


# The Difficult Abdominal Wall Open Abdominal Wall Management

31<sup>ST</sup> ANNUAL  
CONTROVERSIES, PROBLEMS & TECHNIQUES IN SURGERY

SYMPOSIUM  
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## Disclosures

- J&J – preceptor
- Bard/Davol – advisory board
- WL Gore – consultant
- BBraun - consultant

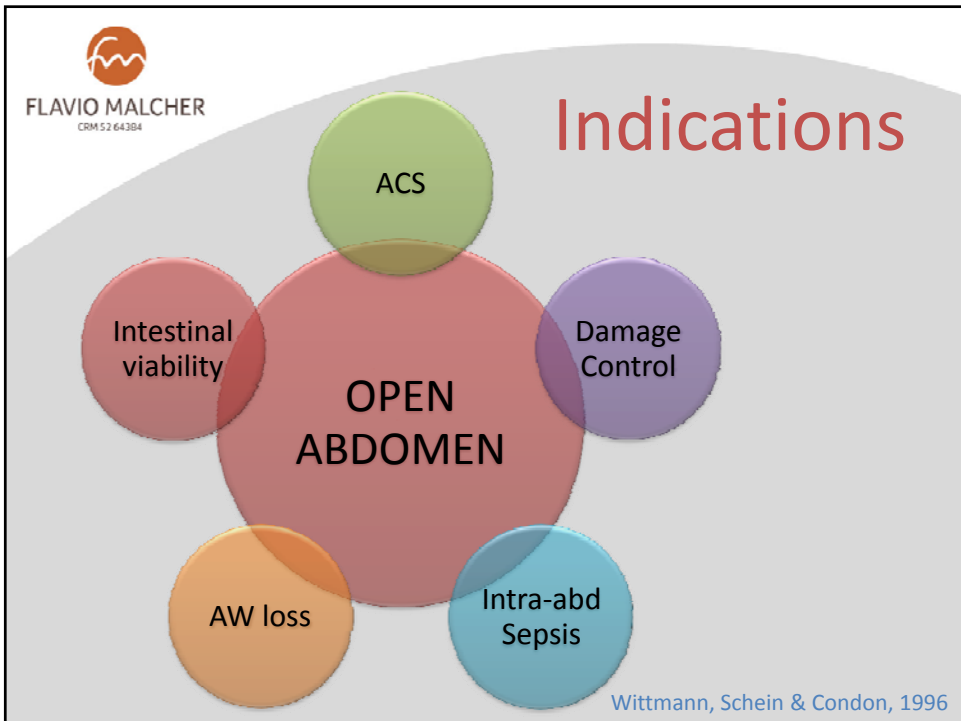


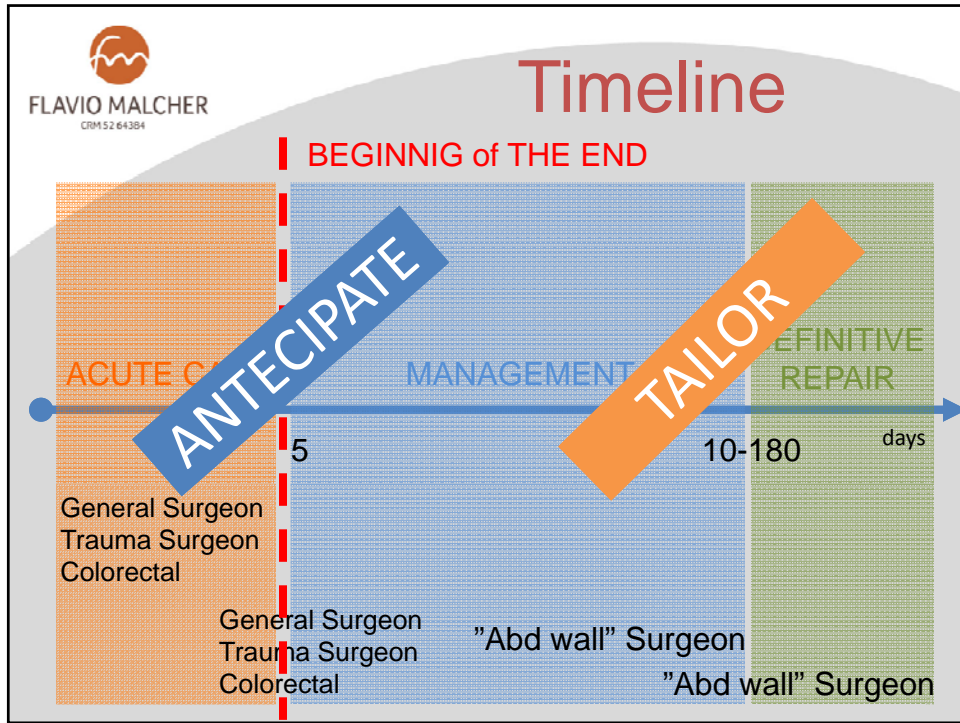
  
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# Open Abdomen Wall Management

