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The use of peritoneal flaps in the repair of large incisional hernia

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Mesh 2017 - Paris

Peritoneal flap in the repair of incisional hernia - *definition*

- The preservation of the hernia sac
- Using it as an extension of the anterior and/or posterior fascia

When used with mesh : also known as "sandwich technique"

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Peritoneal flap - *history*

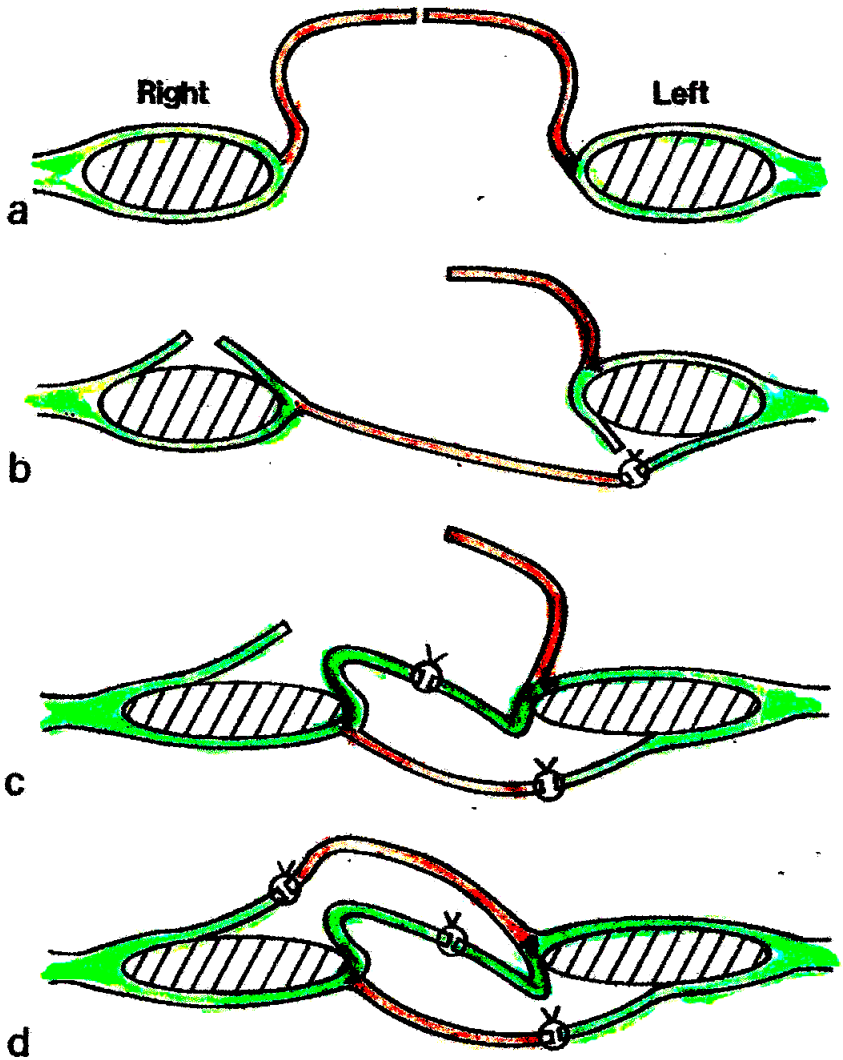
Lazaro Da Silva – technique (1979)

- Surg Gynecol Obstet 1979;148:579-83

"…longitudinal median or paramedian incisional hernia"

- Three overlapping layers :
  - Central aponeurotic layer
  - "reinforced" by two peritoneal layers, using the hernia sac.
- No mesh

Da Silva technique



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Da Silva technique : results

Author	Journal	Year	N
Hope P.G.	Br.J.Surg.	1985	30 (27)
Benoit L.	Ann.Chir.	2000	26 (20)
Lazaro-da-Silva A.	Arq.Gastroenterol.	2004	132 (132)

Author	Width	Follow up	Recurrence
Hope P.G.	n.m.	2,5 y (1-4,5)	0 (0 %)
Benoit L.	4-20 cm	19 m (2-72)	2 (10%)
Lazaro-da-Silva A	n.m.	4 y 10 m	19 (13,2%)

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Conclusions by De Silva (1979) :

- Hernia sac = tissue of good resistance and good healing
- Restore the abdominal wall anatomy
- Tensionless sutures

- Prosthetic material un-necessary…

Suture or mesh ?

A COMPARISON OF SUTURE REPAIR WITH MESH REPAIR FOR INCISIONAL HERNIA

ROLAND W. LUIJENDIJK, M.D., PH.D., WIM C.J. HOP, PH.D., M. PETROUSJKA VAN DEN TOL, M.D., DIEDERIK C.D. DE LANGE, M.D., MARIJEL M.J. BRAAKSMA, M.D., JAN N.M. IJZERMANS, M.D., PH.D., ROELOF U. BOELHOUWER, M.D., PH.D., BAS C. DE VRIES, M.D., PH.D., MARC K.M. SALU, M.D., PH.D., JACK C.J. WERELDSMA, M.D., PH.D., CORNELIS M.A. BRUIJNINCKX, M.D., PH.D., AND JOHANNES JEEKEL, M.D., PH.D.

in : New England J M, 2000; 343: 392-398

Long-term Follow-up of a Randomized Controlled Trial of Suture Versus Mesh Repair of Incisional Hernia

