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Components Separation

Abdominal Wall Reconstruction

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Case Presentation

- **72 yo M with Crohn's disease**
- **Chronic midline abdominal pain**
- **Multiple incisional hernias**
- **No vomiting or constipation**

Medical History

- **HTN**
- **Hepatitis C cirrhosis (2003)**
- **Crohn's disease (8/2008) – remission**
- **Recto - sigmoid adenocarcinoma**
- **Ex-smoker, quit 17 yrs ago**

Surgical History

- **Lap cholecystectomy (7/2004)**
- **Distal sigmoidectomy & protective transverse loop colostomy (12/2008)**
- **Colostomy reversal (8/2009)**
- **Incisional hernia repairs**

Physical Exam

- **AVSS**
- **Wt 185 lbs (213); BMI 31.8 (39.0)**
- **Protuberant abdomen**
- **Midline incisional hernia**
- **Multiple lateral incisional hernias**
- **Rt middle colostomy scar**

Pre - Op Workup

➤ **Colonoscopy (1/11):**

Moderately active ileitis

Luminal narrowing

Two rectal polyps

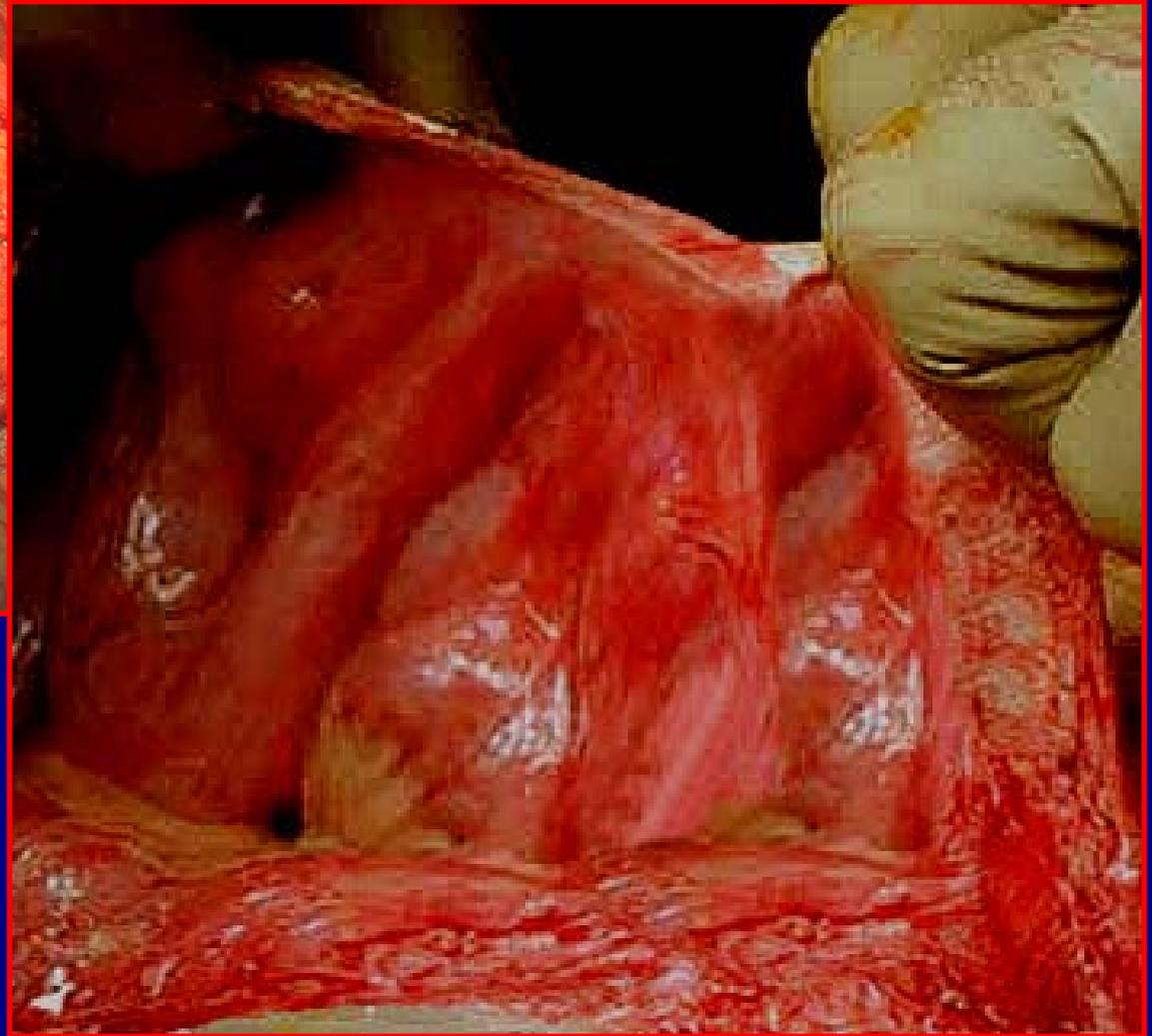
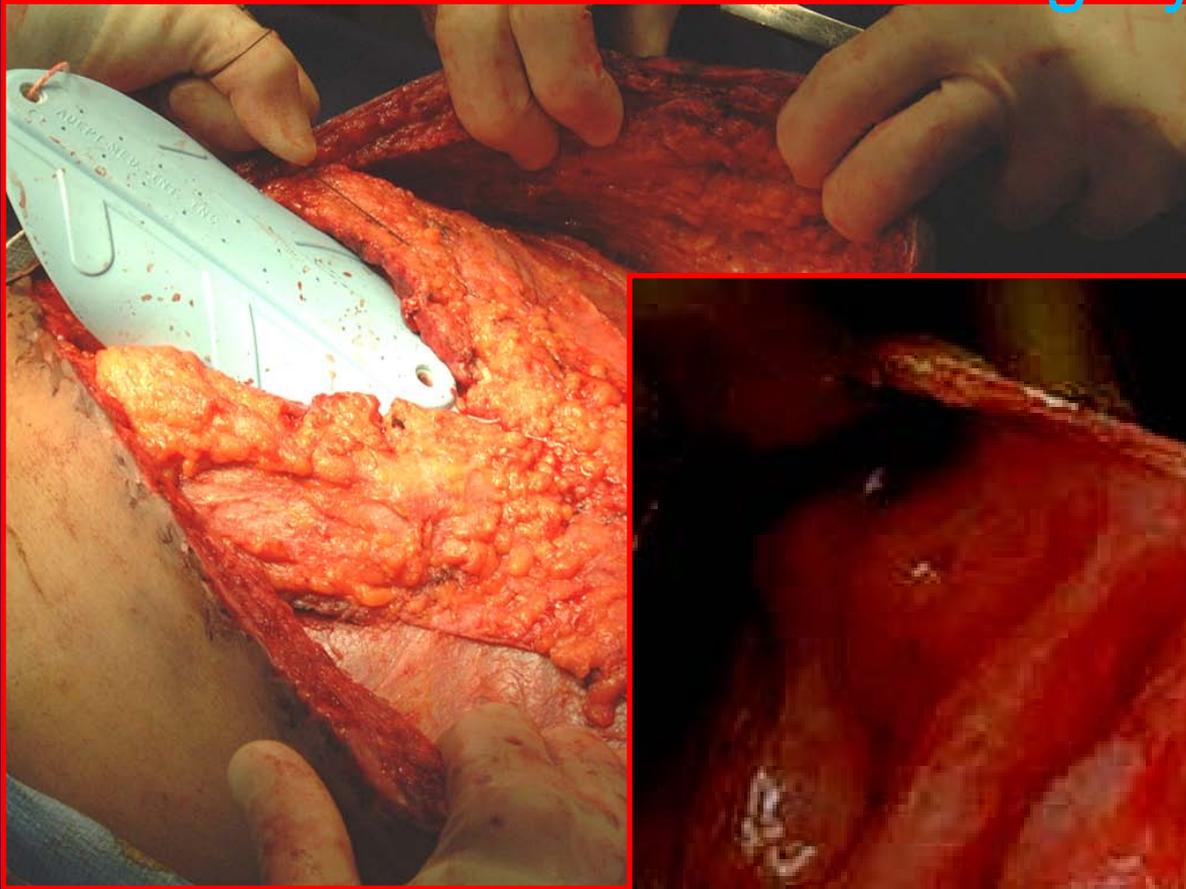