## ANTECIPATE & TAILOR

FARES	
Flag Pull (Base Fare)	\$ 3.25
Each additional mile	\$ 1.80
Every 36 seconds of time elapsed	\$ 0.20
First additional passenger*	\$ 1.00
Each additional passenger after first passenger*	\$ 0.50
Vomit Clean-up Fee	\$50.00
Airport Departure/Arrival Tax	\$ 2.00






## Management of the Open Abdomen

Demetrios Demetriades, MD, PhD<sup>a,\*</sup>, Ali Salim, MD<sup>b</sup>

Surg Clin N Am 94 (2014) 131–153  
<http://dx.doi.org/10.1016/j.suc.2013.10.010>

**Box 1**  
**Problems associated with the open abdomen**

- Fluid and protein loss
- Malnutrition
- Enteroatmospheric fistulas
- Loss of abdominal wall domain
- Prolonged intensive care unit and hospital stay
- Increased hospital costs



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# ACUTE CARE

- Adequate intra-abdominal conditions
- Avoid excessive fluid resuscitation
- Keep minimal abdominal domain
- PLANNING....
  - Team/material



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# MANAGEMENT

  
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# Temporary Closure

**Techniques for temporary abdominal wall closure**

1. Skin approximation with towel clips or running suture
2. Bogota bag
3. Synthetic meshes
4. Velcro or zipper-type synthetic materials (Wittmann patch, Starsurgical)
5. Negative pressure dressing
  - a. Vacuum pack (Barker technique)
  - b. Vacuum-assisted closure (VAC Therapy, KCI)
  - c. ABThera system (KCI)

  
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# Towels clips / Running suture

Fast

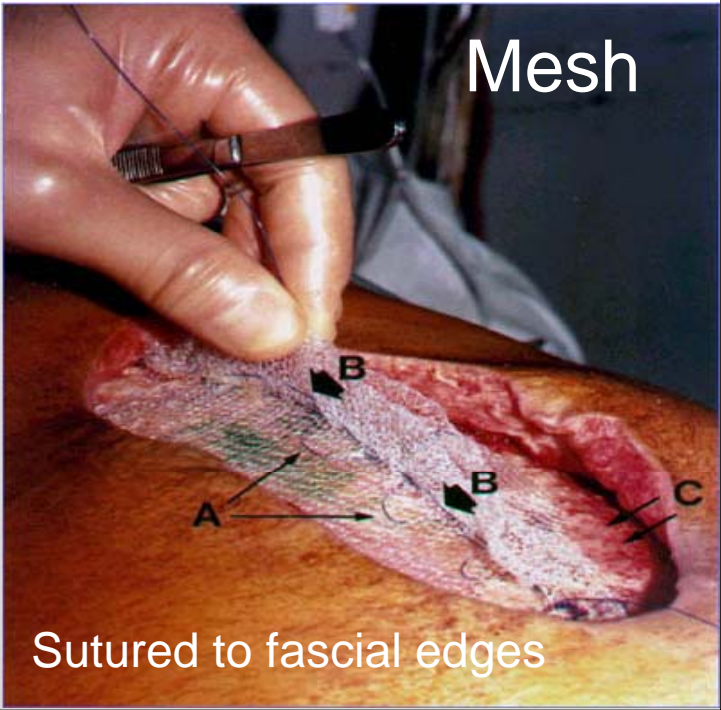
> IAH



# Bogota Bag

Hospital San Juan de Dios, Bogotá, Colombia  
Londoni, Chefe dos Residentes \*


- Prevents evisceration and ACS
- Cheap & easy
- Does NOT remove infected/toxic fluids
- Lost abdominal wall domain



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## Mesh

Sutured to fascial edges

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# Mesh

- Enteroatmospheric fistulas
- Does NOT drain effectively fluids
- Incisional hernia (inlay)



 **Velcro / Ziper-type Closure**  
Wittmann patch

- Gradual reapproximation
- Domain preservation
- Primary fascia closure up to 80%
- Isquemia to the fascia edges

