Presión intraabdominal en cirugía laparoscópica
¿ A quién le importa?

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GRUPO DE INVESTIGACIÓN MEDICINA PERIOPERATORIA
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Recomendación

E.A.E.S. guidelines

Surg Endosc (2002) 16: 1121–1143
DOI: 10.1007/s00464-001-9166-7

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SURGICAL ENDOSCOPY
and Other Interventional Techniques

The European Association for Endoscopic Surgery clinical practice guideline on the pneumoperitoneum for laparoscopic surgery

J. Neudecker,[1,2,3] S. Sauerland,[1,3] E. Neugebauer,[1,3] R. Bergamaschi,[4] H. J. [illegible]
Ch. Jacobi,[1] F. W. Jansen,[8] A.-M. Koivusalo,[9] A. Lacy,[10] M. J. McMahon,[11]

cosmetic result and postoperative pain marginally. It is recommended to use the lowest intraabdominal pressure allowing adequate exposure of the operative field, rather than using a routine pressure. In patients with limited cardiac, pulmonary, or renal function, abdominal wall lifting combined with low-pressure pneumoperitoneum might be an alternative. Abdominal wall lifting devices have no clinically relevant advantages compared to low-pressure (5–7 mmHg) pneumoperitoneum. In patients

Impacto PIA

ORIGINAL ARTICLE

Experimental intra-abdominal hypertension influences airway pressure limits for lung protective mechanical ventilation

Maddison et al. Annals of Intensive Care 2012, 2(Suppl 1):S14
http://www.annalsofintensivecare.com/content/2/S1/S14

Annals of Intensive Care
a SpringerOpen Journal

RESEARCH

Moderate intra-abdominal hypertension is associated with an increased lactate-pyruva ratio in the rectus abdominis muscle tissue: pilot study during laparoscopic surgery

Liivi Maddison[1,2*], Juri Karjagin[1,2], Jyrki Tenhunen[3], Joel Starkopf[1,2]

Relationship between intra-abdomina and indocyanine green plasma disap rate: hepatic perfusion may be impai critically ill patients with intra-abdom hypertension

Manu LNG Malbrain[1*], Dries Viaene[1], Andreas Kortgen[2], Inneke De laet[1], Hilde Dits[1], Niels Van Regenmortel[1], Karen Schoonheydt[1], Michael Bauer[2]

Anesthesiology 2004; 100:1081–7

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Moderate Increase in Intraabdominal Pressure Attenuates Gastric Mucosal Oxygen Saturation in Patients Undergoing Laparoscopy

Lothar A. Schwarte, M.D.,* Thomas W. L. Sche
Artur Fournell, M.D.†

Surg Endosc (2011) 25:1–9
DOI 10.1007/s00464-010-1139-2

Human Reproduction, Vol.26, No.5 pp. 1073–1081, 2011
Advanced Access publication on March 9, 2011 doi:10.1093/humrep/der055

human reproduction ORIGINAL ARTICLE Gynaecology

Impact of intraperitoneal pressure and duration of surgery on levels of tissue

REVIEWS

neal changes due to laparoscopic surgery

Brokelman · M. Lensvelt ·
Borel Rinkes · J. H. G. Klinkenbijl ·

neal Morphological Changes due eumoperitoneum: The Effect of abdominal Pressure

pparella[1] Fabiano Nino[1] Sandra Coppola[1] Carmine Noviello[2] Orlando Paciello[3]
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Address for correspondence Alfonso Papparella, MD, Department of Pediatric Surgery, Second University of Naples, Via S. Pansini 5 Ed.11, Naples 80131, Italy (e-mail: alfonso.papparella@unina2.it).

Systematic review

Systematic review of oxidative stress associated with pneumoperitoneum

T. Sammour, A. Mittal, B. P. T. Loveday, A. Kahokehr, A. R. J. Phillips, J. A. Windsor and A. G. Hill

Department of Surgery, Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand
Correspondence to: Dr T. Sammour, Department of Surgery, University of Auckland, South Auckland Clinical School, Private Bag 93311, Middlemore Hospital, Otahuhu, Auckland, New Zealand (e-mail: tsammour@middlemore.co.nz)

