EUROPEAN HERNIA SOCIETY

PARIS - 2014

"INFLUENCE OF THE INFLAMMATORY PROCESS OF THE PERITONEUM ON THE INTEGRATION OF THE MESH DURING LAPAROSCOPIC VENTRAL HERNIA REPAIR"

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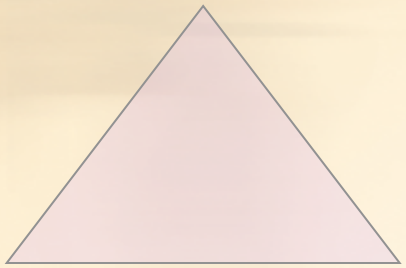
Sevilla (Spain)

Sutures

Tackers

PAIN



MECHANICAL FIXATION

LAPAROSCOPIC VENTRAL HERNIA REPAIR

PAIN

Acute postop. pain

3 RCT- study (Ib), 1 prosp.study (IIb)

Authors	Study	Pat. total (groups)	Typ of fixation suture non resorb. (sn) suture resorb. (sr) tacks (t)	Assess-ment week	Pain Sut. Tack significant (s) non significat (ns)	p-value	Level of evidence
Wassenaar et al. 2010	RCT	172 (56/60/56)	sr+t vs t vs sn+t	2/6/18	ns ns	>0.05	Ib
Bansal et al. 2011	RCT	68 (32/36)	sn vs t	1/12	↑s/s	<0.05	Ib
Beldi et al. 2011	RCT	40 (20/320)	sn vs t	6/24	↑/ns	0.020	Ib
Nguyen et al. 2008	prosp. comp.	50 (29/21)	sn vs t	1/4/8	ns/ns/ns	>0.05	IIb

In the short term follow up there is no significant difference of acute postop pain concerning the different type of mesh fixation by sutures, tacks or combination of both.

PAIN

Chronic postop. pain:

Type of fixation	Number of studies	Total number of patients	Chronic pain % median (IQR)	Follow up month median (IQR)
Sutures + tacks	10	2211	2,75 (1,72-13,22) #"	31,5 (27,75-38,25)
Sutures only	2	1121	3,75 (3,12-4,37) #"	39 (33,5-44,5)
Tacks only	11	2473	6,35 (2,17-13,22) #"	40 (30,5-49,5)

#Kruskal-Wallis Test: p = 0,845 (ns)

"ANOVA: p= 0,747 (ns)

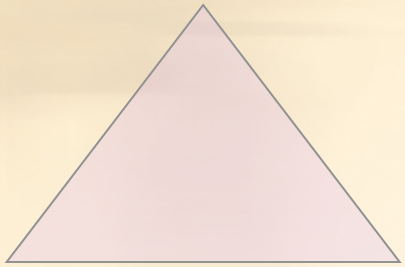
The incidence of postop. chronic pain is without significant difference concerning the type of fixation technique used.

Sutures

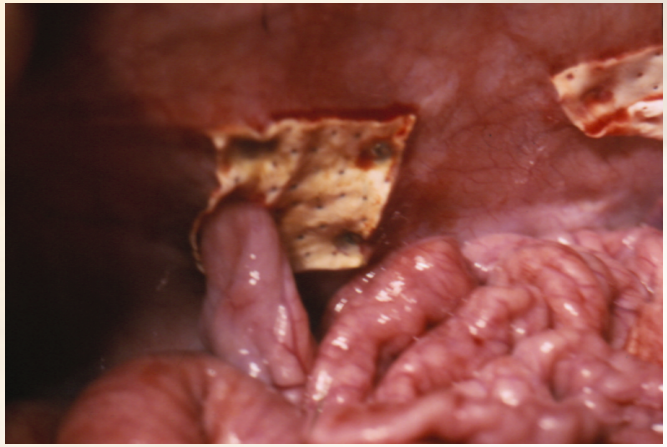
Tackers

PAIN

ADHESIONS



MECHANICAL FIXATION



LAPAROSCOPIC VENTRAL HERNIA REPAIR

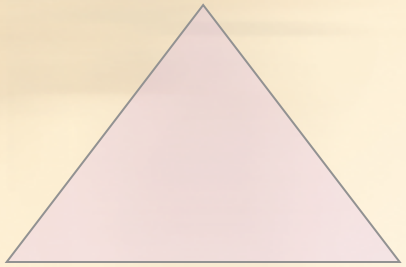
Sutures

Tackers

PAIN

ADHESIONS

RECURRENCES



MECHANICAL FIXATION

LAPAROSCOPIC VENTRAL HERNIA REPAIR

RECURRENCES

Type of fixation	Number of studies	Total number of patients	Recurrence-rate in % median (IQR)	Follow up month median (IQR)
Sutures + tacks	10	2211	3,65 (2,45-5,75)#"	31,5 (27,75-38,25)
Sutures only	2	1121	1,05 (0,82-1,27)#"	39 (33,5-44,5)
Tacks only	11	2473	4,5 (2,4-6,17)#"	40 (30,5-49,5)

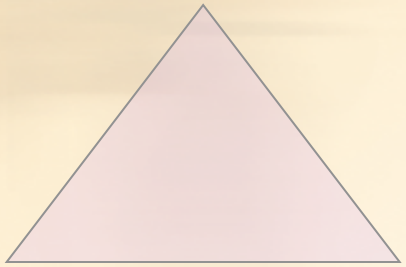
 # Kruskal-Wallis Test: p = 0,17 (ns)

" ANOVA : p= 0,535 (ns)

The different fixation techniques - combination of suture with tack, tacks only and suture only fixation respectively are without significant difference concerning the recurrence rate.

Sutures

Tackers



MECHANICAL FIXATION

The incidence of acute postop. pain correlates significantly with the number of tacks used for mesh fixation.

1 comp.study (III)
Schoenmaeckers et al. Surg Endosc 2011

The absorbability of the suture material used for mesh fixation is not related to the incidence of postop. pain.

1 RCT study
Wassenaar et al. Surg Endosc 2010 (Ib)

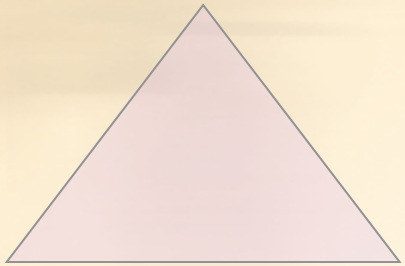
The use of additional glue fixation increases the efficacy of fixation and implicates the reduction of penetrating devices as well as the risk of postoperative pain.

