



3CHIRURGEN



BERLIN
FASHION
WEEK



„tailored hernia surgery“

Mauritius July 28th 2010

Ralph Lorenz



„tailoring“



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principle of tailoring

- pattern
- choice of drapery
- choice of accessories
- studio and sewing machine
- craftsman apprenticeship
- journeyman's piece
- masterpiece





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„tailored surgery“

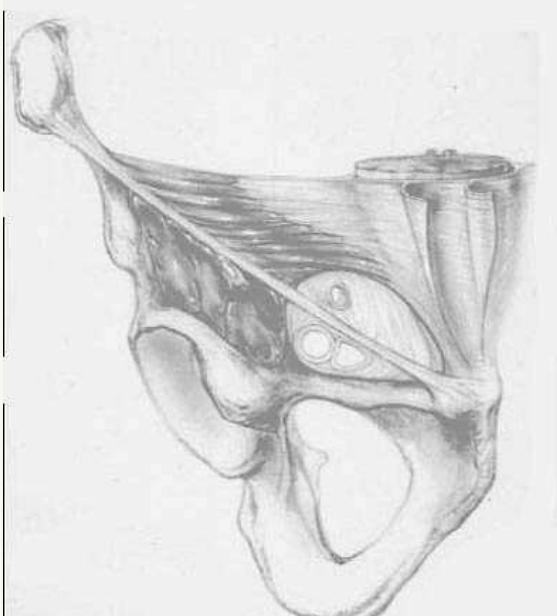
- anatomy
- classification and risk profile
- choice of mesh
- positioning and fixation
- standardisation
- surgical training and education
- quality management
- masterpiece





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anatomy



„Myopectineal orifice“



Henry FRUCHAUD

*1894 †1960

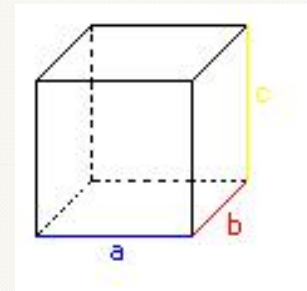
- medial triangle = HESSELBACH triangle
- lateral triangle
- femoral triangle



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Dimensions of the myopectineal orifice

- 7,8 ($\pm 3,0$) cm in width
- 6,5 ($\pm 1,9$) cm in height
- ♂ 7,6 x 7,6 cm
- ♀ 8,1 x 5,3 cm
- *a mesh measuring 10 x 8 cm is suitable for both genders*

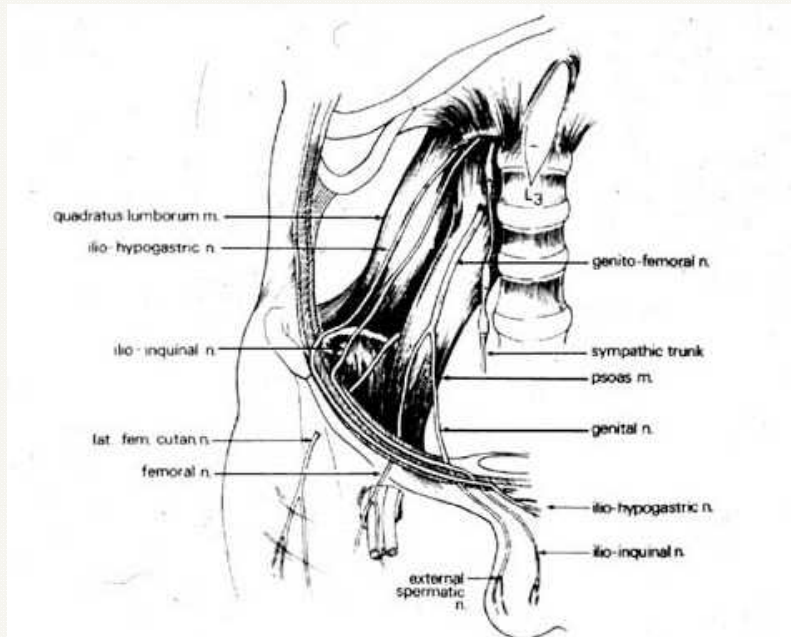


*T. Wolloscheck, M.A. Konerding 2009 (Hernia) 13: 639 - 642



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anatomy of nervs



How should we handle the nerves?

Evidence grade 2A
Identification

Evidence grade 2B
Resection at risk

*EHS –Guidelines
Simons et al
Hernia 13 (2009) 343-403



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different inguinal hernias



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Classification inguinal hernia

M,C,L,F = medial, combined, lateral, femoral

R* 0-x = Recurrence

I = up to 1,5 cm diameter

II = 1,5 to 3 cm diameter

III = over 3 cm diameter

* Aachen classification = SCHUMPELICK classification

European Hernia Society

*Hernia August 09



© bodehase.de



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risk factors for „hernia disease“

- genetic
- smoking
- COPD, asthma
- diabetes
- overweight
- cancer in anamnesis
- physical strain

HEAD Score revised version 1.02e (04.01.2003 12:31)

Hernia of the Adult Decision Score

Characteristics	Points	
Gender	Male	3
	Female	1
Age	≥ 50	3
	< 50	1
Hernia	Primary inguinal hernia	2
	Recurent inguinal hernia (first recurrence)	4
	Recurent inguinal hernia (> 1. recurrence)	8
	Primary incisional hernia	3
	Recurent incisional hernia	8
Size	≥ 3 cm	3
	< 3 cm	1
Localization	Multilocular	4
	Unilocular	1
Smoking	Yes	2
	No	1
Family	Occurrence of hernias in ≥ 2 first-grade relatives	3
	Occurrence of hernias in < 2 first-grade relatives	1
Collagen disorders	Prooved alteration in collagen metabolism (Ehlers-Danlos, Marfan Syndrome, Osteogenesis imperfecta, abdominal aortic aneurysm)	5
	No evidence of alterations in collagen metabolism	1
Sum		



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with or without any mesh ?

meta-analyses:

with mesh - better than without

*SCOTT, WEBB et al,
Cochrane Institut Library Issue 2, 2001

- EU Hernia Trialist Collaboration, 2000 British Journal of Surgery,
- 87,860-867
- **1,4% recurrent rate with mesh**
- **4,4% recurrent rate without mesh**