➤ **Routine pre-op work-up: normal**

➤ **Bowel prep on pre-admission day**

Operative Procedure

- **Long midline incision**
- **Subcutaneous flaps developed**
- **Peritoneal cavity entered**
- **Lysis of adhesions**
- **Bowel dissected from hernia, stoma & mesh suture sites**



Operative Procedure

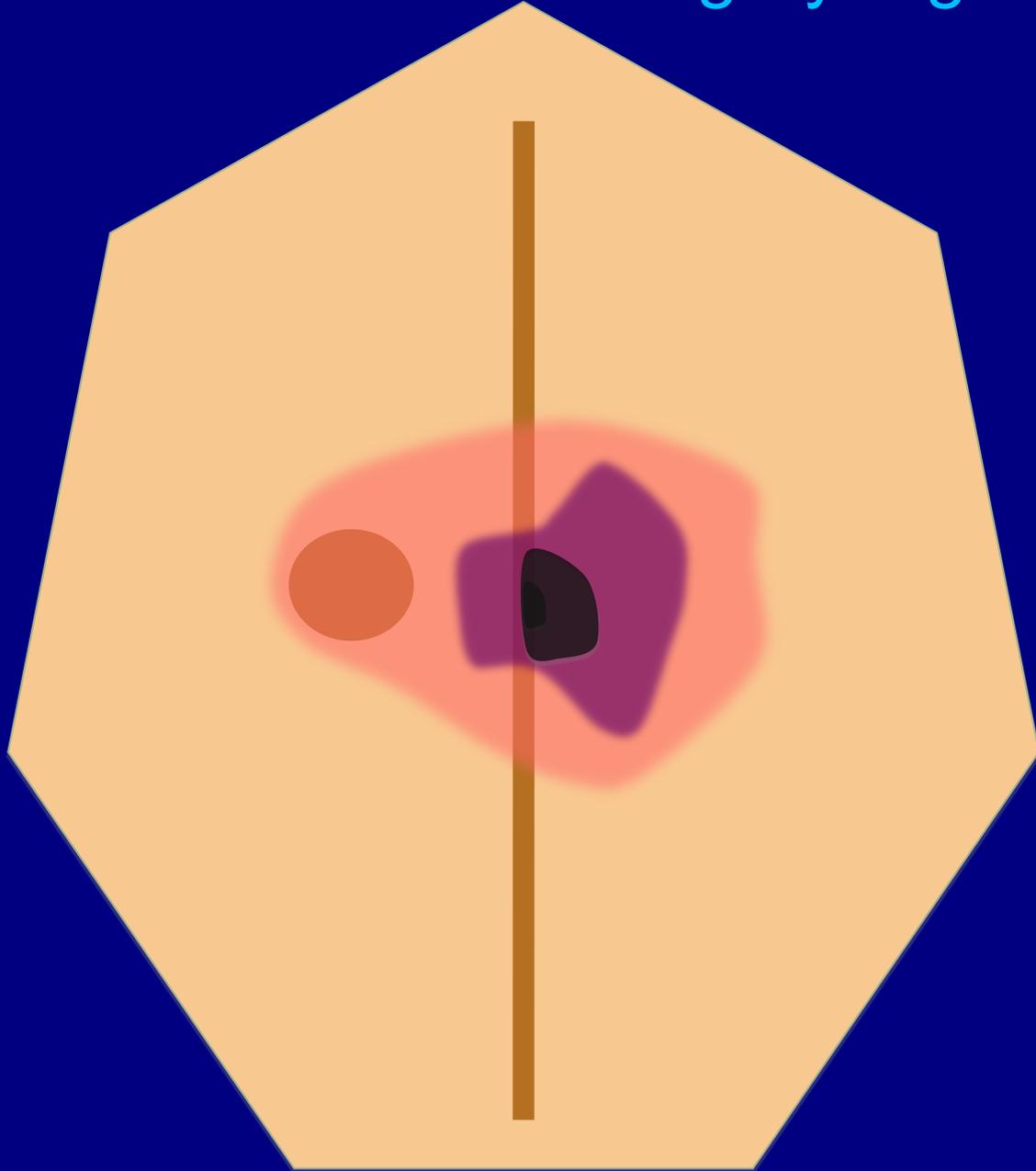
- **Primary repair of linea alba**
- **Reinforced with onlay PhysioMesh**
- **JP drains x 2 in lateral skin flap
dead spaces**
- **Skin closure**

