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Dipartimento di Gastroenterologia
e Malattie Infettive
U.O. Chirurgia Generale
Direttore: Dott. Piero Buccianti



Collaborazione:



6° Edizione del Corso
**CHIRURGIA LAPAROSCOPICA
DELLA PARETE ADDOMINALE**

7-8-9 OTTOBRE • PISA

Johnson & Johnson

MEDICAL S.P.A.



NEL LAPAROCELE LAPAROSCOPICO

Dr. Stefano Cantafio

U.O. Chirurgia Generale

Dir. Dr. M. Scatizzi

Ospedale S.Stefano - Prato



Un laparocele è definito come una breccia della parete addominale nella zona di una cicatrice chirurgica con o senza tumefazione palpabile , percepibile all'esame obiettivo o attraverso esami diagnostici di imaging.

Korenkov M, Paul A, Sauerland S, Neugebauer EA, Arndt M, Chevrel JP, Corcione F, Fingerhut A, Flament JB, Kux M, Matzinger A, Myrvold HE, Rath AM, Simmermacher RKJ. Classification and surgical treatment of incisional hernia. Results of an experts' meeting. *Langenbecks Archives of Surgery* 2001;386(1):65–73. [PUBMED: 11405092]

L'INCIDENZA DEL LAPAROCELE DIPENDE DALLA TECNICA USATA DURANTE IL PRIMO INTERVENTO CHIRURGICO (Laparoscopico o open)

Laparotomie → 10-15%

Wong SY, Kingsnorth AN. Prevention and surgical management of incisional hernias. *Int J Surg Invest* 2001; 3: 407–14.

Laparocele su Trocar → 1,5-1,8%

Trocar Site Hernia

Arch Surg. 2004;139:1248-1256

Hitoshi Tonouchi, MD, PhD; Yukinari Ohmori, MD; Minako Kobayashi, MD, PhD; Masato Kusunoki, MD, PhD



L'incidenza dipende da diversi fattori, inclusi l'età, il sesso maschile, l'obesità, la chirurgia intestinale, il tipo di sutura, infezioni respiratorie, distensione addominale e infezioni del sito chirurgico

Bucknall TE, Cox PJ, Ellis H (1982) Burst abdomen and incisional hernia: a prospective study of 1129 major laparotomies. *Br Med J (Clin Res Ed)* 284:931-933

Höer J, Lawong G, Klinge U, Schumpelick V (2002) Factors influencing the development of incisional hernia. A retrospective study of 2,983 laparotomy patients over a period of 10 years. *Chirurg* 73:474-480

In più del 25 % dei casi si sviluppano quando si presentano infezioni della ferita o qualsiasi altra complicazione dell'incisione chirurgica

Müller-Riemenschneider F, Roll S, Friedrich M, Zieren J, Reinhold T, von der Schulenburg JM, Greiner W, Willich SN (2007) Medical effectiveness and safety of conventional compared to laparoscopic incisional hernia repair: a systematic review. *Surg Endosc* 21(12):2127-2136

Nella Cochrane Review 2005 non si riconoscono differenze nel rischio di sviluppare un laparocele tra le incisioni mediane e trasverse

Brown SR, Goodfellow PB. Transverse versus midline incisions for abdominal surgery. *Cochrane Database of Systematic Reviews* 2005, Issue 4. [Art. No.: CD005199. DOI: 10.1002/14651858.CD005199.pub2]



RICERCA BIBLIOGRAFICA

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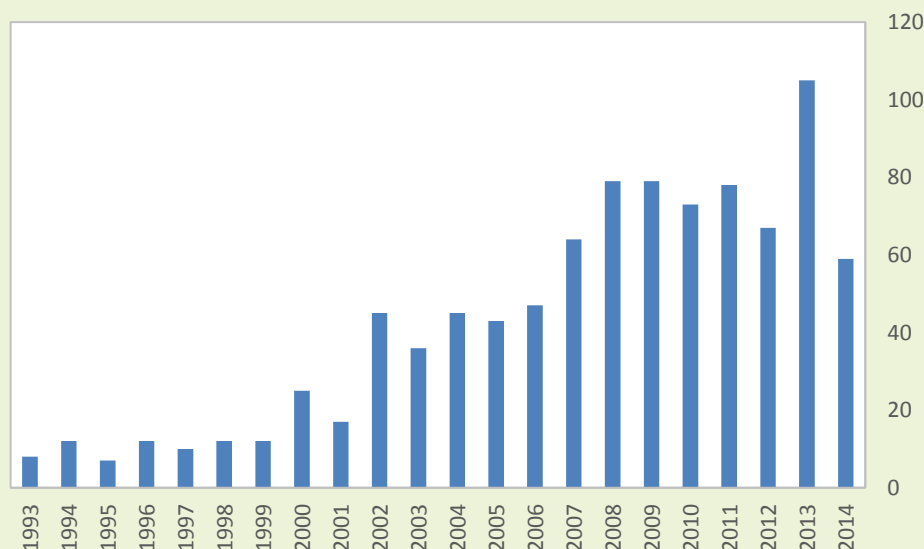
Article types

Clinical Trial

Results: 1 to 20 of 956

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DISTRIBUZIONE PER ANNO DEGLI ARTICOLI





La tecnica laparoscopica di riparazione del laparocele viene descritta per la prima volta da LeBlanc nel 1993.

[Surg Laparosc Endosc](#). 1993 Feb;3(1):39-41.

Laparoscopic repair of incisional abdominal hernias using expanded polytetrafluoroethylene: preliminary findings.

[LeBlanc KA](#)¹, [Booth WV](#).

Author information

Abstract

Laparoscopic techniques were used in **five cases** to repair incisional abdominal hernias ranging in size from 1.5 to 6 cm². Four to five trocars were used in each case, one in the upper midline and three or four placed laterally. All repairs were made using 1-mm-thick expanded polytetrafluoroethylene patches inserted intraperitoneally and stapled to the anterior abdominal wall over the defects, making use of intra-abdominal pressure to secure the repair. The surgical technique is an extension of our current laparoscopic techniques for repairing inguinal hernias and potentially offers a significant decrease in morbidity.



**Il trattamento laparoscopico ha guadagnato progressivamente
sempre più consensi accreditandosi come un'alternativa
vantaggiosa rispetto agli interventi tradizionali**

- ❖ **RIDUZIONE DEL DOLORE POSTOPERATORIO**
- ❖ **TEMPI DI OSPEDALIZZAZIONE PIÙ BREVI**
- ❖ **ASSENZA DI AMPIE INCISIONI ADDOMINALI**
- ❖ **ASSENZA DI DRENAGGI ESTERNI**



K.A. LeBlanc · J.M. Whitaker · D.E. Bellanger
V.K. Rhynes

Laparoscopic incisional and ventral hernioplasty: lessons learned from 200 patients

Hernia. 2003 Sep;7(3):118-24. Epub 2003 Mar 21.