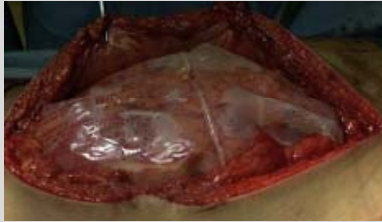




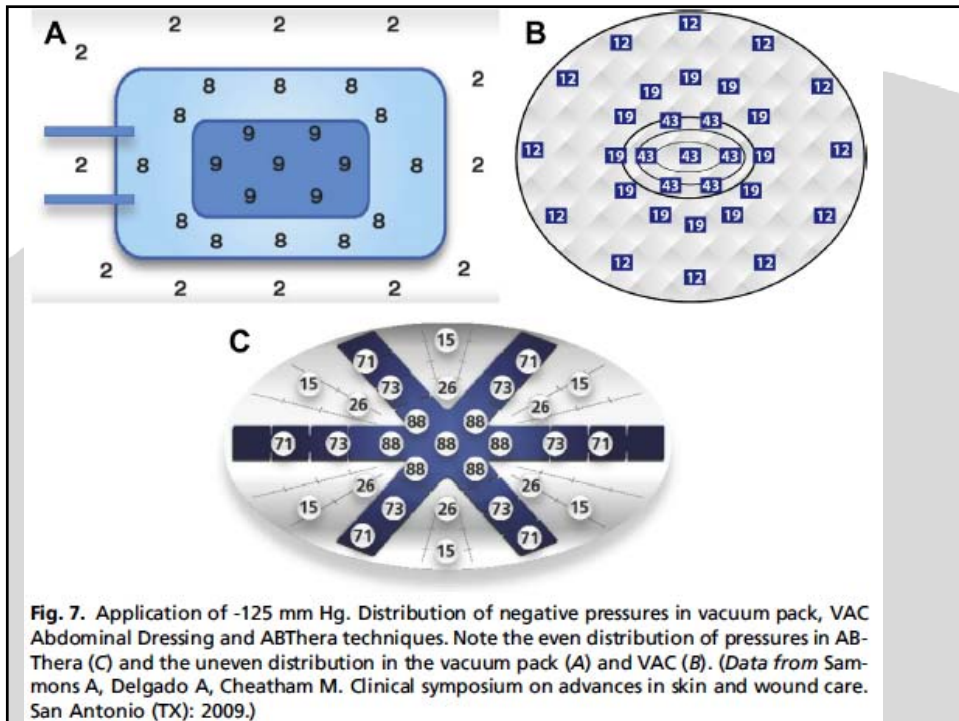
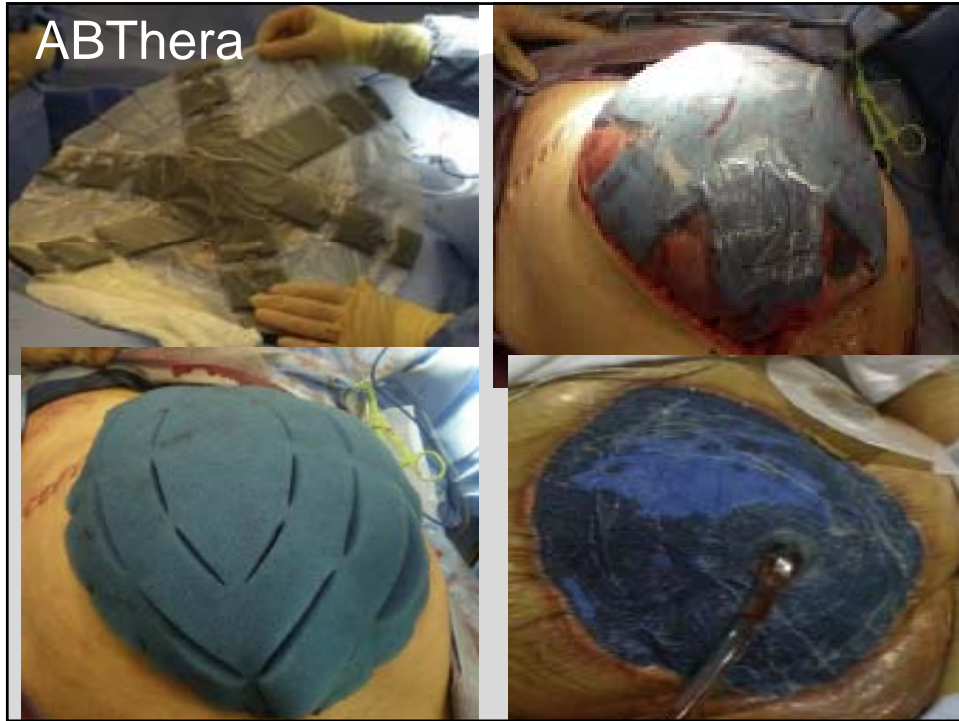
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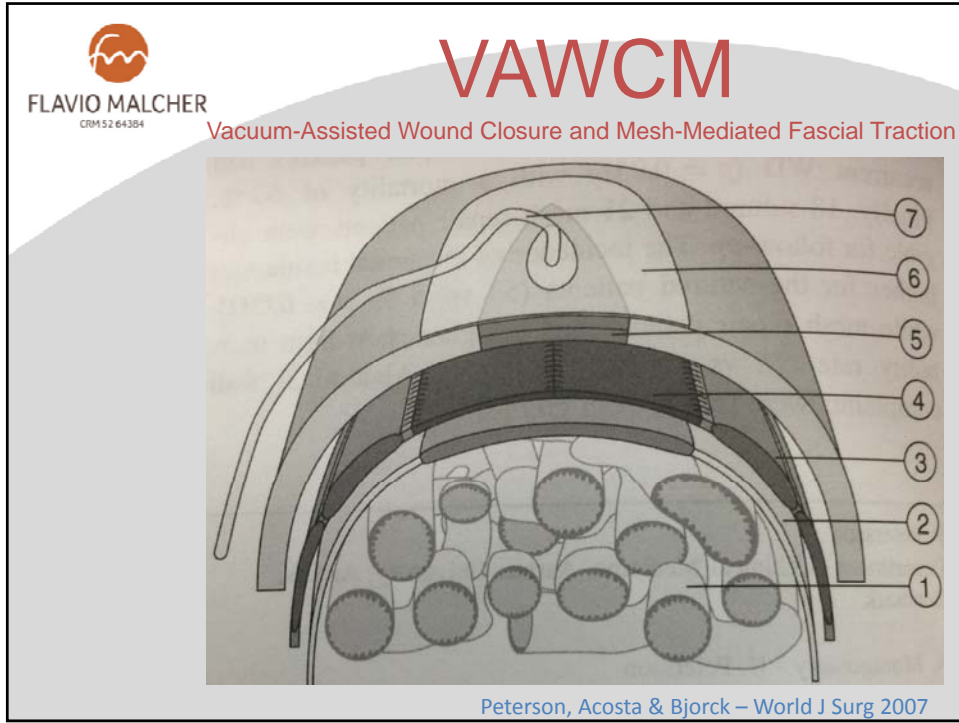
# Negative Pressure Therapy

