



11h30 **Session n° 3 : Meshes in contaminated fields**
Présentateur : **Johan Lange** (Rotterdam)
Modérateurs : **Jean-Luc Bouillot** (Boulogne), **Pablo Ortega Deballon** (Dijon), **Michel Prudhomme** (Nimes), **Pierre Verhaeghe** (Reims)

How to keep in place an infected mesh ?

Y. RENARD, A. METTOUDI, J.P. PALOT



CENTRE HOSPITALIER UNIVERSITAIRE DE REIMS
SERVICE DE CHIRURGIE GÉNÉRALE,
DIGESTIVE ET ENDOCRINIENNE

Introduction

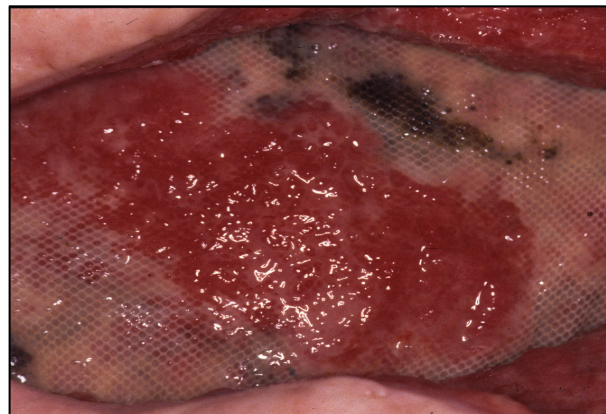
→ Mesh infection occurrence : 4-6%

(depend on the number of risk factors of SSO)

Grade 1 <i>Low Risk</i>	Grade 2 <i>Co-Morbid</i>	Grade 3 <i>Contaminated</i>
<ul style="list-style-type: none">• Low risk of complications• No history of wound infection	<ul style="list-style-type: none">• Smoker• Obese• COPD• DM• History of wound infection	<ul style="list-style-type: none">• A. Clean-Contaminated• B. Contaminated• C. Dirty
SSO = 14%	SSO = 27%	SSO = 46%
SYNTHETICS		BIOLOGICS

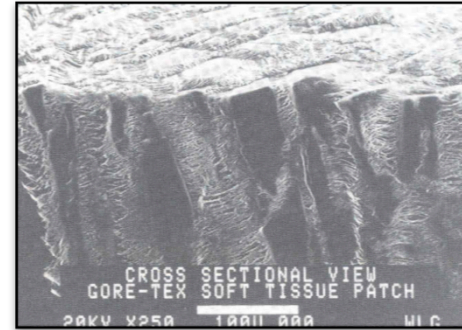
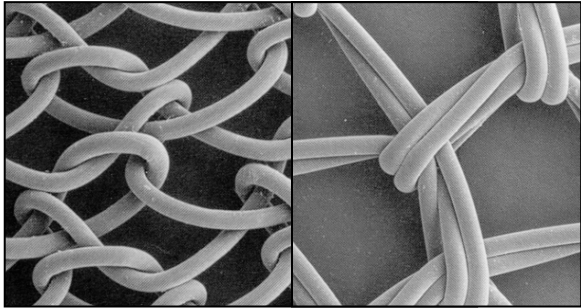
→ More frequent (2-7%) and severe in ventral position

→ Economic and social impact



Kanters AE. *JACS*. 2012
Berrevoet F. *Hernia*. 2013
Luijendijk RW. *N Engl J Med*. 2000
Deysine M. *Surg Clin North Am*. 1998

Which material could be salvaged ?