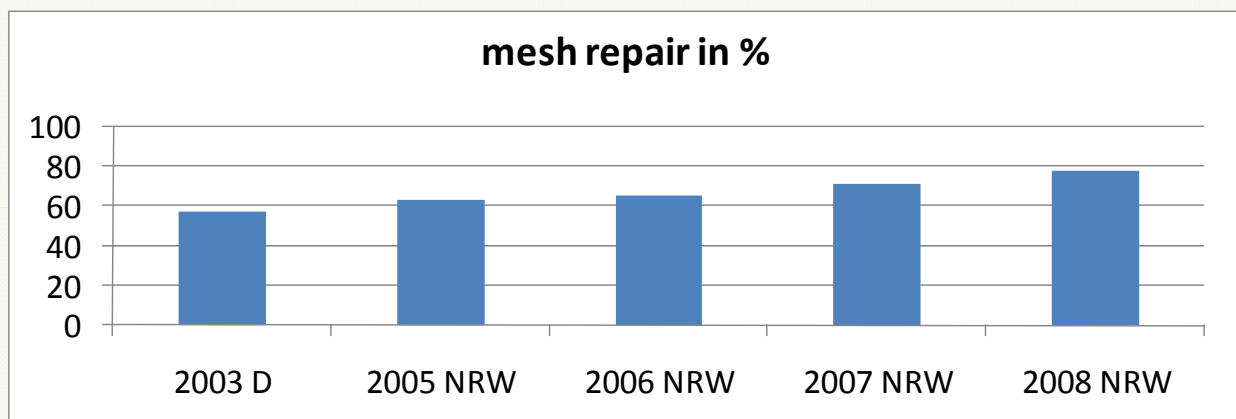
Shouldice - best technique without mesh

* Cochrane Institut Library, 1996





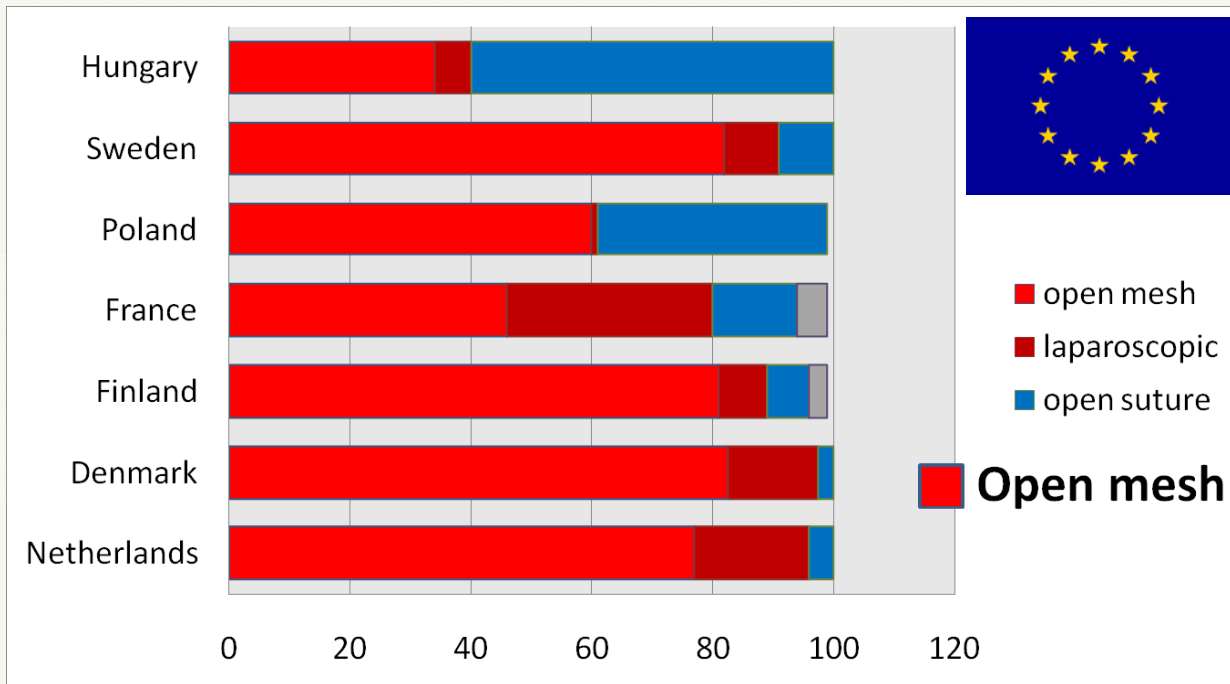
Use of mesh in Germany 2003-2008?



*BQS
Nordrhein Westphalen
2009



different techniques in Hernia surgery Europe 2006



(*EHS Guidelines Hernia(2009) 13:343-403)



right choice of mesh?



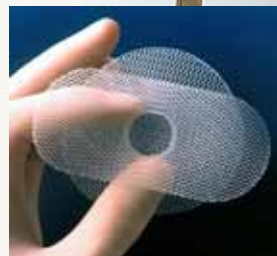




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Long term results with heavy weight meshes

- Diskomfort
- Stiff abdomen
- Chronic pain



Ideal mesh 2010?

- Polypropylen (non absorbable, monofilament)
- light weight concept (less 50g/m²)
- macroporous (more than 1mm pore size)
- stability (16N/cm)
- elasticity (more 20%)

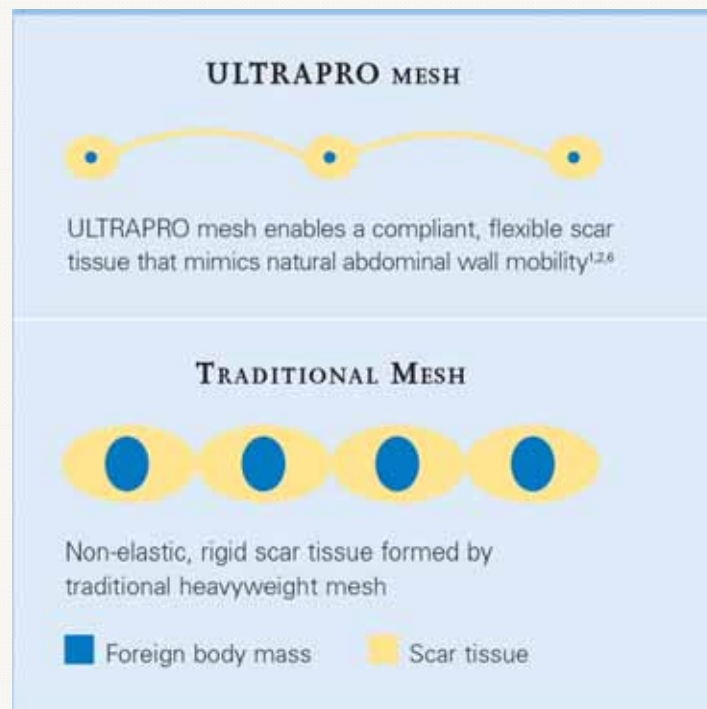


bridging





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Bridging = Macroporous mesh concept

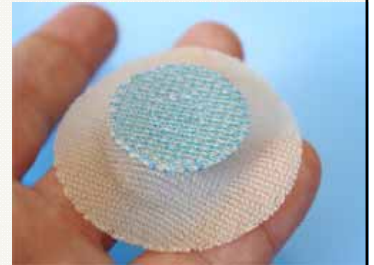


why partly absorbable meshes?



„Less is more!“

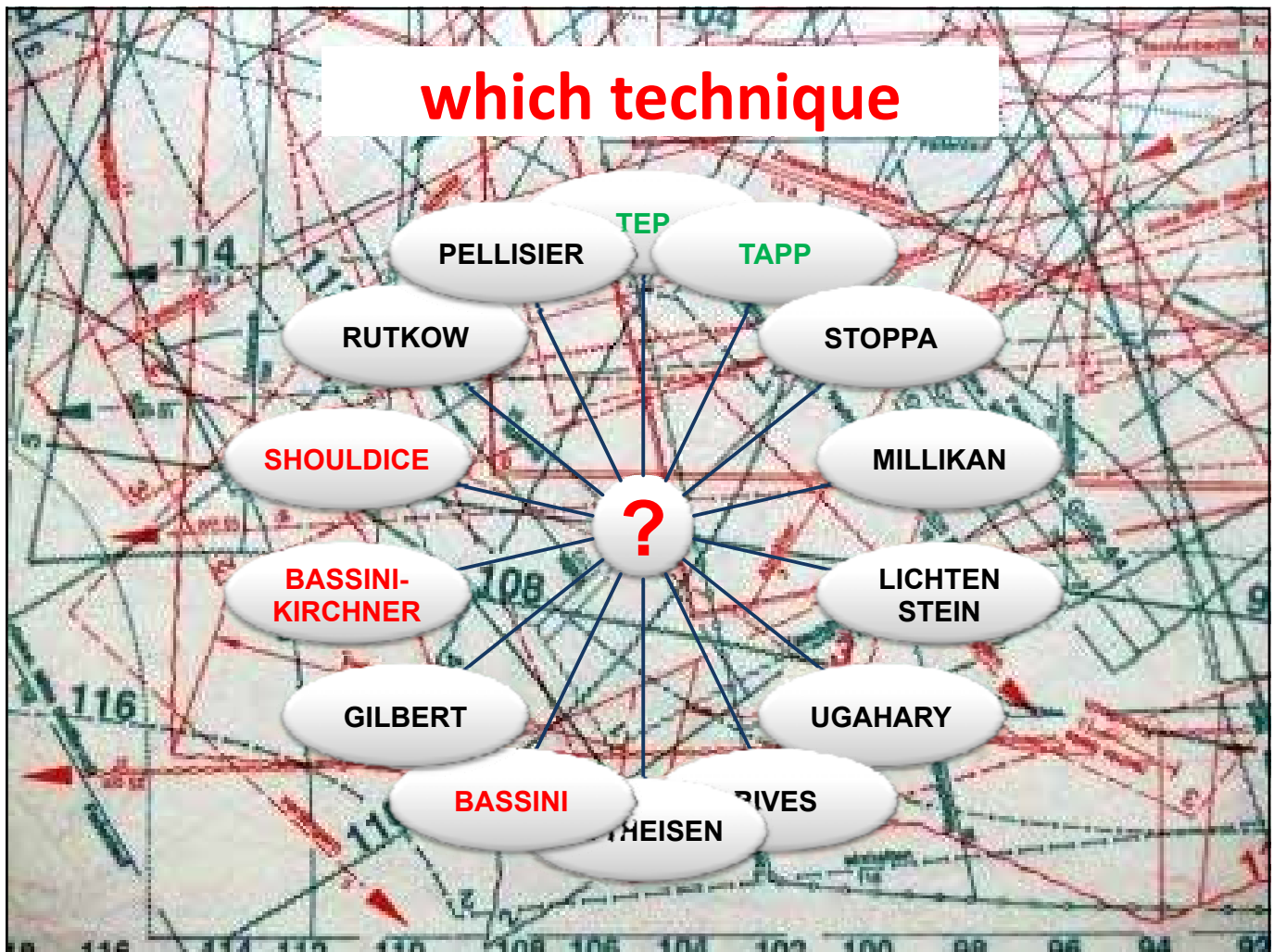
- less material after scarring
- intelligent mesh
- high stability
- more flexibility
- more comfort
- less chronic pain



*Holste JL. Are meshes with lightweight construction strong enough? Int Surg. 2005;90(suppl. 3): S10-S12.