Post - Op Course

- **POD#1: Left-sided ecchymosis**
- **POD#3: Bowel function**
- **POD#4: Peri-umbilical skin ischemia**
- **POD#5: Localized skin necrosis**

Post - Op Course

- **POD#6: Diarrhea; Flagyl started**
- **POD#8: C. diff positive**
- **POD#10: Worse necrosis**
- **POD#12: OR**



Operation # 2

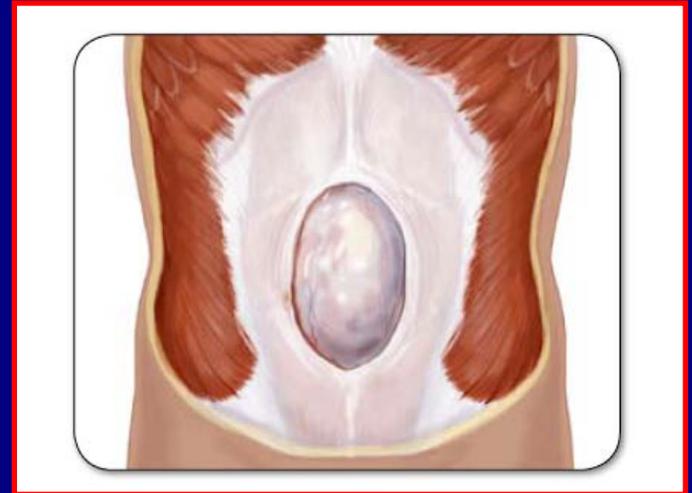
- **Wound debridement & mesh removal**
- **Fascial repair intact**
- **Wound packed**

Post - Op Course



Incisional Hernia

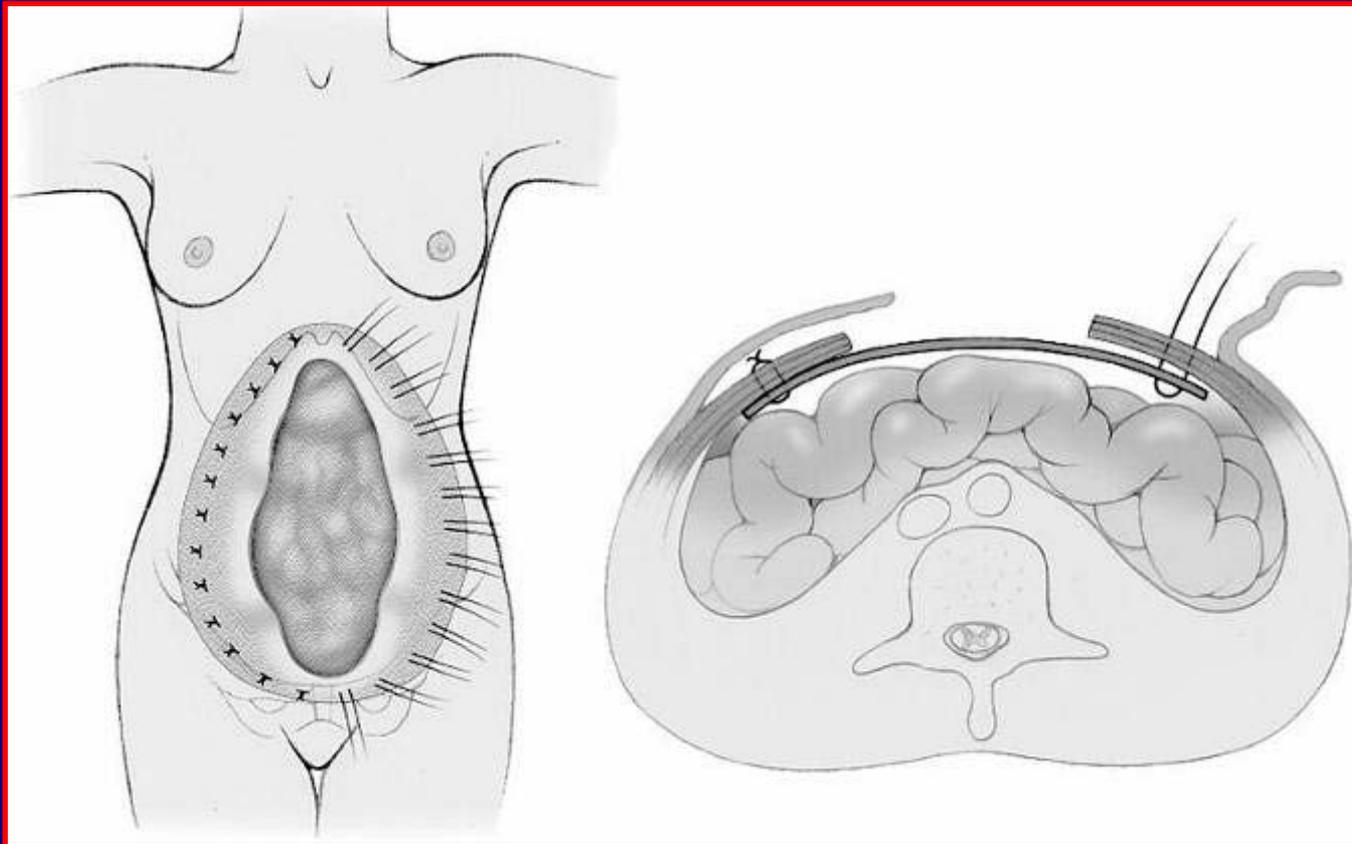
- **Incidence: 10% after celiotomy**
- **Causative factors**
 - **Surgical technique**
 - **Post - op infections**
 - **Patient factors**
 - **Emergency operations**



Surgical Options

- **Tension repair**
- **Tension – free repair with mesh**
- **Lap incisional hernia repair**
- **Components separation**
- **Local flaps**