1995 - Barker










**NPT**


- < Wound Edema, > Granulation
- Removal of infected / toxic fluids
- Never on sutures/anastomosis/fistulas
- Bleeding?

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## Enteroatmospheric Fistula




Up to 15%

- Bowel e...
- Infer...
- M...
- ...

ANTEICIPATE


	Fistula	No Fistula	P Value
ICU days	25.7	8.8	.02
Hospital days	82.5	20.0	<.01
Hospital charges (\$)	514,758	112,508	<.001

Thirty-six patients with fistulas matched to 36 controls (matched for age, gender, mechanism, injury severity score (ISS), Glasgow coma score (GCS), damage-control laparotomy).  
*Data from Teixeira PG, Inaba K, Dubose J, et al. Enterocutaneous fistula complicating trauma lap-*



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## Enteroatmospheric Fistula



LEAK

Chemical/Inf ectious

Nurses/Physi cians

Patient/Famil y



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### Enteroatmospheric Fistula

- Hydroelectrolytic and acid-base correction
- NUTRITIONAL support
- Local/wound control
- Fistula tract study
- Surgical treatment
  - Acute (ostomies, drainages,...)
  - Definitive

**TAILOR**

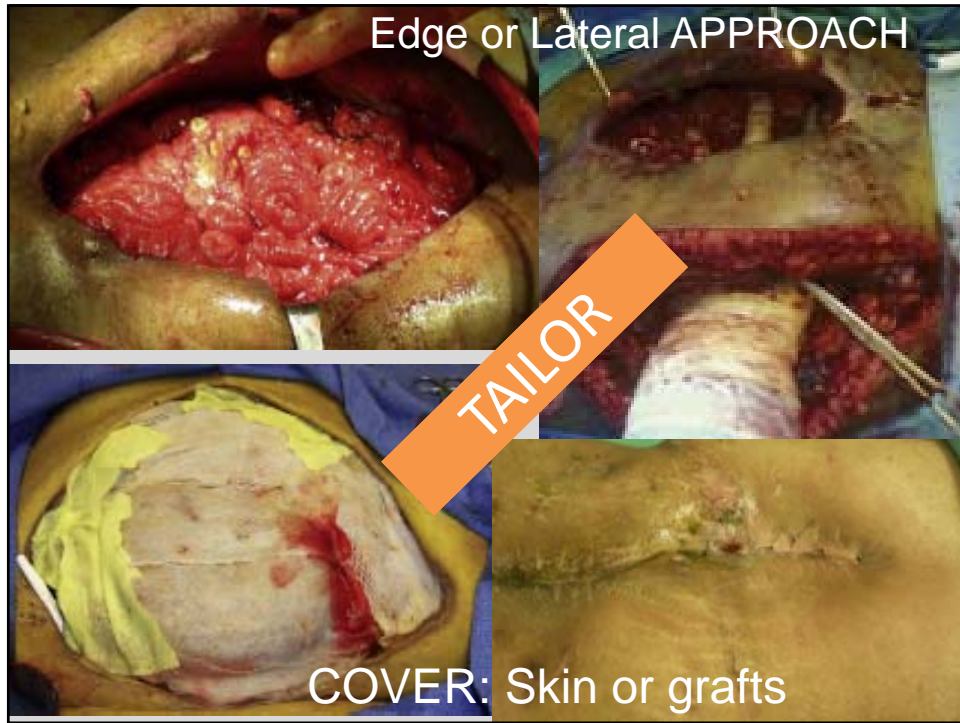
Campos & Mattos, 2011



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## Surgical Treatment


- Adequate NUTRITIONAL status
- NO outlet obstruction
- 6 months wait



  
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DEFINITIVE REPAIR


SKIN & FASCIA

  
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## SC / skin closure

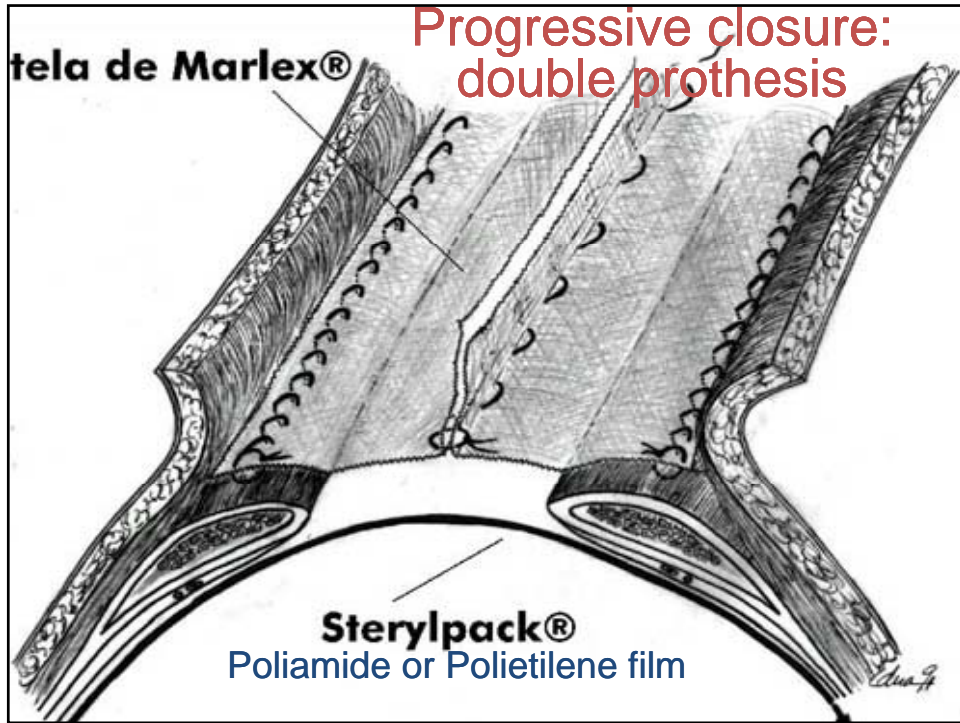
- Simple and fast
- Shortening UCI/hospital stay
- Eventration.....




  
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## Fascial Closure

- Early vs progressive
- Primary vs mesh



  
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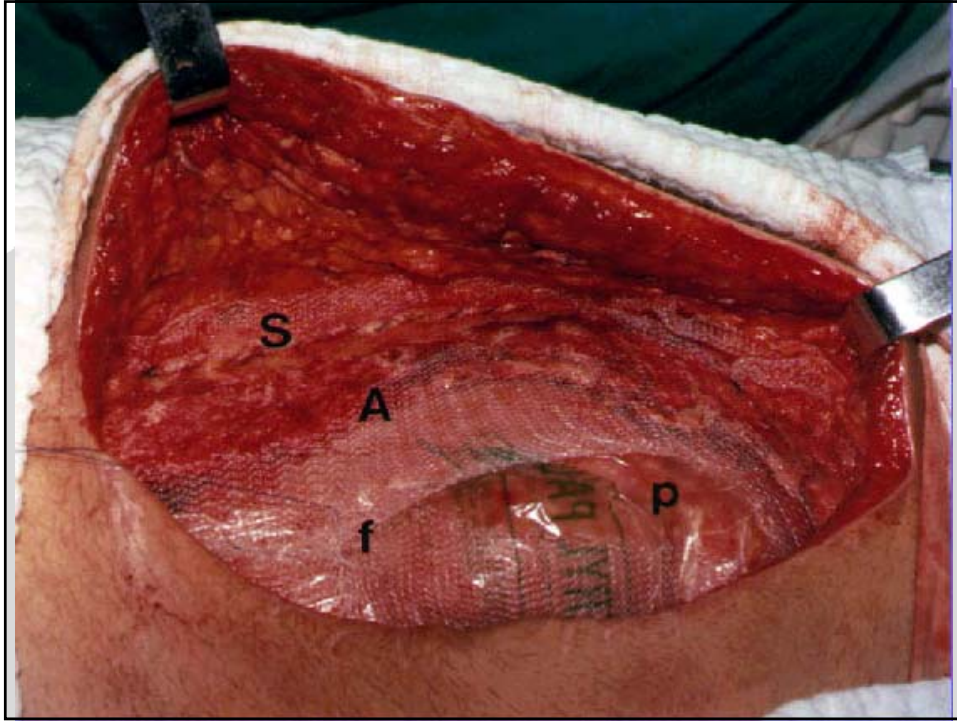
## Early implantation


(Minimal intra-abd conditions)