Olmi et al. Surg Endosc. 2007 (4), Olmi et al. JSLS 2010 (4)

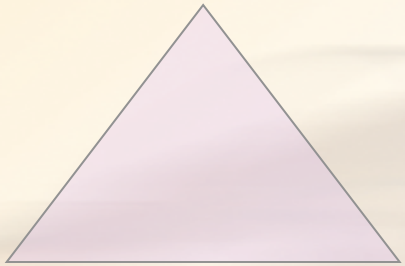
Experimental articles: Rieder et al. J Am Coll Surg. 2011 (5), Clarke et al. Surg Endosc. 2011 (5) Fortelny et al J Surg Res. 2010 (5), Melmanet al. Surg Innov. 2010 (5) Schug-Pass et al. Surg Endosc. (5), 2009 Eriksen et al. Hernia. 2008 (5)

Sutures

Tackers



MECHANICAL FIXATION

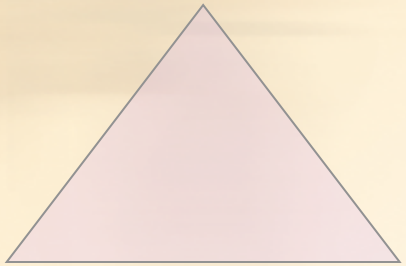


BIOLOGICAL FIXATION

- *We should decrease mechanical fixation to decrease pain*
- *Tackers and absorbible sutures do not increace recurrences, but do not decrease pain*
- *Glues alone are not useful, but they could be used to decrese mechanical fixation*

Sutures

Tackers



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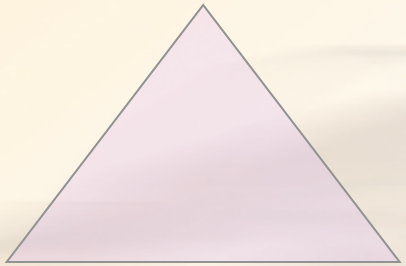

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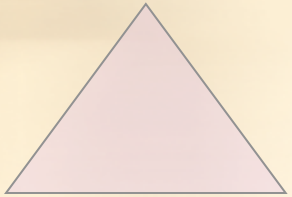
Decrease mechnical fixation

Sutures

Tackers



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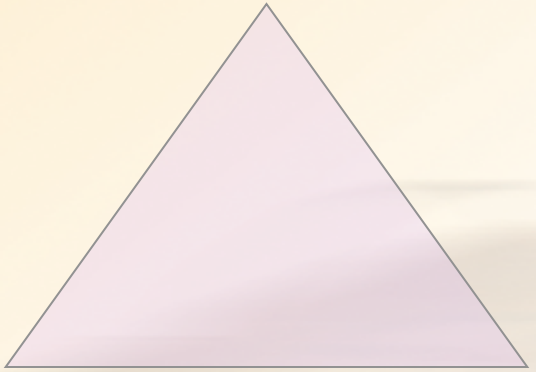


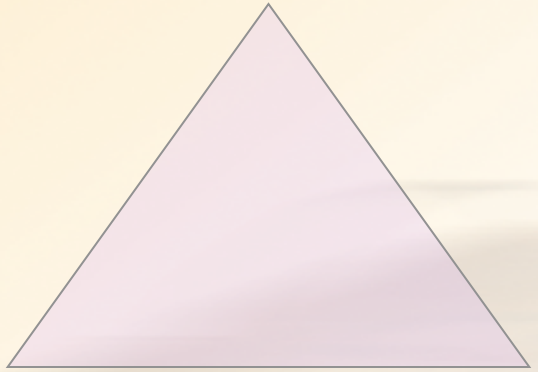
BIOLOGICAL FIXATION

Decrease mechnical fixation

MESH

TECHNIQUE

FIXATION



BIOLOGICAL FIXATION

Decrease mechnical fixation

INCREASE IN-GROWTH

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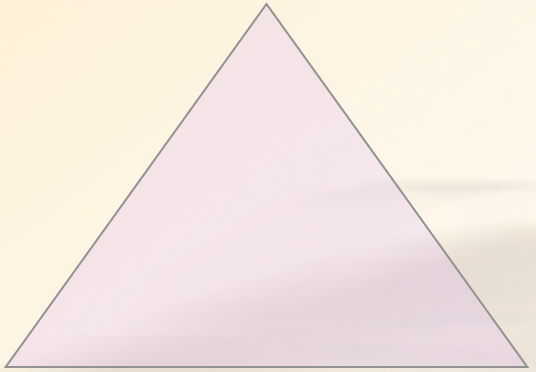
MESH