Jacobus W. A. Burger, MD, Roland W. Luijendijk, PhD,† Wim C. J. Hop, PhD,‡ Jens A. Halm, MD,* Emiel G. G. Verdaasdonk, MD,* and Johannes Jeekel, PhD**

in : Annals of Surgery, 2004; 240: 578-585

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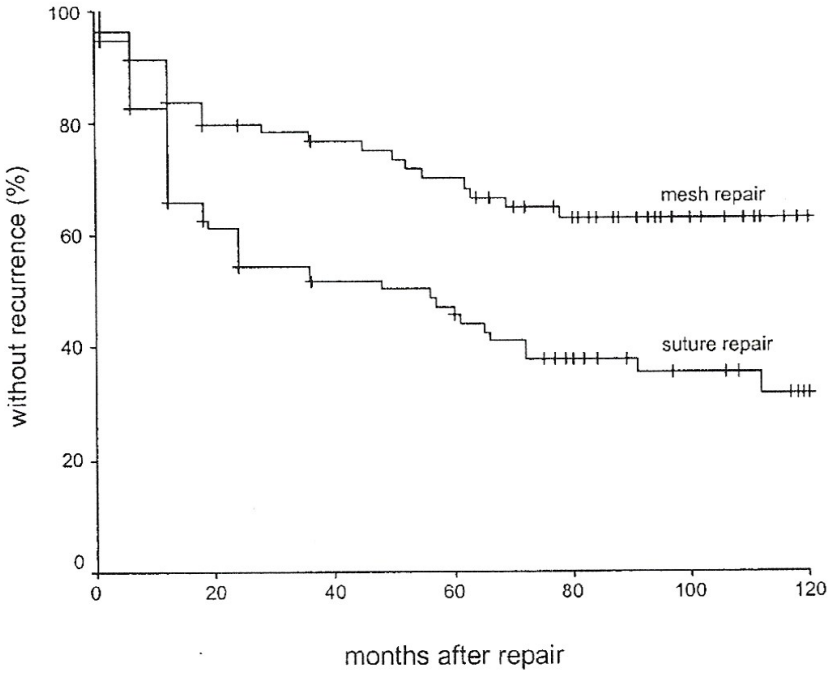
Dutch trial



Recurrence rate :

- suture repair : 63 % (67%)
- prosthetic repair : 32 % (17%)

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Conclusions of the dutch trial

Mesh repair =

- superior, for small and large incisional hernias
- results in lower recurrence rates
- results in less discomfort
- not associated with a higher complication rate

- suture repair of incisional hernia should completely abandoned

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Optimal location of mesh

- Mesh placement in the retromuscular sublay position is regarded as a highly standardised and proven method (*V.Schumpelick*)

Reference	Position	Overlap (cm)	*n*	Follow-up (months)	Recurrence rate (%)
Park et al. [12]	Onlay	1.5	49	53.7 (mean)	36
Luijendijk et al. [9]	Sublay	2	84	36 (cumulative)	24
Langer et al. [7]	Sublay	5	38	36 (mean)	5.2
Schumpelick et al. [14]	Sublay	5	81	22 (mean)	4.9
McLanahan et al. [11]	Sublay	6	86	24 (median)	3.5
Toniato et al. [18]	Sublay	6	77	38.3 (mean)	2.6

in: Schumpelick V. et al., Langebecks Arch Surg (2004) 389: 1-5

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The origin of this retromuscular mesh repair …. Reims

In : Techniques Chirurgicales E.M.C. Edit, 1977, 4.2.07, 401565

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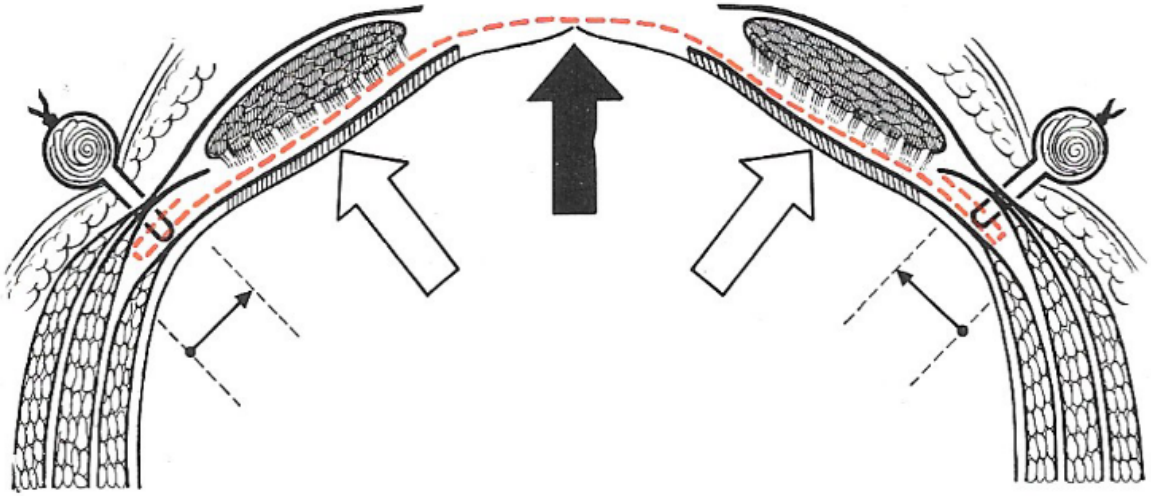
Rives - EMC 1977



4

Suture par apposition. Dans ce cas le site d'implantation est le meilleur, car il éloigne le matériel de la peau et du péritoine, en permettant une « prise » de la pièce au contact du conjonctif musculaire.

