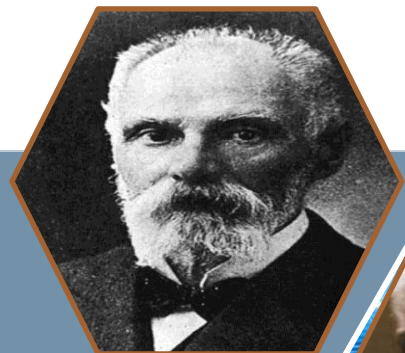


Hernia y Fertilidad



Dr. Eduardo Molina Fernández
Especialista Cirugía Gral.

Hospital Universitario Clínico Quirúrgico
«Manuel Fajardo»

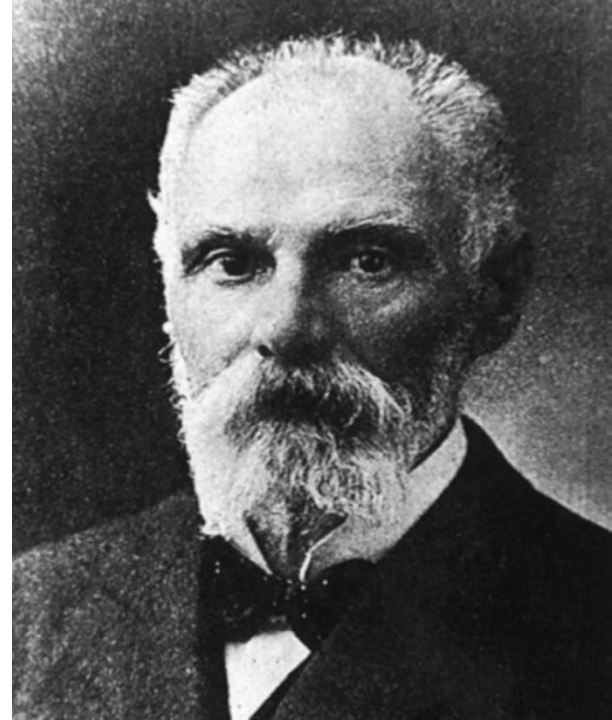
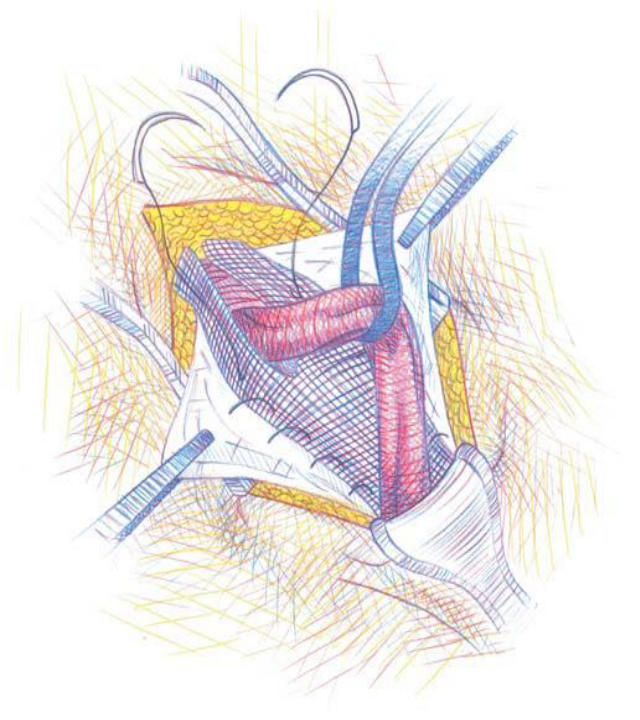
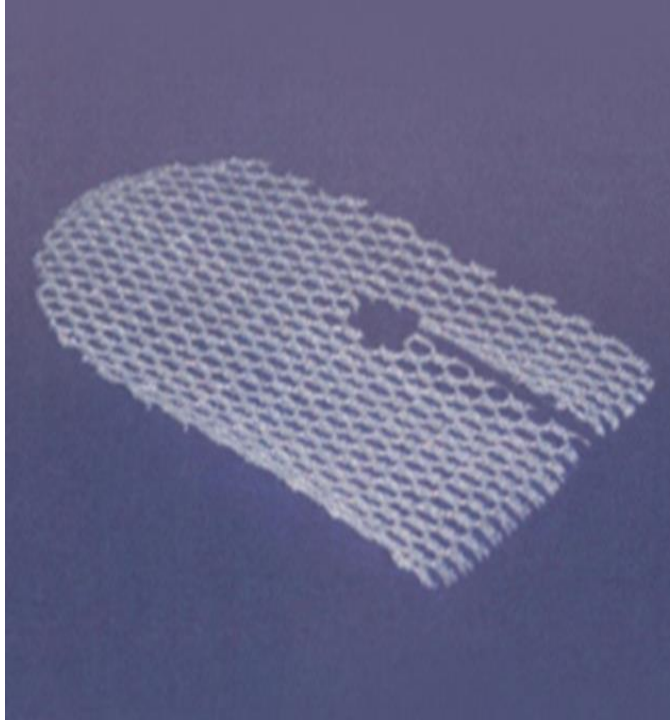