1. Avoid fascia retraction
2. Basal IAP levels
3. Visceral protection
4. Avoid parietal adhesions

**ANTECIPATE**




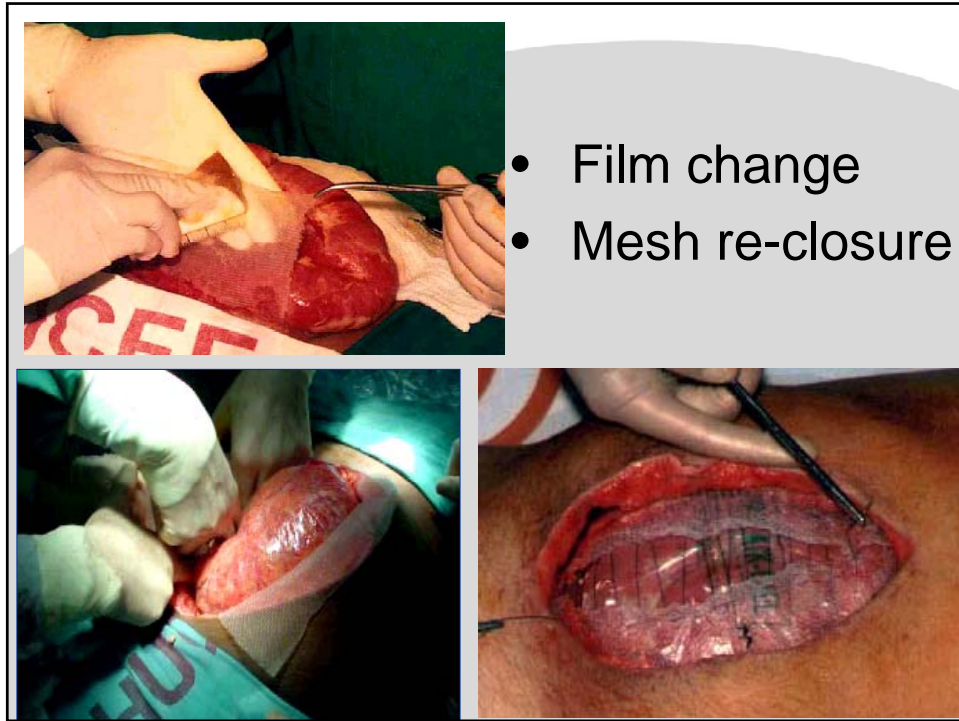


  
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## 48/72 hs revisions

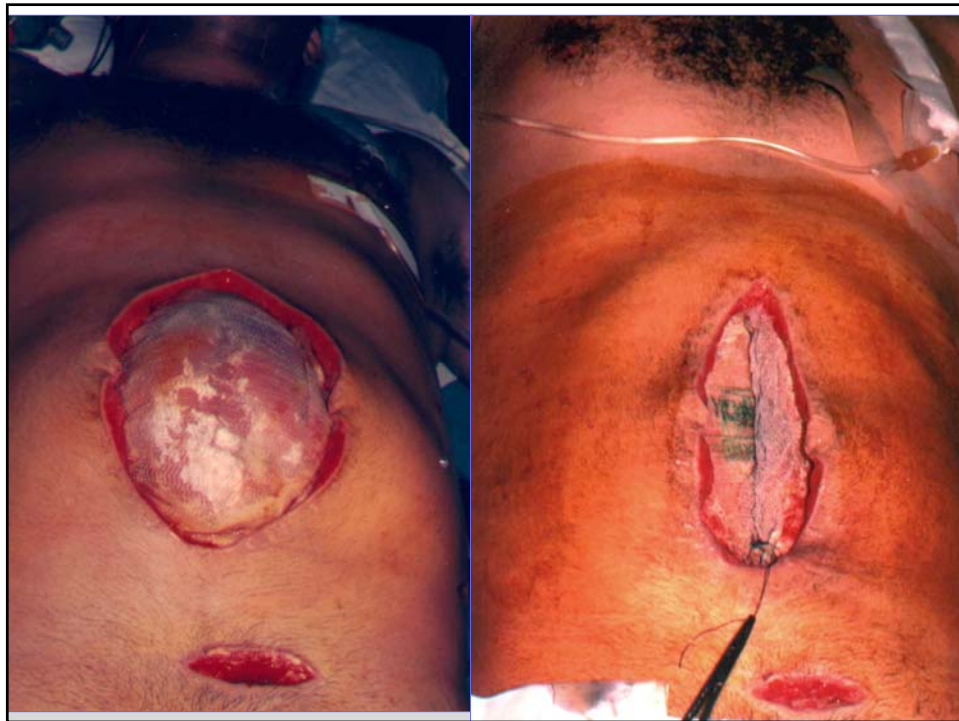
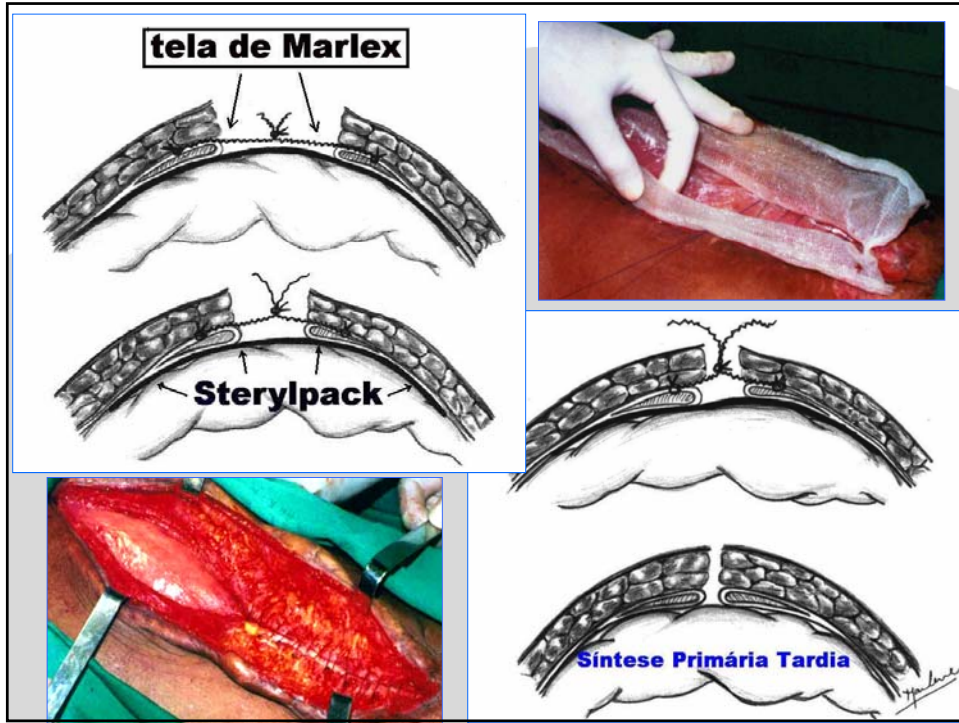
- Mesh opening
- Cavity wash-out