* Cobb WS, Kercher KW, Heniford BT. The argument for lightweight polypropylene mesh in hernia repair. Surg Innov. 2005;12:T1-T7.







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~~gold standard~~



*Prof. Dr. U. Klinge 2nd Berlin Herniadays 2008

*„...there is
no standard **patient** and
no standard of **hernia***

thatswhy

*no standard **technique**
to reach a
standard **result...**“*



open suture



- **SHOULDICE**

1944 first **report** about 272 patients
(Ontario Medical Association)

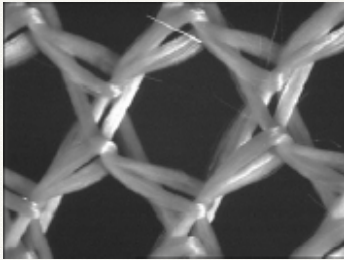
1953 first **description** of the technique
(the treatment of hernia, Ontario Medical
Review 1953, 1-14)

Indication:

- small hernias in young persons without risc profile
- “sportsmen´s hernia”



Open mesh



- LICHTENSTEIN *1984
- STOPPA *1968
- RUTKOW *1993
- MILLIKAN *2001
- UGAHARY *1998
- PELISSIER *2001
- GILBERT *1998



Possibilities of mesh placement

Onlay (= anterior or prefascial)



Inlay



Sublay (= retromuscular, extraperitoneal)



3-D-Meshes (= anterior **and** posterior)





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Possibilities of mesh placement

Onlay (= LICHTENSTEIN)



Inlay (= RUTKOW)



Sublay (= PELISSIER)



3-D-Meshes (= UPP/UHS)



mesh placement in incisional hernias ?

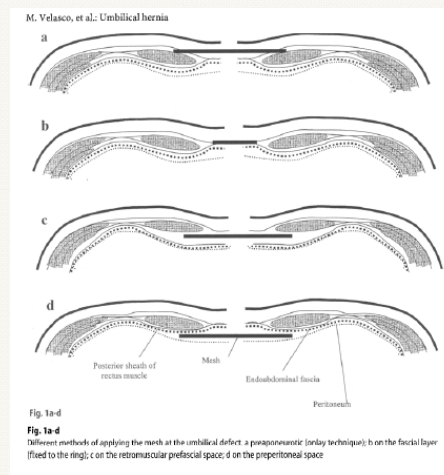
Onlay



Inlay



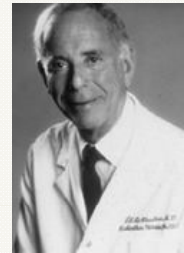
Sublay



*Velasco et al , Hernia 1999,4

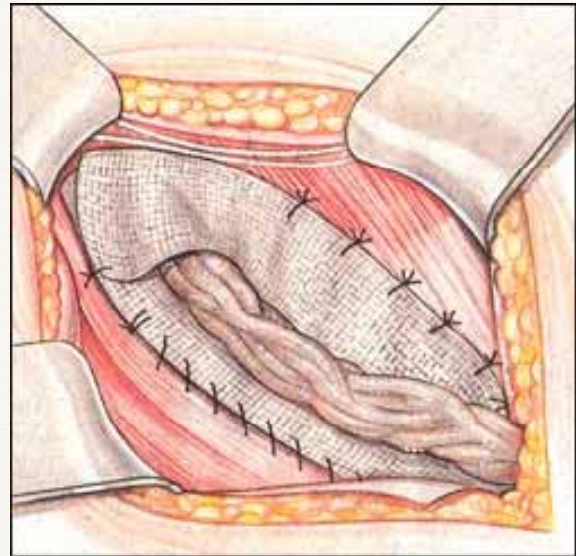


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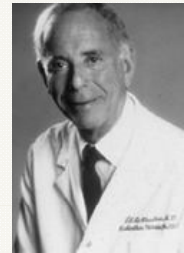


Irving LICHTENSTEIN*1984

- simple
- easy to perform
- short learning curve
- tensionfree
- worldwide most popular
- local anaesthesia



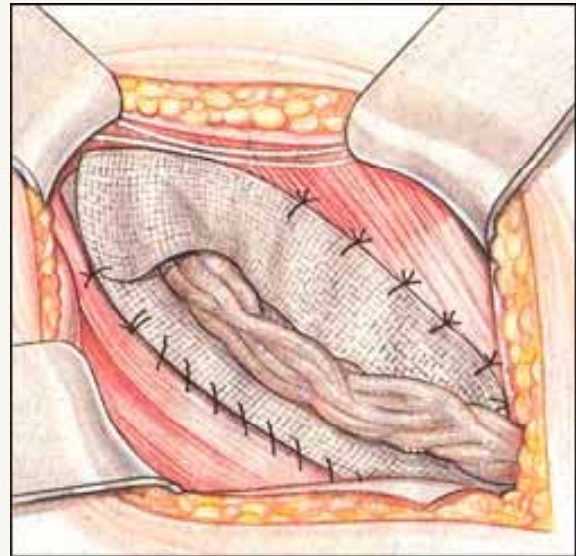
but!



Irving LICHTENSTEIN*1984

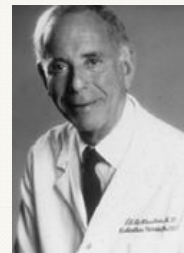
but!

- Problems with big hernias - standard?
- Not covering the MPO?
- wrong positioning of mesh
- Onlay mesh contacts nervs = chronic pain
- Recurrences mostly mediocaudal because of insufficient fixation





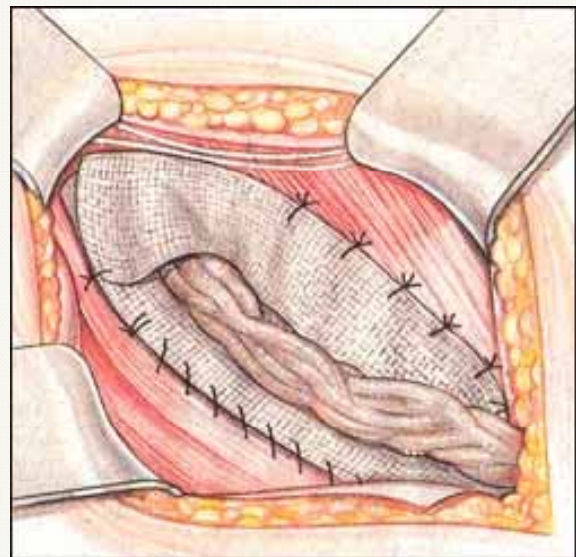
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Irving LICHTENSTEIN*1984

Indication:

- **Medial and Larger Hernias with no possibilities to create the preperitoneal space**
i.e. after Prostatectomy,
Vascular surgery





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Rene STOPPA *1968

posterior approach

preperitoneal/retromuscular mesh placement

indication for large inguinal hernias

covering the whole MPO

initially use of Dacron later Polypropylen

but!