Laparoscopic incisional hernia repair: are transfascial sutures necessary? A review of the literature

K. A. LeBlanc^{1,2}

¹ Minimally Invasive Surgery Institute, 7777 Hennessy Boulevard, Suite 612, Baton Rouge, LA 70808, USA

² Clinical Associate Professor, Louisiana State University School of Medicine, New Orleans, LA, USA

Surg Endosc (2007) 21: 508–513

STANDARDIZZAZIONE DELLA TECNICA

«La protesi deve avere un overlap di almeno 5 cm rispetto al difetto e deve essere ancorata alla parete addominale attraverso tacks, suture transfasciali o una combinazione dei due metodi»...



GUIDELINES



Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))

Classificazione delle pubblicazioni

- 1A. Systematic review of randomized clinical trials (RCTs) (with consistent results from individual studies)
- 1B. RCTs (of good quality)
- 2A. Systematic review of 2B studies (with consistent results from individual studies)
- 2B. Prospective and comparative studies (or RCTs of poorer quality)
- 2C. Outcome studies (e.g., analyses of large registries, population-based data)
3. Retrospective and comparative studies, case-control studies
4. Case series (i.e., studies without a control group)
5. Expert opinion, animal or lab experiments.

- A Consistent level 1 studies: strict recommendations (“standard,” “surgeons *must* do it”)
- B Consistent level 2 or 3 studies or extrapolations from level 1 studies: less strict wording (“recommended,” “surgeons *should* do it”)
- C Level 4 studies or extrapolations from level 2 or 3 studies: vague wording (“option,” “surgeons *can* do it”)
- D Level 5 evidence or worryingly inconsistent or inconclusive studies at any level (no recommendation at all, described options).

Gradi di raccomandazione



INDICE

SEZIONE 1

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DIAGNOSI

Tc

Rmn

CLASSIFICAZIONE

INDICAZIONI ALLA CHIRURGIA

In base alle dim

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Pazienti obesi

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MANAGEMENT PERI-OPERATORIO

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Nuovi device di

Colla di fibrina

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ANZE

LAPAROSCOPICO

a recidiva

a recidiva

LAPAROSCOPICA E OPEN

attività routinaria

Recidive

SEZIONE 3

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Prevenzione dell'adesiolisi

Ruolo delle protesi biologiche

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Chirurgia addominale open

Stomie

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ERNIE LOMBARI ED ALTRE MENO FREQUENTI

EDUCAZIONE

Training

QUESITI IRRISOLTI



DIAGNOSI

GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Ruolo della TC e della RMN nella diagnosi del laparocele

Recommendations

Grade B A CT scan should be performed to find a recurrence or associated pathologies.

Grade D Functional cine MRI can be used to find postoperative adhesions.

Level 2b In the postoperative diagnosis of recurrent hernia, a CT scan is superior to a clinical examination.



INDICAZIONE CHIRURGICA

Mudge M, Hughes LE (1985) Incisional hernia: a 10-year prospective study of incidence and attitudes. Br J Surg 72: 70–71

«I laparoceli sono frequenti dopo laparotomia, anche se molti di essi rimangono asintomatici. Nello studio decennale di Mudge e Hughes solo 1/3 dei casi sono diventati sintomatici ed hanno richiesto una riparazione chirurgica».

« Non esistono chiare linee guida che dicano quando e se riparare i laparoceli»

Courtney CA, Lee AC, Wilson C, O'Dwyer PJ (2003) Ventral hernia repair: a study of current practice. Hernia 7:44–46

Hernia (2008) 12:223–225

DOI 10.1007/s10029-007-0322-4

«Monitorizzando per un lungo periodo la maggior parte dei pazienti con laparocele che non vengono sottoposti a riparazione, questi non si sottoporranno a intervento nemmeno in futuro»



Indications for incisional hernia repair: an international questionnaire among hernia surgeons

J. Nieuwenhuizen • G. J. Kleinrensink • W. C. J. Hop •
J. Jeekel • J. F. Lange

Hernia (2008) 12:223–225
DOI 10.1007/s10029-007-0322-4

Indication

Pain

Limitations of
daily activities

(Possible) period of
incarceration

Progressive enlargement

Risk of incarceration

Respiratory dysfunction*

Discomfort
(no pain or limitation)

Young age

Only cosmetic complaints

Table 3 Reasons not to operate

Reasons	Times mentioned
Comorbidity, high operation risk	19
Asymptomatic	10
High body mass index or obesity	5
High age	3
Large size	2
Smoking	1
No progression	1
Loss of abdominal wall tissue	1
Small hernia	1

Questo questionario internazionale mette in evidenza una opinione comune nei chirurghi sulle indicazioni ad eseguire e non eseguire l'intervento chirurgico.



LAPAROSCOPIA VS OPEN

Laparoscopic versus open surgical techniques for ventral or incisional hernia repair (Review) 2011

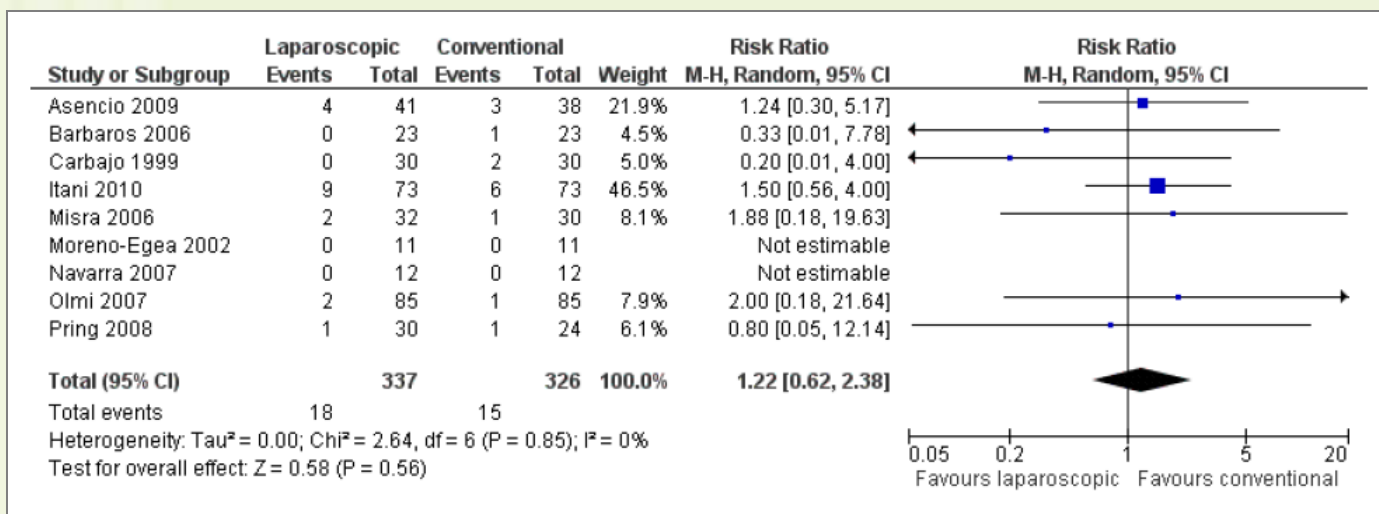
Sauerland S, Walgenbach M, Habermalz B, Seiler CM, Miserez M