Madrid, 2018



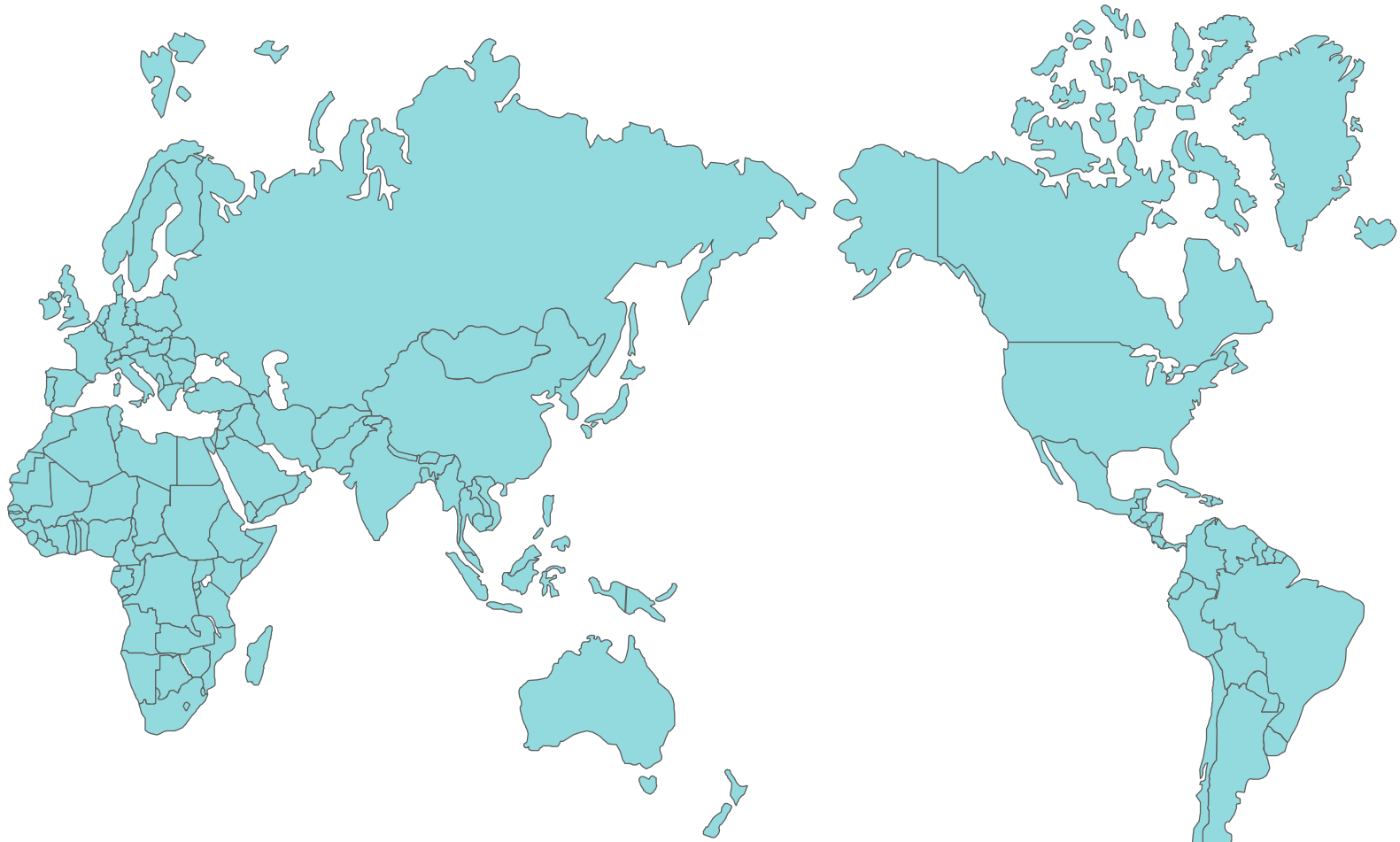
II Congreso
Sociedad Hispanoamericana de Hernia







Insidencia - Prevalencia



2 0 000 000 HERNIOPLASTIAS/ año

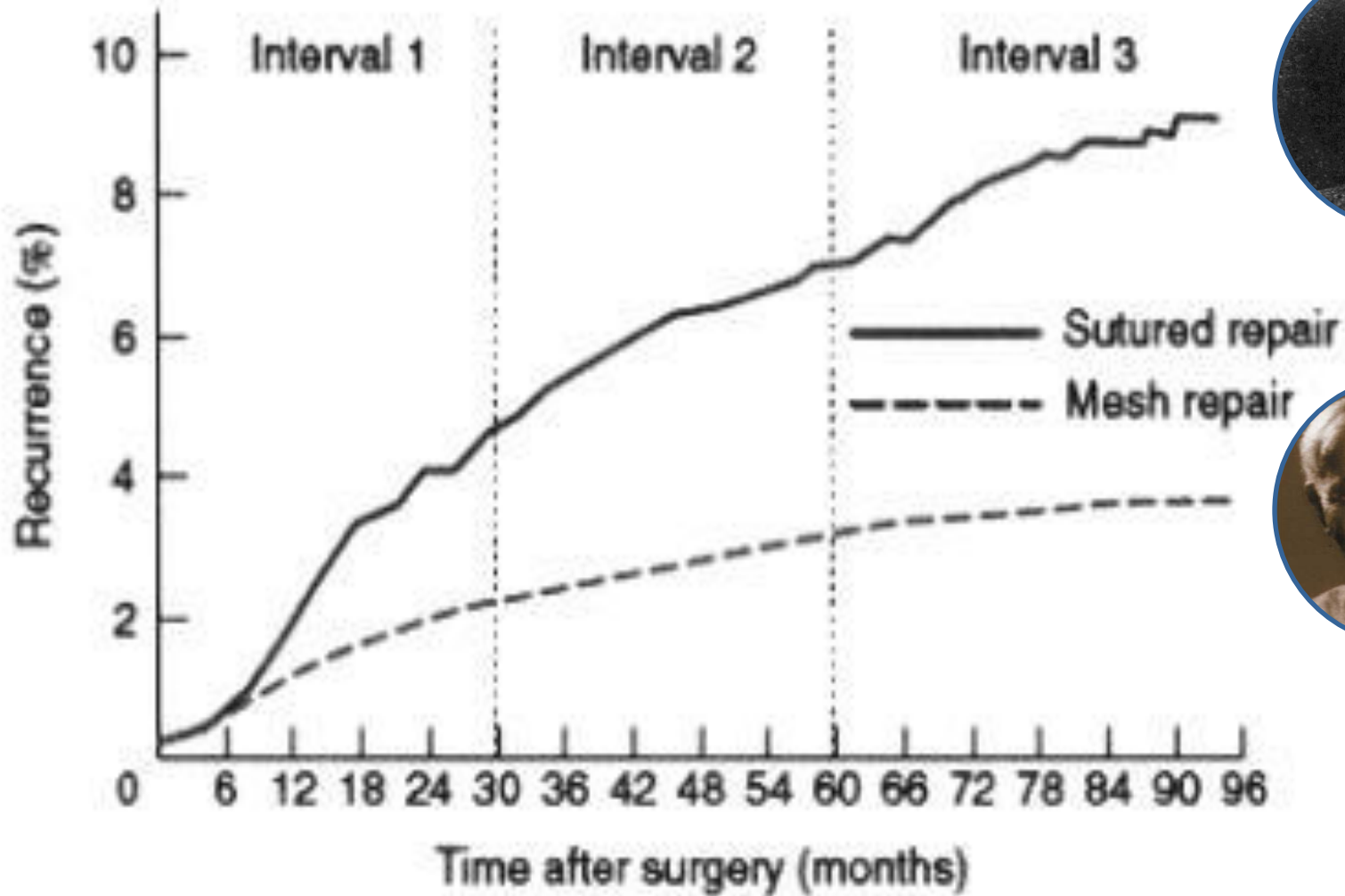


Calidad de las técnicas quirúrgicas según recurrencia.