traumatic



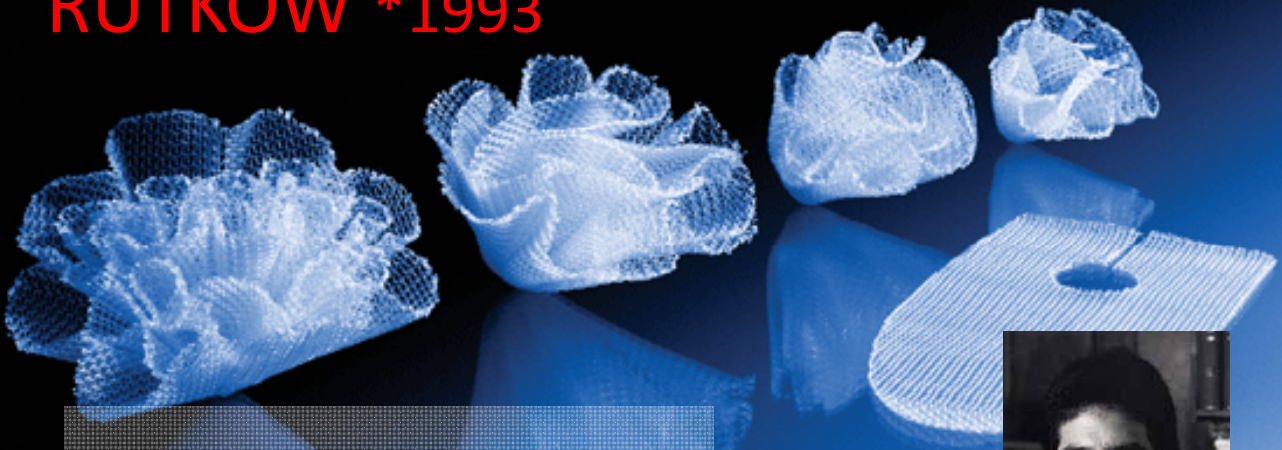


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Development of the plug technique

- PHELPS *1894
- USHER *1958
- LICHTENSTEIN *1968
- GILBERT *1988
- RUTKOW *1993
- MILLIKAN *2001

RUTKOW *1993



4 million
Perfix Plugs





but!

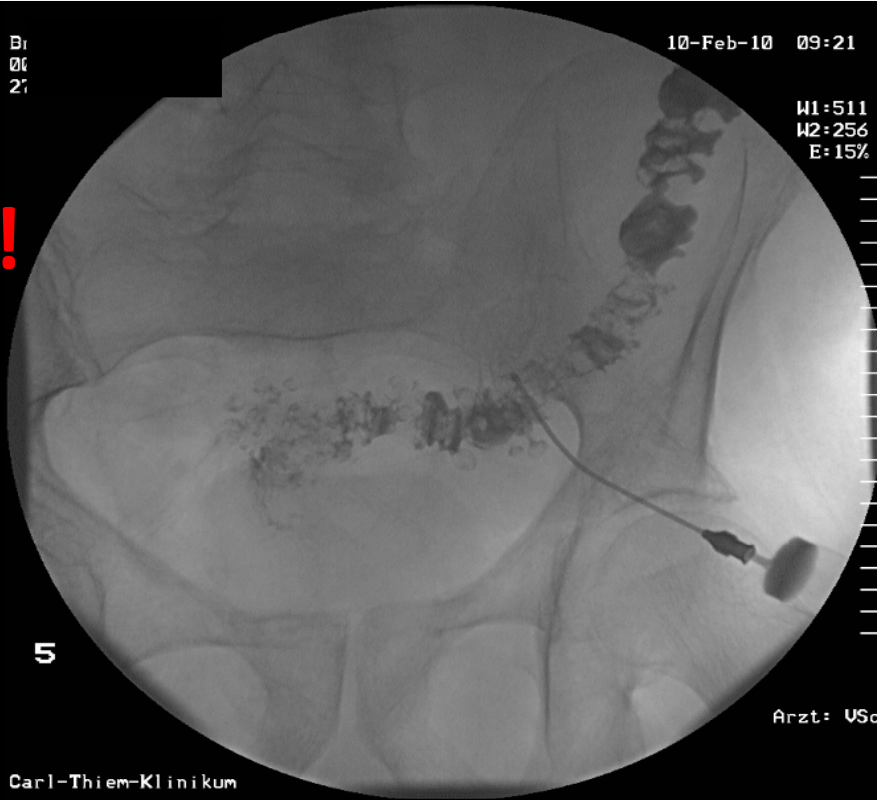
- heavy weight mesh with rigid structure
- third dimension
- discomfort
- chronic pain

* Kingsnorth Hernia 4(2000)



**severe complications are possible
after Perfix-Plug: Colon fistula**

but!



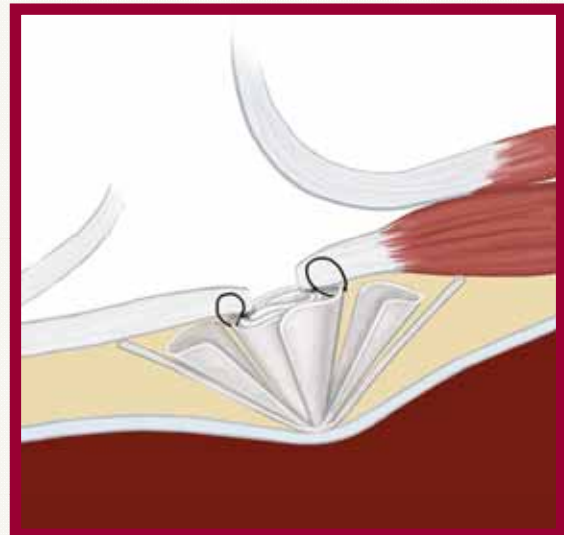


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Keith MILLIKAN*2001



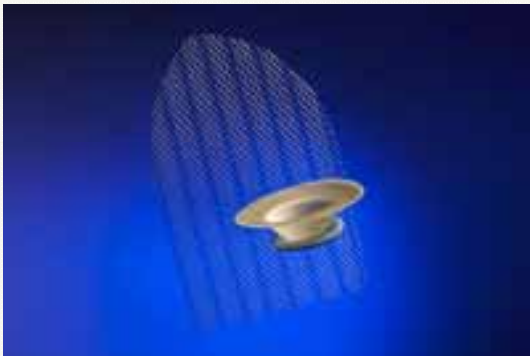
- modification of the Perfix Plug
- fixation of the inner sheets of the plug
- like an in- and sublay repair





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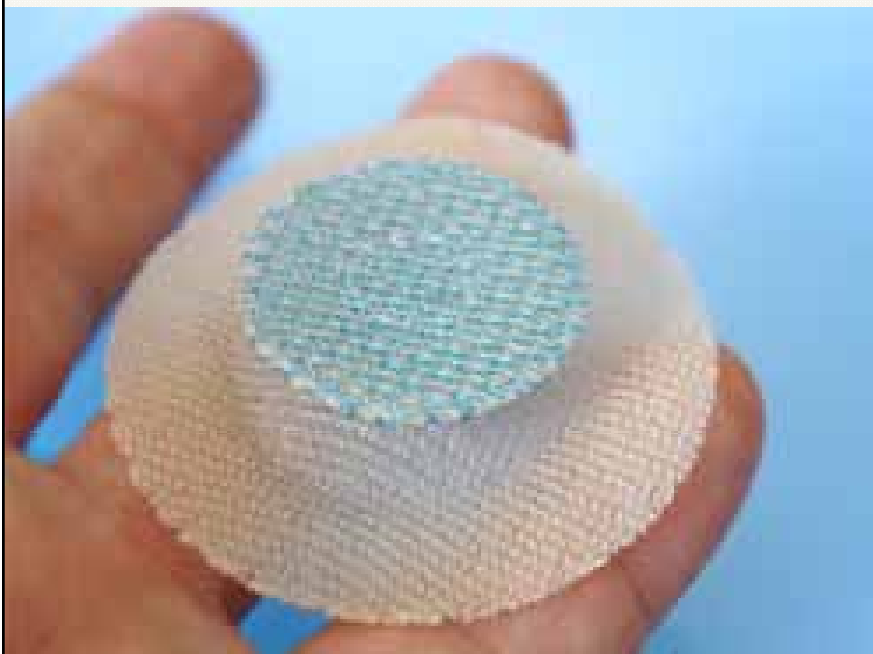
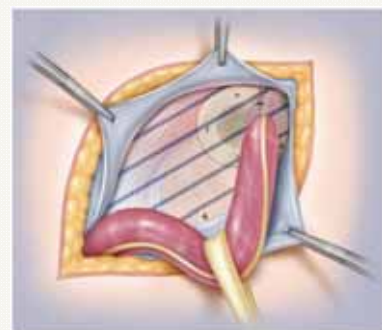
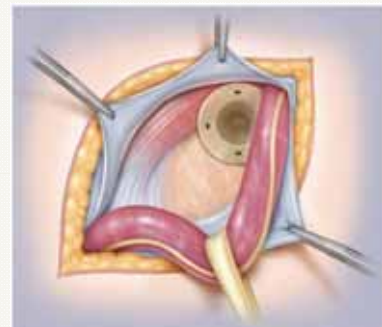
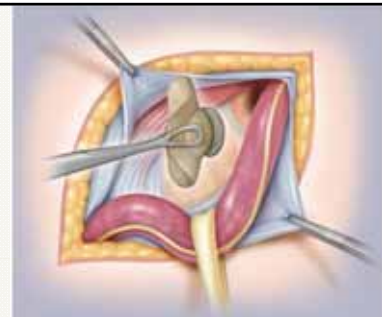
possible answer: UPP[®] = Ultrapro plug