Two side-by-side photographs illustrating surgical procedures. The left photograph shows a close-up of a surgical site where a mesh is being opened or adjusted. The right photograph shows a surgical team performing a cavity wash-out, with one person holding a large red mesh and another using a long tube to irrigate the cavity.




## PROGRESSIVE Closure

- Running “U” central suture
- Only begins:  
Peritonitis control  
Mesh minimally integrated  
07 - 15 days



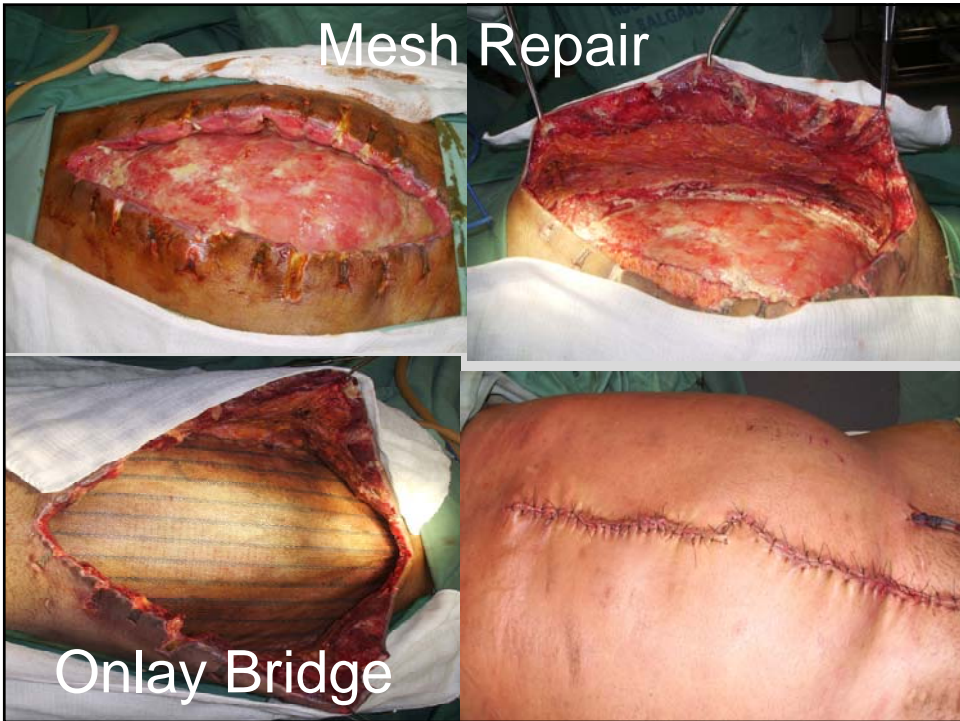



  
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### Peritonite Secundária Generalizada Grave com Peritoneostomia - UFRJ

