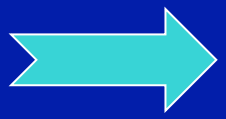
Medieval times in surgery

Still no solution for:

The most frequent complications of the abdominal surgeon:

- Adhesions
- Postoperative ileus
- Incisional hernia
- Anastomotic leakage
- Wound infection



Incidence did not change

A postoperative defect in the linea alba is the most frequent complication of the abdominal surgeon

Which may lead to a hernia

In the acute postoperative fase in 1-7%

longterm in 5-35%

When and why does the defect occur??
Can we prevent it to occur

Acute hernia

Hernia :

The most frequent operation
The most frequent complication

- Inguinal hernia
- Umbilical hernia
- Diaphragmatic hernia
- Incisional hernia
- Burst abdoman/acute hernia
- Stoma hernia
- Recurrent hernia

Closing time
=
Coffee time
Closing team

Prevention particularly in:

pts with high risk for incisional hernia :

- *Stoma surgery 5 – 59%*
- *Aneurysma surgery 20—35%*
- *Hartman procedure ? – 59%*
- *BMI > 27 -35%*
- *(Previous) wound infection*
- *Smoking,age,etc*

Prevent Incisional Hernia:

- Avoid surgery , only EBS
- No stoma, stoma =medieval
- Stop preop smoking
- Loose weight
- Exercise?

The Midline

Linea Alba

The thinnest part of the wall

Midline under pressure

The Midline Crisis

La-Place : wall stress is wall tension divided by wall thickness.

The Herniation occurs at a weak spot in the wall caused by

- Surgeon, by creating a weak spot
- Patient, with collagen problem

The surgeon:
1. by choosing the wrong incision and thus creating a weak spot
2. or by insufficient closure

La-Place : wall stress is wall tension divided by wall thickness.

Hardly any Incisional hernia with

- **Pfannenstiehl incision**
- **Lateral paramedian incision !**

=

layered wall techniques

Mesh enforcement = layered wall

Prevention by:

- ***Wall enforcement (mesh)***
- ***Better sutures/suture techniques***
- ***Other techniques ???***

The Midline

Linea Alba

The thinnest part of the wall

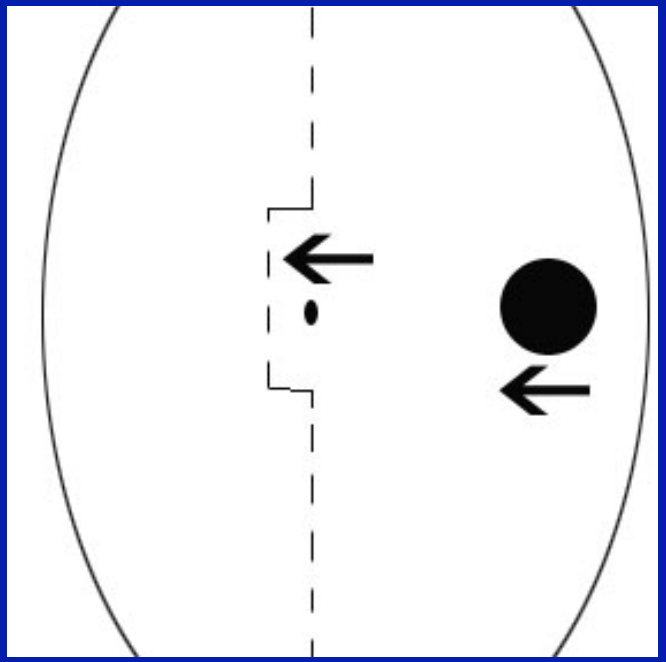
Enforce with mesh

Stoma thin wall/no wall

40-60% midline I.H in case of parastomal hernia

- 1. IH and PH are highly correlated
- 2. IH incidence rate of 60 % in patients with an end colostomy

Midline shift



- Stoma creation
- Midline shift

- Increased forces suture line/holes
- Wound edges separation
  - Major risk factor IH development
- 57,7% of hernias at the level of the stoma

Timmeermans 2013
Pollock et al, BJS 1989

Mesh vs no mesh in colostomy

3 meta-analyses and 3 RCT's

1. Shabbir e.a.(Colorect Dis 2011)
2. Tam e.a. (WJS 2010)
3. Wijeyekoon e.a. (J Am Coll Surg 2010)

Parastomal hernia 14% in mesh vs 59% in no mesh group

Mesh extending over midline incision

Prevention of incisional hernia formation two rct's from Rotterdam:

1.Mesh enforcement in *high risk* patients

2.Small/big bites in *routine* midline operations

!.