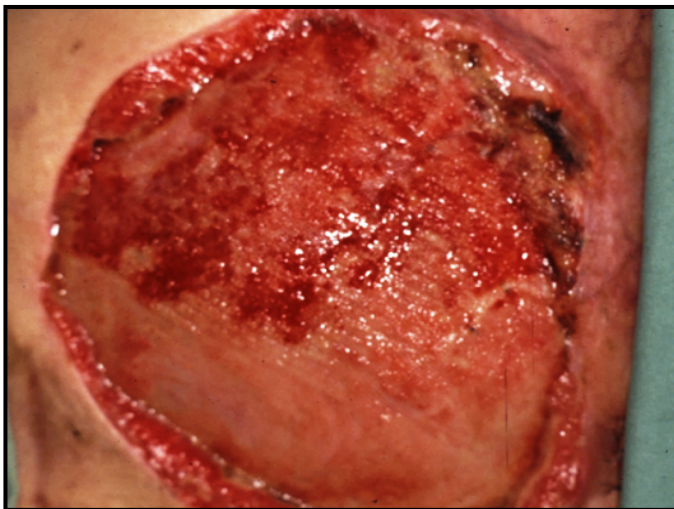


Macroporous

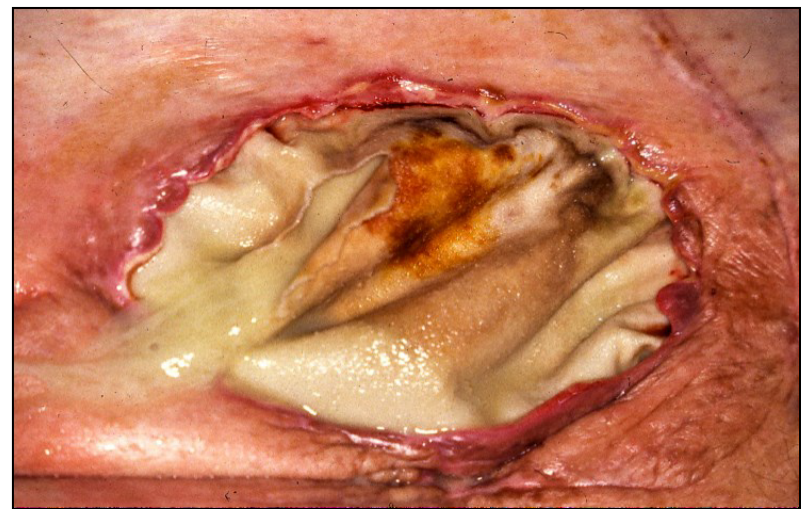
Better resistance to infection
Less inflammatory response

Microporous (ePTFE)

The germs do penetrate, but not the
macrophages nor the polynuclears



Pauci-filamentous / light



Predictors of mesh explantation after incisional hernia repair

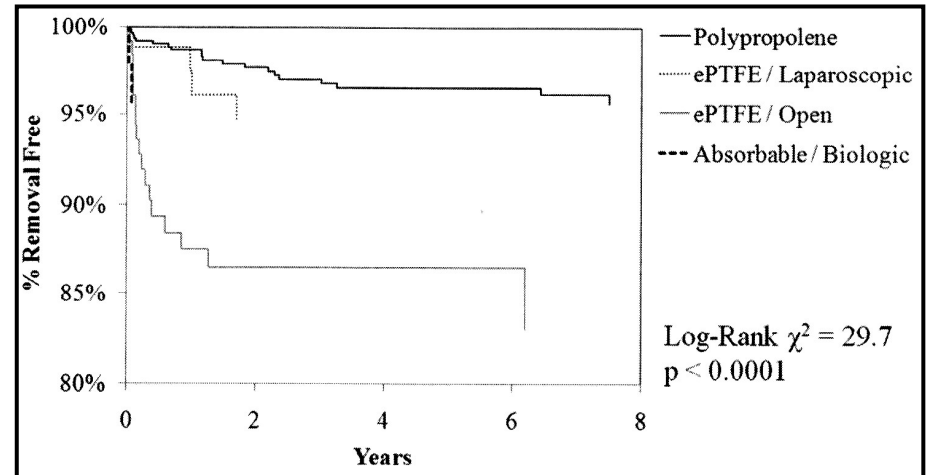
Mary T. Hawn, M.D., M.P.H.^{a,b,*}, Stephen H. Gray, M.D., M.S.P.H.^b,
Christopher W. Snyder, M.D., M.S.P.H.^b, Laura A. Graham, M.P.H.^a,
Kelly R. Finan, M.D., M.S.P.H.^b, Catherine C. Vick, M.S.^a