Rives : “ limitations “

- Impossible closure of the posterior and/or anterior fascia
    - Posterior :
        - Omentum
        - Vicryl mesh
    - Anterior :
        - Relaxing incisions : procedure of Clotteau-Prémont
        - Bridging other mesh
        - Use of the hernia sac

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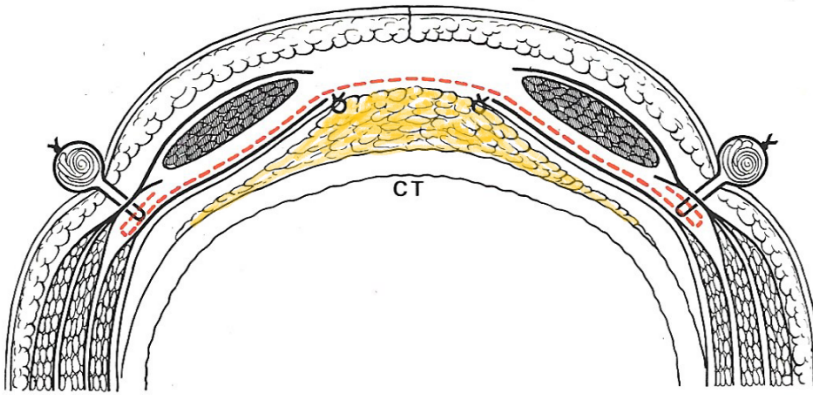
Rives - EMC 1977



38 Dans les éventrations monstrueuses le péritoine ne peut être refermé. Une épiplooplastie permet d'obtenir une bonne péritonisation en constituant pour la pièce un lit conjonctif permettant une réhabitation rapide.

EMC

□ *Couverture et enfouissement de la pièce*

Mais dans les éventrations importantes, il persiste toujours un orifice que l'on recouvrira en général avec un lambeau de sac péritonéal, qu'il faut savoir conserver, si possible avec sa vascularisation, au cours des manœuvres d'exposition. Ce temps est très important, car il protégera la pièce, si une infection superficielle apparaît dans les jours qui suivent.

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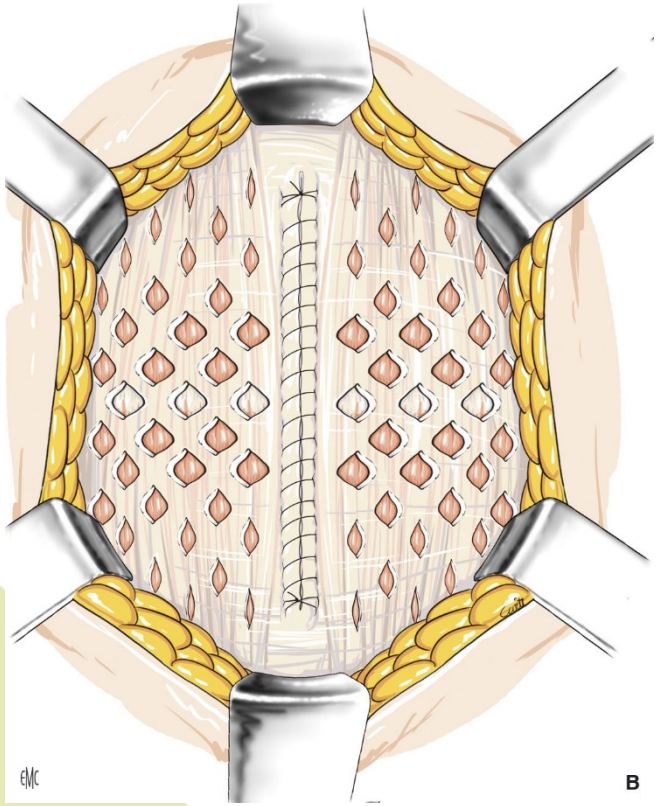
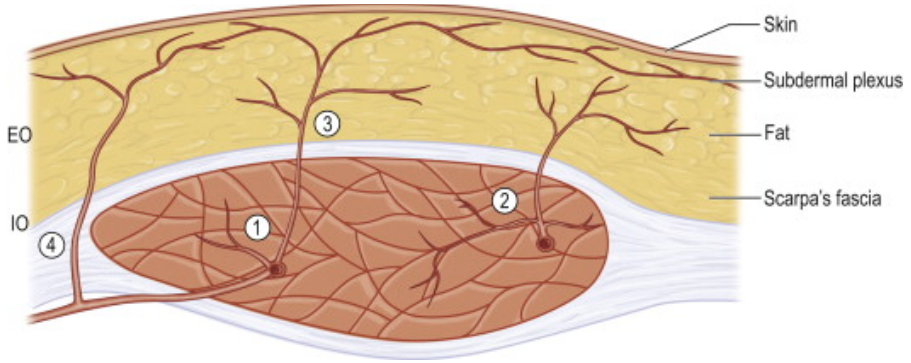
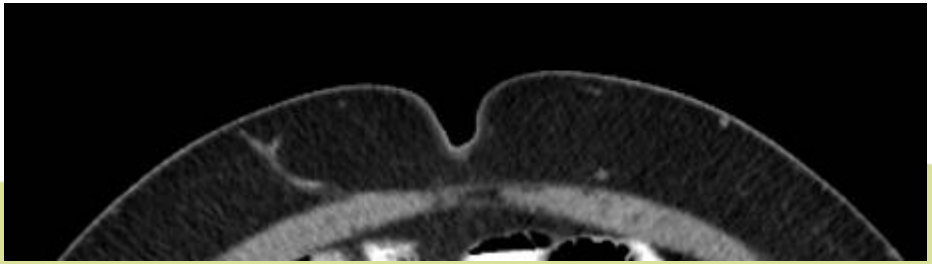
Clotteau - Prémont



- gain : 2- 4 cm
- disadvantage :
  - subcutaneous dissection
  - interruption of perforant arteries