Rives - Stoppa



Retrofascial Repair

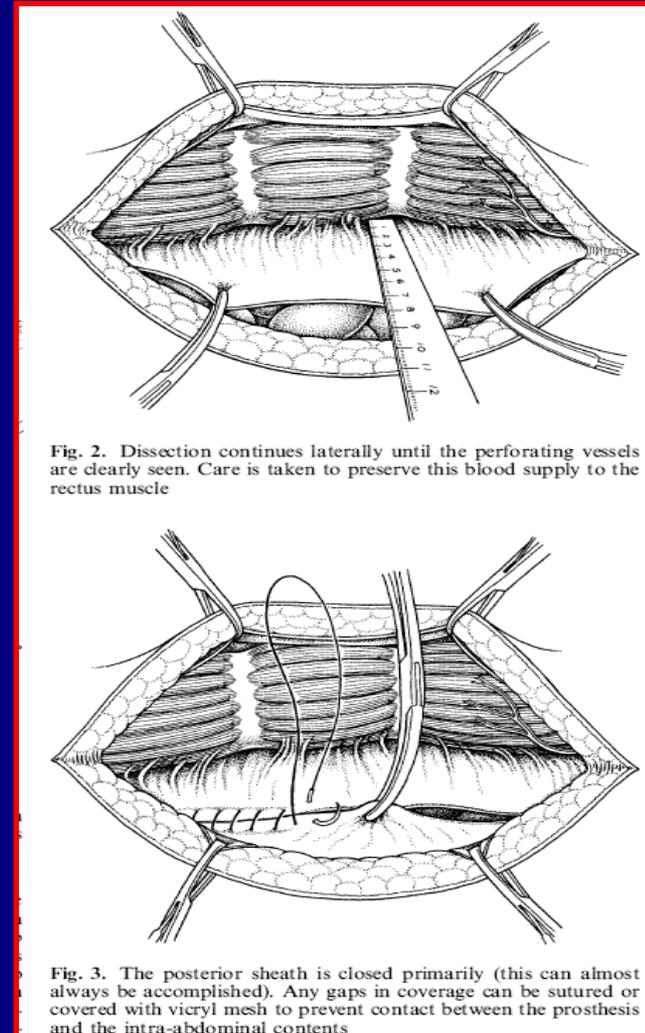
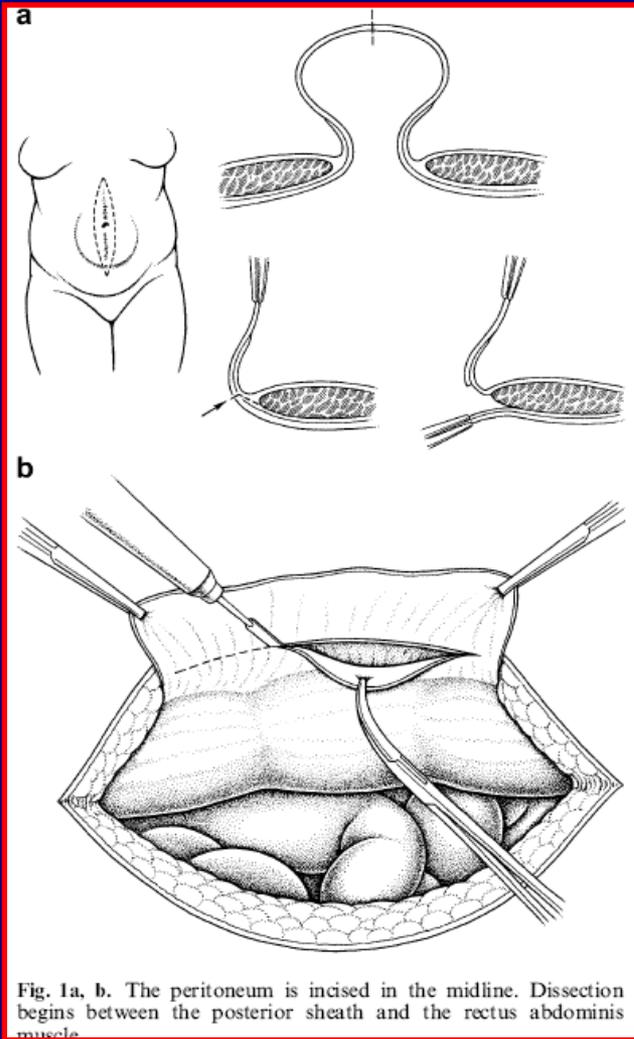


Fig. 2. Dissection continues laterally until the perforating vessels are clearly seen. Care is taken to preserve this blood supply to the rectus muscle

Fig. 3. The posterior sheath is closed primarily (this can almost always be accomplished). Any gaps in coverage can be sutured or covered with vicryl mesh to prevent contact between the prosthesis and the intra-abdominal contents

Components Separation



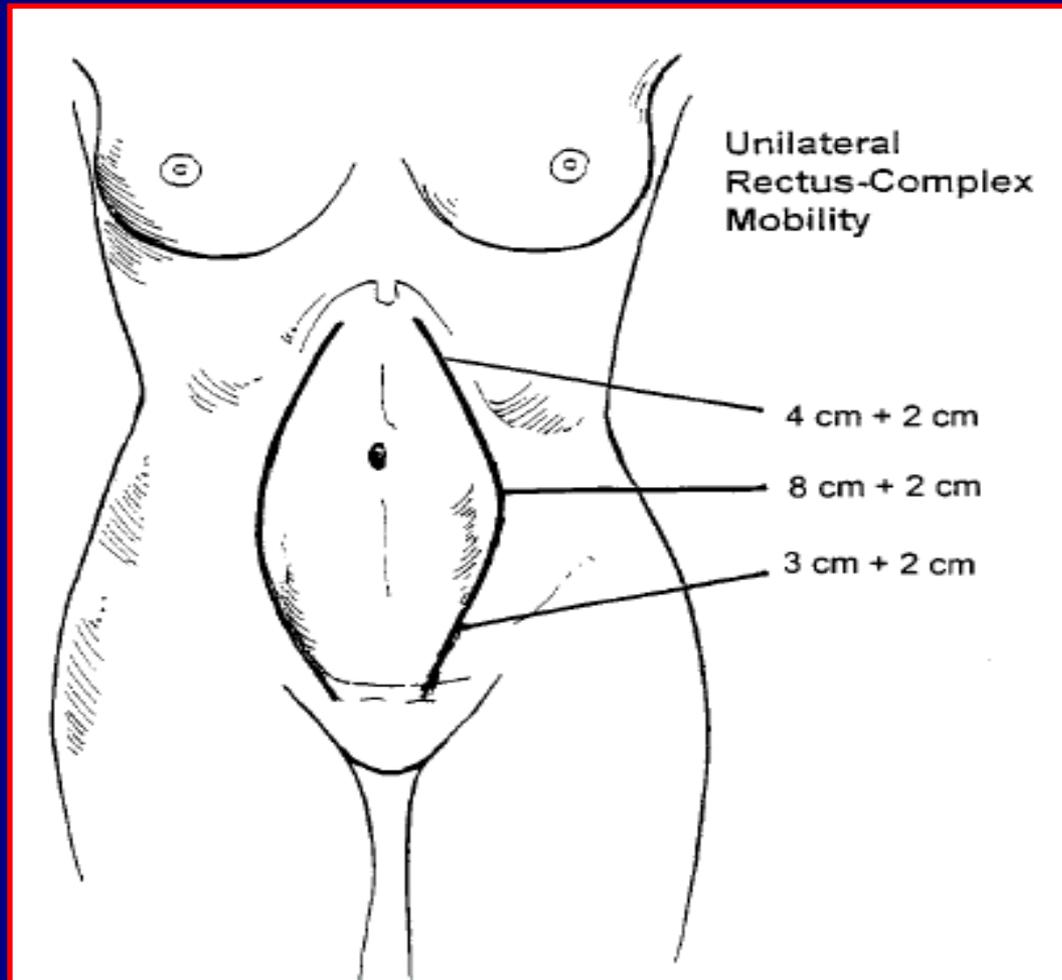
- **What is it ?**
- **When ?**
- **Success ?**