The American Journal of Surgery (2011) 202, 28–33

1071 operations
55 (5.1%) explanations

Independent factors :

- **Associated surgical procedure**
- **Open ePTFE mesh**



Mesh Graft Infection Following Abdominal Hernia Repair: Risk Factor Evaluation and Strategies of Mesh Graft Preservation. A Retrospective Analysis of 476 Operations

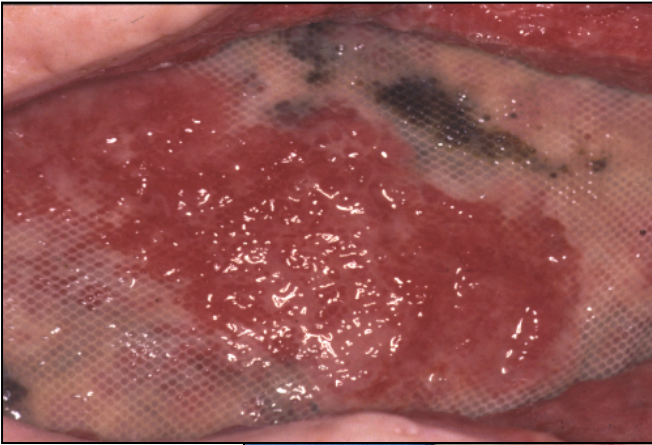
Stefan Stremitzer · Thomas Bachleitner-Hofmann · Bernhard Gradl ·
Matthias Gruenbeck · Barbara Bachleitner-Hofmann · Martina Mittlboeck ·
Michael Bergmann

World J Surg (2010) 34:1702–1709

476 operations, 31 mesh infections
0% PP explanted, 77% PTFE explanted (p<0.0001)

2 opposite situations

Acute infection \neq late infection



Acute infection

Superficial: Conservative treatment...



ACT QUICKLY TO ENSURE THAT THIS INFECTION REMAINS SUPERFICIAL

- Early aggressive treatment
- Revision surgery under general anesthesia
- Wide surgical debridement,
- Antibiotic therapy



No minor surgery

Acute infection

Deep: Conservative treatment...

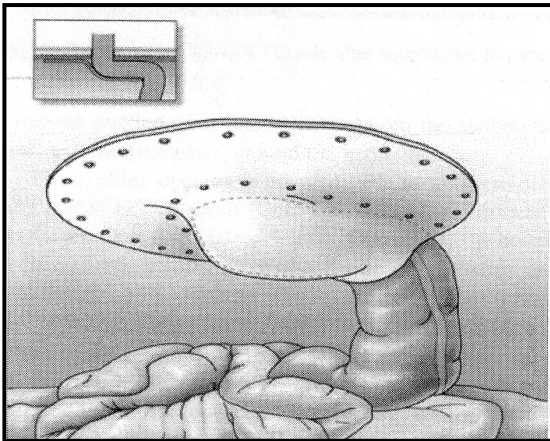


Left iliac incisional hernia



Percutaneous drain placed within the collection + intravenous / irrigation antibiotics

Deep: Conservative treatment...