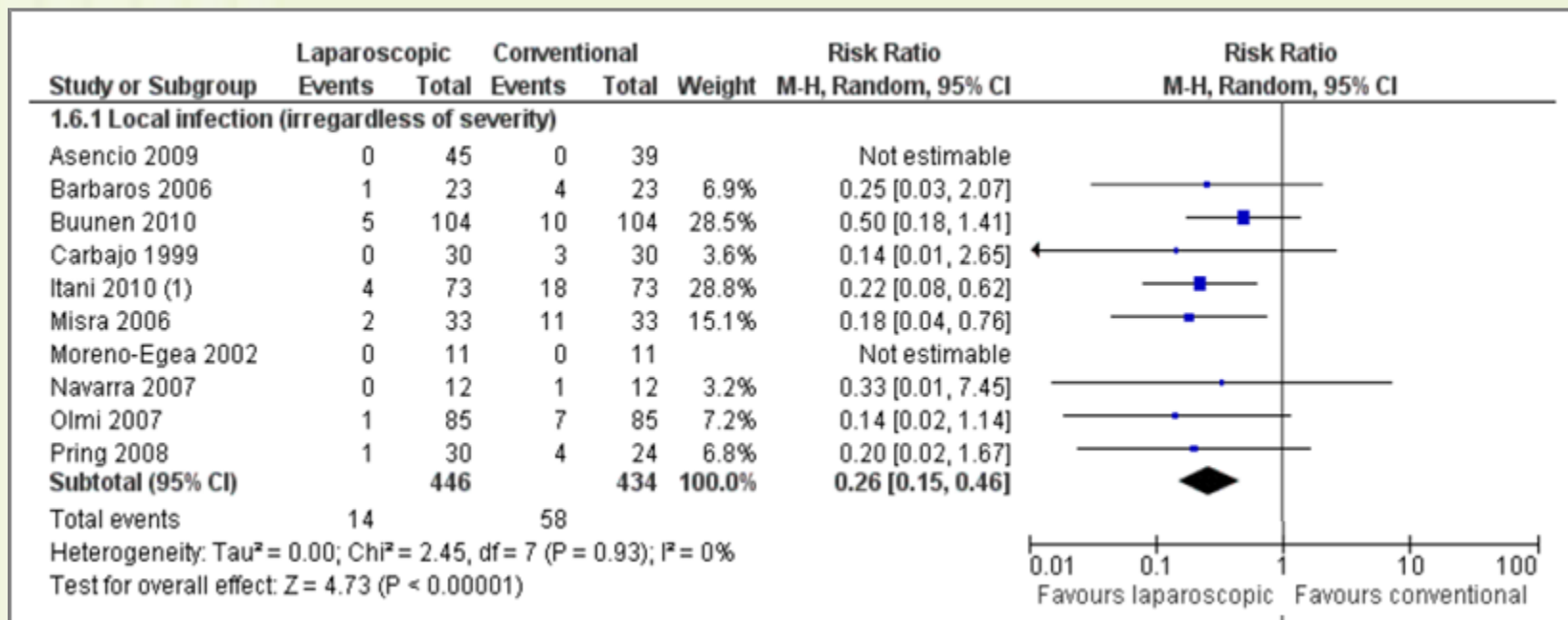
THE COCHRANE
COLLABORATION®

La percentuale di recidive non è significativamente
diversa nelle due tecniche.

5%



Le infezioni del sito chirurgico sono quattro volte meno frequenti nei pazienti sottoposti a plastica laparoscopica





GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Limitazioni alla tecnica laparoscopica in relazione alla dimensione del difetto e all'habitus del paziente

IPOM feasibility in relation to hernia size: statements

- | | |
|----------|---|
| Level 3 | Laparoscopic IPOM is feasible for defects larger than 15 cm. |
| Level 2B | Hernia recurrence is more likely with defects wider than 10 cm. |
| Level 3 | The operating time is longer with defects larger than 15 cm. |
| Level 2B | Mesh sizes up to 1,250 cm ² can be used. |
| Level 4 | Mesh sizes up to 2,400 cm ² can be used. |
| Level 4 | LVHR is feasible for defects of up to 880 cm ² . |

Feasibility with regard to obesity: statements

- | | |
|---------|--|
| Level 3 | Laparoscopic IPOM is feasible for obese patients (BMI > 30 kg/m ²). |
| Level 3 | Laparoscopic IPOM is feasible for morbidly obese patients (BMI > 40 kg/m ²). |
| Level 3 | Laparoscopic IPOM is feasible for super morbidly obese patients (BMI > 50 kg/m ²). |
| Level 4 | Laparoscopic IPOM is feasible for patients with a BMI up to 82 kg/m ² . |

IPOM = Intraperitoneal onlay mesh



GUIDELINES



Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))

Limitazioni alla tecnica laparoscopica in relazione alla dimensione del difetto e all'habitus del paziente

Level 1A	Laparoscopic ventral and incisional hernia repair is associated with fewer wound infections.
Level 2A	Laparoscopic ventral and incisional hernia repair is associated with significantly fewer wound complications.
Level 2B	Obese patients (BMI > 30 kg/m ²) have significantly larger defect sizes in laparoscopic incisional hernia repair.
Level 3	A BMI higher than 30 kg/m ² or a defect larger than 8–10 cm significantly increases the risk of recurrence. The early outcome of LVHR does not differ significantly between non-morbidly obese (BMI < 35 kg/m ²) and morbidly obese (BMI ≥ 35 kg/m ²) patients.

Grade A	For obese patients presenting with a ventral or incisional hernia, the laparoscopic approach is preferred because it reduces the wound infection rate and complications.
Grade B	For patients with a BMI of 35 kg/m ² or higher, laparoscopic ventral and incisional hernia repairs may be preferred. In obese patients, the defect sizes are significantly larger, something that must be considered when the laparoscopic approach is advised. For obese patients (BMI ≥ 30 kg/m ²) with a defect size greater than 8–10 cm, there may be a need for additional technical steps (greater mesh fixation, more overlap, suture closure of the defect) when the laparoscopic approach is indicated.



TECNICA CHIRURGICA VL

- ❖ **INDUZIONE DELLO PNEUMOPERITONEO ED INTRODUZIONE DEI TROCARS**
- ❖ **ADESIOLISI**
- ❖ **PLASTICA PROTESICA**
 - ❖ **SCELTA DELLA PROTESI**
 - ❖ **TIPO DI PROTESI**
 - ❖ **DIMENSIONI DELLA PROTESI**
 - ❖ **MISURA DEL DIFETTO**
 - ❖ **MISURA DELL'OVERLAP**
 - ❖ **INTRODUZIONE DELLA PROTESI**
 - ❖ **FISSAGGIO**



Induzione dello pneumoperitoneo e posizione dei trocar

GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Level
4

A safe area for Veress needle insertion usually is in the right or left upper quadrant. However, most surgeons prefer an open access (Hasson) in the left or right subcostal region but modify the insertion site depending on previous surgery and expected adhesions.