Oscar Ramirez (1990)

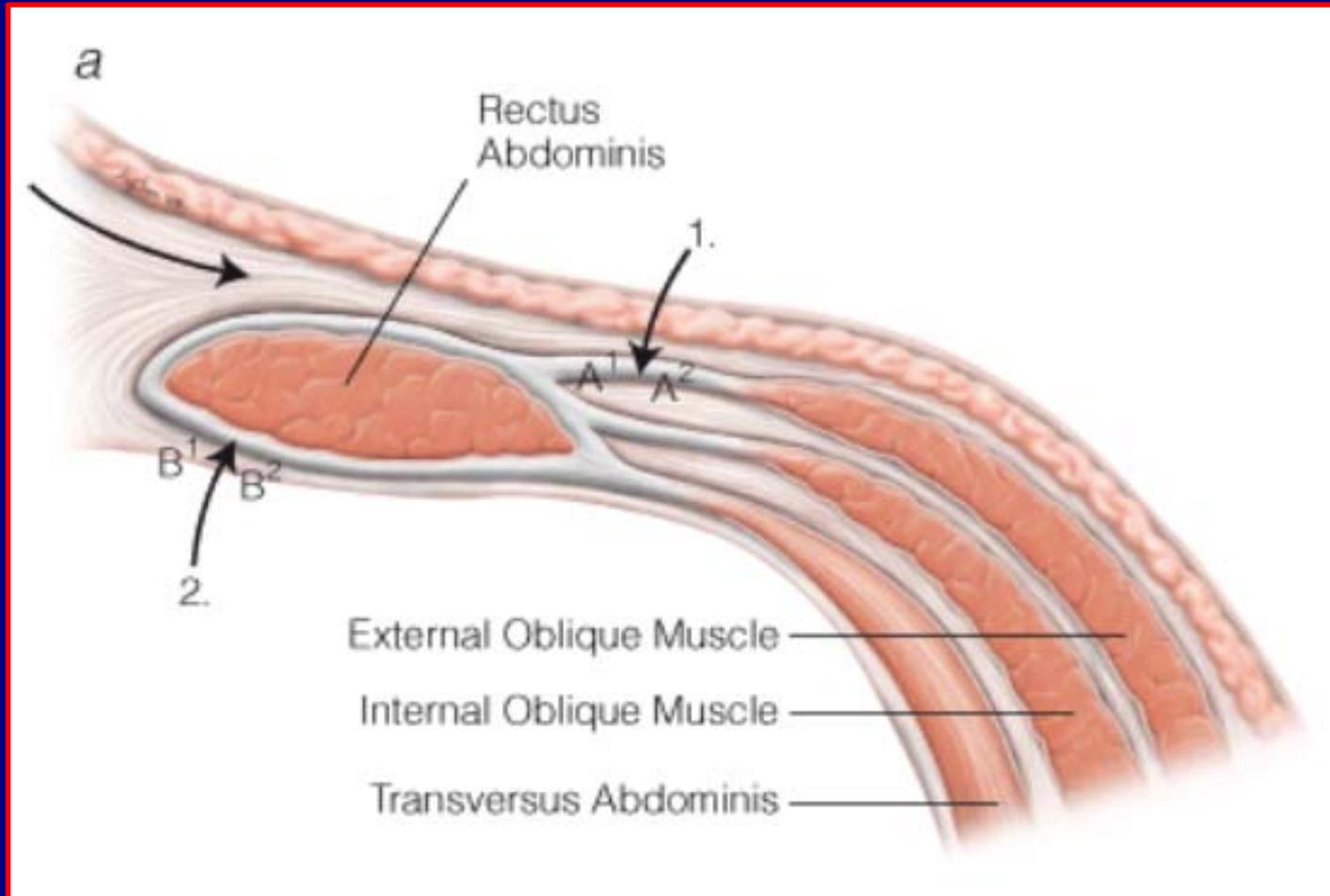
- **Cadaveric dissection**
- **Incision lateral to linea semilunaris**
- **Ext oblique (EO) and int oblique (IO) separated in AVASCULAR plane**
- **Rectus w/ IO flap advanced**