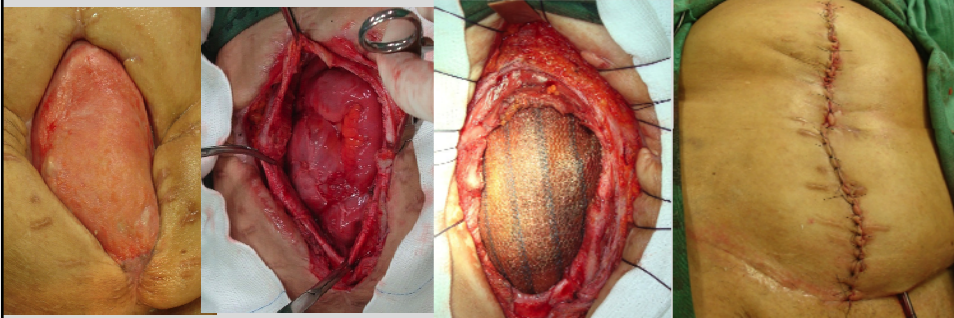
Série: 1990-2000  
N = 143

	N	Óbitos	%	p-valor
Dupla Prótese	87	42	48 %	0.028
Outras	56	36	64 %	



  
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## IPOM Bridged Mesh





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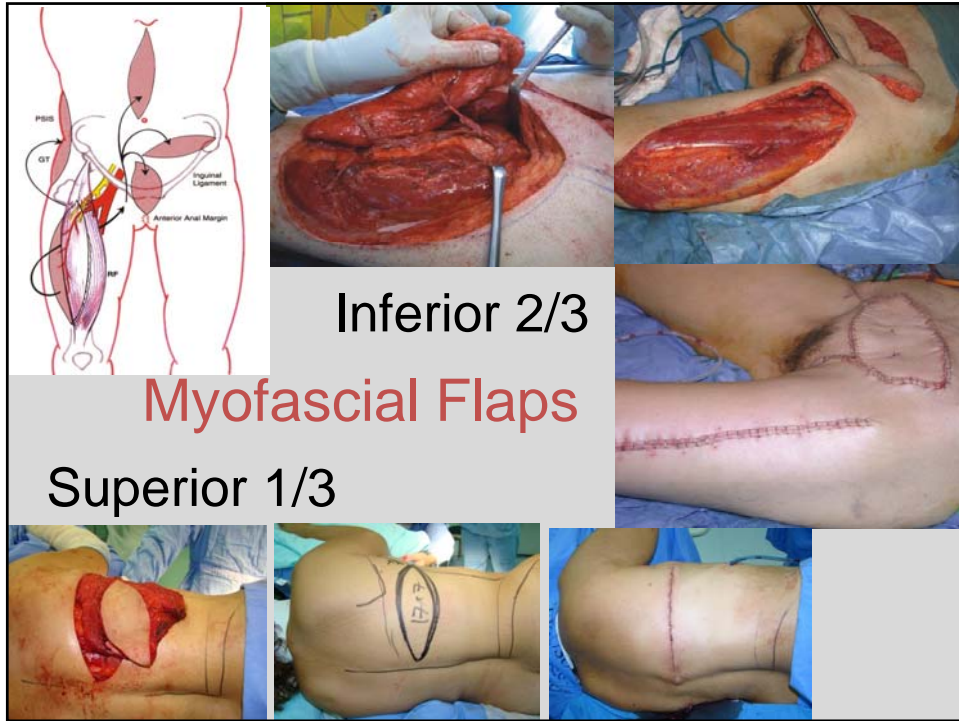
Components Separation

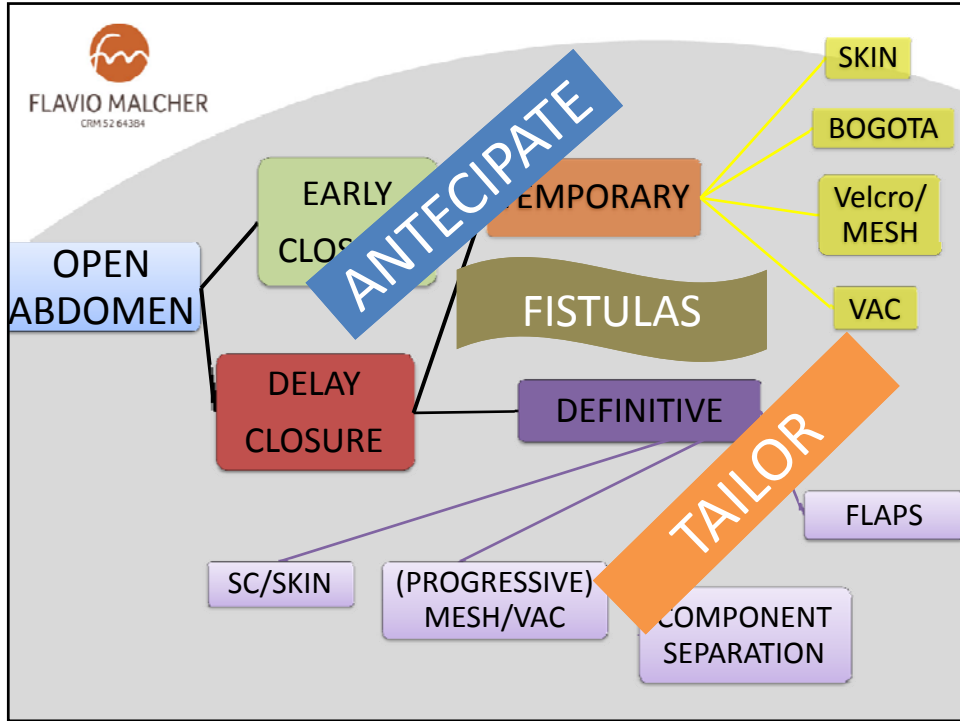
The diagram illustrates the components separation technique for abdominal wall reconstruction. It shows a cross-section of the abdominal wall with the rectus abdominis muscles separated. The diagram is labeled with numbers 1 through 6, indicating the steps of the procedure: 1. Dissection of the anterior rectus abdominis sheath; 2. Lateral dissection of the anterior rectus abdominis sheath; 3. Dissection of the posterior rectus abdominis sheath; 4. Lateral dissection of the posterior rectus abdominis sheath; 5. Dissection of the external oblique muscle; 6. Dissection of the internal oblique muscle.

- Avoid foreign body
- Expand cavity volume
- Challenging?









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IV Congresso Brasileiro de Hérnia  
IV Convenção Latinoamericana de Hérnia

**Save  
the  
date!**

**5 a 7 de maio de 2016 - Búzios/RJ**

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