The location of the trocars is influenced by the location of the hernia defect or defects.

The use of 30° and 45° scopes provides better visualization of the inner aspect of the abdominal wall.

Grade
D

The left or right upper quadrant subcostally is recommended for the first access port to the peritoneal cavity.

The use of a 30° laparoscope is recommended.

The trocar entry points should be as far as possible from the site of expected adhesions and the size, site, and number of wall defects, and they should be placed to achieve triangulation of the hernia site.



SCELTA DELLA PROTESI

Tipo di protesi



**Poliestere + Film idrofilo
Parietex**



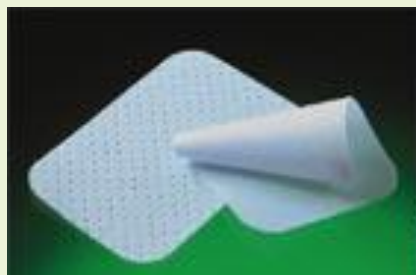
**ePTFE (politetrafluoroetilene)
Gore-Tex**



**ePTFE + Polipropilene
Composix**



**Polipropilene+
poliglecaprone+polidiossanone
Physiomesh**



**Poliestere/Poliuretano
Hi-Tex**



**Polipropilene + ORC
Proceed**

SCELTA DELLA PROTESI

dimensioni

E' necessaria un'accurata misura del difetto

E' necessario un adeguato overlapping



GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Recommendations

Grade B	Accurate measurement of the hernia defect size should be performed.
Grade B	The intracorporeal method of measuring the size of the hernia defect should be used.

«Maggiore sarà l'overlapping minore sarà il rischio di recidiva»

Recurrences after laparoscopic repair of ventral and incisional hernia: lessons learned from 505 repairs

Eelco B. Wassenaar · Ernst J. P. Schoenmaeckers ·
Johan T. F. J. Raymakers · Srdjan Rakic

Surg Endosc (2009) 23:825–832



GUIDELINES



Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))

overlap

Level 3 Recurrence is increased if overlap of the fascial defect by the prosthesis is inadequate.

Large meshes with substantial overlap are associated with a low recurrence rate.

Level 4 Structures such as the falciform ligament, the ligamentum teres, and the prevesical fatty tissue require dissection to enable proper fixation and incorporation of the mesh in the area that has mesh overlap of the fascial defect.

A larger overlap of the prosthesis (5 vs 3 cm) is necessary if sutures are not used and is more important for securing the overlap than the use of transfascial sutures for fixation of the mesh.

Recurrence after incisional hernia repair appears to be due primarily to disregard for the principle that the whole incision (not only the hernia) must be repaired.

Grade B The mesh used for laparoscopic repair of a ventral hernia should overlap the hernia defect by at least 3 to 4 cm in all directions

Grade C For proper fixation and incorporation of the mesh dissection of anatomic structures such as the falciform ligament, the ligamentum teres and the prevesical fatty tissue should be done.

A large overlap of the defect by mesh is necessary, with a minimum of 5 cm if the mesh is fixed without transfascial sutures.

A larger overlap is recommended for larger hernias than the overlap used for small hernias.

To avoid recurrences, the entire incisional scar should be covered by the mesh, even if the defect is overlapped 3 to 5 cm in all directions.



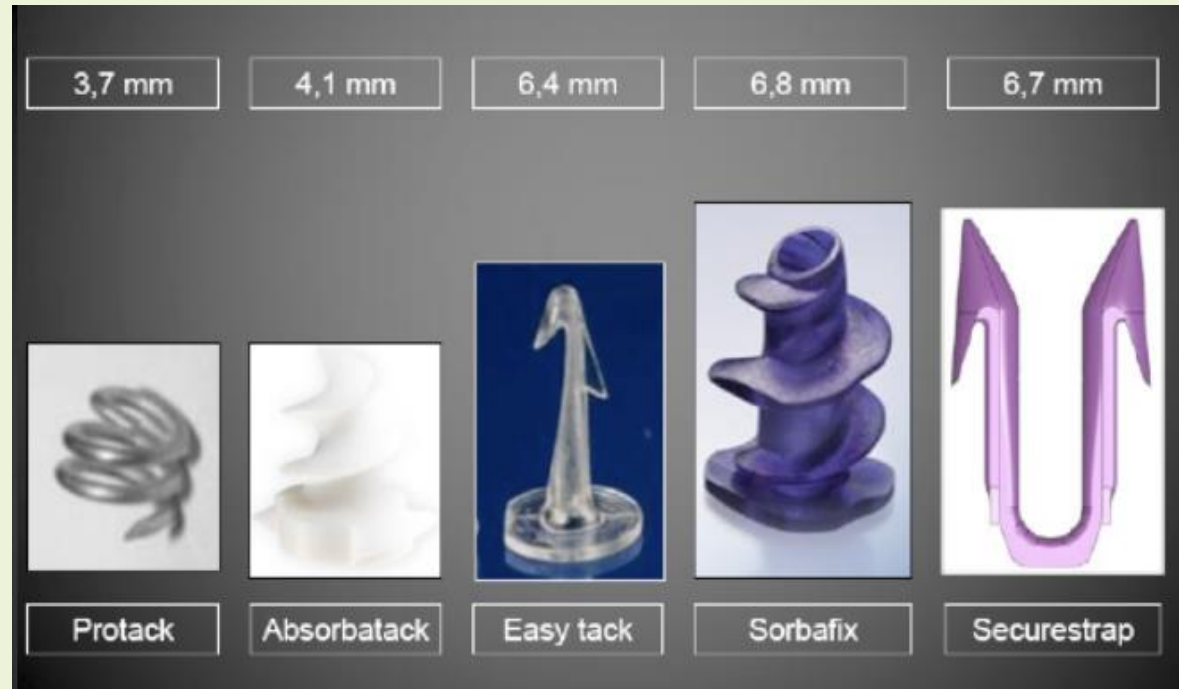
MEZZI DI FISSAGGIO



- ❖ RESISTENTE E AFFIDABILE
- ❖ NO MIGRAZIONE DELLA RETE PROTESICA
- ❖ NO DOLORE
- ❖ NO ADESIONI VISCERALI
- ❖ GARANZIA DI TENUTA NEL TEMPO
- ❖ RIMUOVIBILE
- ❖ SEMPLICE NELL'UTILIZZO

Mezzi di fissaggio della rete

- **Tacks**



- **Suture transparietali a tutto spessore**
 - MATERIALE RIASSORBIBILE O NON RIASSORBIBILE
- **Adesivi**
 - COLLA DI FIBRINA



Punti trans-fasciali

I punti trans-fasciali sono il metodo più utilizzato per il fissaggio della protesi, da soli o in associazione con tacks

ATTUALMENTE CI SONO OPINIONI DIVERSE SULLA VALIDITÀ DEL
POSIZIONAMENTO DI TALI PUNTI

- ❖ Aumento del tempo operatorio
- ❖ Incidenza del dolore
- ❖ Rischio di infezioni