Técnica	Recurrencia expertos	Recurrencia inexpertos
Lichtenstein	0,1% a 4 años	5-8% a 7 años
Shouldice	1,5% a 35 años	15% a 15 años
McVay	2% a 9 años	7% a 3 años
Bassini	2% a 1 año	85% a 6 años
TAPP	1,2-8% a 3 años	10% a 7 años



Recurencia. Malla v/s Tisular





Hernioplastia en Europa. 2009

Country	Year	Types of inguinal hernia repair			
		Conventional (%)	Open mesh (%)	Endoscopic (%)	Other (%)
Netherlands	2006	4	77	19	
Denmark	2006	2.5	82.5	15	
Finland	2006	7	81	8	3
France	2006	14.9	46	34	4.6
Poland	2006	38	60	1	
Austria	2006	76		24	
Hungary	2007	60	34	6	
Sweden	2006	8.5	82	9	

Provided by the Working Group





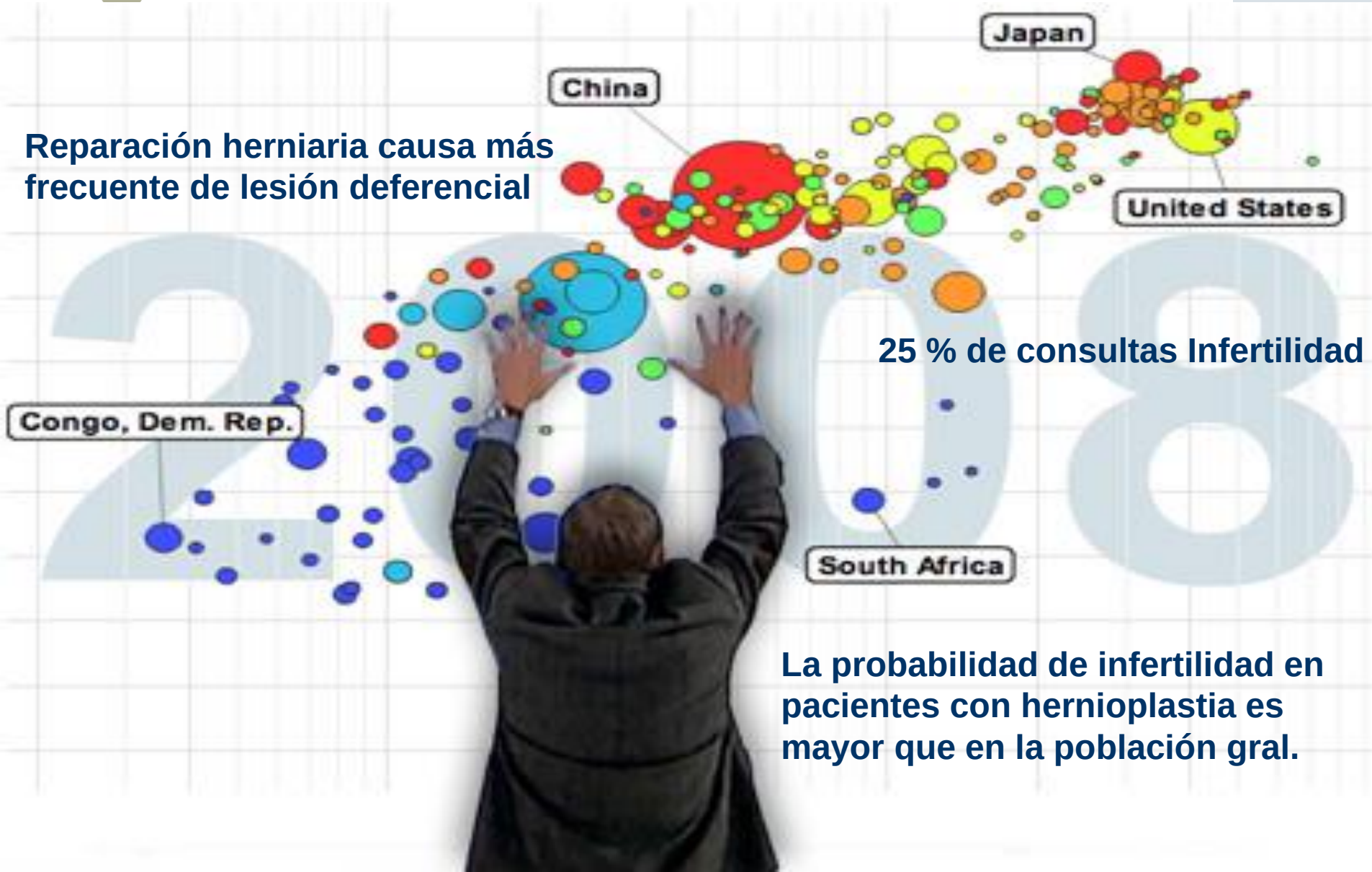
Reportes complicaciones





Infertilidad Masculina

Reparación herniaria causa más frecuente de lesión deferencial





Hernia (2009) 13:343–403
DOI 10.1007/s10029-009-0529-7

EDITORIAL

European Hernia Society guidelines on the treatment of inguinal hernia in adult patients

M. P. Simons · T. Aufenacker · M. Bay-Nielsen · J. L. Bouillot ·
G. Campanelli · J. Conze · D. de Lange · R. Fortelny · T. Heikkinen ·
A. Kingsnorth · J. Kukleta · S. Morales-Conde · P. Nordin · V. Schumpelick ·
S. Smedberg · M. Smietanski · G. Weber · M. Miserez



Questions for the future

These guidelines provide an answer to many of the questions concerning the treatment of inguinal hernia. However, a large number of questions remain unanswered. A number of these questions can only be answered if clinical studies are performed:

- What are the late complications of mesh implantations?
- What is the best mesh?
- Does mesh cause infertility?

Posibles complicaciones

En raras ocasiones, la reparación de una hernia inguinal puede dañar las estructuras involucradas en el funcionamiento de los testículos de un hombre.

Referencias

Turnage RH, Richardson KA, Li BD, McDonald JC. Abdominal wall, umbilicus, peritoneum, mesenteries, omentum, and retroperitoneum. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL, eds. *Sabiston Textbook of Surgery*. 18th ed. Philadelphia, Pa: Saunders Elsevier;2008:chap 43.