Profylactic *mesh enforcement*
in patients with high risk for incisional hernia (33%)

RCT

in obese patients

and in pts. with AAA

Collagen disorder in AAA and Obesitas?

Prevention by mesh enforcement

- PRIMA TRIAL
- Primary suture versus Onlay mesh
- Primary suture versus Sublay mesh
- Onlay versus Sublay mesh

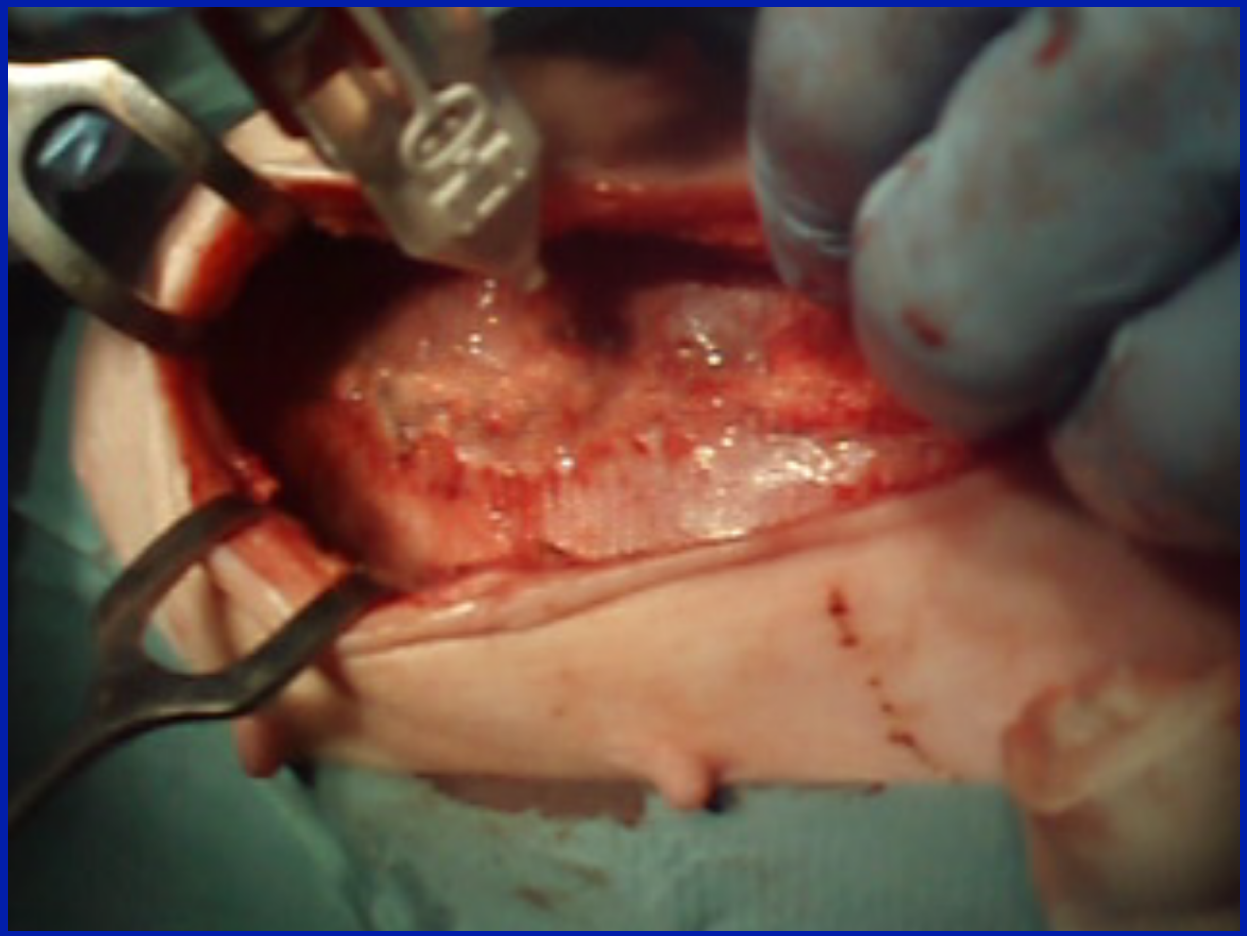
- ***510 patients (AAA and BMI)***

Onlay procedure

- The optilene mesh is positioned on the primary closed midline fascia with an overlap of 3 cm at each side.