E.B. Wassenaar (2008) 12: 23-25

E.B. Wassenaar Surg. Laparosc. Endosc. Perc Tech.(2008) 17:514-516

F. Bellows JSLS (2006) 10: 345-350



REVIEW

L. R. Rudmik • C. Schieman • E. Dixon
E. Debru

Hernia (2006) 10: 110–119
DOI 10.1007/s10029-006-0066-6

Laparoscopic incisional hernia repair: a review of the literature

Transfascial suture + Tacks
(mean follow-up 21 months)

Study	Type of study	No. of patients
Berger et al. [70]	Retrospective	150
Ben-Hiam et al. [72]	Retrospective	100
Heniford et al. [65]	Prospective	850
LeBlanc et al. [67]	Retrospective	200
Rosen et al. [74]	Retrospective	114
Chelala et al. [75]	Retrospective	120
Franklin et al. [66]	Retrospective	384
Ujiki et al. [73]	Prospective	100
Bower et al. [68]	Retrospective	100
Perrone et al. [71]	Retrospective	116
Total		2,234

Tacks alone
(mean follow-up 34 months)

Study	Type of study	No. of patients
Chowbey et al. [80]	Retrospective	202
Bageacu et al. [63]	Retrospective	159
Kirshtein et al. [79]	Retrospective	103
Gillian et al. [76]	Retrospective	100
Rosen et al. [74]	Retrospective	114
Carbajo et al. [78]	Prospective	270
Frantzides et al. [77]	Retrospective	208
Total		1,156

Table 7 Summary of calculated outcomes between the two different laparoscopic mesh fixation techniques

Laparoscopic mesh fixation technique	Operating time (min)	Length of hospital stay (days)	Conversion rate (%)	Bowel injury rate (%)	Overall complication rate (%)	Recurrence rate (%)
Transfascial sutures and tacks	106	3.2	4	2	16	4.5
Tacks alone	90	2.2	3.7	2.1	14.3	4.4



Laparoscopic incisional hernia repair: are transfascial sutures necessary? A review of the literature

K. A. LeBlanc^{1,2}

Surg Endosc (2007) 21: 508–513

DOI: 10.1007/s00464-006-9032-8

23 series (3594 total patients, follow-up 6,5-49 months)

12 comparative studies (411 total patients, follow-up 6-40 months)

Questi dati non consentono di affermare la validità dei punti trans-fasciali. Sembra però che se si decide di applicare questi punti si possa diminuire l'overlapping da 4-5 cm a 3 cm in ogni direzione.



Mesh-fixation method and pain and quality of life after laparoscopic ventral or incisional hernia repair: a randomized trial of three fixation techniques

Eelco Wassenaar • Ernst Schoenmaeckers •
Johan Raymakers • Job van der Palen •
Srdjan Rakic

Surg Endosc (2010) 24:1296–1302
DOI 10.1007/s00464-009-0763-1

Questo studio randomizzato confronta metodi diversi di ancoraggio della protesi, suture riassorbibili (AS), doppia corona di tacks (DC) e suture non riassorbibili (NS) associate al dolore post-operatorio e al QoL. I risultati suggeriscono che non esista un metodo di fissaggio migliore degli altri.

Table 3 VAS scores for pain at various assessment times, according to mesh-fixation group^a

Assessment time	Mesh-fixation group			<i>p</i> -Value ^b
	AS	DC	NS	
Preoperative	21.1 (20.7)	20.5 (23.6)	26.4 (27.8)	0.43
2 weeks postoperative	15.8 (15.6)	16.3 (20.8)	20.7 (21.8)	0.38
6 weeks postoperative	6.2 (10.2)	8.6 (19.6)	8.8 (16.4)	0.76
3 months postoperative	4.5 (10.5)	5.8 (12.5)	11.2 (21.2)	0.41
Postoperative score minus preoperative score ^c	−17.3 (−23.6 to −11)	−14.7 (−22.2 to −7.3)	−15.9 (−25 to −6.7)	0.9

VAS visual analogue scale, AS absorbable sutures, DC double crown, NS nonabsorbable sutures



Mesh shrinkage and pain in laparoscopic ventral hernia repair: a randomized clinical trial comparing suture versus tack mesh fixation

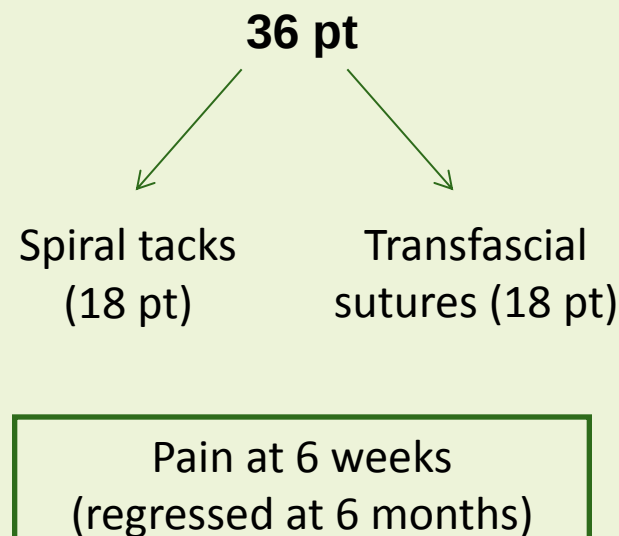
Guido Beldi • Markus Wagner • Lukas E. Bruegger •
Anita Kurmann • Daniel Candinas

Surg Endosc (2011) 25:749–755
DOI 10.1007/s00464-010-1246-0

Table 2 Operative details, morbidity, and follow-up, modified intention-to-treat analysis

Characteristics	Spiral tacks	Sutures	<i>p</i> -Value
Mesh size (cm ²)	263 (113–600)	300 (113–750)	0.236
Operative time (min)	92 (45–310)	120 (75–240)	0.039
In-hospital stay (days)	6 (1–10)	6 (3–12)	0.681
Leave from work (days)	35 (4–120)	21 (0–105)	0.440
Late morbidity	1/18 (6%)	3/18 (17%)	0.250
Nerve irritation	0/18	2/18 (11%)	
Mesh migration	0	0	
Recurrence	1/18 (6%)	1/18 (6%)	

Quantitative data are given as median and range



Questo studio ha dimostrato che entrambi i metodi di fissaggio sono efficaci nell'evitare lo spostamento della protesi nei primi 6 mesi. I punti trans-fasciali sono associati però a un maggior dolore nell'immediato post-operatorio



GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Level 1B

The method used for mesh fixation (sutures and/or tacks) has no influence on acute postoperative pain.

Suture fixation of the mesh incurs a significantly longer operation time than fixation by tacks.

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

Tacks-only fixation is associated with a significantly higher grade of mesh shrinkage in the horizontal direction than transfascial suture fixation.

In umbilical hernias with a defect size up to 5 cm, mesh fixation by glue results in less acute postoperative pain than fixation by tacks.