Actualizado: 11/21/2011



HERNIOPLASTIA- FERTILIDAD

PRIMEROS

REPORTES



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[Testicular atrophy. A risk of inguinal hernioplasty.....]

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Chirurgie. 1991;117(8):645-51; discussion 651-2.

[Testicular atrophy. A risk of inguinal hernioplasty].

[Article in French]

Wantz GE.

Department of Surgery, New York Hospital, Cornell Medical Center, New York 10021.

Abstract

Testicular atrophy is a complication of inguinal hernioplasty that angers men of all ages. It is caused by thrombosis of the spermatic cord. Experience with over 6,500 inguinal hernioplasties in men indicates that the thrombosis is induced by direct surgical trauma to the cord. Trauma to the cord can be minimized and the incidence of testicular atrophy can be reduced by 1) not dissecting beyond the pubic tubercle, by 2) leaving distal indirect hernia sacs attached to the cord or by 3) avoiding dissection of the spermatic cord altogether by employing a posterior properitoneal approach.

Ann Surg. 2005 April; 241(4): 553–558.
doi: [10.1097/01.sla.0000157318.13975.2a](https://doi.org/10.1097/01.sla.0000157318.13975.2a).

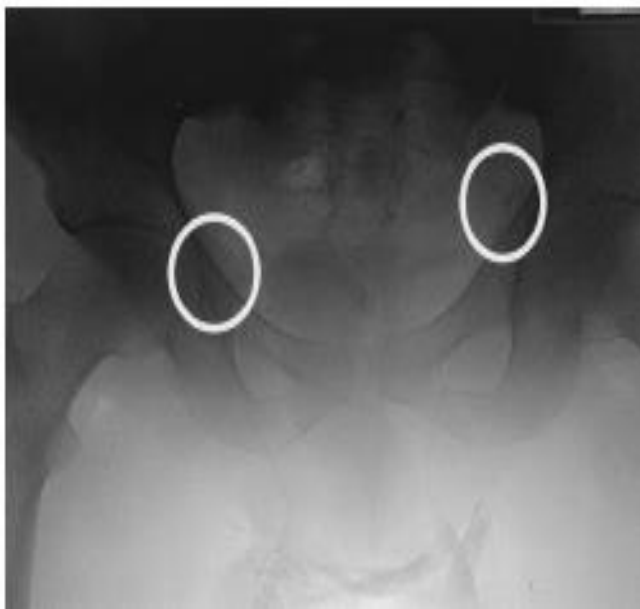
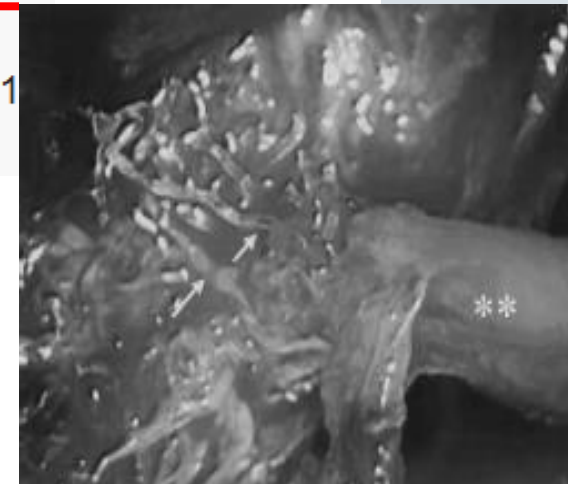
PMCID: PMC1357057

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Herniorrhaphy With Polypropylene Mesh Causing Inguinal Vasal Obstruction A Preventable Cause of Obstructive Azoospermia

David Shin, MD,* Larry I. Lipshultz, MD,* Marc Goldstein, MD,† Gregory A.

Eight institutions in the United States reported a total of 14 cases of azoospermia secondary to inguinal vasal obstruction related to previous polypropylene mesh herniorrhaphy. Patient characteristics and operative findings were forwarded to 1 center for tabulation of data.



Conclusion:

Reconstruction to restore fertility can be difficult secondary to fibrotic reaction. Before undergoing polypropylene mesh herniorrhaphy, men, especially of your reproductive age or with a solitary testicle, need to be carefully advised of potential obstruction and compromise to future fertility.

Rapidly progressing, late-onset obstructive azoospermia linked to herniorrhaphy with mesh

tively). Semen analyses for 4 months since the first visit revealed a clear, rapid reduction of sperm concentration from $59 \times 10^6/\text{mL}$ to $21 \times 10^6/\text{mL}$, $13 \times 10^6/\text{mL}$, $12 \times 10^6/\text{mL}$, and finally to azoospermia within 5 months. Treatment with

Objective: To report a case of a man presenting with rapidly progressing inguinal vasal obstruction 5 years after bilateral herniorrhaphy with polypropylene mesh.

Design: Case report with a review of the scientific literature.

Setting: Male infertility clinic, Kobe University Hospital (Kobe, Japan).

Patient(s): A 30-year-old patient who had undergone bilateral inguinal herniorrhaphy using polypropylene mesh 5 years previously.

Intervention(s): The patient underwent bilateral vasography and left testicular sperm extraction (TESE).

Main Outcome Measure(s): Long-term effects of the adult inguinal herniorrhaphy with polypropylene mesh.