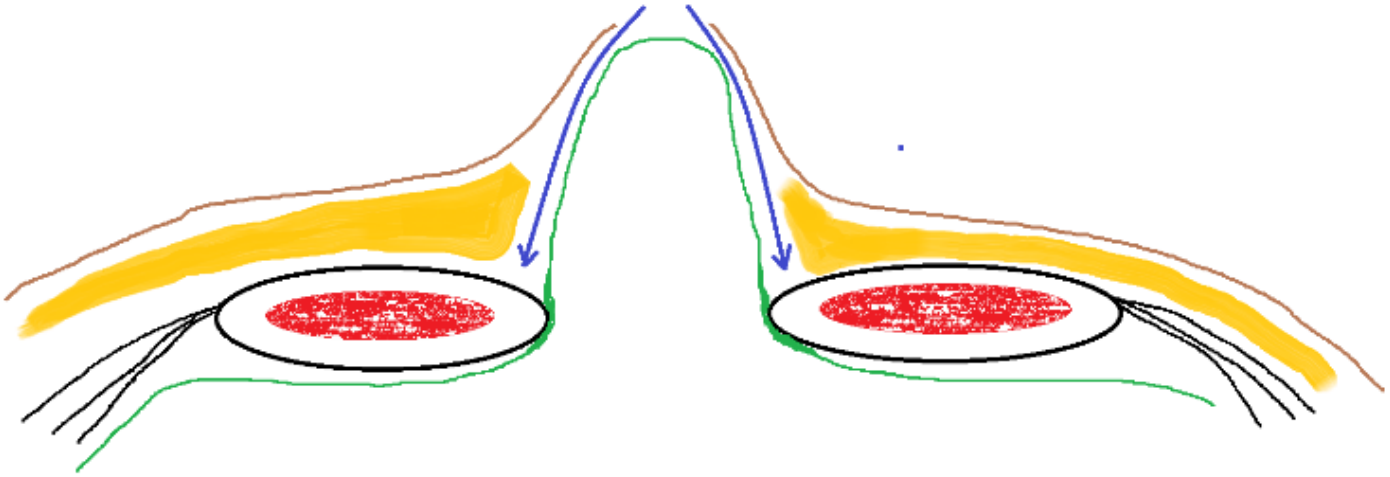
Rives + da Silva => “sublay sandwich”

- Katsaragakis S., Eur J Surg 2001
- Beck M., J Chir 2008
- Tulloh B., Hernia 2014

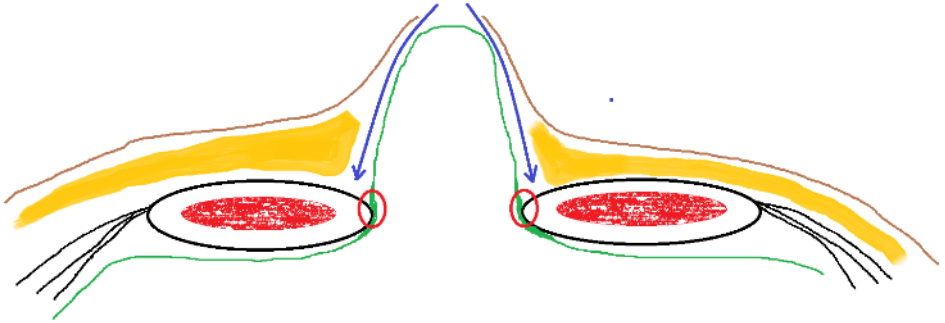
Combination with the (anterior) Ramirez procedure :

- Picazo-Yeste J., J Gastrointest Surg 2013

STEP 1 :
exposure of the hernia sac and the fascia margins



Keep the flap attached to fascia !



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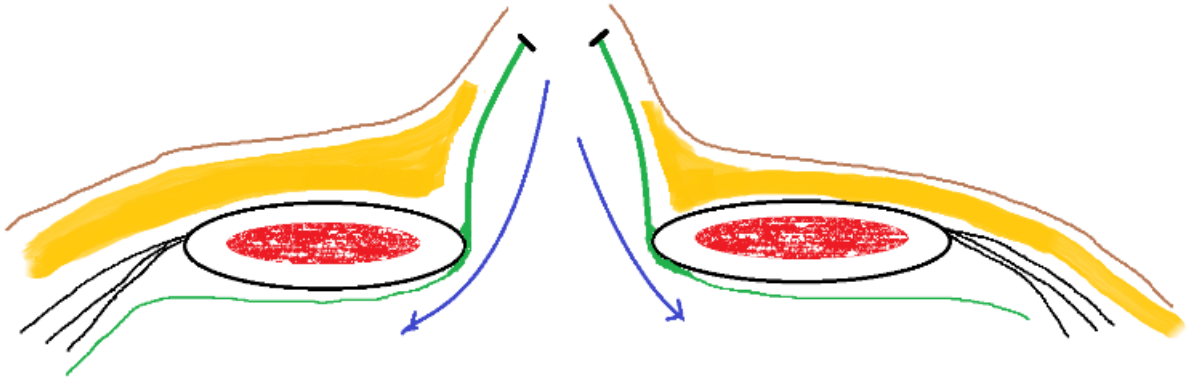
STEP 2 :
Opening of the hernia sac