TECHNIQUE

FIXATION



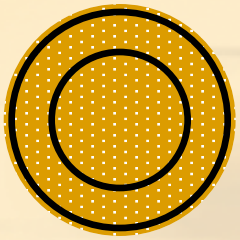
BIOLOGICAL FIXATION

Decrease mechnical fixation

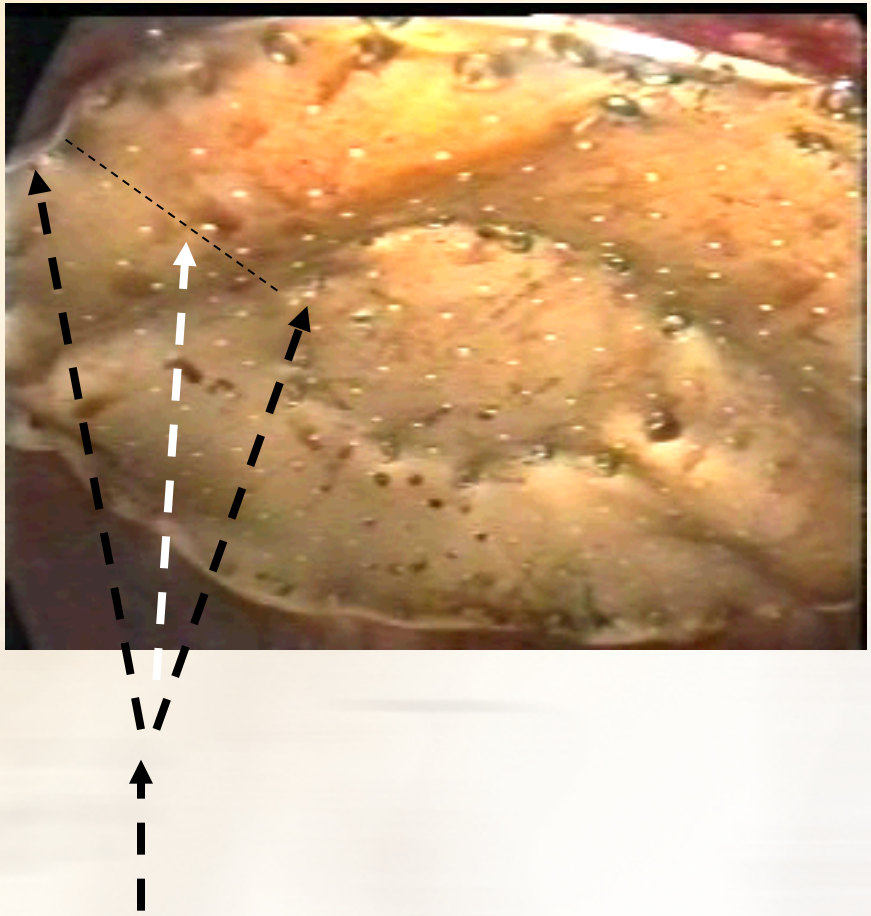
INTERFACE

MESH – ABDOMINAL WALL

INCREASE IN-GROWTH

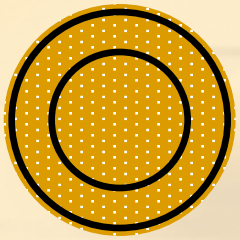


DOUBLE CROWN



INTERFACE

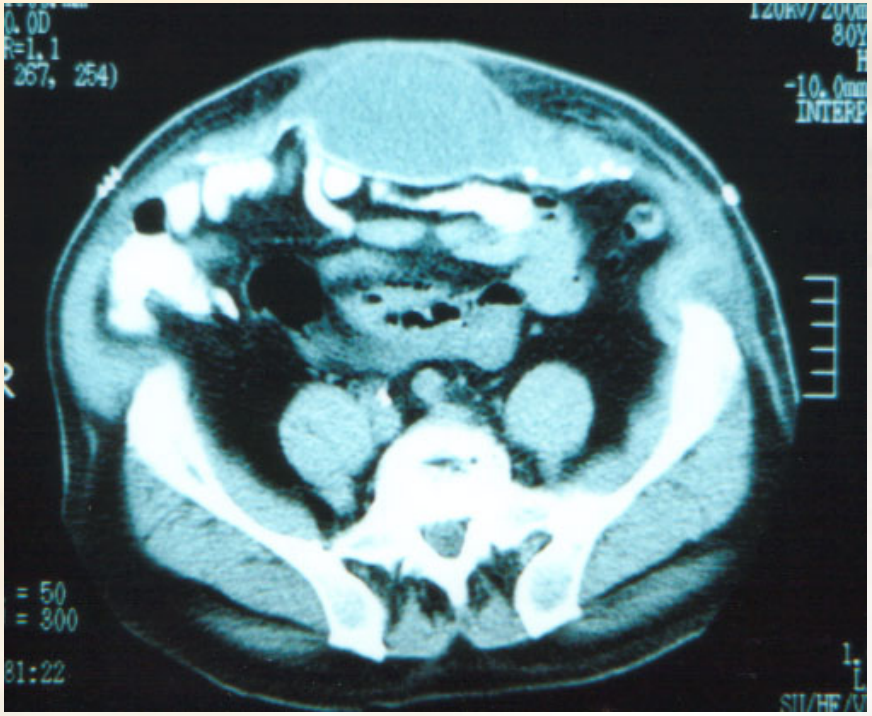
MESH – ABDOMINAL WALL

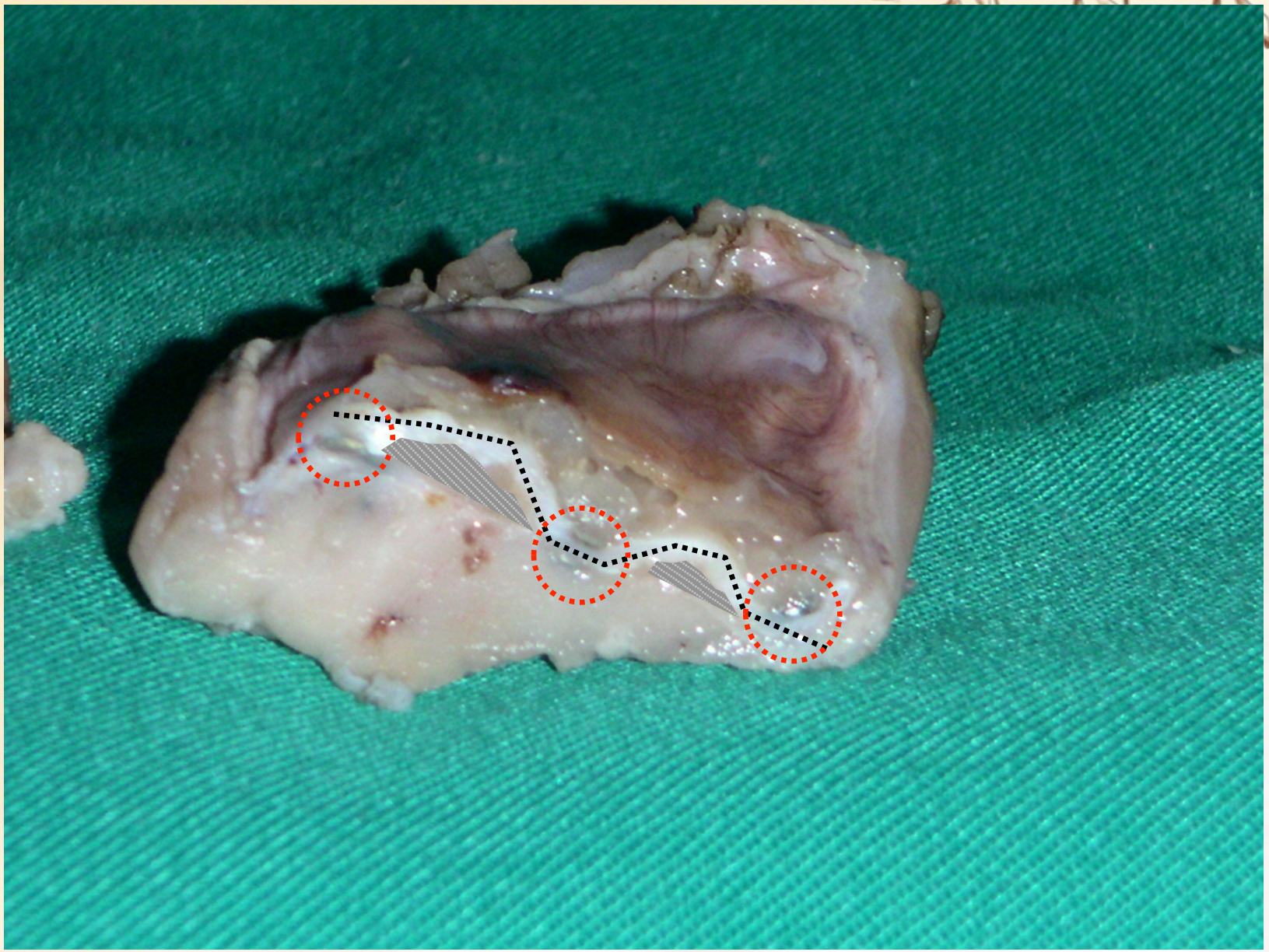


DOUBLE CROWN

INTERFACE

MESH – ABDOMINAL WALL



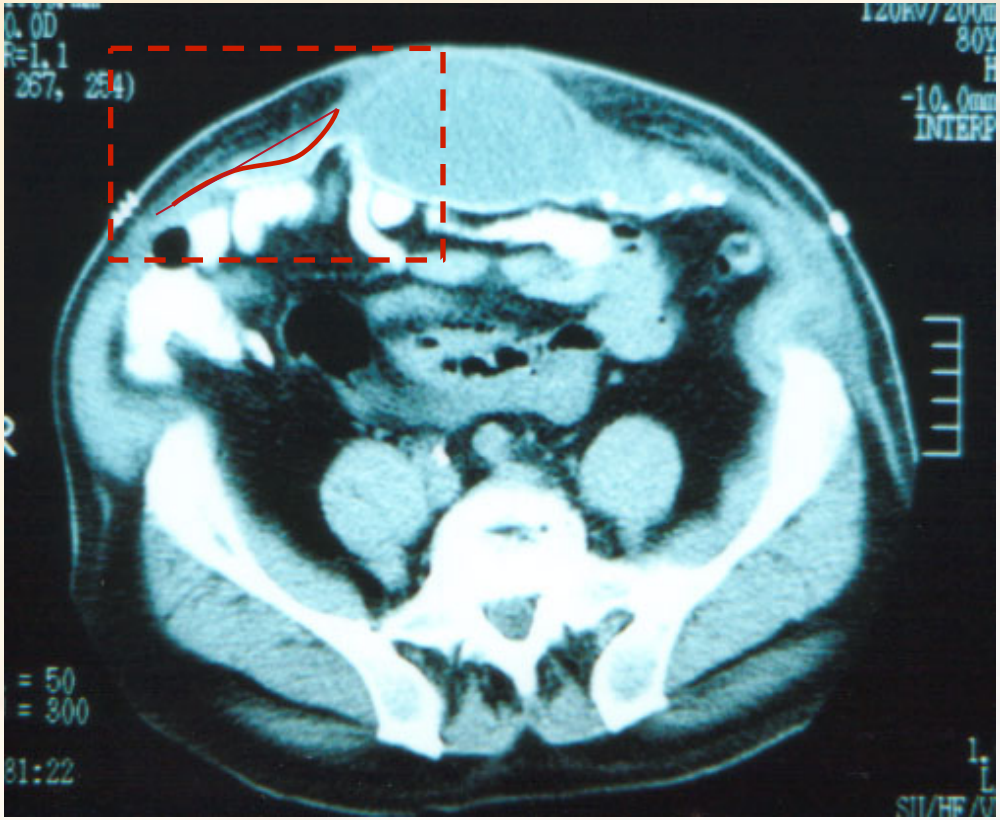


DOUBLE CROWN

PERITONEUM

INTERFACE

MESH – ABDOMINAL WALL