Percutaneous drainage of deep mesh abscess

Existing literature poor and contradictory

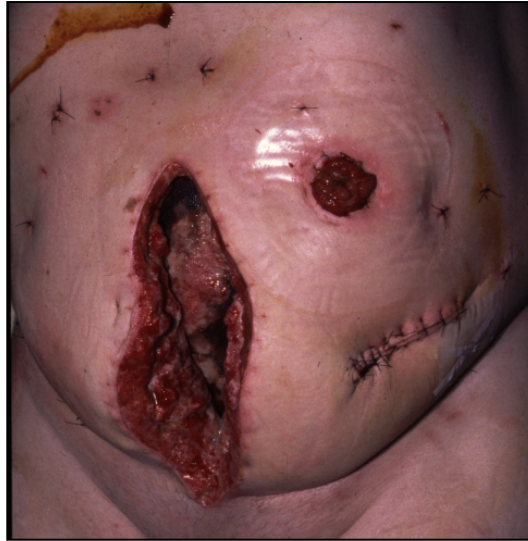
Acute infection

**Substantial progress :
Negative pressure (wound) therapy (NPT/NPWT)**



- Accelerating wound healing
- Increase the formation of granulation tissue

Negative pressure therapy

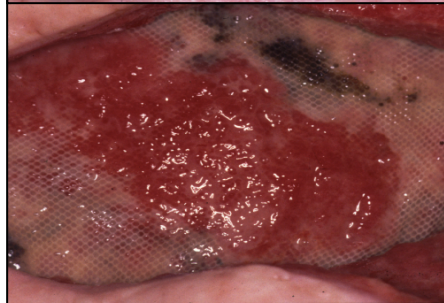
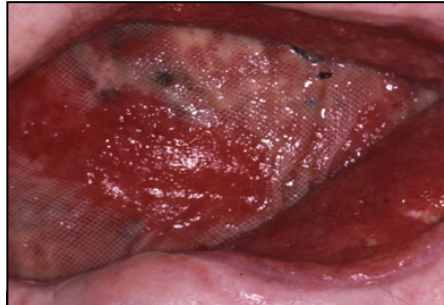


**Median + peristomal
incisional hernia**

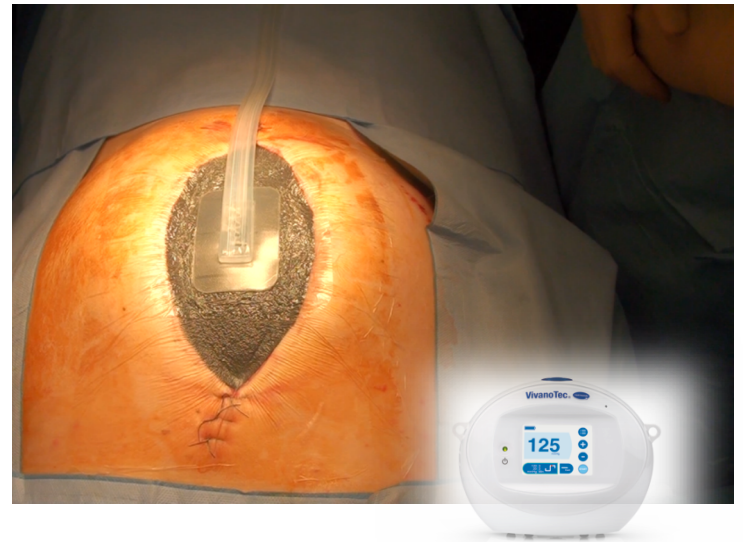
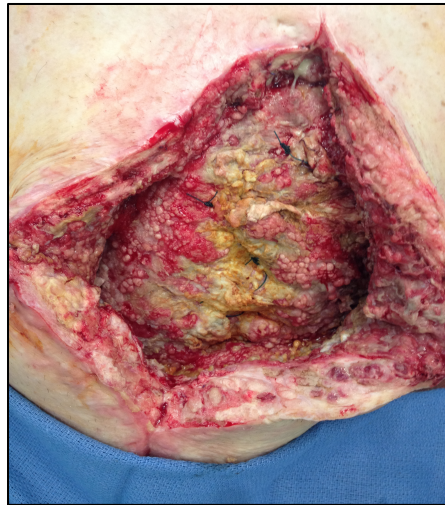
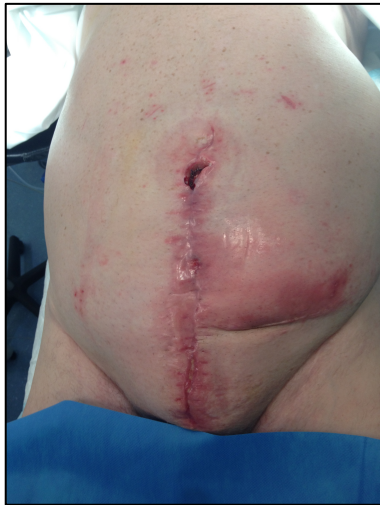
**Retro-muscular
polyester mesh**