- in the midline
- over the full lenght of the defect



- adhesiolysis

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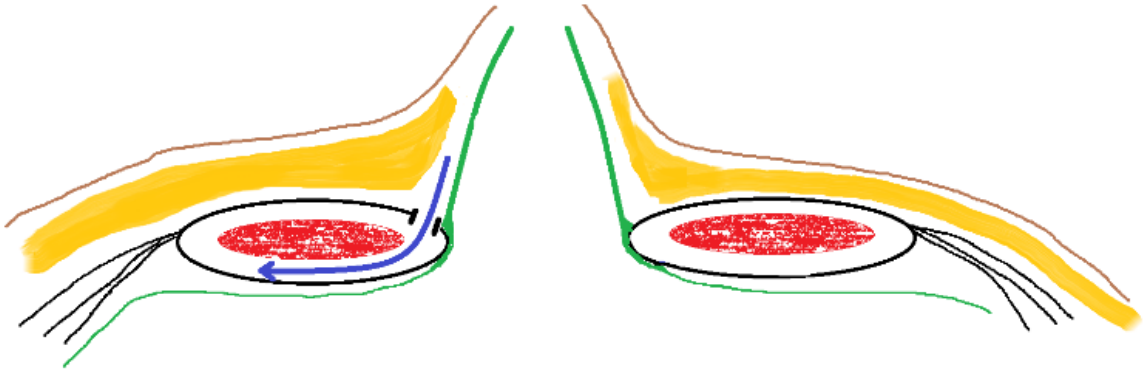
STEP 3 :
Incision of the anterior rectussheat

- at the border or the palpable rectus muscle
- over the lenght of the defect



- creation of the deep layer of the sandwich

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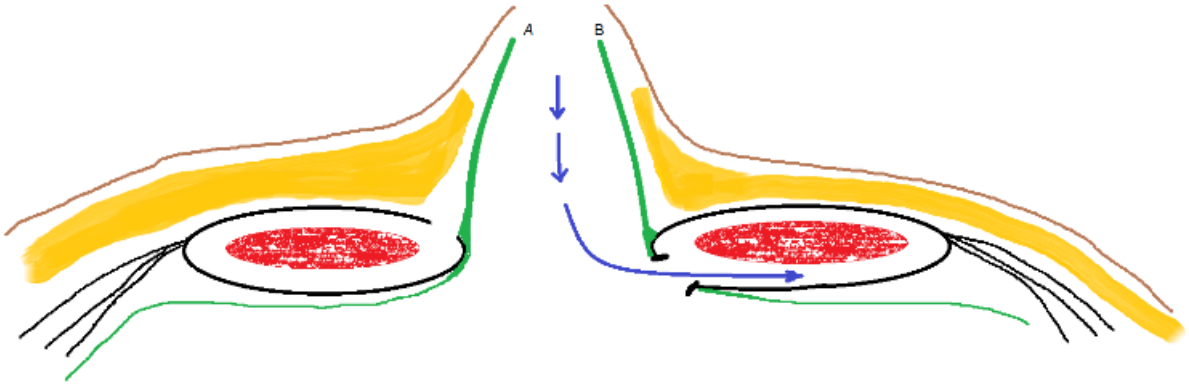
STEP 4 :
Incision of the posterior rectussheat

- at the border or the palpable rectus muscle
- at the backside of the opposite site



- creation of the superficial layer of the sandwich

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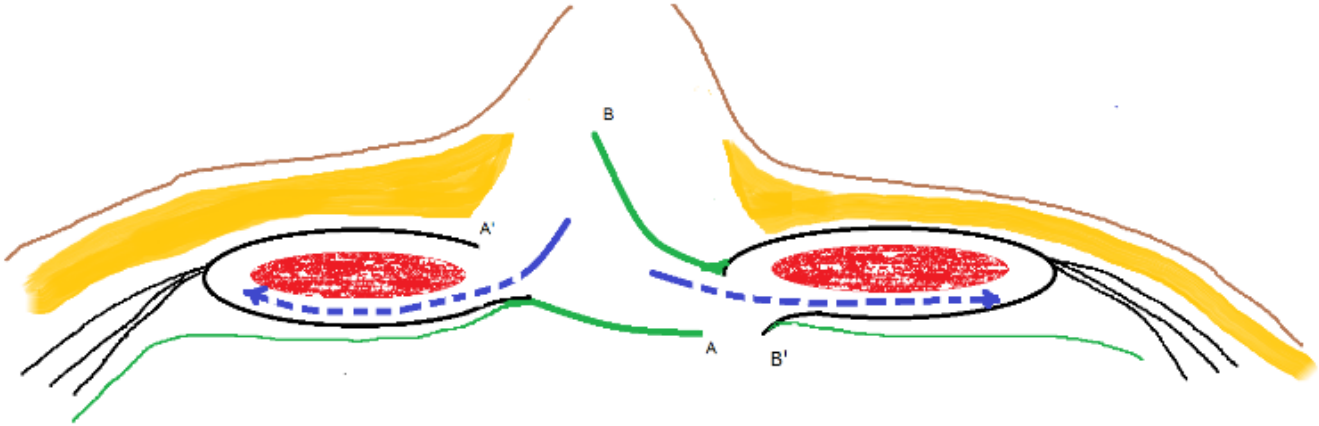
STEP 5 :
Opening of the sublay space