OBJETIVES

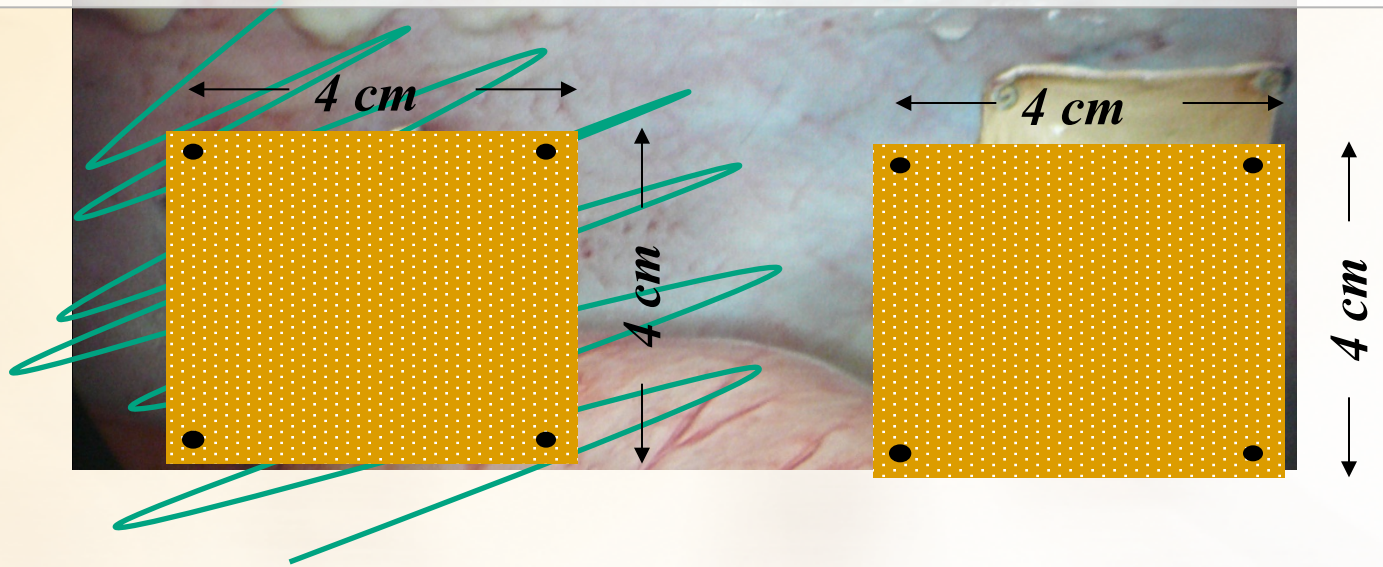
The main GOAL of our STUDY was to DEMONSTRATE that the inflammatory process of the peritoneum could have some influence in the integration of the mesh

MATERIAL AND METHODS

Experimental study
12 pig

Two 4x4 meshes were placed intraperitoneally fixed with one tacker in each corner.
One mesh as control group and the other once the inflammatory process of the peritoneum has been performed

We analyzed epidemiological data (sex, BMI...) and local complications where the mesh were placed