Fissazione nel laparocele di confine

Il laparocele sovrapubico viene definito da Carbonell et. al e da Palanivelu et al. come un difetto erniario localizzato **3-4 cm al di sopra della sinfisi pubica** e dalla classificazione EHS come ernia M5



GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Recommendations

Grade C	For safe positioning and sufficient overlap of mesh, the retropubic space should be dissected. The mesh fixation should include Cooper's ligament, preferably by penetrating devices.
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**Il laparocele sottoxifoideo viene definito dalla classificazione EHS come ernia M1.
Ha una incidenza dopo sternotomia tra l'1 e il 4.2%**



GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Statements

Level 4	Dissection of the extended retroxiphoidal space up to 5 cm behind the xiphoid process is mandatory for appropriate mesh positioning and overlap. Fixation in the cephalad portion of the mesh carries a high risk of injury to the pericardium.
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Recommendations

Grade C	The overlap of the mesh should be sufficient, especially in the proximal retroxiphoidal space. The proximal part of the mesh should not be fixed.
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Tecnica mandatoria per la
preparazione di un adeguato
alloggiamento della protesi con
sufficiente overlap



mobilizzare il tessuto adiposo al
di sopra della xifoide e
proseguire con la dissezione
distaccando la porzione sternale
del diaframma, infine separare il
pericardio dallo sterno.

COMPLICANZE



Enterotomie

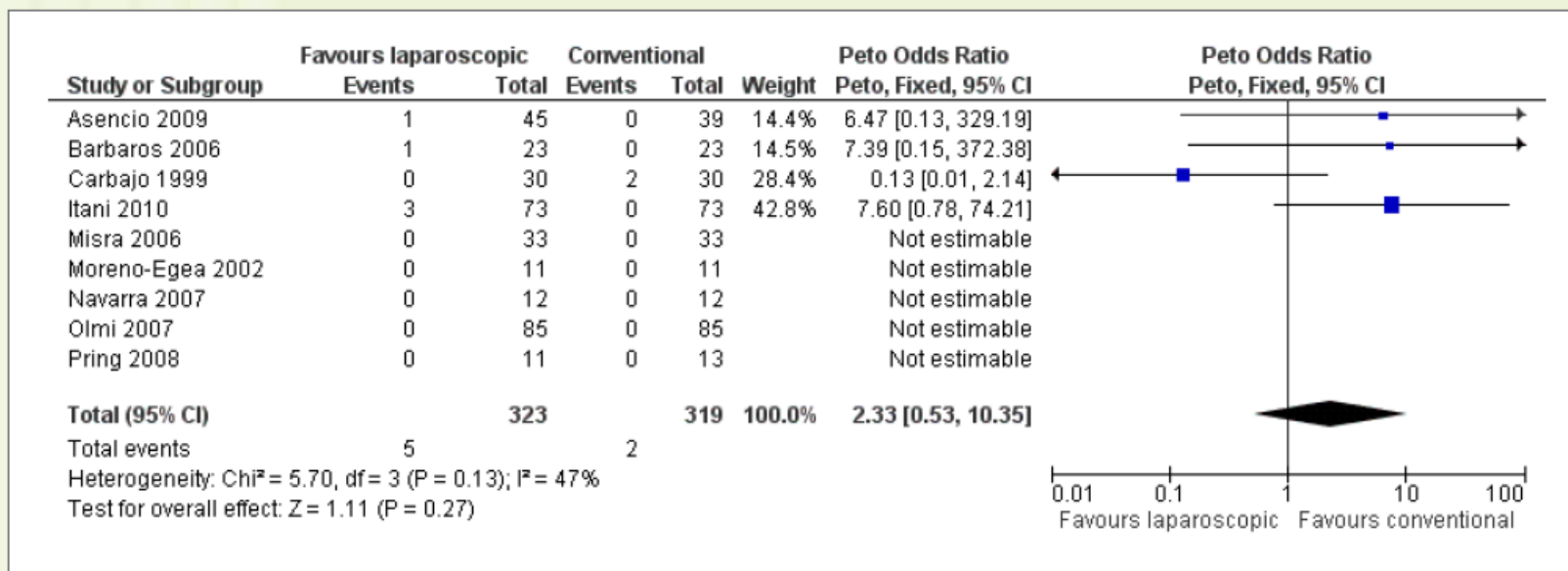


Qual è l'incidenza delle enterotomie?

Qual è la tecnica più sicura per evitarle?

Qual è la gestione migliore delle lesioni intestinali?

La frequenza delle **enterotomie** non è significativamente diversa se messe a confronto la tecnica laparoscopica e open. Se però ampliamo il significato delle enterotomie anche alle speritoneizzazioni i risultati sono significativamente peggiori per il sottogruppo dei laparoscopici





Enterotomy and Mortality Rates of Laparoscopic Incisional and Ventral Hernia Repair: a Review of the Literature

Karl Andrew LeBlanc, MD, MBA, Melvin Joseph Elieson, MD, James M. Corder III, MD

Mortalità complessiva
0,05%

JSLS (2007)11:408–414



In caso di enterotomia accidentale (1,78% dei casi)
2,8%



Riconosciuta (82% dei casi)
1,7%



Misconosciuta (18% dei casi)
7,7%

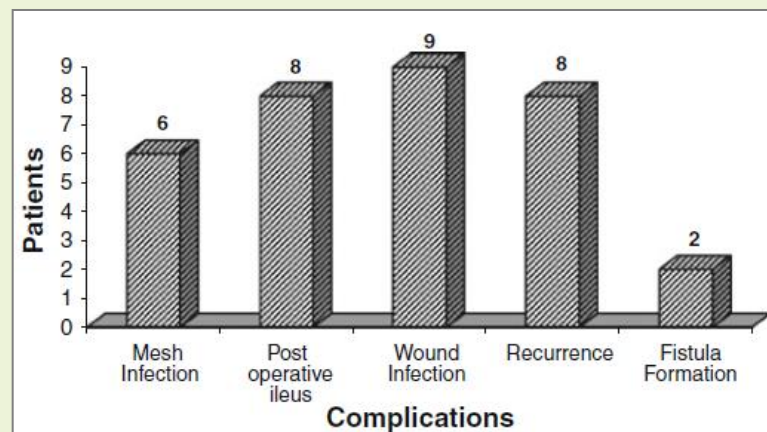
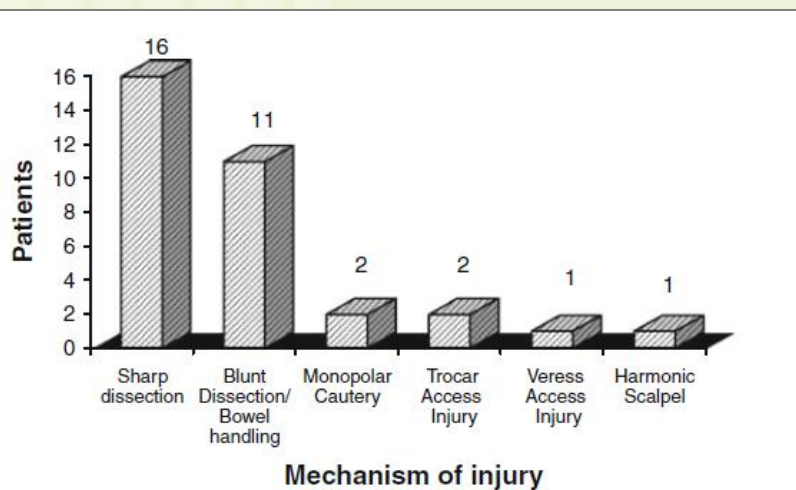