- The mesh is then fixed with fibrin glue.

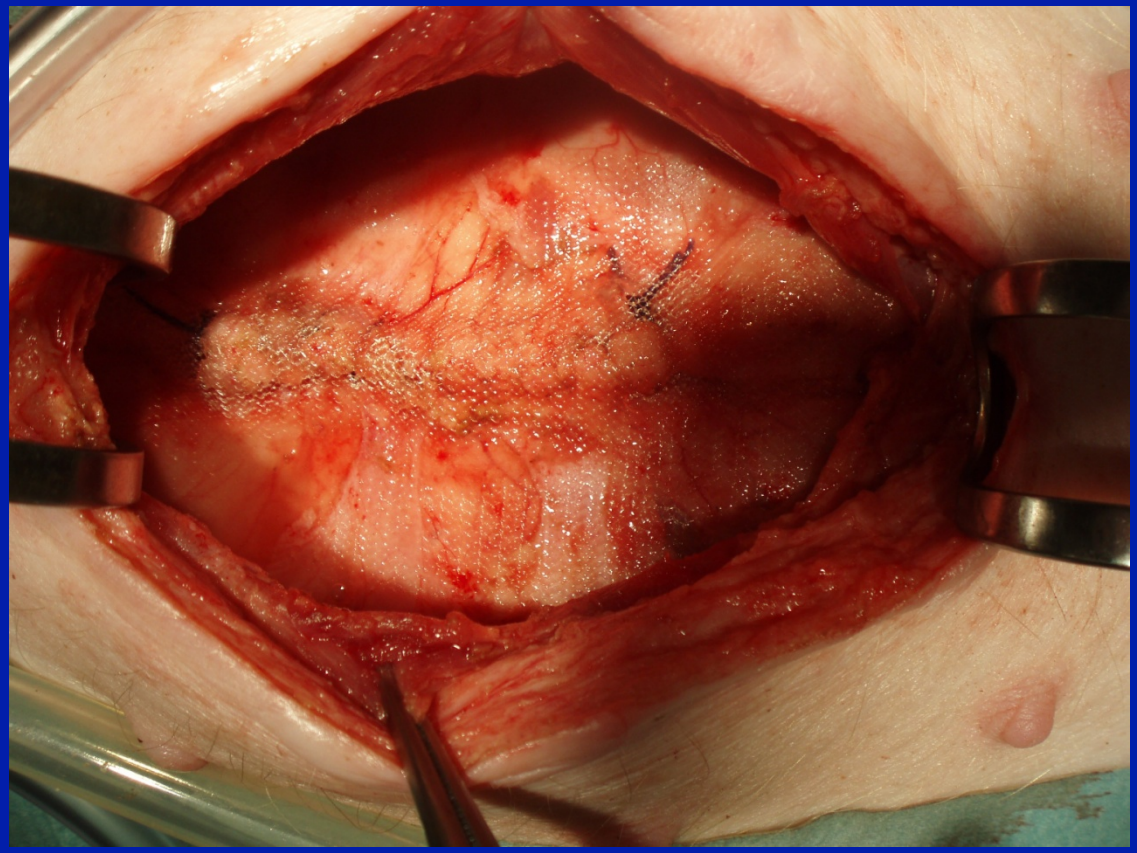
Onlay procedure



Sublay procedure

- A space is created between both posterior rectus sheaths and the rectus muscle.
- Both posterior rectus sheath edges are sutured using a running slowly absorbable suture.
- The optilene mesh is then placed between the posterior rectus sheath and the rectus muscle with an overlap of 3cm at each side and fixed with fibrin glue.
- The midline anterior rectus sheath is closed covering the mesh.