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UPP[®] = Ultrapro plug



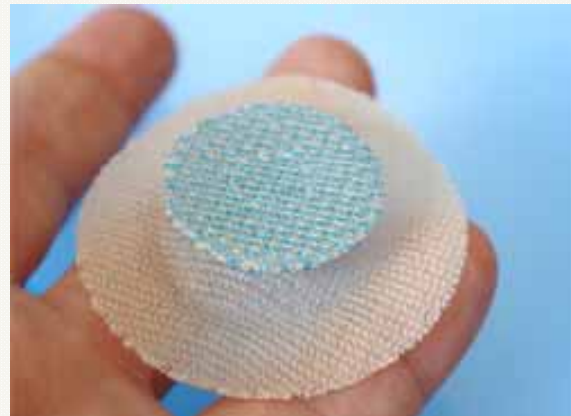


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UPP[®] = Ultrapro plug

Indication:

- Medium size direct and indirect Hernia with no high risc profile





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F. UGAHARY

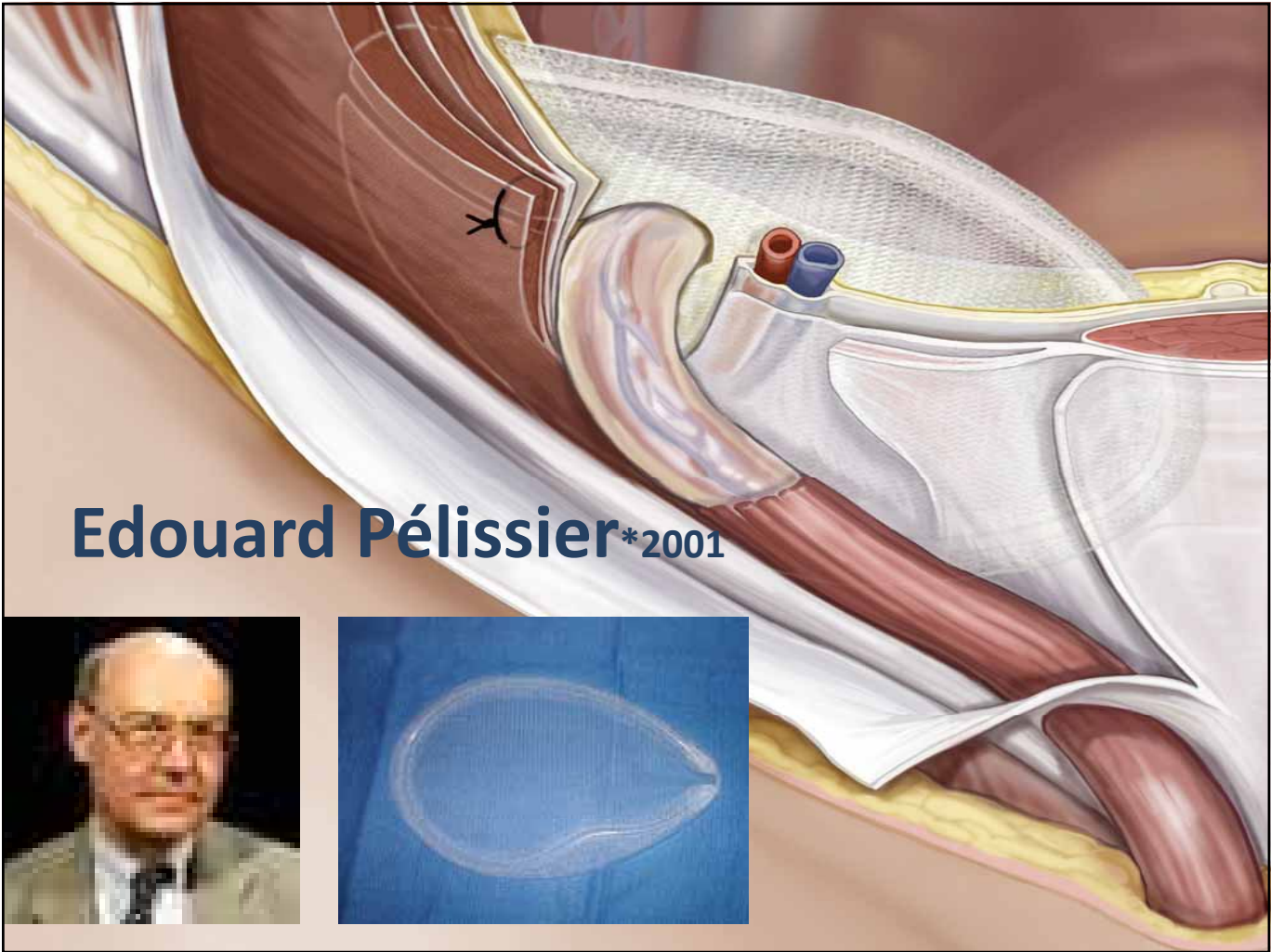
= grid iron Technik *1998

small skin incision like in appendectomy
10 x 15 cm mesh, only one fixation stitch

But!

- Difficult technique
- Long learning curve
- Retrograde percentage in the Netherlands
4,6% 2001 ► 2,2% 2005





Edouard Pélissier*2001





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Edouard Pélissier*2001



but!

- memory ring?
- heavy weight mesh

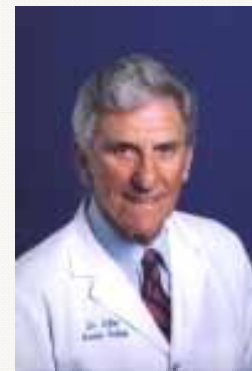


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Arthur I. GILBERT *1998

- Founder of the hernia Institute in Florida in South Miami
- Classification
- Development of procedures:

**Prolene Hernia System=
PHS 1998**



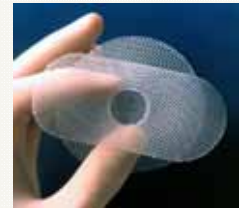


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PHS[®] / UHS[®]

Prolene Hernia System

Ultrapro Hernia System



- **three-dimensional device (onlay – connector – underlay)**
- **minimum pain**
- **low recurrence rate**

**Khera et al, Incisional, epigastric and umbilical hernia repair using the Prolene Hernia System: describing a novel technique. Hernia (2006), pp 367-269*

**Polat et al, Umbilical hernia repair with the prolene hernia system. Am J Surg (2005), pp 61-64*

**Perrakis et al. A new tension-free technique for the repair of umbilical hernia, using PHS. Hernia (2003), pp 178-180*



PHS -5 year results

32 months

- Recurrence rate 1,8%
- Chronic pain 3,2%

54 months

- Recurrence rate 2,3%
- Chronic pain 1,8%
- Testicular atrophy 1,4%
- Hypaesthesia 4,4%

* Faraj et al Hernia 14 (2010) 155-158



UHS[®] = Ultrapro Hernia System



**after PHS new developed for
the lightweight concept**

**composed of almost equal
parts of absorbable
Monocryl and Prolene**

**more than 60% less remaining
foreign body permanently
implanted**

markings and colourings

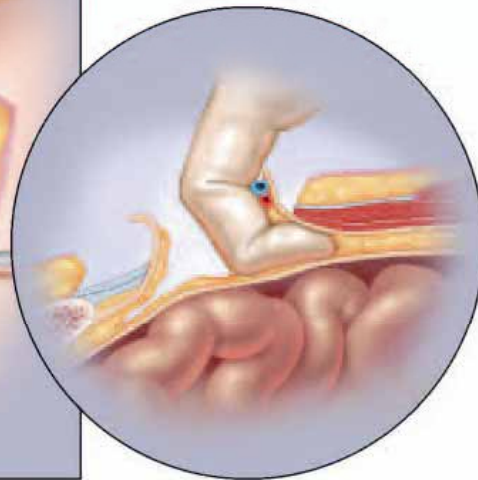
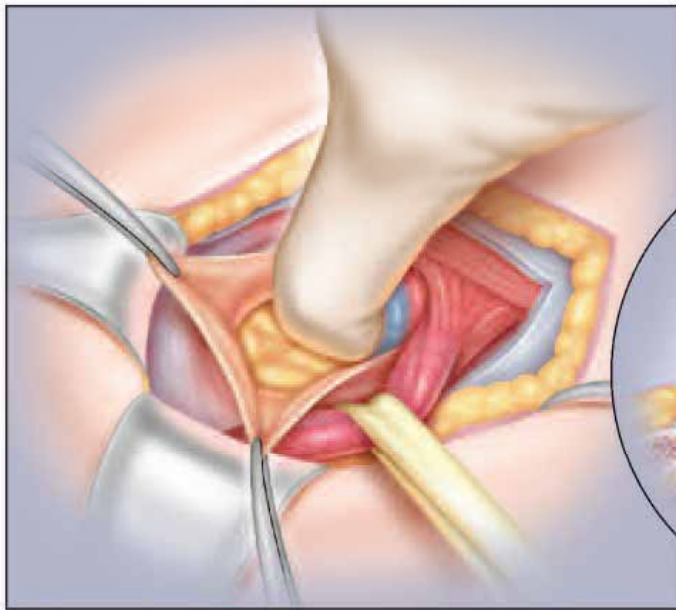