- as usual in the Rives – Stoppa approach



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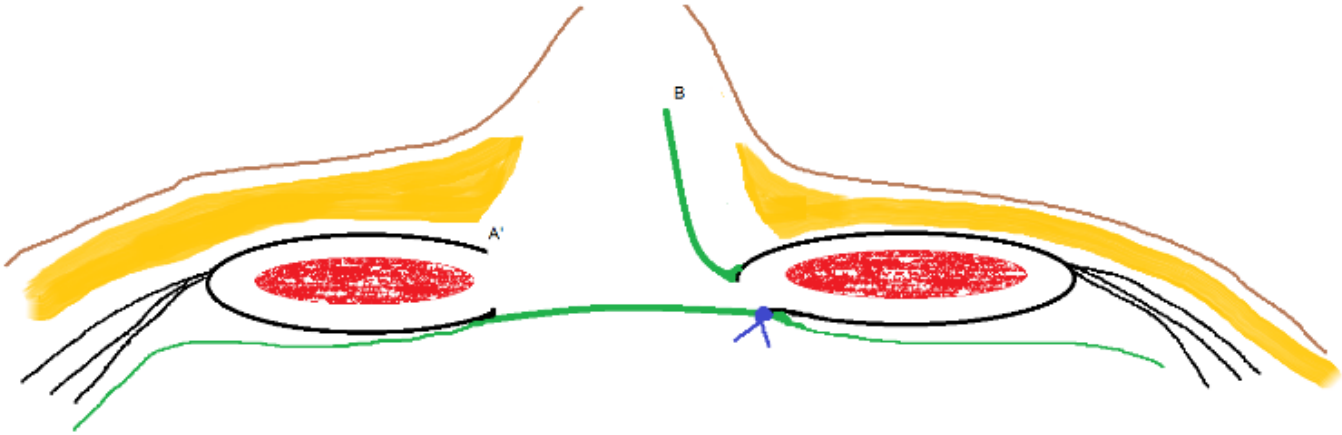
STEP 6 :
Closure of the peritoneal cavity



- trim the flap as necessary

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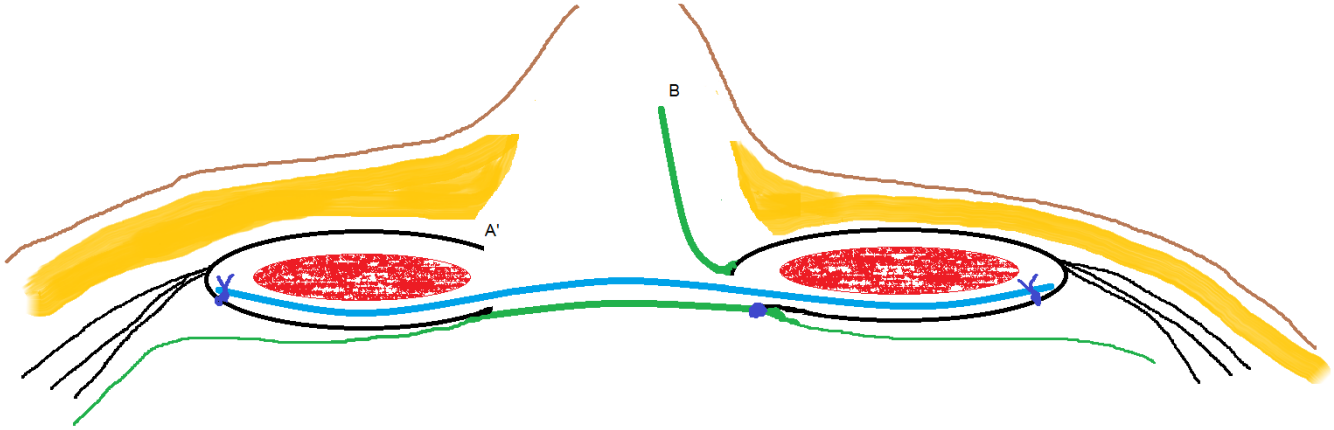
STEP 7 :
Insertion of the mesh

- as in the Rives – Stoppa approach



- > 5 cm overlap
- flat, avoiding folding and curling
- lateral and cranio-caudal fixation

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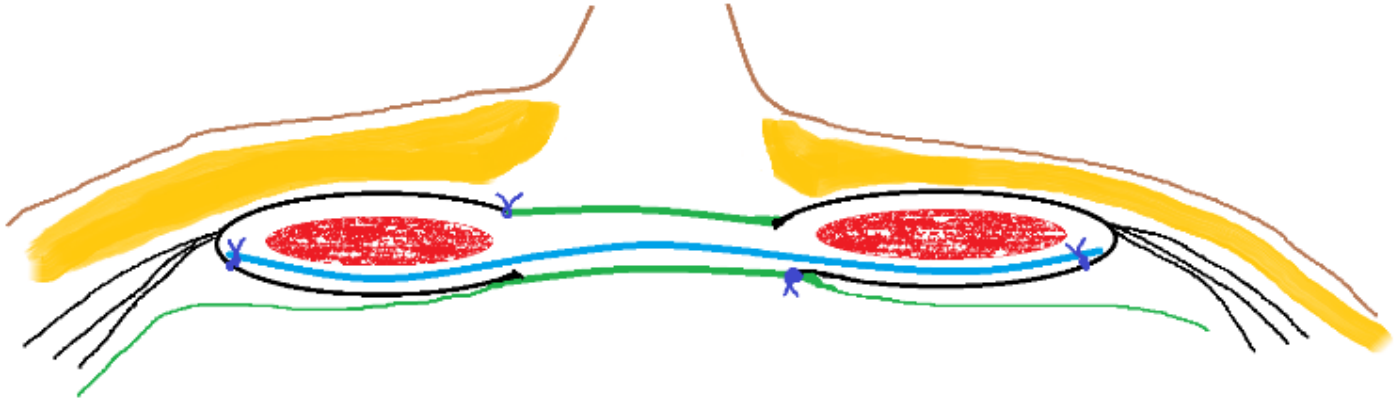
STEP 8 :
Closure of the anterior fascia



- trim the flap as necessary
- mesh “sandwiched” between the peritoneal flaps
- but also far retromuscular