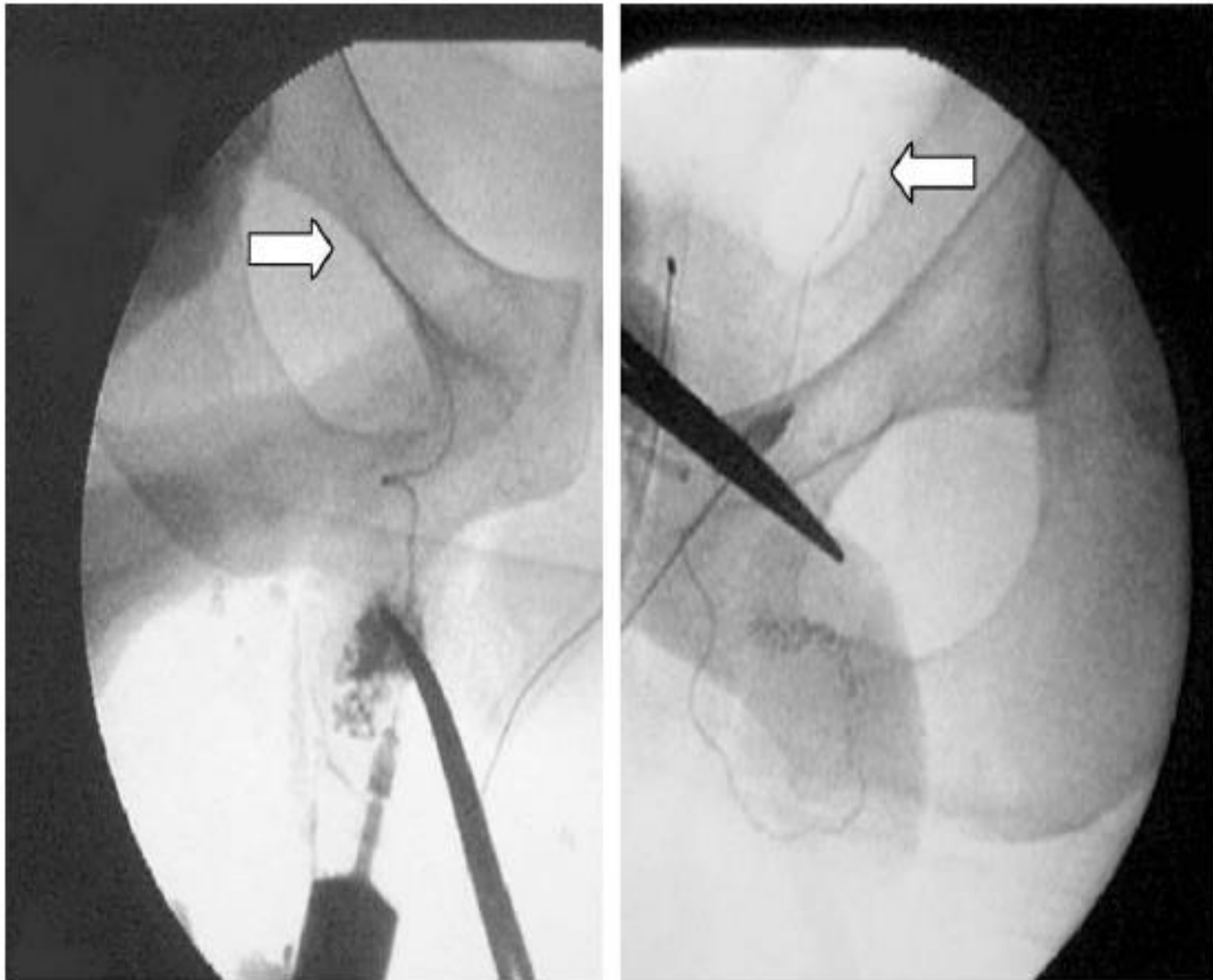
Result(s): Rapid progression of vas deferens obstruction occurred within several months. We performed left TESE for intracytoplasmic sperm injection (ICSI) and retrieved many motile sperm.

Conclusion(s): Before azoospermia, men who undergo inguinal herniorrhaphy using polypropylene mesh need to rapidly cryopreserve their sperm for future fertility; TESE-ICSI is also a selectable treatment. (Fertil Steril® 2008;90:2018.e5–e7. ©2008 by American Society for Reproductive Medicine.)

Key Words: Obstructive azoospermia, herniorrhaphy, polypropylene mesh

FIGURE 1

Vasography shows bilateral obstruction in the inguinal lesion at the site of polypropylene mesh placement.





Reportes en modelos animales



[Article in Russian]

Protasov AV, Krivtsov GA, Mikhaleva LM, Tabuika AV, Shukhtin NI.

Abstract

In vivo experiment involved 95 white breedless male rats of pubertal age. The animals were divided in three groups: 1st group had unilateral hernioplasty with mesh implant; 2nd group had bilateral mesh implantation and 3rd group had animals with hernioplasty with lavsan thread. The results were assessed with the use of morphological method, the state of reproductive organs - with the use of biological method and compared with the control (intact) group. Stable progressive increase of thickness of epithelium and spermatic duct wall during the whole observation time was registered after hernioplasty with mesh implantation. In the group after hernioplasty with lavsan thread the above mentioned changes returned to normal values by the end of the first month after the operation. Disorders of the reproductive system in animals after bilateral mesh implantation turned out to be essential and resulted in sterility within the whole time of the observation. Mildly decreased or average fertility was observed among animals after unilateral mesh implantation and hernioplasty. Notably, that after hernioplasty with lavsan thread, fertility was sufficient. The study demonstrated the negative influence of mesh implant on spermatic duct structure, which may cause infertility.

ORIGINAL ARTICLE

Christian Peiper · Karsten Junge · Uwe Klinge
Eva Strehlau · A. Öttinger · Volker Schumpelick

Is there a risk of infertility after inguinal mesh repair? Experimental studies in the pig and the rabbit

inflammatory tissue remodeling. This effect has been investigated using standardized animal models (pig and rabbit). Fifteen adult male pigs underwent transinguinal preperitoneal implantation of a polypropylene mesh. The contralateral side with a Shouldice repair served as control. After 7, 14, 21, 28, and 35 days, three animals were sacrificed. The spermatic cords were resected and analyzed histologically. In a second experiment Lich-

The implantation of a polypropylene mesh in the inguinal region induces major response of the structures of the spermatic cord. This may have an influence also on spermatogenesis.

Histopathological alterations of the vas deferens in rats exposed to polypropylene mesh

Luiz Carlos Maciel, Sidney Glina*, Paulo C.R. Palma*, Nascimento F.C. Costa and Nelson R. Netto Jr*