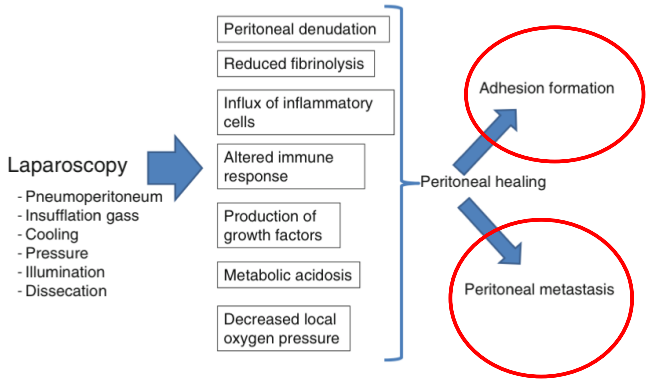
A mayor PIA mayor repercusión para el paciente

Cambios peritoneales por PIA

Surg Endosc (2011) 25:1–9
DOI 10.1007/s00464-010-1139-2

REVIEWS

Peritoneal changes due to laparoscopic surgery



Peritoneal Morphological Changes due to Pneumoperitoneum: The Effect of Intra-abdominal Pressure

Alfonso Papparella[1] Fabiano Nino[1] Sandra Coppola[1] Carmine Noviello[2] Orlando Paciello[3] Serenella Papparella[3]

[1] Department of Pediatric Surgery, Second University of Naples, Naples, Italy
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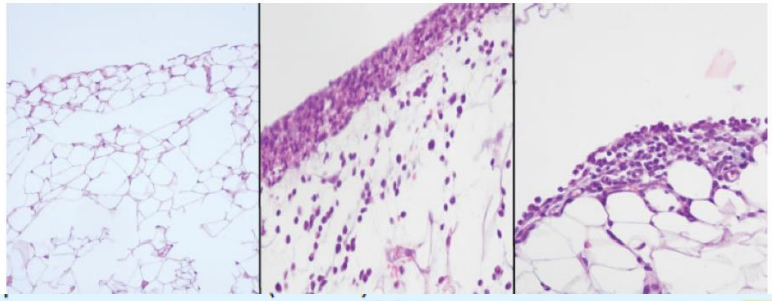


Conclusions Our data confirm that PN affects the peritoneal integrity. The grades of morphological peritoneal changes are related to the level of IAP. Low CO_2 pressure causes minor peritoneal changes with respect to high pressure and air insufflation.

Relación PIA y presiones vía aérea

ORIGINAL ARTICLE

Experimental intra-abdominal hypertension influences airway pressure limits for lung protective mechanical ventilation

Gustavo A. Cortes-Puentes, MD, Luis A. Cortes-Puentes, MD, Alexan
Christopher P. Anderson, MPH, John J. Marini, MD, *and* David J. Di