ORIGINAL ARTICLE

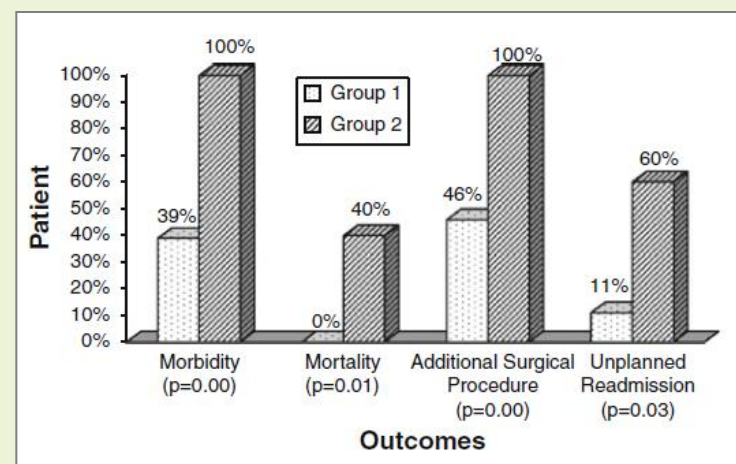
Iatrogenic enterotomy in laparoscopic ventral/incisional hernia repair: a single center experience of 2,346 patients over 17 years

A. Sharma · R. Khullar · V. Soni · M. Baijal ·
A. Kapahi · K. Najma · P. K. Chowbey

Hernia (2013) 17:581–587



In caso di enterotomia la lesione deve essere riparata. Se vi fa seguito una importante contaminazione peritoneale è mandatorio rimandare il posizionamento della mesh





GUIDELINES



Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))

Statements

- Level 1** The incidence of iatrogenic enterotomy during laparoscopic ventral hernia is 1.78 %. The mortality rate for these patients is 2.8 %
- In most cases (92 %), the small bowel is injured
- The most frequent causes are rough adhesiolysis and the use of energized dissection close to the adherent bowel
- Level 4** The risk of bowel injury during laparoscopic ventral hernia repair (LVHR) is related to the need for extensive adhesiolysis and to inexperience
- The extent of the bowel injury and contamination dictate the type of repair
- Bowel injury does not always require conversion to open repair
- The LVHR can be delayed for patients who have increased risk factors for the development of mesh infection
- Bowel injury does not preclude immediate LVHR

Recommendations

- Grade C** Adhesiolysis should be performed close to the abdominal wall and not near the bowel
- Sharp dissection techniques should be preferred, and the use of energized dissection near the bowel should be avoided
- Conversion to laparotomy is advisable if the surgeon is not proficient with laparoscopic bowel repair techniques
- A primary open repair is advisable in the presence of gross spillage. An open prosthetic repair may be undertaken if conditions remain sterile
- A small laparotomy away from the hernia defect may be used to repair a bowel injury and may be followed by continuation of LVHR
- If a bowel injury is repaired laparoscopically, LVHR may be performed after an observation period of 3–7 days during parenteral antibiotic therapy if no evidence of infection is observed
- An LVHR may be performed in the event of bowel injury repaired immediately with minimal spillage, but this option requires experience with laparoscopic repair of bowel injury



GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



ENTEROTOMIE NON RICONOSCIUTE

Level 2A

Reoperation will be necessary

The recommended method of repair or resection of the intestinal injury cannot be supported

Mesh explantation with primary repair of the hernia is recommended

Level 4

Evidence supports a laparotomy but not the specific treatment of the intestinal injury

- Repair or resection both are appropriate
- Mesh explantation is necessary
- Primary repair of the hernia is recommended

Level 5

When this is suspected, repeat laparoscopy or laparotomy is necessary

- Repair or resection each is appropriate
- Mesh explantation is necessary
- Primary hernia repair is recommended

Recommendations

Grade B

Surgeons use either open or laparoscopic procedure to re-explore the patient if there is a suspicion of a missed iatrogenic enterotomy or

to repair the injury, resect the injured segment, or create a stoma depending on the injured organ and the clinical situation

Grade C

Mesh explantation should be performed

Primary repair of the hernia, if feasible, is with current evidence deemed to be the option

Series	Incidence (%)	Laparoscopy/ laparotomy	Primary repair of intestine/resection	Mesh explant/primary hernia repair
Baccari et al. [20]	1	Yes/yes	Resection	Explant/primary repair
Ben-Haim et al. [21]	2	No/yes	Primary repair	Explant/hernia not repaired
Berger et al. [22]	1.3	No/yes	Repair ($n = 1$) Resection ($n = 1$)	Explant/primary repair
Binenbaum and Goldfarb [23]	0.3	No/yes	Resection	Not described
Heniford et al. [6]	1.7	No/yes	Resection	Primary repair
Koehler and Voeller [14]	2.9	No/yes	Resection	Explant/primary repair
Moreno-Egea et al. [13]	1.1	Not mentioned	Not discussed	Not discussed
Perrone et al. [24]	1.6	No/yes	Resection	Not mentioned/primary hernia repair
Wara and Anderson [25]	1.4	Not mentioned	Not discussed	Not discussed
Wright et al. [15]	0.68	No/yes	Not discussed	Explant/not discussed



COMPLICANZE



Sieromi

L'incidenza del **sieroma** dopo laparocele laparoscopico varia tra il 3% e il 100% con un picco dopo la settima giornata postoperatoria e una completa risoluzione entro 90 giorni.

La maggior parte di essi non rappresentano una complicanza ma un'epifenomeno dell'intervento chirurgico.
Solo il 35% di questi sono sintomatici

Un piccolo numero di studi randomizzati ha dimostrato che cauterizzare il sacco erniario riduce la frequenza di sieromi dal 25% al 4%.