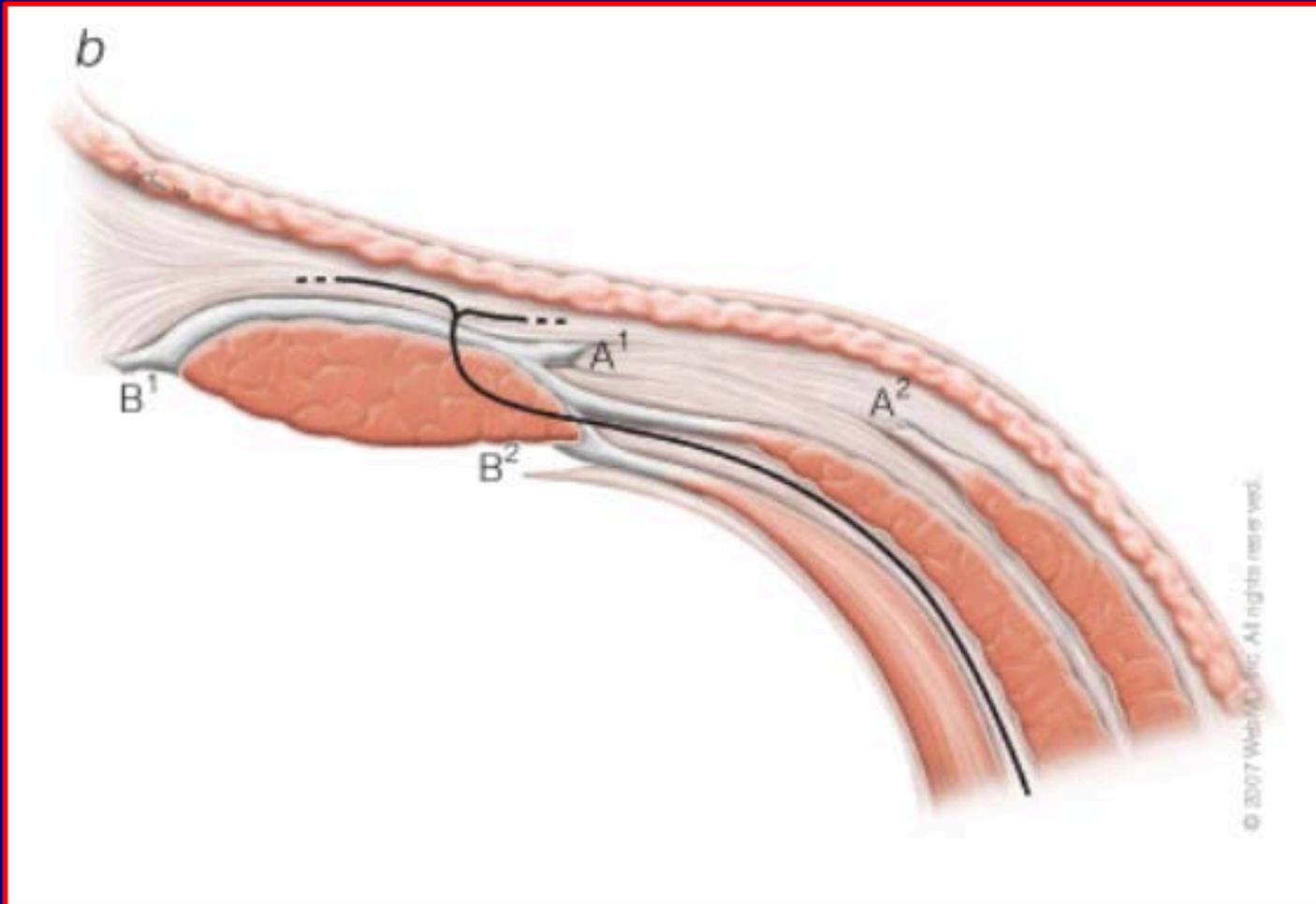
Bridging the Gap



Components Separation



Components Separation

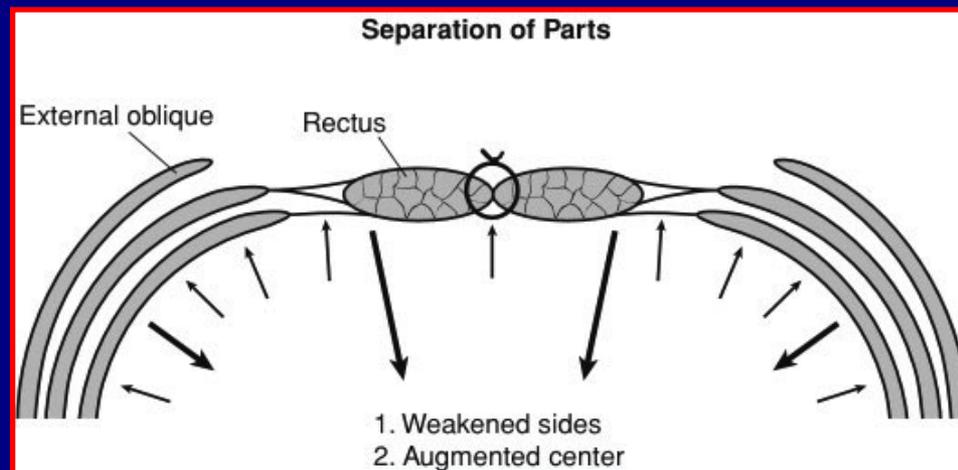


Indications

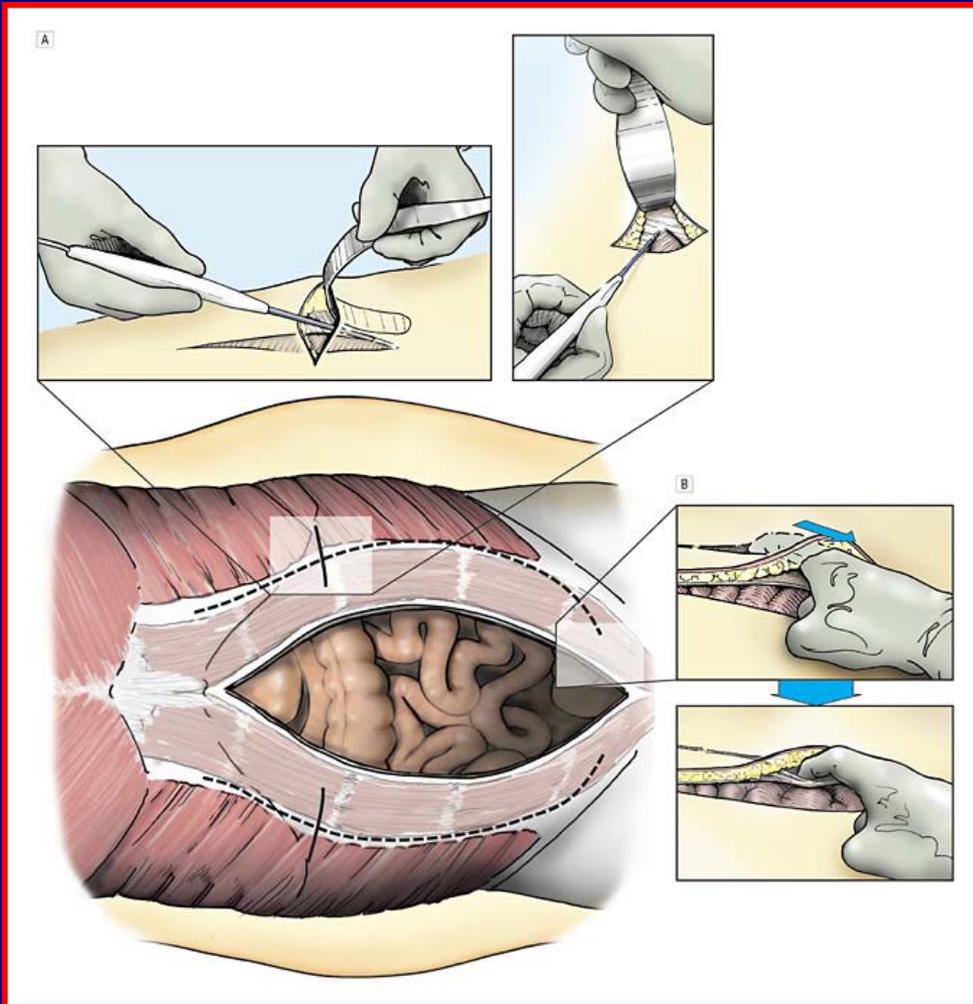
- **Infected wound**
- **Concomitant bowel surgery**
- **Closure of giant defects**
- **Multiple hernia recurrences**

Advantages

- **Autologous tissue**
- **Cutaneous coverage**
- **Dynamic muscular support**



Modified Technique