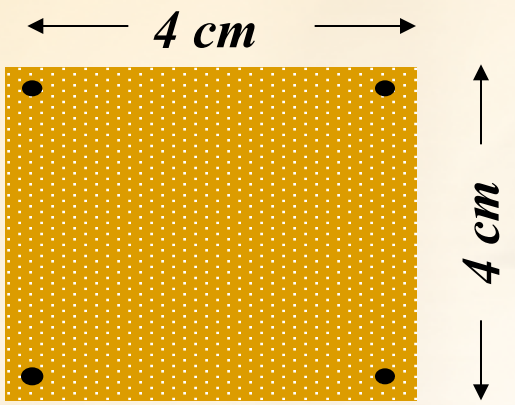


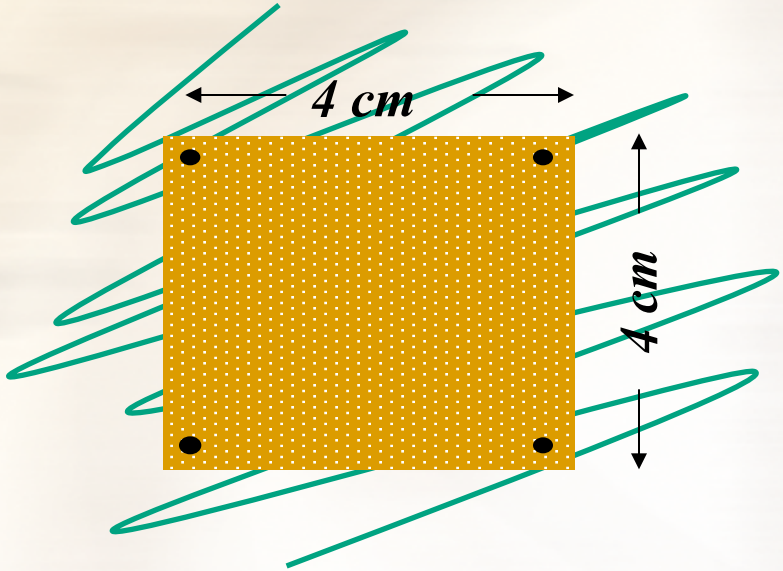
MATERIAL AND METHODS

Experimental study
12 pig

All animals were sacrified 5 weeks later

Macroscopic findings: cellulitis, infection, seroma, adhesions
Histological study: fibroblast, new vessels





RESULTS

No animal died previous being sacrified at week 5

differences between the two groups

MACROSCOPIC FINDINGS

No cellulitis, infection or seroma

No difference in adhesions

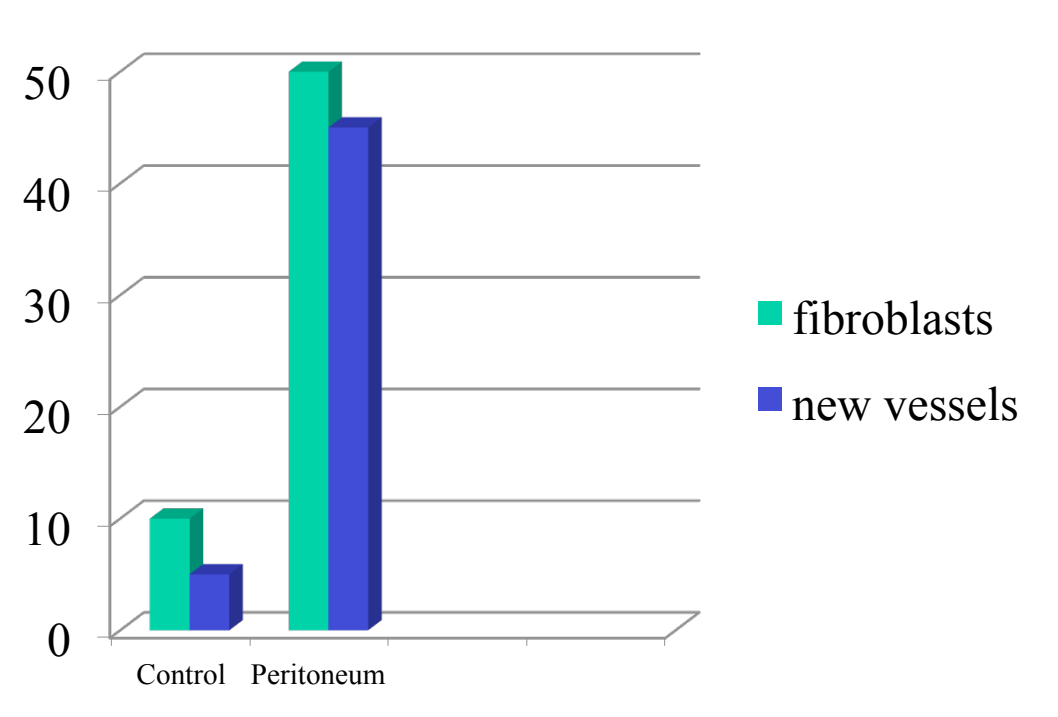
HISTOLOGICAL STUDY

More fibroblast and new vessels in the mesh

(Statiscally significant)