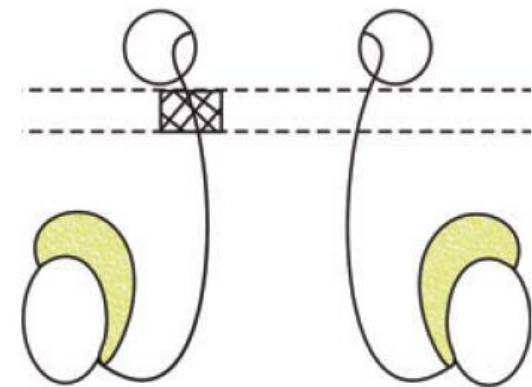
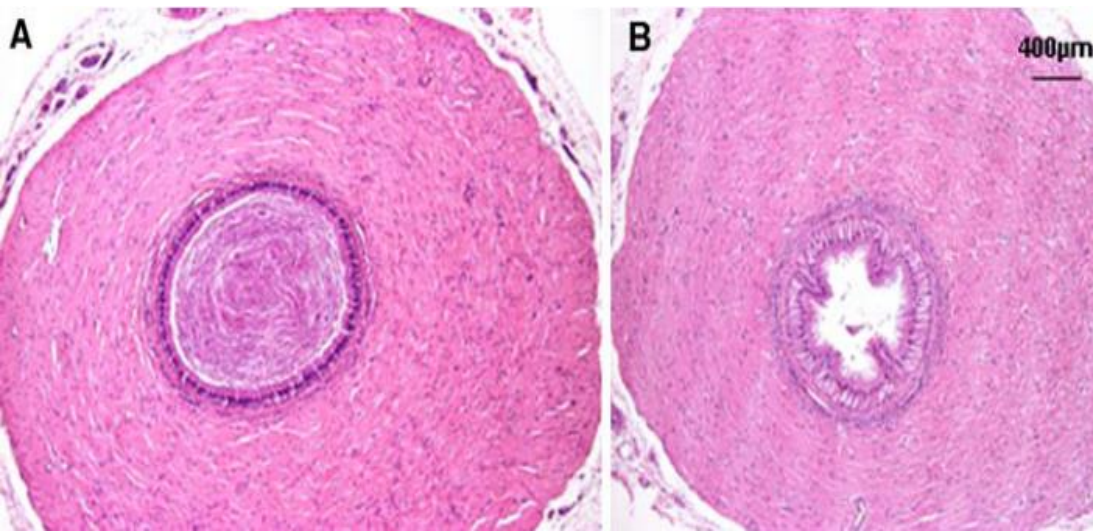
*Departments of Urology, University of Taubaté, Taubaté, and *University of Campinas, Campinas, São Paulo, Brazil*

OBJECTIVE

To assess the histological and physiological effects of polypropylene mesh for inguinal herniorrhaphy, as it can cause lesions in the vas deferens in 0.3–2.0%, leading to infertility, and induces an inflammatory process and adjacent fibrosis, strengthening the posterior inguinal wall.

MATERIALS AND METHODS

In all, 40 male albino rats (3 months old) had bilateral vas deferens dissection followed by mesh implantation on one side; the contralateral side was used as the control. The rats were killed 90 (group 1) and 120 (group 2) days later, and the vas deferens, epididymides and testicles assessed histopathologically.



CONCLUSION

Polypropylene mesh induces a foreign-body reaction, with histological changes in the vas deferens that cause functional obstruction, with dilatation and spermatozoid repression.

Materials In 12 minipigs a bilateral inguinal hernia repair, either open or laparoscopic, was performed using a standard small-pore polypropylene (PP) or large-pore polyvinyliden fluoride (PVDF) mesh. Next to measurement

Damage to the spermatic cord by the Lichtenstein and TAPP procedures in a pig model

Karsten Junge · Marcel Binnebösel · Caroline Kauffmann ·
Raphael Rosch · Christian Klink · Klaus von Trotha ·
Felix Schoth · Volker Schumpelick · Uwe Klinge



all groups compared to preoperative measurements. Only the Lichtenstein PP group showed significantly decreased values in testicular function. Quantity and quality of obstructions seen at vasography were most detectable in the Lichtenstein PP group. There was significantly decreased granuloma formation following PVDF mesh implantation compared to the PP mesh group regardless of the technique used.

Conclusions Both the technique and the mesh material have an impact on integrity of spermatic cord and testicular function. According to the results of this study, the lapa-

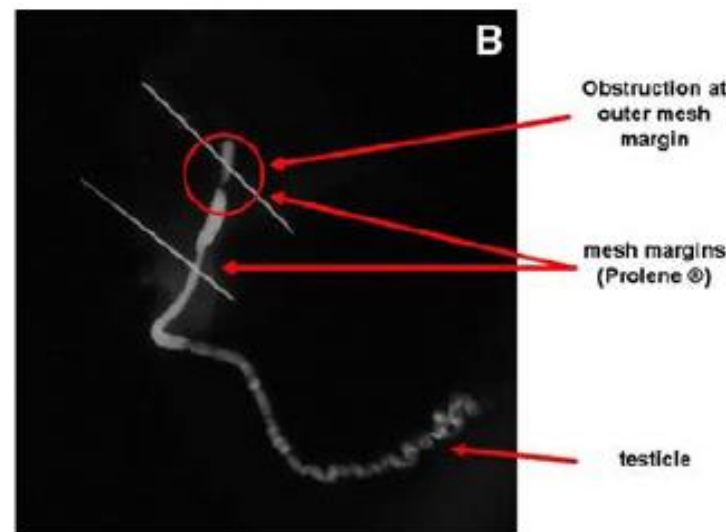
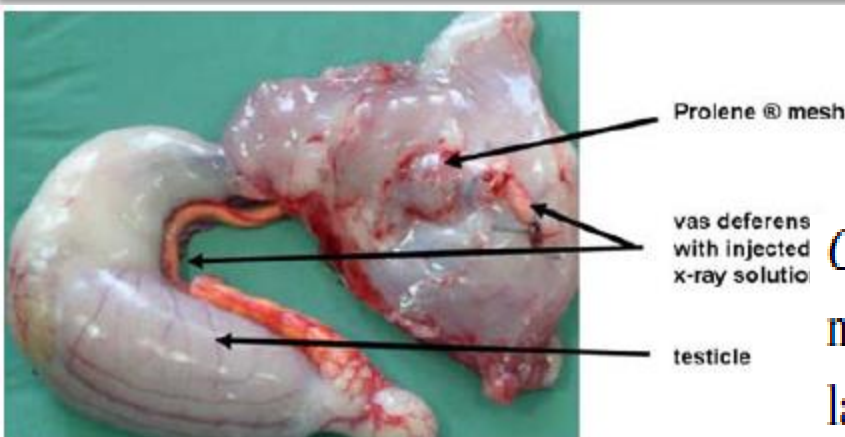
Influence of mesh materials on the integrity of the vas deferens following Lichtenstein hernioplasty: an experimental model

ORIGINAL ARTICLE

K. Junge · M. Binnebösel · R. Rosch · A. Öttinger ·
M. Stumpf · G. Mühlenbruch · V. Schumpelick ·
U. Klinge

Materials and methods Twenty male Chinchilla rabbits were used. The spermatic cord was dissected free and a Lichtenstein repair was performed with a low-weight polypropylene mesh (UltraPro®) and a heavy-weight polypropylene mesh (Prolene®) on the contralateral side. A vasography was performed after six months in order to

Results Vasography revealed relevant obstructions (>75% of lumen diameter) located at the mesh margins (50% of Prolene® and 22.2% of UltraPro® mesh samples). Microscopic investigation of the mesh–host tissue interface showed typical formation of foreign body granulomas. The



Conclusions If a mesh material is needed for inguinal hernia repair in young patients, the use of modern low-weight large porous and elastic samples appears to have a beneficial effect on integrity of the vas deferens.