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UHS®

**most important
step:**

preparation of the
epigastric vessels and
of the triangle of doom





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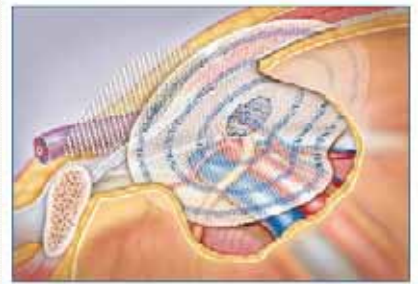
UHS[®] = Ultrapro Hernia System

Indication:

- Big direct or indirect hernias or
- Pantaloon Hernias or
- Hernias with a high risk profile



Anteriore Ansicht



Posteriore Ansicht

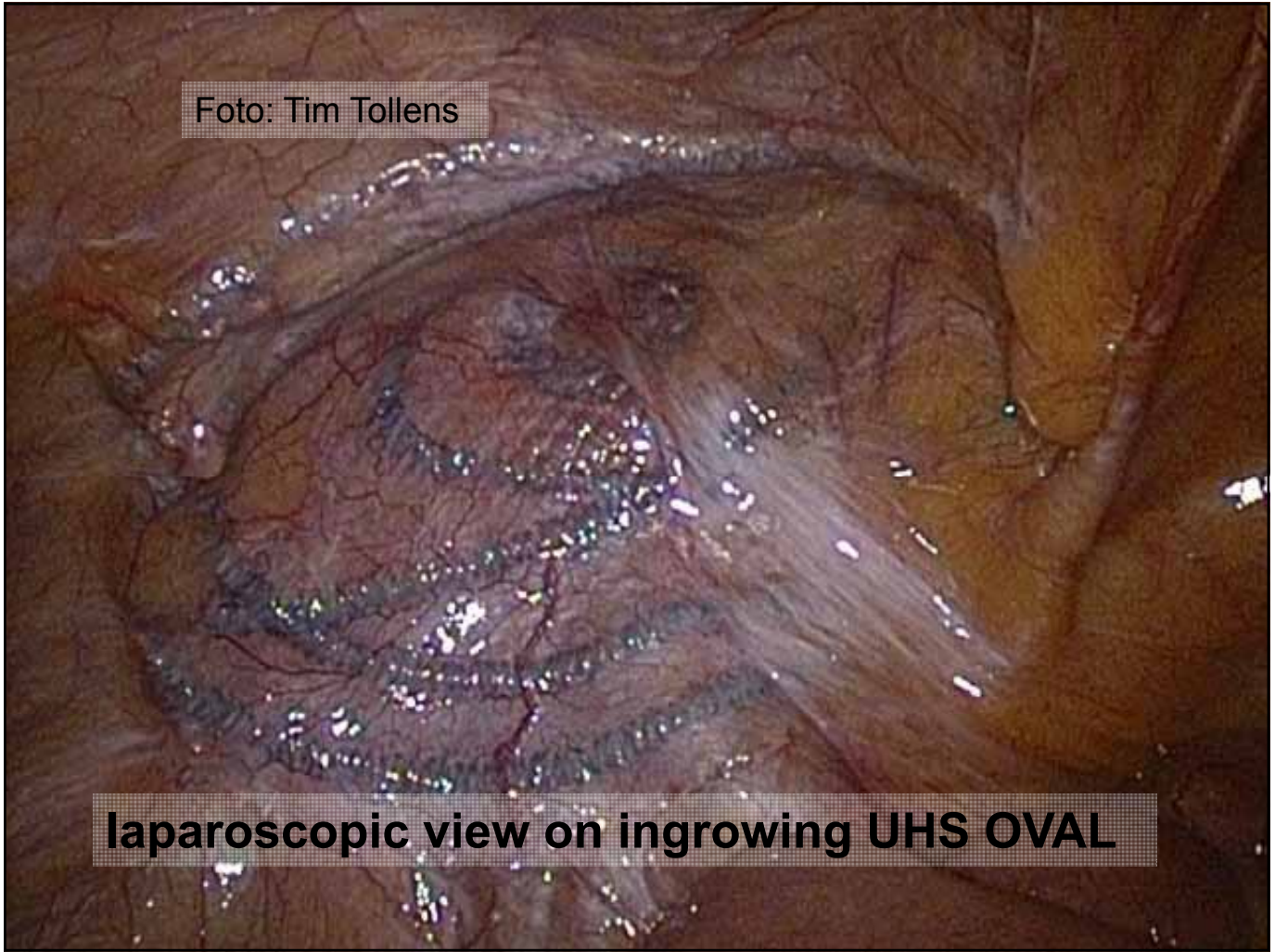


Foto: Tim Tollens

laparoscopic view on ingrowing UHS OVAL



UPP®/UHS® tailored concept

6 different sizes of the preperitoneal stabilization

UPP S Ø **3** cm

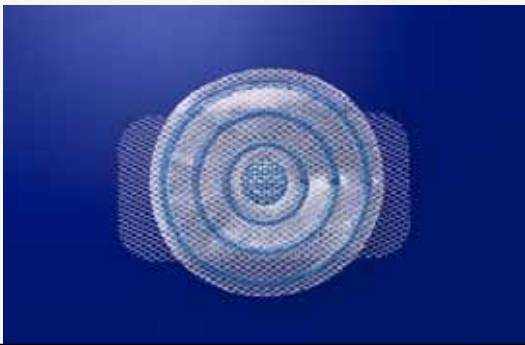
UPP M Ø **4** cm

UPP L Ø **5** cm

UHS M - Ø **7,5** cm

UHS L - Ø **10** cm

UHS OVAL - **10 x 12** cm



成人経膈ヘルニア手術用半環状性メッシュ「ウルトラプロヘルニアシステム」



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Laparoscopic mesh repair

TAPP *1991

*Arregui

*Fitzgibbons

TEP*1992

*Duluq und Begin

*Ferzli, Mc Kernan, Philips,
Hourlay

indication for bilateral hernias
Recurrences after
open techniques?

but!





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problems with
fixation in laparoscopy

but!





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3. Load-dependent inguinal pain left and right

but!

1. Recurrent hernia left

4. Patient employs a lawyer

2. Hydrocele right

**after both side TAPP
06/2008**



Laparoscopic or open

- Recurrence rate in Laparoscopy up to 10 % compared to 5% in open repair
- **Major complications**
- Same results only in case of high volume laparoscopy

*NEUMAYER- Salt Lake City, NEJM Bd. 350 (2004), 1819 und 1895



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own therapy concept

recommenation for tailored surgery depending on

- classification of the hernia
- age und comorbidity
- risc profile for a hernia desease
- physical strain(balance between elasticity and stability
- wish of patient



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„...cost savings“

...In the United States most hernia repairs (80-90%) are performed as day surgery procedure; 90% of operations are open herniorrhaphies with mesh.