Animal Model

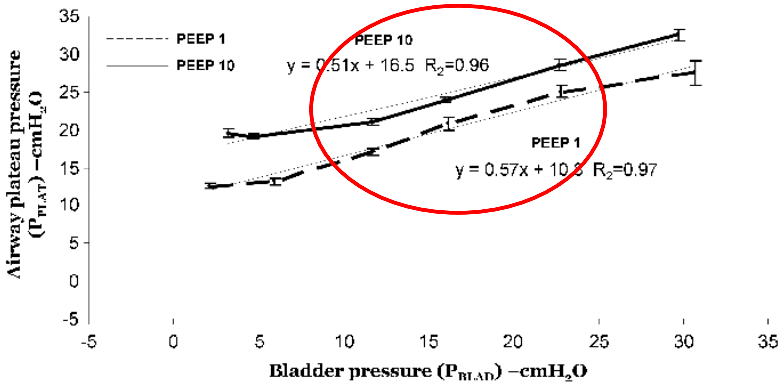
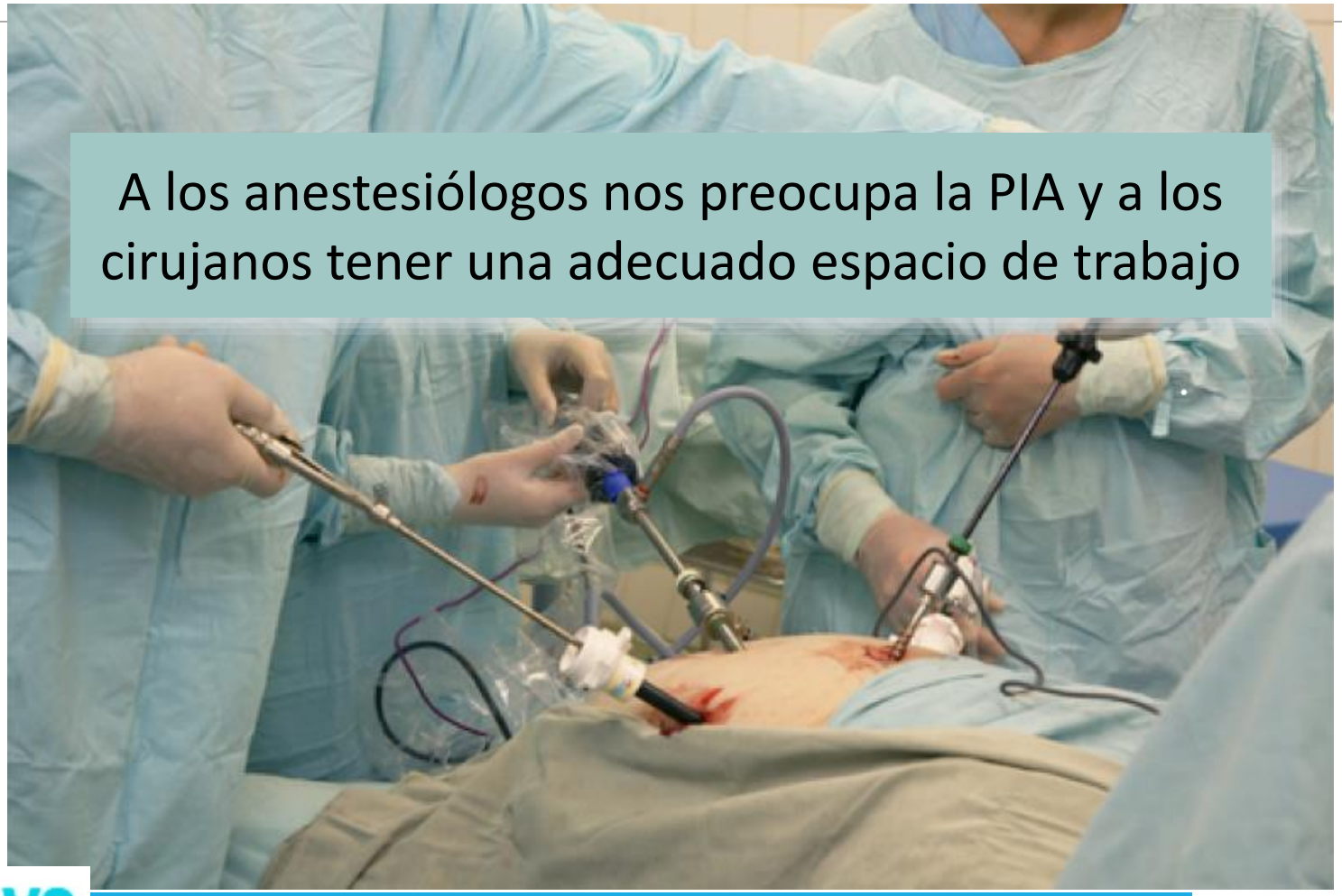


Figure 3. Relationship of airway plateau pressure to measured P_{BLAD}. Approximately 50% of measured P_{BLAD} (in centimeter of water) corresponds to changes in P_{PLAT} with tidal volume held constant at both PEEP1.

CIRUGÍA LAPAROSCÓPICA



A los anestesiólogos nos preocupa la PIA y a los cirujanos tener una adecuado espacio de trabajo

Espacio de trabajo ≠ Presión intraabdominal ⍰

British Journal of Anaesthesia 112 (3): 498–505 (2014)
Advance Access publication 15 November 2013 · doi:10.1093/bja/aet377

Evaluation of surgical conditions during laparoscopic su
in patients wit

C. H. Martini[1†], M. Boon[1]

REVIEW ARTICLE

Neuromuscular blockade for optimising surgical conditions during abdominal and gynaecological surgery:

Mejoran Condiciones quirúrgicas

REVIEW ARTICLE

ORIGINAL ARTICLE

review and meta-analysis

e Relaxants:

Deep neuromu
during laparos

A randomised controlled trial

Solo disminuyen PIA, 50-60% casos

Surgical Space Conditions During Low-Pressure
Laparoscopic C
Moderate Neur
Clinical Study