Sublay procedure



PRIMA Trial – postoperative results

	General	PS	OMA	SMA	p-value
Total	480	107	188	185	
SSI (%) -superficial -deep -intra-abdominal	 27 (5.6) 22 (4.6) 19 (3.9)	 4 (3.7) 2 (1.9) 8 (7.5)	 14 (7.4) 13 (6.9) 8 (4.3)	 9 (4.9) 7 (3.8) 3 (1.6)	 NS NS NS
Seroma (%)	52 (10.8)	5 (4.7)	34 (18.1)	13 (7)	0.002*, 0.002**
Hematoma (%)	21 (4.4)	1 (0.9)	11 (5.9)	9 (4.9)	NS
Fascial dehiscence (%)	16 (3.3)	1 (0.9)	6 (3.2)	9 (4.9)	NS
Mesh infection	6 (1.6)	-	5 (2.7)	1 (0.5)	NS
Mesh removal (%)* -complete -partial -reimplanted	 10 (2.7) 4 (1.1) 2 (0.5)	 - - -	 7 (3.7) 3 (1.6) 2 (1.1)	 3 (1.6) 1 (0.5) 0	 NS NS NS
Ileus (%)	26 (5.4)	3 (2.8)	12 (6.4)	11 (5.9)	NS
Reintervention (%)	77 (16)	12 (11.2)	33 (17.6)	32 (17.3)	NS
Readmission (%)	76 (15.8)	12 (11.2)	37 (19.7)	27 (14.6)	NS
Death (%)	18 (3.8)	4 (3.7)	7 (3.7)	7 (3.8)	NS

PRIMA Trial - conclusions

- Short term results:
  - PMA is a safe procedure without increase in SSI !!
  - Increase in Seroma after OMA
  - No increase in other postoperative complications after OMA or SMA

Prevention by:

- ***Wall enforcement (mesh)***
- ***Better sutures/suture techniques***

There is no consensus on closure techniques except :

Close with a running slowly resorbable suture with a SL/WL 4:1 ratio ..?

Technique

- *Big bite or small bite*
- *Big surgeon : Big bite??*

Large vs. small?

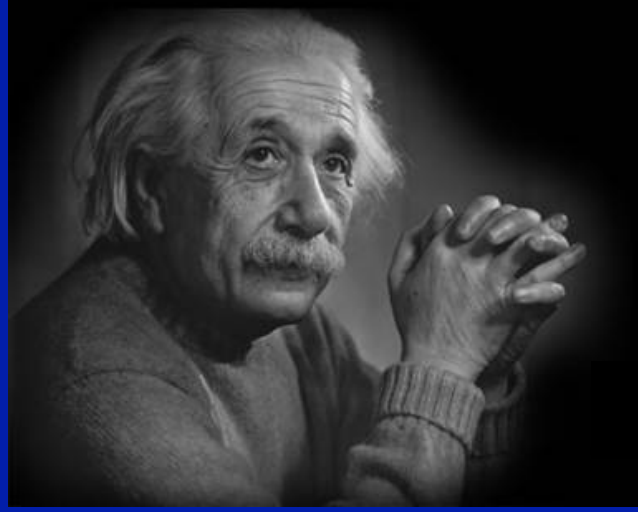
Big surgeon : Big wound

- *Big surgeon : big bite*
- *Good surgeon : small bite ?*

GOOD Surgeon

- **E**XPERIENCE
- **E**BM
- **E**MPATHIME

I am a deeply religious nonbeliever - this is a somewhat new kind of religion.



Albert Einstein

German Theoretical-Physicist

(1879-1955)

Prevent Incisional Hernia:

- Avoid surgery , only EBS
- Avoid midline
- Close with small bites after midline incision
- Close with mesh in high risk patients
- No stoma, stoma =medieval
- If stoma: use mesh overlapping midline
- Stop preop smoking
- Loose weight
- Exercise?