- **Bilateral transverse subcostal incision**
- **Perforator vessel preservation**

Contra - Indications

- **Concurrent stoma creation**
- **Invading malignancy**
- **Select patient disease**

Complications

- **Hernia recurrence**
- **Infection**
- **Skin necrosis**
- **Seroma**

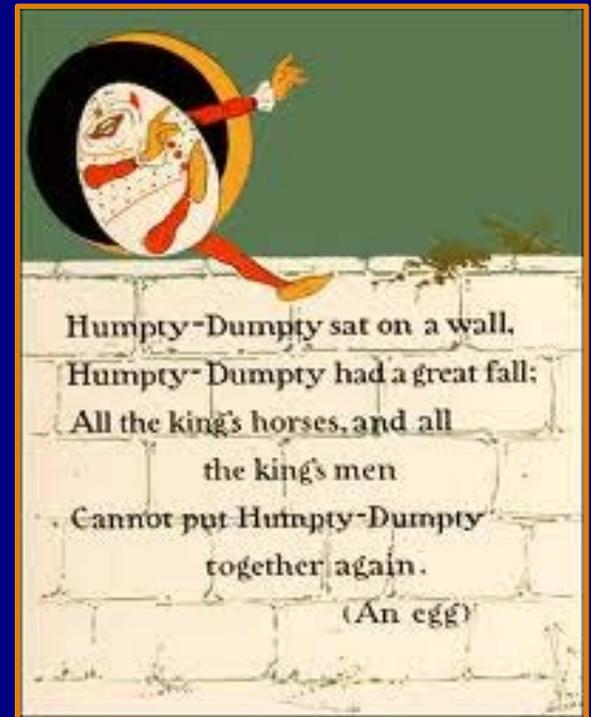


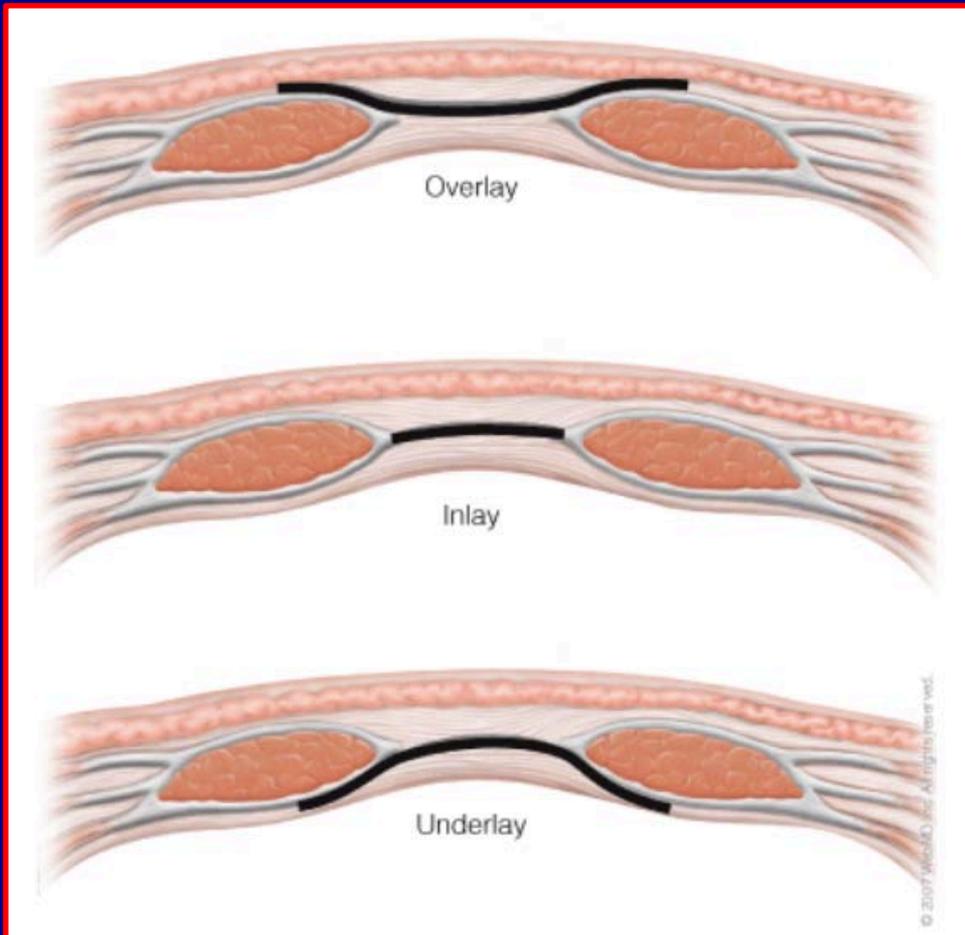
Table 1. Results of the Repair of Large Abdominal Wall Defects with the Component Separation Technique