**Post-operative abscess on
the mesh**

Uncovered mesh



D0



D30



D60



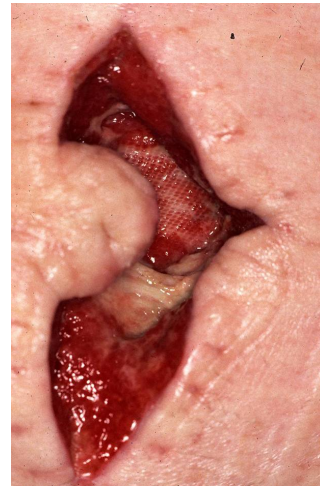
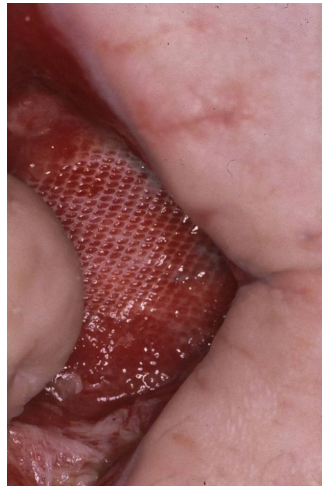
D80



D110

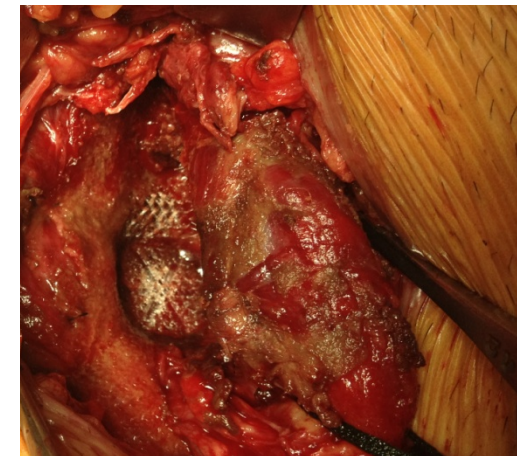
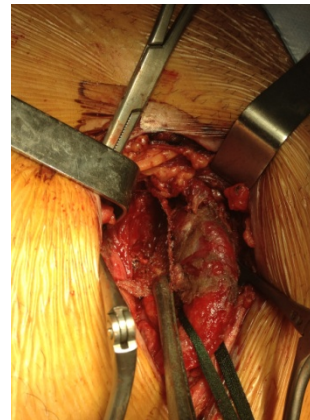
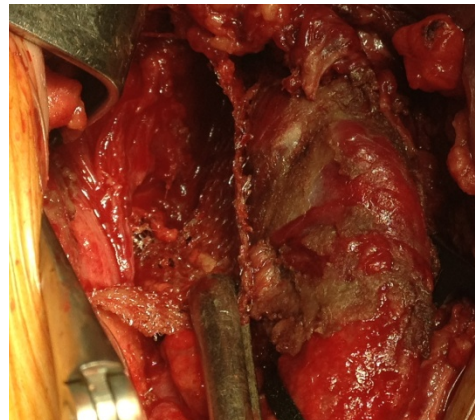
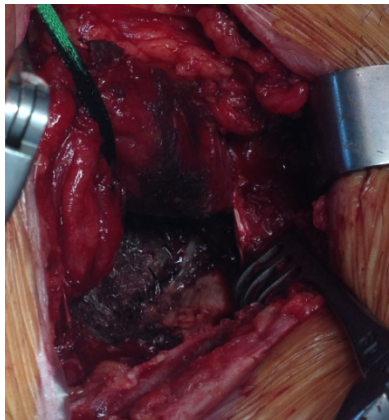
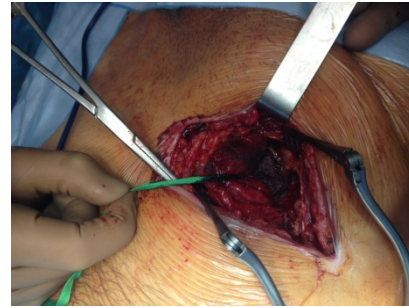
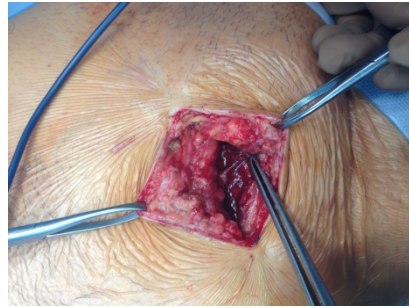