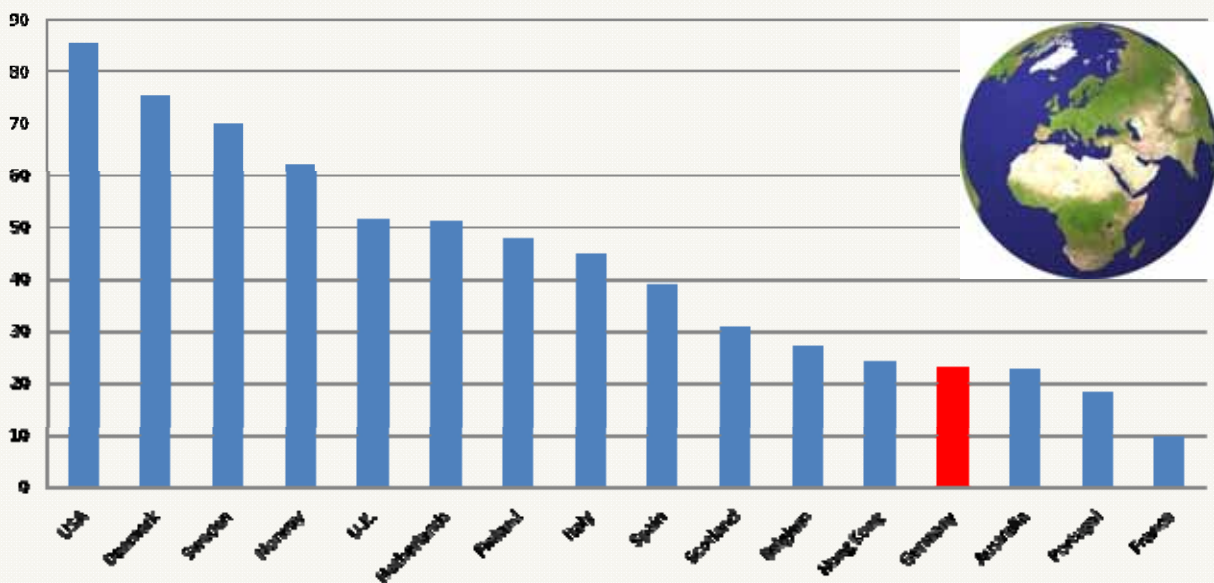
If in Germany an equal proportion of hernia repair as in the United States would be done as ambulatory procedure (80-90%), there would be an annual cost saving of several hundred million Euro

**Holzheimer, RG (Halle) Eur J Med Res. 2004 Jun 30;9(6):323-7*



outpatients

Percentage of daycase inguinal hernia surgery



(* International Association for Ambulatory Surgery (IAAS) (2005))



Standards?

EHS-Guidelines for treatment of inguinal hernia in adults



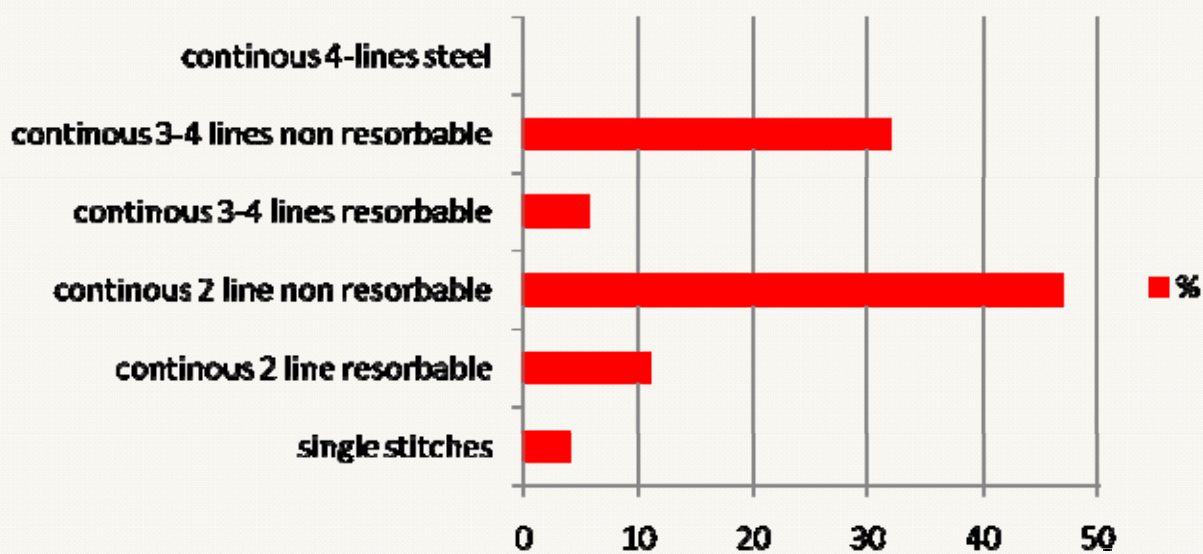
* Hernia 2009



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Standard meaning?

TED – voting for **SHOULDICE** repair



*Berlin Herniadays – January 2010, TED voting among 300 herniologists



Surgical training and education



in former times

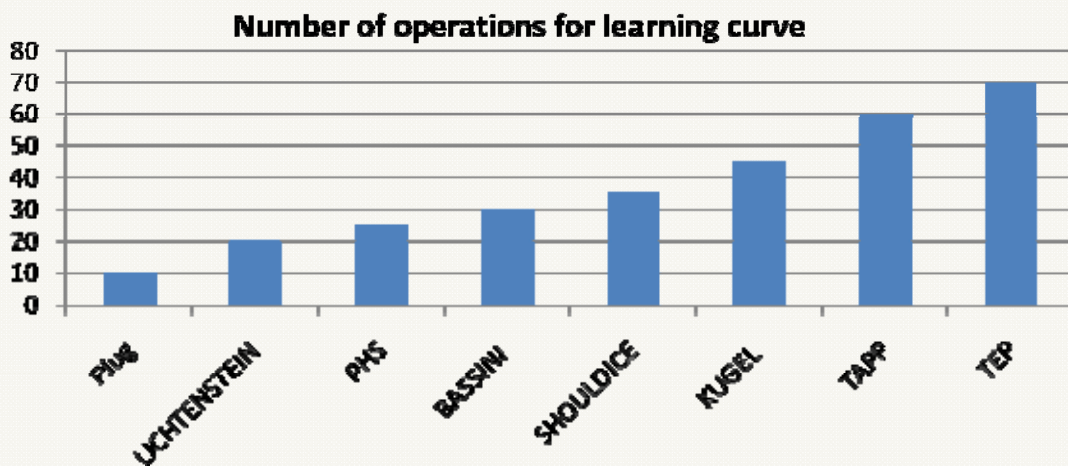


today?



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„surgeons satisfaction“, depending on learning curve



* Negro – Rom (2010) Hernia 14: 223-224



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„...you can't see quality at the first view!“



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*„For no other operation in general
surgery are the results so
dependent
on the **skill and**
experience of the surgeon.“*

***George E. Wantz**





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German Hernia Database Registry



start: 01.12.2009

Director of studies : Prof. Dr. Köckerling
Berlin

Scientific board with 14 members from
Germany and **Austria**



- participation voluntary
- online Project
- all types of hernias (inguinal, incisional, umbilical, parastomal, hiatal)
- Follow-up (1, 5, 10 years)
- participation at no charge

english version is now available

www.herniamed.com



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Own results:

Quality institute for operative medicine
University of Magdeburg

- Multicenter Study
- Online Project
- duration 1 year
- 1000 patients in 15 german hernia centers
- use of 3- D- Meshes
- follow up after 4, 12 and 52 weeks
- Carolina Comfort Scale after 4, 12 and 52 weeks
- **criteria: pain and recurrence**



QUALITÄTSSICHERUNG
LEISTENHERNIE

PATIENTENANSICHT Angemeldet als: Max Study
Zentrum Berlin

LEISTENHERNIE

Patientenübersicht
Neuer Patient
Operateure
Informationen

ADMINISTRATION

Studie
Nutzer
Zentren

ÜBERSICHT

Status
Aktivität

ADMIN ZENTRUM

Übersicht

ABOUT

Einstellungen
Ansprechpartner
Lesezeichen erstellen

ABMELDEN

ClinWise®
Qualitätssicherung Leistenhernie v0.9

ÜBERSICHT PATIENT

PATIENT

Name: **Mustermann, Max** PATIENT NEU ANLEGEN PATIENT LÖSCHEN
Status: **Patient lehnt** Nachverfolgung auf Befragung wird durchgeführt. BELEG.: 27.05.1969

FLOW Patientenbrief: -- Bitte auswählen -- LADEN

letter-2.pdf (Seite 2 von 2)

Patientenbrief

Waren Sie zufrieden?	<input type="checkbox"/> Ja	<input type="checkbox"/> Nein
Mussten Sie sich wegen Ihrer Leistenprobleme in erneute ärztliche Behandlung begeben?	<input type="checkbox"/> Ja	<input type="checkbox"/> Nein
Nach wieviel Wochen waren Sie vollständig / normal belastbar (Freizeit / tägliche Arbeiten)?	[] Woche(n)	<input type="checkbox"/> Noch nicht belastbar
Haben Sie ein Fremdkörpergefühl / Schmerz?	<input type="checkbox"/> Ja	<input type="checkbox"/> Nein

1. Beim Liegen verspüren Sie

a.) eine Wahrnehmung des Netzimplantats?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> n.z.
b.) Schmerzen?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> n.z.