First author	Year	Patients	Clean/ contaminated	Complications (n)	Rehemiation n (%)	Followup mean (range, mo)
Ramirez ³	1990	11	8/3	0	0 (0.0)	? (4–42)
DiBello ⁹	1996	35*	20/15	Wound infection (2) Hematoma (1) Seroma (1)	3 (8.6)	22 (1–43)
Giroto ¹⁰	1999	33	30/3	Wound infection (8) Enterocutaneous fistula (1)	2 (6.1)	21 (6–57)
Shestak ¹¹	2000	22	?	Wound infection (2) Seroma (1) Death (1)	1 (5)	52 (8–84)
Lowe ¹²	2000	30 [†]	?	Wound infection (12) Skin ischemia (6) Skin dehiscence (13)	3 (10)	12
Cohen ¹³	2001	24	15/9	Skin dehiscence (2) Seroma (1)	1 (4)	? (12–36)
Authors	2002	43	28/15	Wound infection (6) Hematoma (5) Seroma (2) Skin necrosis (1) Fascial dehiscence (1)	12 (30)	15.6 (12–30)

*In 15 patients, an onlay synthetic prosthesis was implanted as well.

[†]In 10 patients, an onlay polypropylene mesh was implanted as well.

Mesh Position

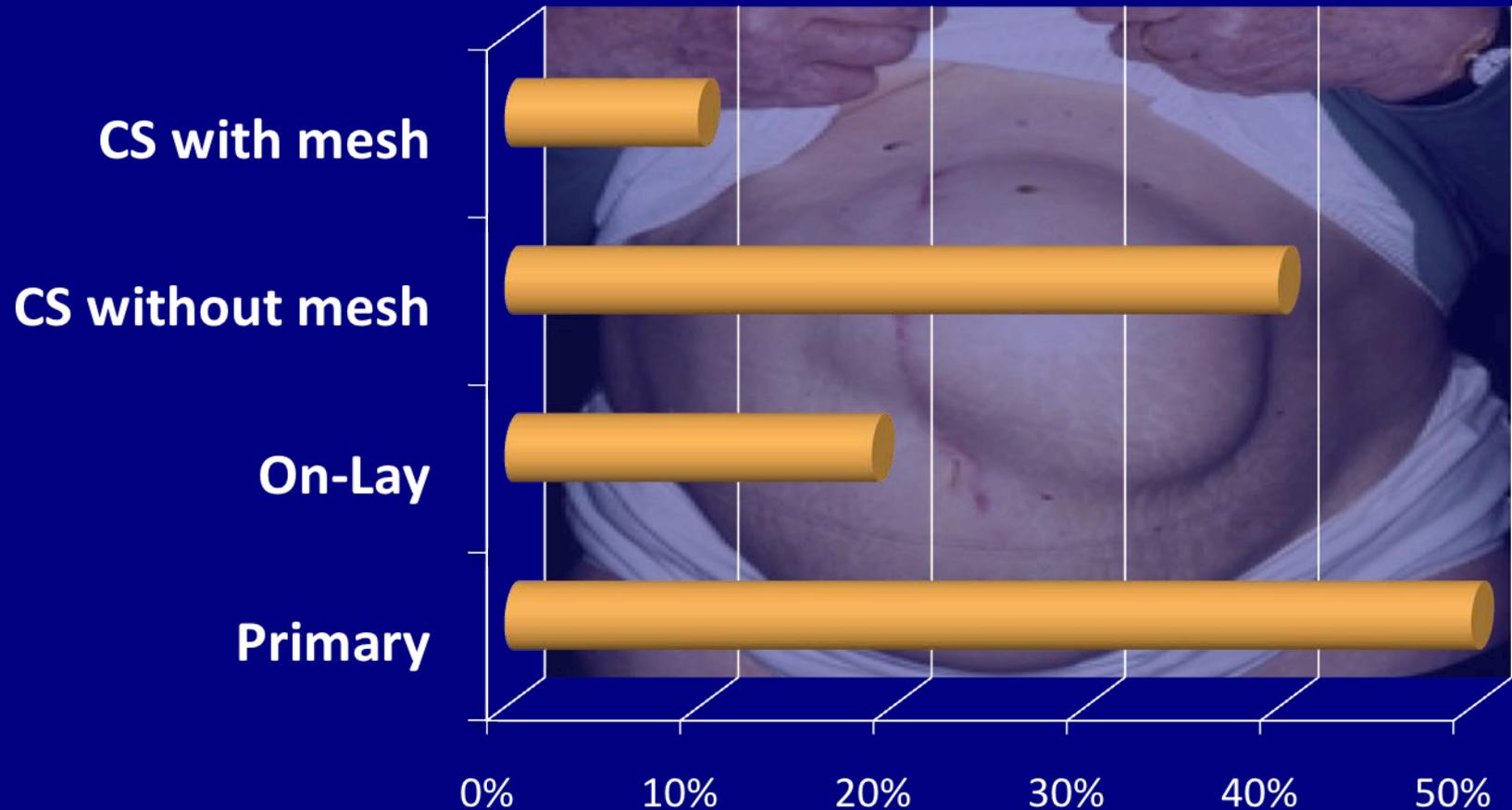


Recurrence

7.4 - 29.1 %

7.3 - 13.6 %

Hernia Recurrence



Van Geffen *Recurrent Hernia*, 2007; den Hartog D et al. *Cochrane Database Syst Rev*. 2008; Fitzgibbons *ACS Surgery: Principles and Practice* Ch 27.

Hernia Recurrence

- **Fewer hernia recurrence with open mesh repair**
- **No difference of hernia recurrence with mesh position**

Mesh Infection

- **Pre-existing infection**
- **Skin ulceration**
- **Obesity**
- **Incarcerated / perforated bowel**

Wound Infection

- **Less wound infections with primary repair**
- **Occurrence with mesh: 5 - 10%**
- **No difference in wound complication with mesh position**

Conclusion

- **Close the gap**
- **Component separation with mesh preferred technique**
- **Perforator vessel preservation**
- **Risk of re-herniation and infection**
- **Patient selection**

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Questions ?