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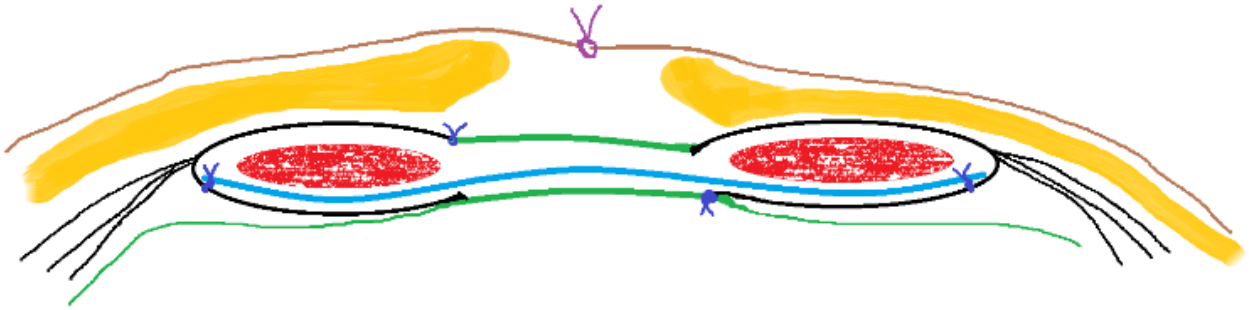
STEP 9 :
Closure of the skin



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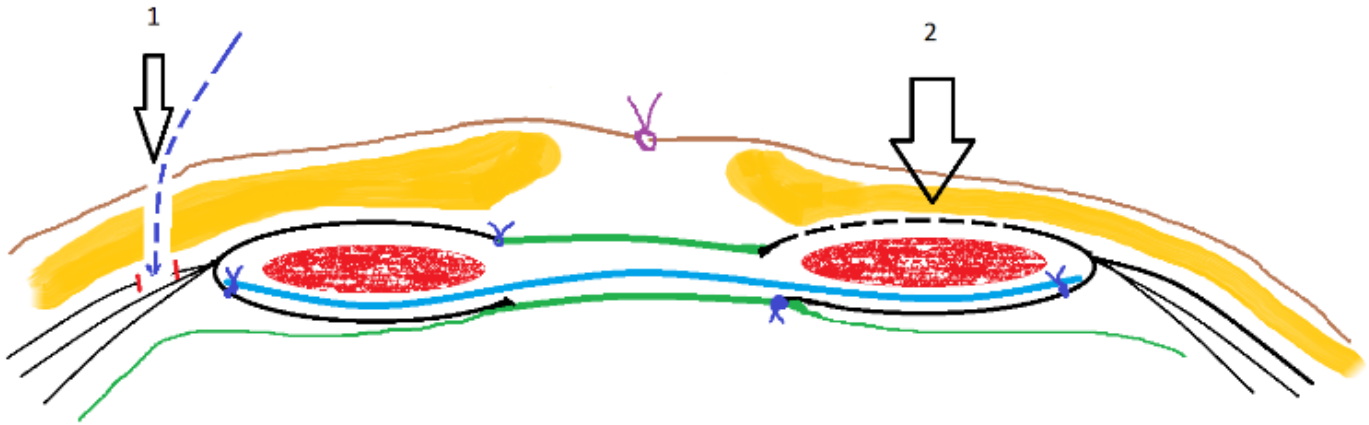
Possible extensions of the peritoneal flap technique

1.Component separation technique (Ramirez)
2.Small relaxing incisions anterior rectusfascia (Prémont)



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Results

Author	Journal	Year	N		
Katsagarakis S	Eur J Surg	2001	19		
Tulloh B	Hernia	2014	21		
*Picazo-Yeste**	*J Gastrointest Surg*	*2013*	*24*		

Author	defect size	Width	Follow up	Complic	Rec
Katsagarakis S	n.m.	n.m.	32 m	2	0
Tulloh	25 - 500 cm^2	3 - 20 cm	36 m	6	1
*Picazo-Yeste**	*225 - 875 cm^2*	*15 - 25 cm*	*22 m*	*9*	*1*
* Ramirez + Peritoneal flap					

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ADVANTAGES

- Technically easy
  - On the condition that operative strategy is adapted to it !
  - No extra operating time

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ADVANTAGES

- Technically easy

- Avoids unnecessary subcutaneous dissections
  - Minor risk of seroma and hematoma
  - Preserving of the periumbilical perforantes

ADVANTAGES

- Technically easy
- Avoids unnecessary subcutaneous dissections

- Isolates the mesh from subcutis and peritoneal cavity
  - Allows the use of standard polypropylene mesh
  - Minimalizes the risk for infection and adhesions

ADVANTAGES

- Technically easy
- Avoids unnecessary subcutaneous dissections
- Isolates the mesh from subcutis and peritoneal cavity

- Allows a tensionfree repair
  - Less risk for postoperative respiratory problems

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ADVANTAGES

- Technically easy
- Avoids unnecessary subcutaneous dissections
- Isolates the mesh from subcutis and peritoneal cavity
- Allows a tensionfree repair

- Principles can be used in paramedian, lateral and oblique incisional hernia

- It can be used in large primary ventral hernia

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ADVANTAGES

- Technically easy
- Avoids unnecessary subcutaneous dissections
- Isolates the mesh from subcutis and peritoneal cavity
- Allows a tensionfree repair
- Can be used in paramedian, lateral, oblique incisional hernia and in large primary ventral hernia

- It can be used with other techniques :
  - Relaxing incisions
  - Component separation technique
  - BTX

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ADVANTAGES

- Technically easy
- Avoids unnecessary subcutaneous dissections
- Isolates the mesh from subcutis and peritoneal cavity
- Allows a tensionfree repair
- Can be used in paramedian, lateral, oblique incisional hernia and in large primary ventral hernia
- It can be used with other relaxing techniques

- Seems to have good outcome, also concerning recurrence

Drawback ?

- A reproach could be that no effort is done to approach the rectusmuscle in their exact position
- Could create a diastasis on the midline
- No functional problem or consequence

When to do a peritoneal flap ?