Does Mesh Implantation Affect the Spermatic Cord Structures after Inguinal Hernia Surgery?

An Experimental Study in Rats

F.H. Berndsen^a L.-M. Bjurste^b **European Surgical Research**

Original Paper

Eur Surg Res 2004;36:318–322
DOI: 10.1159/000079918

^aDepartment of Surgery, Akraness Hospital, Akranes, Iceland; Departments of ^bExperimental Research, ^cPathology, and ^dSurgery, Malmö University Hospital, Malmö, Sweden

the spermatic cord structures. **Methods:** Thirty rats were divided into three groups. The spermatic cord was dissected free and a conventional suture repair was performed in group I, an operation mimicking the Lichtenstein operation with a heavyweight polypropylene mesh in group II and the same operation using large pore, lightweighted polypropylene/polyglactin composite mesh in group III. A vasography was performed after 90 days. The cross-sectional area of the vas deferens and s-testosterone from the spermatic vein were measured using the contralateral side as control. Light microscopy of the inguinal canal was performed and inflammation and fibrosis were graded. **Results:** Vasography revealed

in specimens in group III after 90 days. **Conclusion:** In conclusion, the only effect on the spermatic cord structures in a rat model is seen as an impaired s-testosterone production and a reduced cross-sectional area of the vas deferens after use of a low-weight composite mesh compared to the control side. No difference in inflammation or fibrosis was found between heavyweight polypropylene mesh and low-weight composite mesh.



THE EFFECTS OF MESH BIOPROSTHESIS ON THE SPERMATIC CORD STRUCTURES: A PRELIMINARY REPORT IN A CANINE MODEL

ROBERT G. UZZO,
GARY E. LEMACK,
KEVIN P. MORRISSEY,
MARC GOLDSTEIN

Departments of Urology and Surgery, The New
York Hospital-Cornell Medical College, New York,
New York

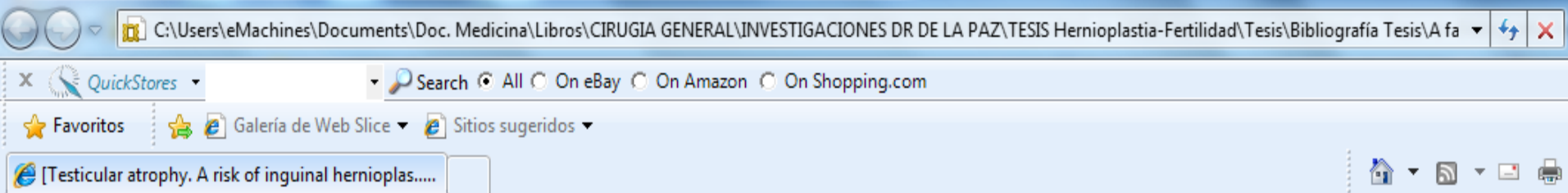
[The Journal of Urology](#)
[Volume 161, Issue 4, April](#)
[1999, Pages 1344–1349](#)

Materials and Methods

Unilateral inguinal hernia defects were created in 12 male beagle dogs. Half were repaired using Marlex [TM] mesh and half using a classic Shouldice technique. The inguinal anatomy was then re-examined at 6 and 12 months. Testicular temperature and volume, peripheral and testicular vein testosterone levels, testicular blood flow, vasography, testicular and cord histology, and sperm.

Conclusions

Half of the testicles had gross abnormalities after mesh repair versus none in the control and Shouldice dogs. Although all vasograms were patent, vasal luminal size was significantly decreased with a marked soft tissue foreign body reaction identified after mesh repair. A traumatic neuroma was identified suggesting nerve entrapment in the fibrotic mesh reaction. Marlex [TM] mesh may adversely affect spermatic cord structure and function and further work is required to fully elucidate its effects.



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Hernia, infertility

Search

Clear

Ann Ital Chir. 2009 Jul-Aug;80(4):305-9.

Modified Lichtenshtein hernioplasty prevents male infertility.

Kiladze M, Gvenetadze T, Giorgobiani G.

Department of Surgery at Gudushauri National Medical Center, Georgia.

Abstract

INTRODUCTION: Lichtenstein hernia repair made revolutionary progress in hernia treatment. Since that a lot of modifications have been proposed. In a few of them attention is drawn to spermatic cord isolation from a mesh for prevention of spermatic cord involvement into inflammatory process which may lead to disturbances in ejaculation act and spermatogenesis itself

AIM OF THE STUDY: To compare morphological parameters of sperm prior and after hernia surgery in those groups of patients who underwent Lichtenstein and modified Lichtenstein (with spermatic cord isolation from a mesh by Gvenetadze) hernia repairs.

CONCLUSION: Our experience showed that modified Lichtenstein hernioplasty which involves spermatic cord complete isolation from the mesh prevents male infertility especially in the case of bilateral hernia repair.



Análisis de tendencia

Técnicas de protección

Reportes de casos

**Hernioplastia
Fertilidad**

Modelos Animales





Hernioplastia y Fecundidad. Impacto

1

No se estudia el verdadero impacto.

2

Mayoria de los pacientes sin afectación clínica

3

Mayoria de pacientes sin interes en la fecundidad

4





Conclusiones

1

Estudios de casos y pequeñas series.

