*

**ABSTRACT.** *Background:* The purpose of this study was to determine if early enteral nutrition improves outcome for trauma patients with an open abdomen (OA). *Methods:* Retrospective review was used to identify 78 patients who required an OA for  $\geq 4$  hospital days, survived, and had available nutrition data. Demographic data and nutrition data comprising enteral nutrition initiation day and daily % target goal were collected. Patients were divided into 2 groups: early enteral feeding (EEN), initiated  $\leq 4$  days within celiotomy; and late enteral feeding (LEN;  $> 4$  days). Outcomes included infectious complications, early closure of the abdominal cavity ( $< 8$  days from original celiotomy), and fistula formation. *Results:* Fifty-three of 78 (68%) patients were men, with a mean age of 35 years; 74% had blunt trauma.

Forty-three of 78 (55%) patients had EEN, whereas 35 of 78 (45%) had LEN. There was no difference with respect to demographics, injury severity, or infectious complication rates. Thirty-two of 43 (74%) patients with EEN had early closure of the abdominal cavity, whereas 17 of 35 (49%) patients with late feeding had early closure ( $p = .02$ ). Four of 43 (9%) patients with EEN demonstrated fistula formation, whereas 9 of 35 (26%) patients with late feeding formed fistulae ( $p = .05$ ). The EEN group had lower hospital charges ( $p = .04$ ) by more than \$50,000. *Conclusions:* EEN in the OA was associated with (1) earlier primary abdominal closure, (2) lower fistula rate, (3) lower hospital charges. (*Journal of Parenteral and Enteral Nutrition* 31:410–415, 2007)

# IV. Pohybová rehabilitace

– předpoklad proteosyntézy



# Závěr:

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- „Open abdomen“ je závažná riziková situace zatížená vysokým rizikem úmrtí
- Pokrok v technickém provedení a péči o pacienty na JIP je markantní
- Zlepšení výsledku hojení bez hernie
- Vzájemná spolupráce chirurga a intenzivní péče je důležitá





Děkuji za pozornost