No difference in rest of histological parameters

RESULTS



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CLINICAL APPLICATIONS

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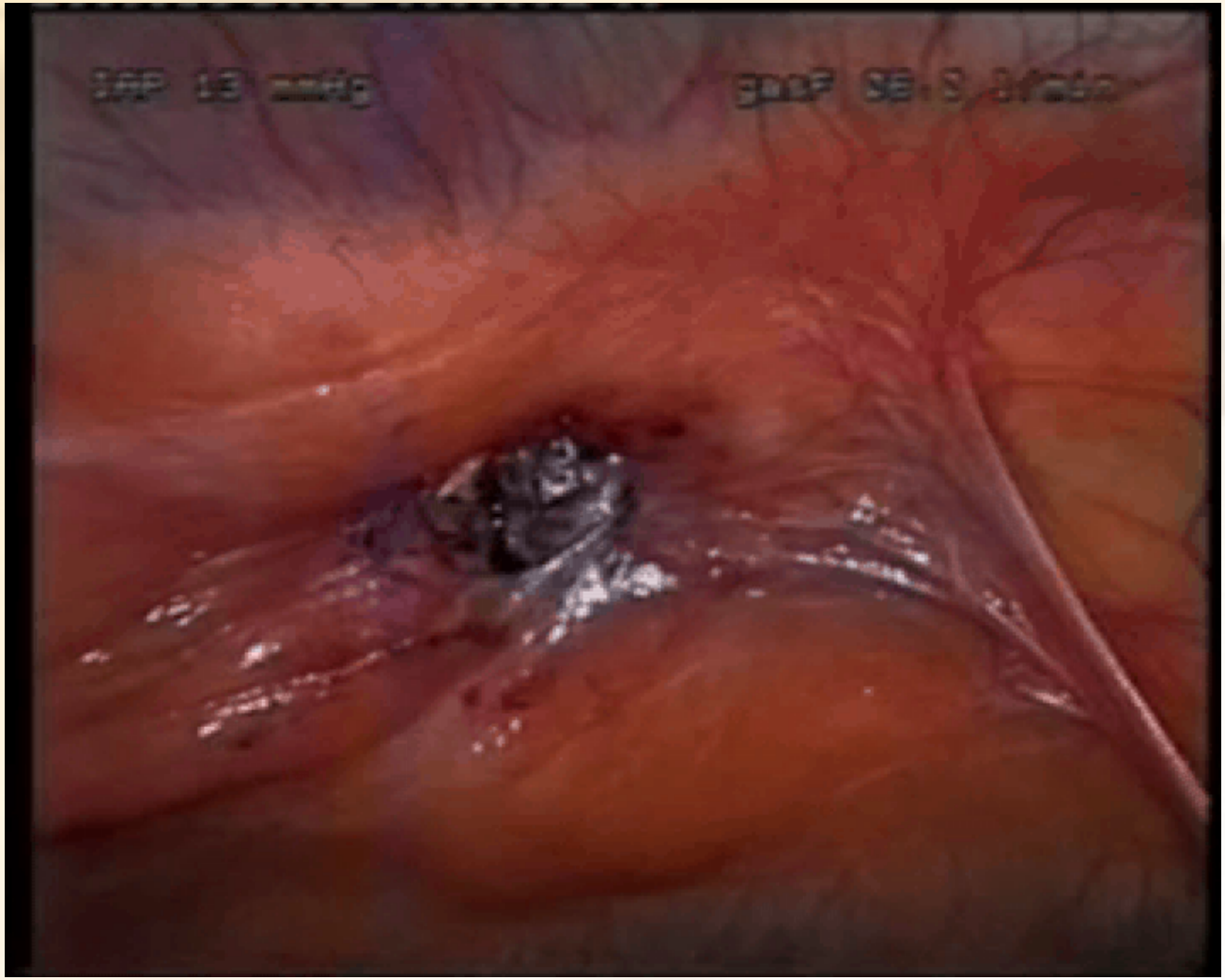
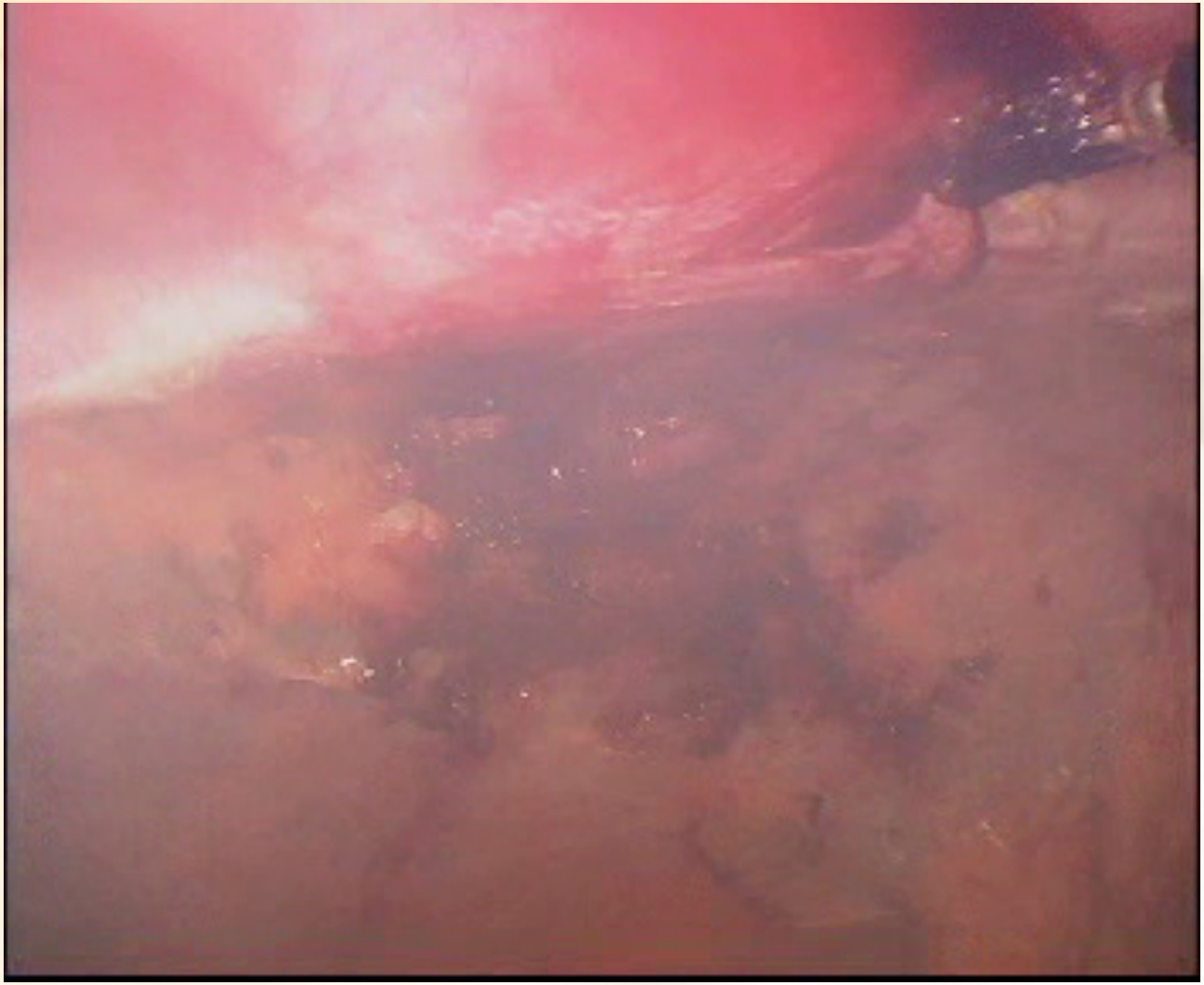