2

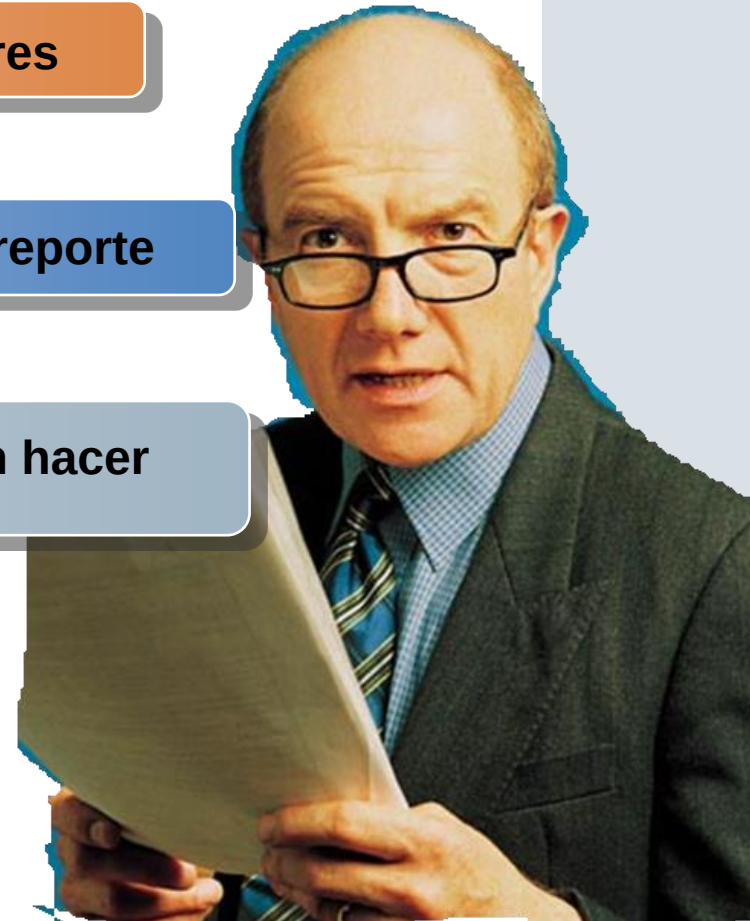
Evaluación aislada de diferentes factores

3

En la literatura nacional no existe ningún reporte

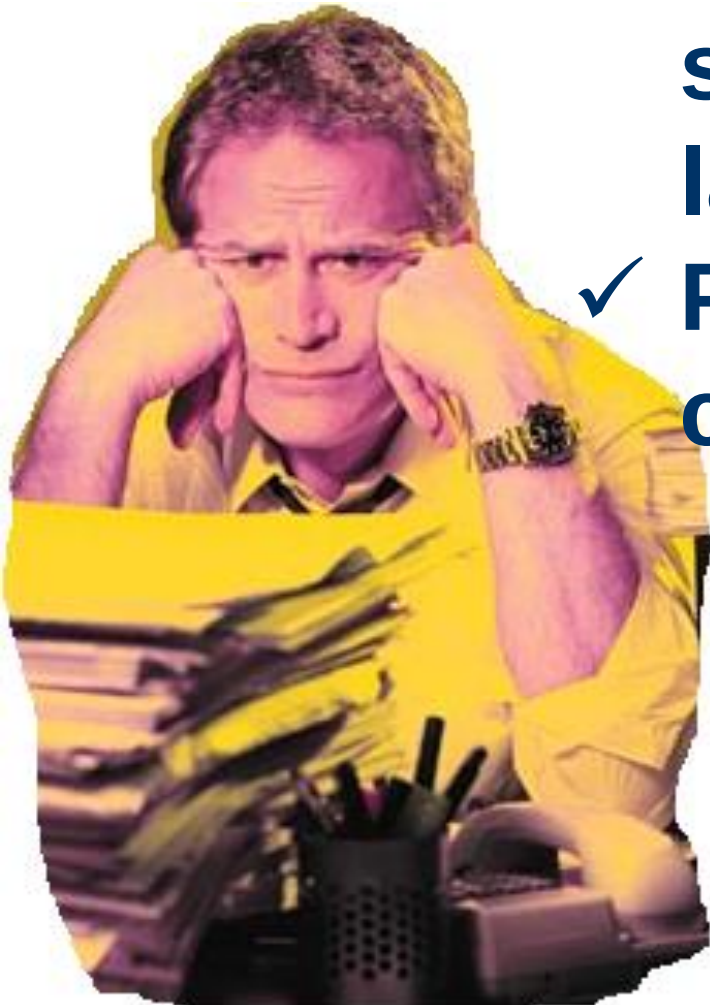
4

Las bajas tasas de recidiva nos deben hacer trabajar en las complicaciones





- ✓ **Existe un relación directa?**
- ✓ **Infertilidad: Fenómeno subclínico y/ o trastorno latente?**
- ✓ **Protección del cordón como punto clave?**

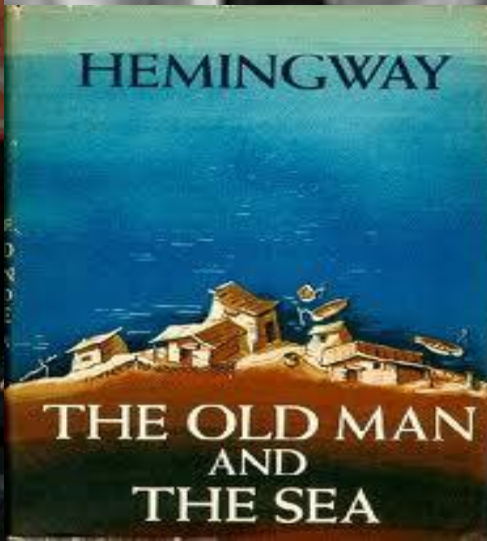


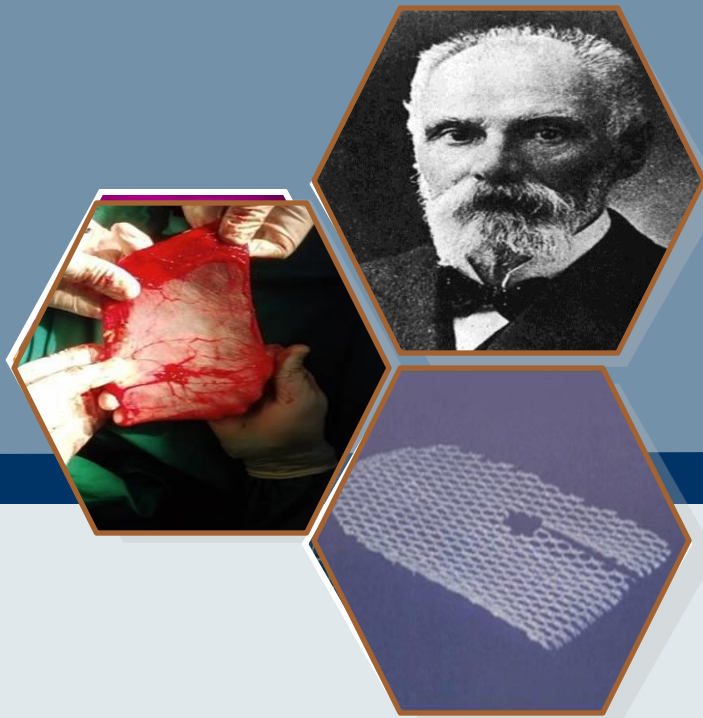


TÉCNICA DE PROTECCIÓN DEL CORDÓN









Muchas gracias