Tissue integration in progress



RESULT AFTER 10 WEEKS OF NPT

NPT MANAGEMENT FOR GROIN HERNIA



Literature is scarce...

Ostomy Wound Manage. 2002 Oct;48(10):40-2, 44-5.

Successful salvage of infected PTFE mesh after ventral hernia repair.

Kercher KW¹, Sing RF, Matthews BD, Heniford BT.

1 patient,
1 success (ePTFE)

Ostomy Wound Manage. 2006 Jan;52(1):52-4.

Negative pressure wound therapy to treat peri-prosthetic methicillin-resistant *Staphylococcus aureus* infection after incisional herniorrhaphy. A case study and literature review.

Steenvoorde P¹, de Roo RA, Oskam J, Neijenhuis P.

1 patient 1 success (rétroM)

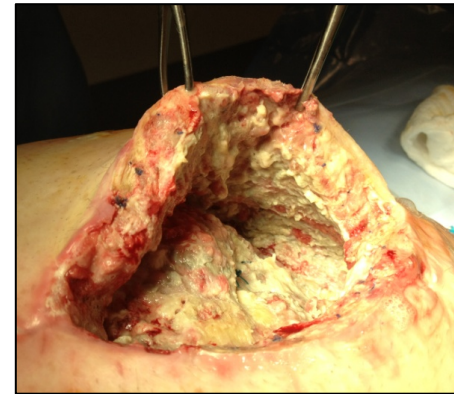
Hernia (2012) 16:475–479
DOI 10.1007/s10029-010-0767-8

CASE REPORT

Salvage of an infected titanium mesh in a large incisional ventral hernia using medicinal honey and vacuum-assisted closure: a case report and literature review

G. Chatzoulis · K. Chatzoulis · P. Spyridopoulos ·
P. Pappas · A. Ploumis

1 patient, 1 success
(onlay)



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VACUUM ASSISTED CLOSURE® THERAPY IN THE TREATMENT OF MESH INFECTION AFTER HERNIA REPAIR