CLINICAL APPLICATIONS

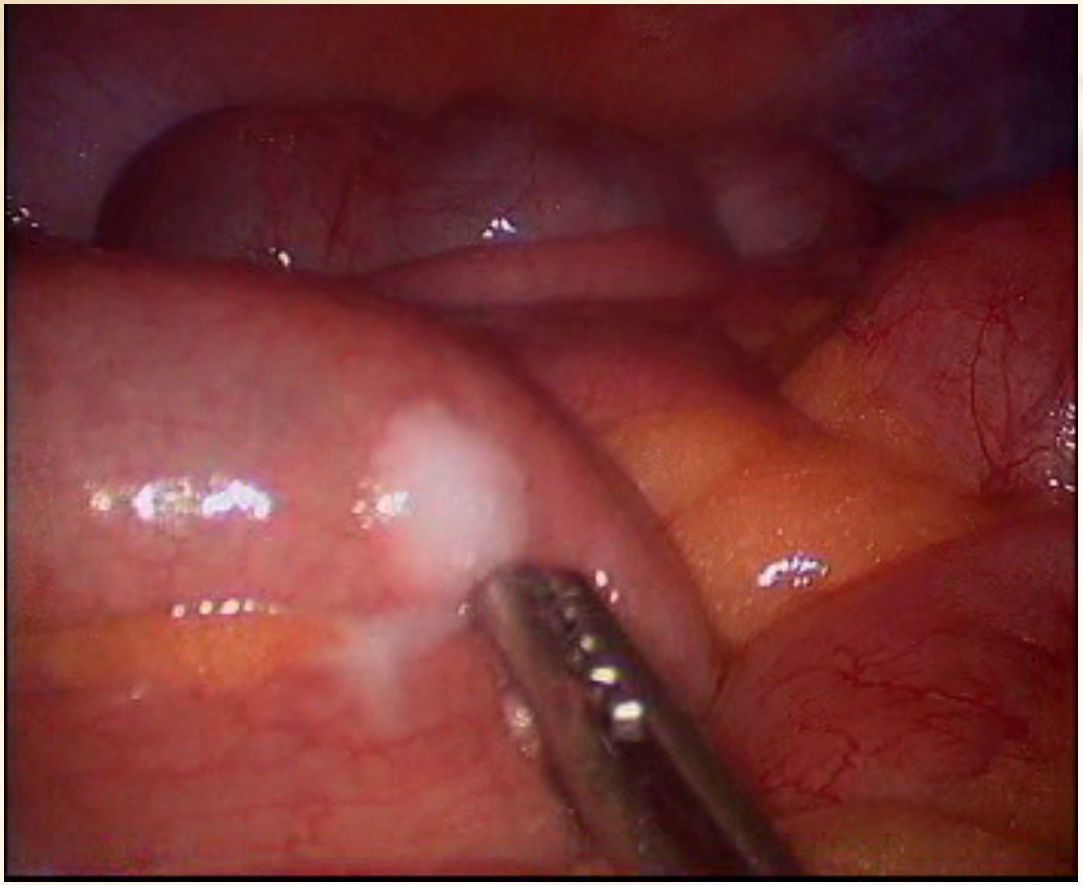


CLINICAL APPLICATIONS

FIBRIN GLUE

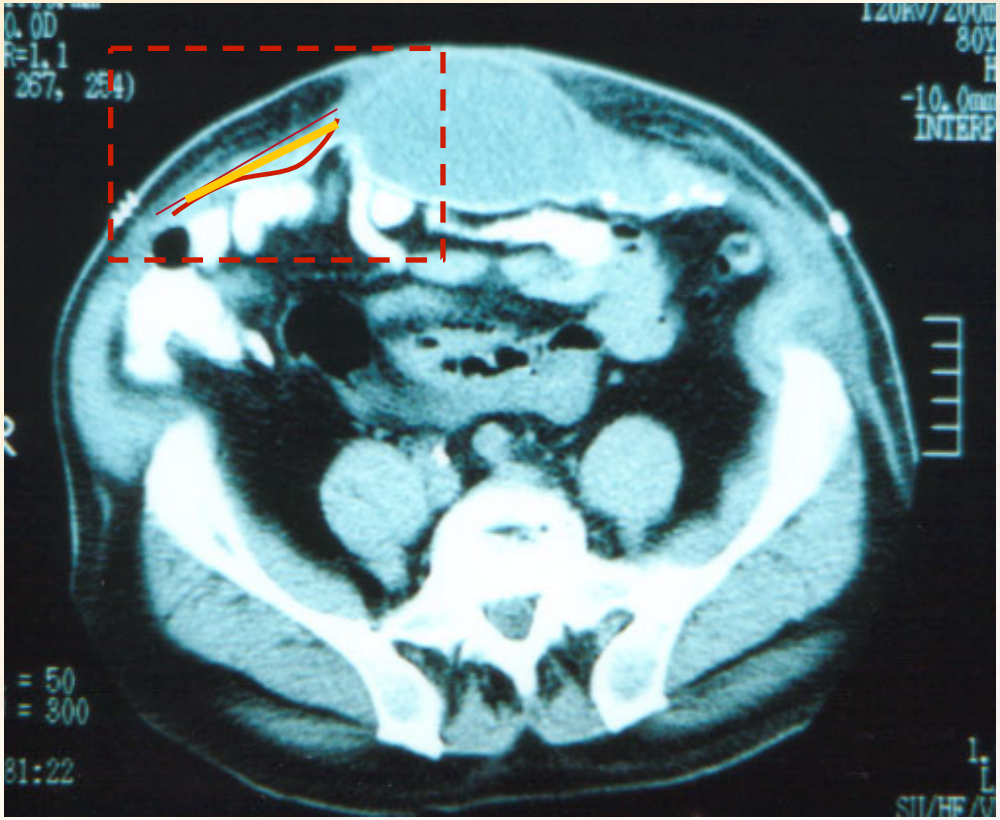
CLINICAL APPLICATIONS

FIBRIN GLUE



CLINICAL APPLICATIONS

FIBRIN GLUE



CLINICAL APPLICATIONS

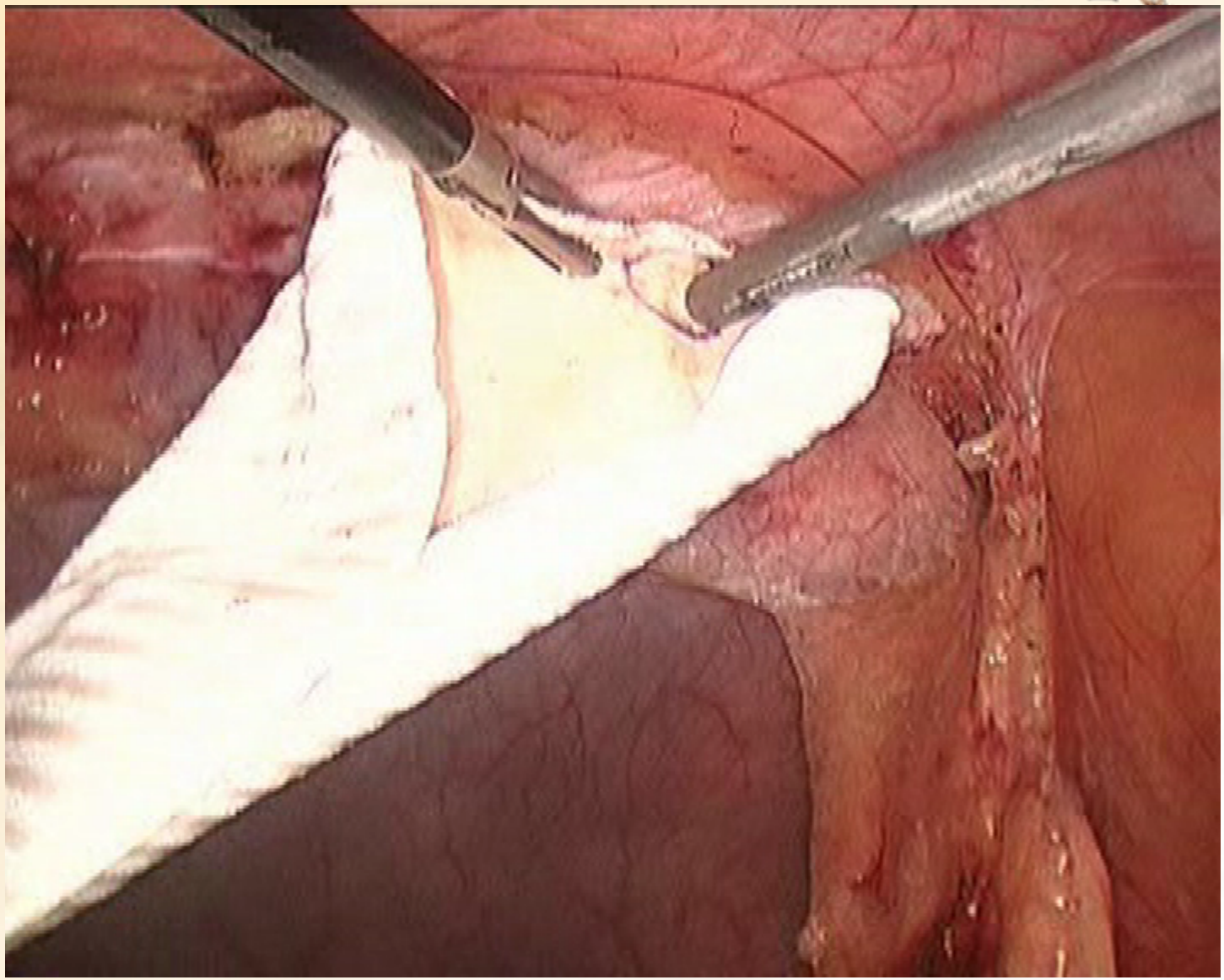
DOUBLE CROWN

PERITONEUM

FIBRIN GLUE

REDUCE THE INTERFACE MESH – ABDOMINAL WALL

REDUCE MECHANICAL FIXATION SINCE THE INTEGRATION IS INCREASED



CLINICAL APPLICATIONS

DOUBLE CROWN

PERITONEUM

FIBRIN GLUE

CLOSING THE DEFECT

REDUCE THE

INTERFACE

MESH – ABDOMINAL WALL

REDUCE

MECHANICAL FIXATION
SINCE THE INTEGRATION IS
INCREASED