- When expecting a difficult closure of the fascia-borders
  - > 4-5 cm width ?
  - Depending of location : epig !

- What are the limits ? (for midline IH)
  - What are the data literature ?

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When to do a peritoneal flap ?

- What are the limits ? (for midline IH)
  - What are the data ?

Author	Nr midline IH	width (cm)	cm^2	EHS "large"
Katsargakis	19 (?)	n.m.	mesh	?
Tulloh	13	3-12 (6,5 cm)	15 - 150	3
Own	4 (+ 1)	6,5-10 (8 cm)	56 - 150	2 (+1)
(EHS 2016)				
Tournai	28	15 mid (6-9 cm)	175 ± 91	13
(BSW 2015)		13 large (≥10 cm)		

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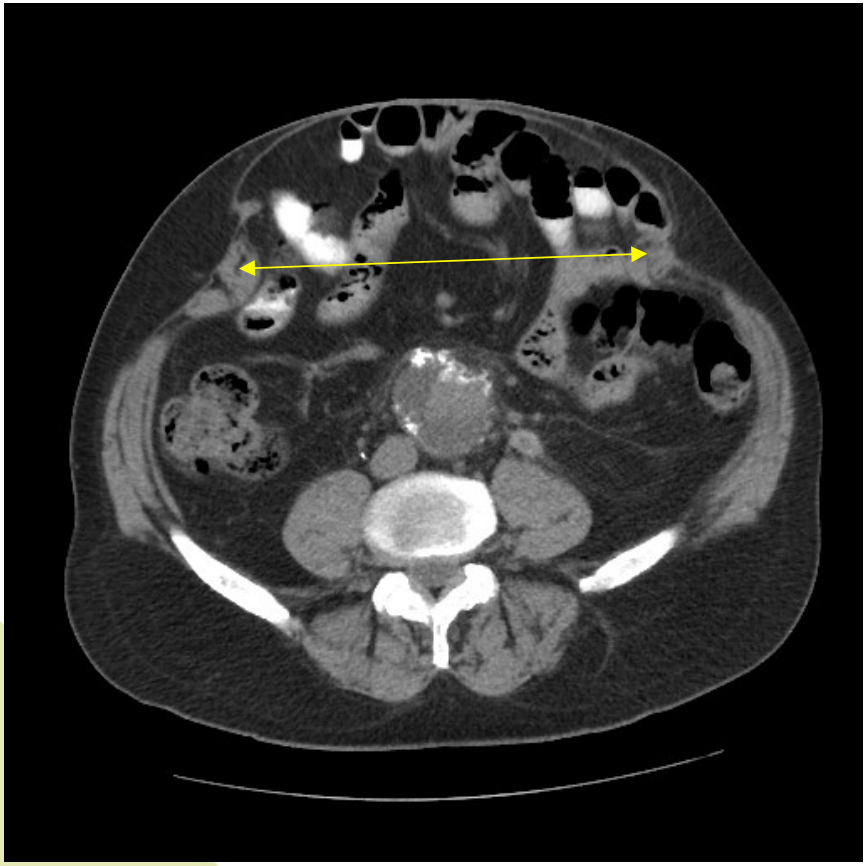
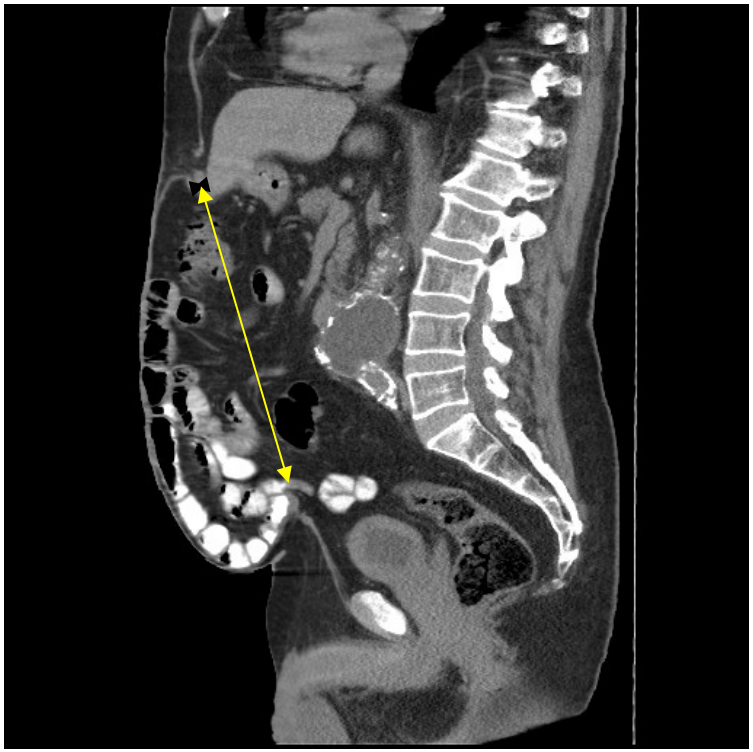
Our “outliner”: 17 x 20





Bilateral CS (modified) +
Peritoneal flap +
Retromuscular mesh

Picazo-Yeste J., J Gastroinstest Surg (2013)

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Limitations

- No hernia sac available (after laparostomy)
- Hernia sac to fragile

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Conclusions

- The hernia sac in incisional hernia should be considered as a “present” to the surgeon, and should not be ignored
- The “sublay sandwich”-technique is a valuable tool in the repair of midsize and large incisional hernia
- The surgical technique is easy and accessible to every surgeon, without compromising other options

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Literature

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- Beck M., J.Chir. 2008 ; 145, 5 : 475-477
- Malik A et al, Hernia 2014 ; 18 :39-45
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