GUIDELINES



Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))

Prevention

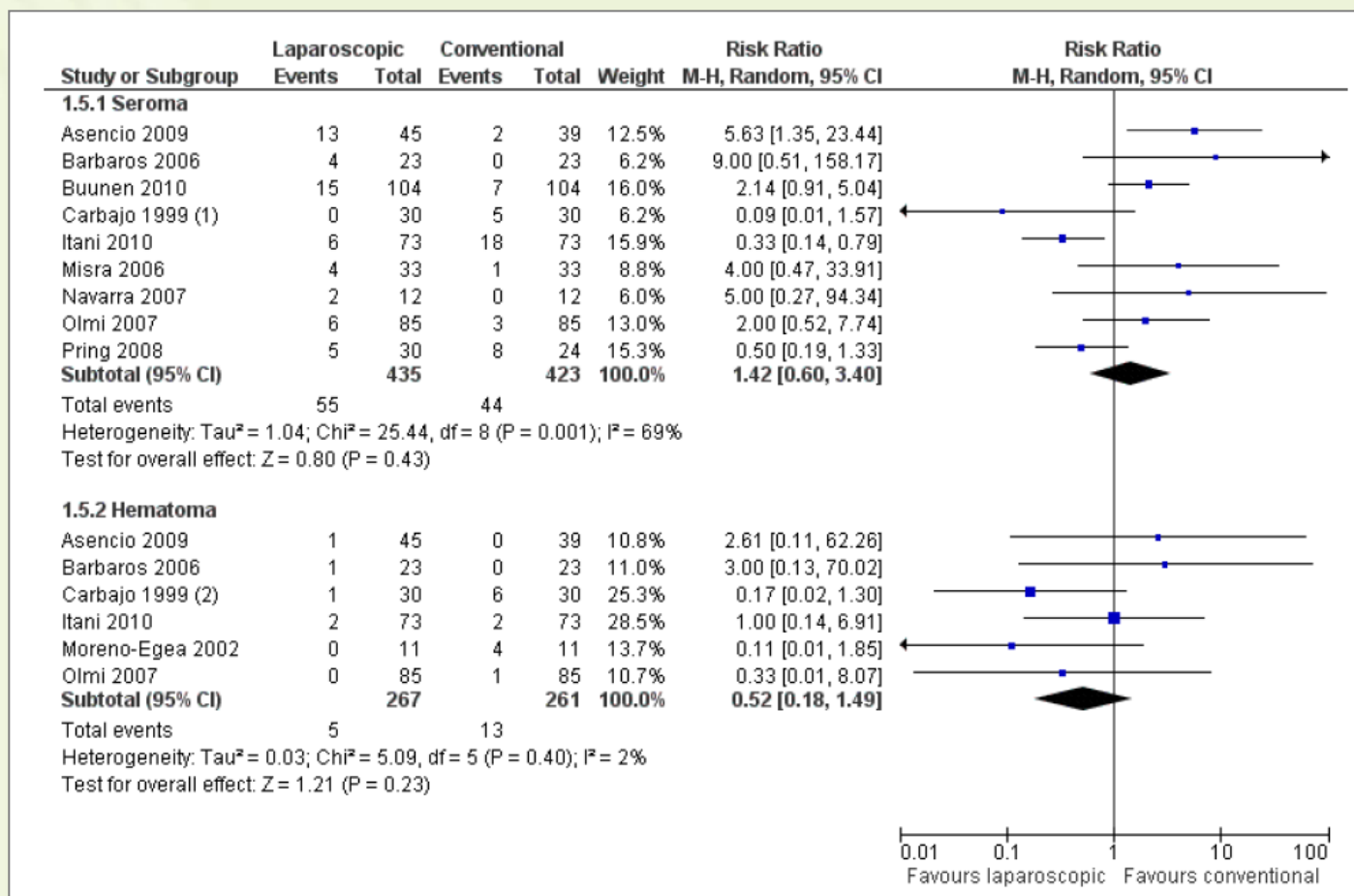
Level 2B	Cauterizing of the hernia sac may lead to less seroma formation
Level 2B	Placement of a quilting stitch does not affect seroma formation
Level 2B	Double-crown stapling does not decrease seroma formation
Level 4	No specific mesh type is related to seroma formation
Level 4	Compression dressing for 1 week reduces the occurrence of seroma

Treatment

Level 2B	<u>The majority of seromas resolve spontaneously</u>
Level 4	Aspiration is often effective
Level 4	Repeated aspiration may lead to mesh infection.
Level 5	An abdominal binder does not reduce seroma formation (unpublished randomized controlled trial [RCT] data)
Level 2B	<u>The length of abdominal binder use does not affect seroma formation</u>



Il tasso di **sieromi** e **ematomi** non è statisticamente diverso tra tecnica open e laparoscopica



Laparoscopic versus open surgical techniques for ventral or
incisional hernia repair (Review)
2011

Sauerland S, Walgenbach M, Habermalz B, Seiler CM, Miserez M



NUOVE TECNOLOGIE



C'E' POSTO PER LE NUOVE TECNOLOGIE
QUALI LA CHIRURGIA ROBOTICA, LA NOTES
O LA SINGLE PORT NELLA CHIRURGIA DEI
LAPAROCELI?



GUIDELINES

Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))



Chirurgia Robotica

Level 4

Robot-assisted ventral hernia is a feasible alternative to laparoscopic repair of ventral hernia

Intracorporeal suturing under direct visualization allows stable suture fixation of the mesh

Helicoid tackers and transabdominal sutures contribute to postoperative pain



Recommendations

Grade C

More studies must be conducted on the feasibility, practicality, and success of robot-assisted ventral hernia repair



World J Surg (2012) 36:447–452
DOI 10.1007/s00268-011-1389-8

Technical Feasibility of Robot-Assisted Ventral Hernia Repair

Nathan Allison • Ken Tieu • Brad Snyder •
Alessio Pigazzi • Erik Wilson

13 pazienti con ernie mediane di piccole e medie dimensioni

Chiusura intracorporea della fascia con sutura continua e successivamente fissaggio della mesh con sutura continua non riassorbibile

procedura sicura e riproducibile non associata a dolore cronico post-operatorio

World J Surg (2012) 36:453–454
DOI 10.1007/s00268-011-1401-3

INVITED COMMENTARY

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NESSUN SIGNIFICATIVO VANTAGGIO:

- ❖ Non offre nessun vantaggio aggiuntivo rispetto alla vl
- ❖ Aumento dei costi del 34 % rispetto alla vl
- ❖ Non esiste ancora un «gold standard» laparoscopico da poter superare con la robotica
- ❖ Difficile il cambio di campo operatorio
- ❖ Necessita di introduzione di nuove tecnologie



Single Port



- Level 4 Single-port access ventral hernia repair appears to be safe for experienced endolaparoscopic surgeons. It may decrease parietal trauma and scarring in patients prone to incisional hernia and may be associated with a decrease in the rate of port-site hernia compared to multiport laparoscopy

Recommendations

- Grade C Single-port access ventral hernia repair seems to be a safe and feasible alternative option to conventional laparoscopy in selected cases, but further RCTs are needed

NOTES

- Level 1 Mesh placement via NOTES is technically feasible but has a high infection rate
- Level 4 The risk of infection is much higher than in open or laparoscopic transabdominal ventral hernia repair
- The vaginal wall seems to be a safer entry site compared to the gastric wall

Recommendations

- Grade C Access and development of an effective delivery device (which eliminates the contamination of the mesh through a colonized route) is necessary before trials can be started in humans
- Comparative studies are necessary to verify the feasibility and success rate of this new methodology