KEYWORDS: HERNIA, SURGICAL MESH, INFECTION, VACUUM-ASSISTED CLOSURE
Surgeon, 1 October 2009, pp. 316-18

4 patients, 4 success

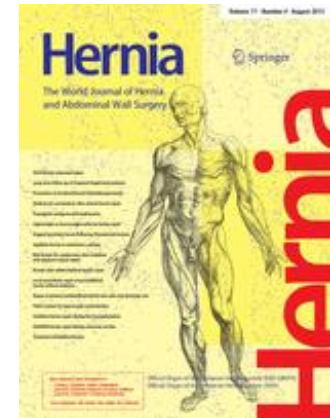
Literature

Hernia (2013) 17:67–73
DOI 10.1007/s10029-012-0969-3

ORIGINAL ARTICLE

Infected large pore meshes may be salvaged by topical negative pressure therapy

F. Berrevoet · A. Vanlander · M. Sainz-Barriga ·
X. Rogiers · R. Troisi



6-year period

724 consecutive open hernia and incisional hernia repairs

63 (8.7 %) were treated using NPT

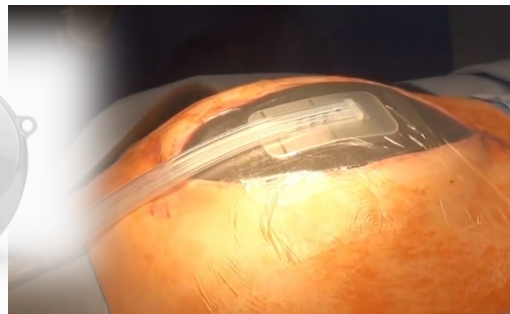
54 in retromuscular group → 100 % success

0 in laparoscopic group (38 patients)

9 in intraperitoneal group → 6 (67%) success

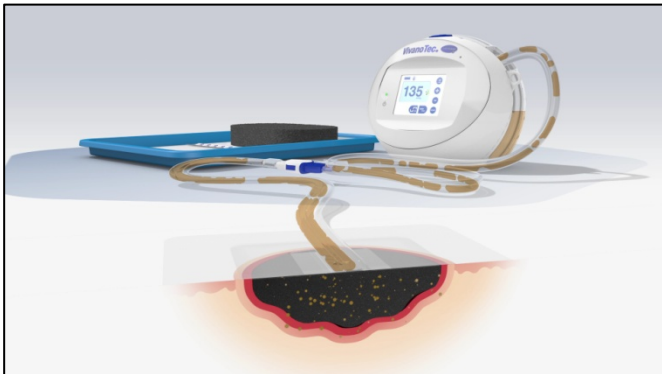
Literature

	Feature	N=	Success	Mean Healing time	Follow-up	Rec
Nobaek et al Scan J Surg 2017	Retrosp	48	44 (92%)	110 d	28 m	1 (2%)
Baharestani et al Int Wound J 2010	Retrosp	21	18 (86 %)	66 d	?	0
Stremitzer et al World J Surg 2010	Retrosp	31	17 (55%)	81 d	30 m	0
Berrevoet et al Hernia (2013)	Prosp	63	60 (95%)	38 d	3 y	4 (7%)
Our series	Retrosp	54	49 (91%)	193 d	26 m	7 (14%)
POOLED RESULTS		217	188 (87%)	101.8 d	26 m	6.4 %



Conclusion

- Common agreement that infected mesh must be removed
- In case of acute mesh infection
 - Conservative treatment must always be considered
 - Especially for macroporous meshes in retromuscular position
- The best solution may be :
 - Revision surgery under general anesthesia
 - Wide surgical debridement
 - Uncover the mesh in case of deep infection
 - As soon as possible
 - The use of Neg. P. therapy may salvage the mesh in **87%** of cases



e-mémoires de l'Académie Nationale de Chirurgie, 2015, 14 (2) : 069-080

**Éventrations - prothèses infectées :
traitement et prévention**

**Abdominal Wall Incisional Hernias - Infected Prosthesis:
Treatment and Prophylaxis**

JF Gillion [1], JP Palot [2]

Conclusion

- In case of failure of conservative treatment, the problem is different
 - ➔ Chronic mesh infection
 - ➔ Should lead (quickly ?) to the explanation of the mesh



Late abscess

Chronic sinus

EXPLANATION +++