INTERFACE

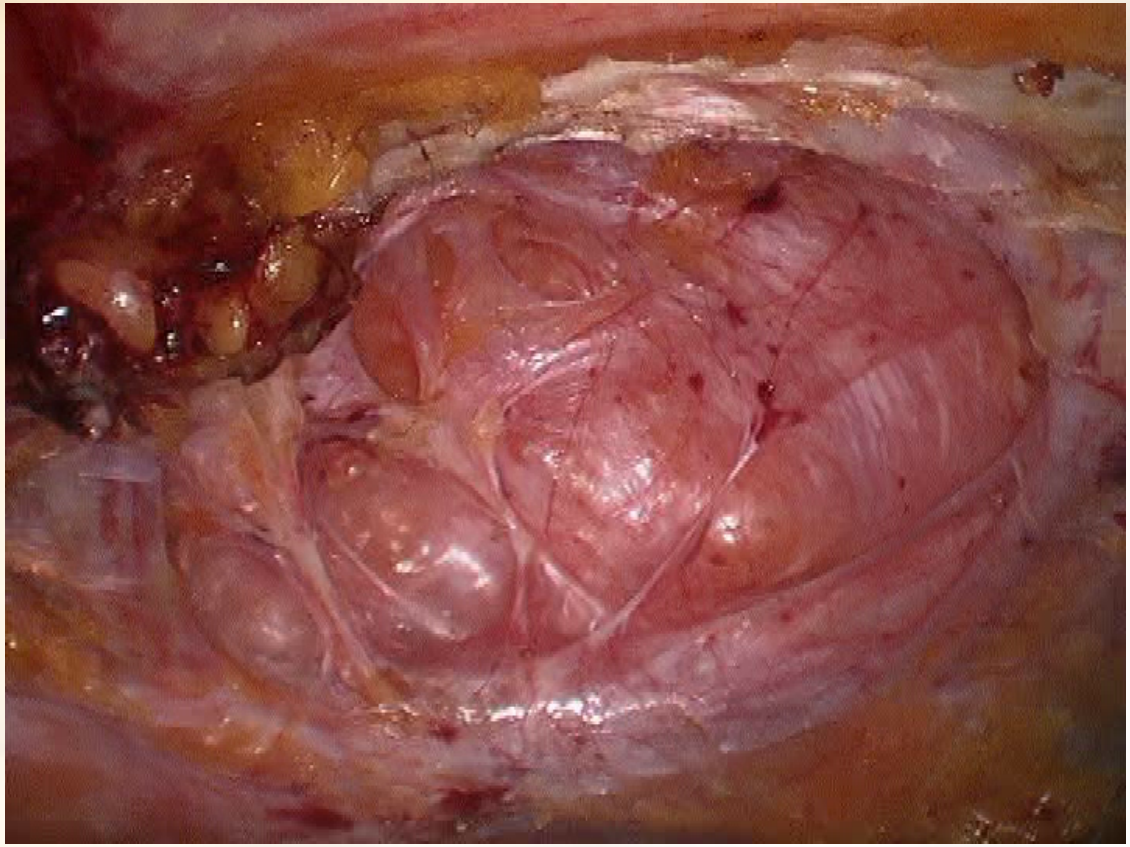
MESH – ABDOMINAL WALL

DOUBLE CROWN

PERITONEUM

FIBRIN GLUE

CLOSING THE DEFECT



CONCLUSIONS

There is an important difference in the integration of the mesh when an inflammatory process of the peritoneum is created. In those cases in which no adhesions are detected an abrasion of the peritoneum should be performed.

The Double Crown technique, the use of fibrin glue, the inflammatory process of the peritoneum and closing the defect could increase the biological fixation of the mesh, what could be another factor that may influence the reduction of mechanical fixation