2. Beim Bücken verspüren Sie

a.) eine Wahrnehmung des Netzimplantats?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> n.z.
b.) Schmerzen?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> n.z.
c.) Bewegungseinschränkungen?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> n.z.

3. Beim Sitzen verspüren Sie

a.) eine Wahrnehmung des Netzimplantats?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> n.z.
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letter-2.pdf

5497-00:



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Own results:

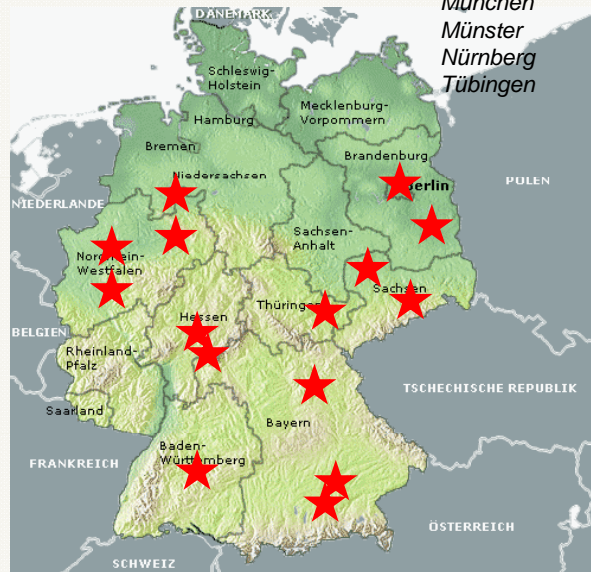
start: 1.10.2009

27.05.2010

- 925 patients
- men 823 Ø53 years
- woman 101 Ø56 years

15 hernia centers

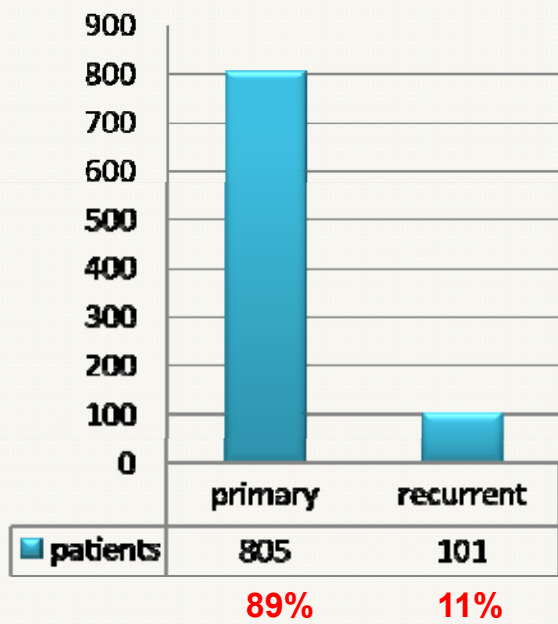
Arnsberg
 Berlin
 Cottbus
 Dortmund
 Jena
 Kelkheim
 Krefeld
 Lampertheim
 Leipzig
 Meißen
 München
 Münster
 Nürnberg
 Tübingen



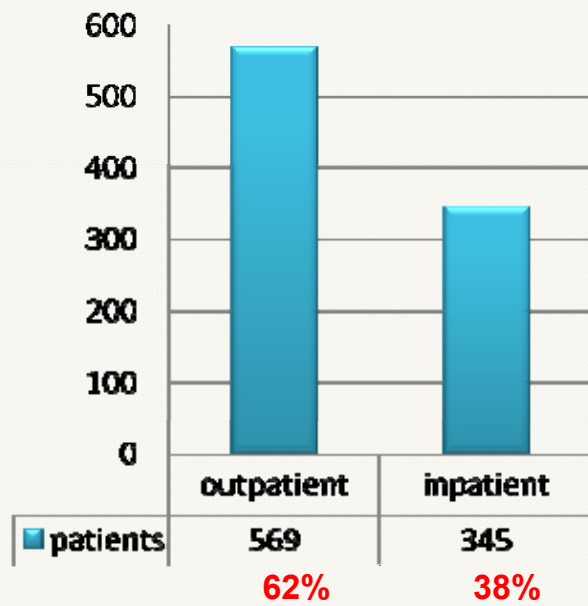


3CHIRURGEN

primary /recurrent Hernia



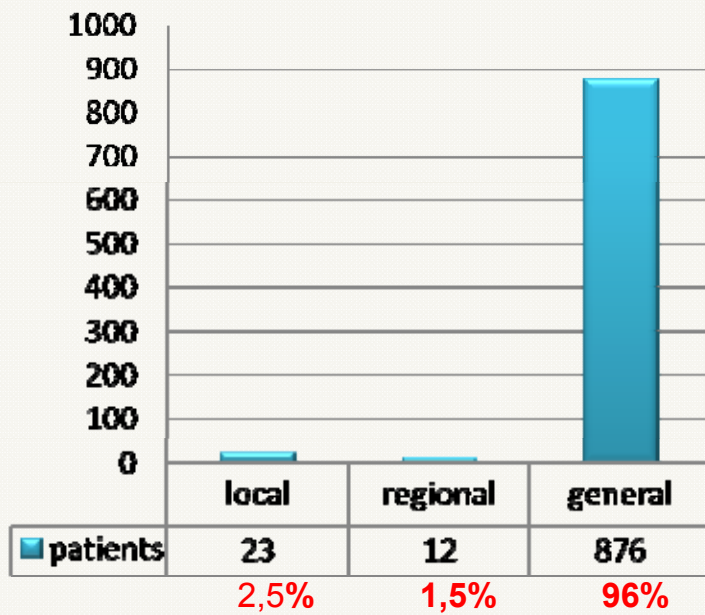
outpatient/inpatient





3CHIRURGEN

anesthesia



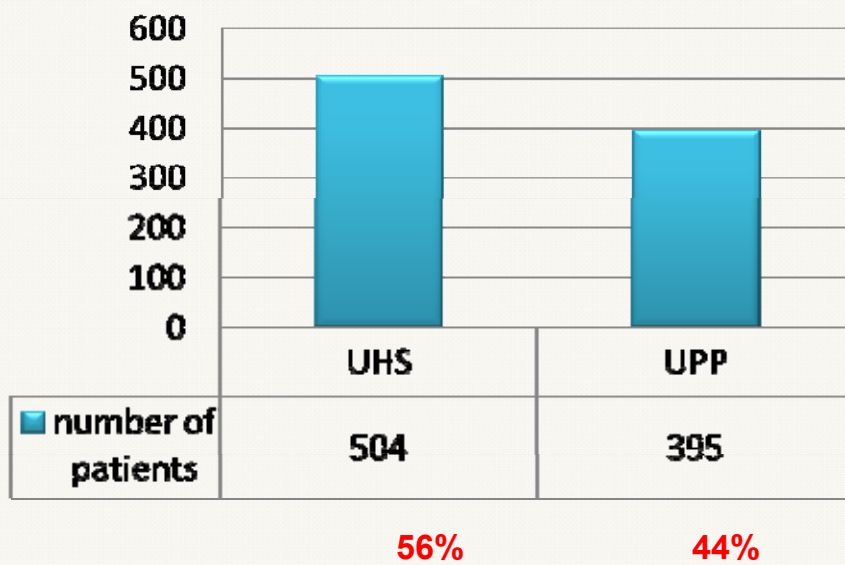
OI-duration

Ø 39 min





Which mesh is used?





First results: follow up after 4 weeks/3 months

- Disturbance of sensitivity n=99(9,9%)
- testicular pain n=19 (2,3%)
- inguinal pain n=43 (4,6%)
- seroma n=32 (3,5%)
- infection n=2 (0,2%)
- Recurrence n=6 (0.6%)



conclusion

- tailored principle is better than gold standard
- open mesh techniques have widespread possibilities to adapt on **every** hernia
- open mesh techniques with new devices combines a simple and save access with low complications, high patient comfort and low costs



3CHIRURGEN

„...tailor your standard“

and

„... standard your tailored concept!“



masterpiece?

Ideal mesh?



Networking!

RMK-Markel