No vale todos a 8 mmHg !!

scle

Relaxation in Surgery"

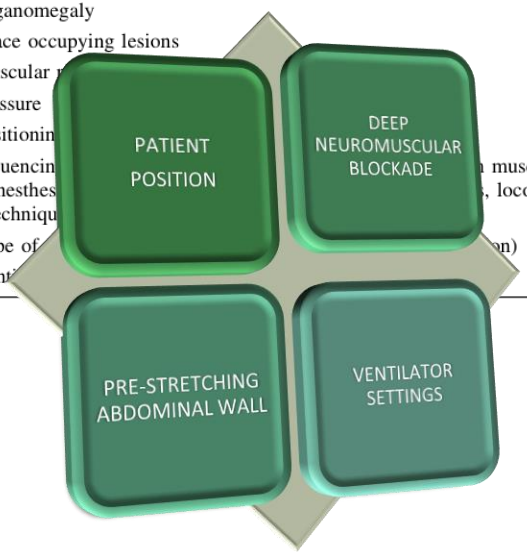
Anne K. Staehr-Rye, MD,* Lars S. Rasmussen, MD, PhD, DMSc,† Jacob Rosenberg, MD, DMSc,‡
Poul Juul, MD,§ Astrid L. Lindekaer, MD,‖ Claus Riber, MD,§ and Mona R. Gätke, MD, PhD*

François Donati, PhD, MD,* and Sorin J. Brull, MD, FCARCSI (Hon.)†

Espacio de trabajo = Volumen intrabdominal

Table 1 Factors that determine laparoscopic working space

Factor	Description
Patient factors	Age/size
	Bowel content
	Body wall thickness (e.g., obesity)
	Organomegaly
	Space occupying lesions
	Muscular
Pneumoperitoneum	Pressure
	Positionin
Anesthesiologic factors	Influencin muscle tone, depth of anesthes , locoregional techniqu
	Type of n)
	Vent



- Factores relacionados con paciente no modificables
- Factores relacionados con el cirujano no modificables: habilidad, experiencia…
- Factores relacionados con la cirugía: posición y preestiramiento
- Factores anestésicos : Bloqueo neuromuscular profundo y ventilación low tidal volume

The Internet Journal of Anesthesiology 2009 : Volume 21 Number 1

On the abdominal pressure v

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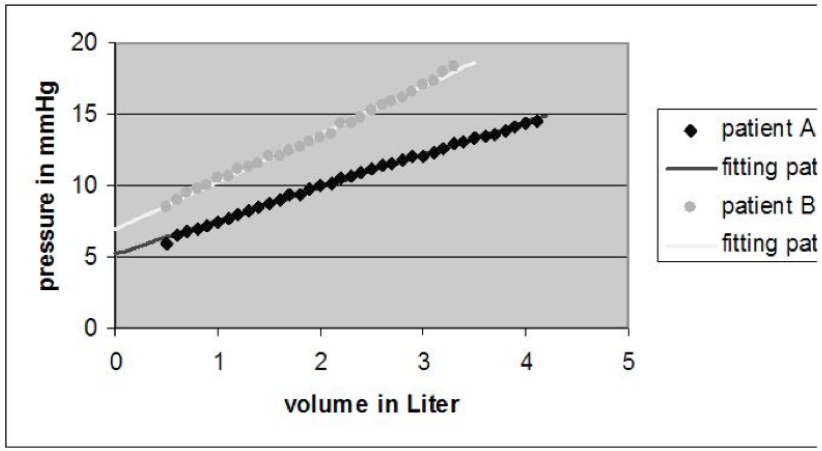
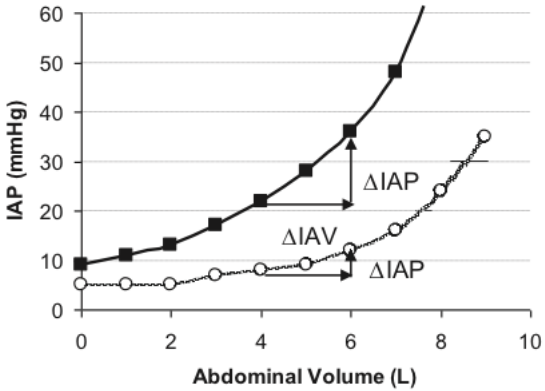


Graph 1: Two Patients (A and B) with their pressure volume points and fitted curves

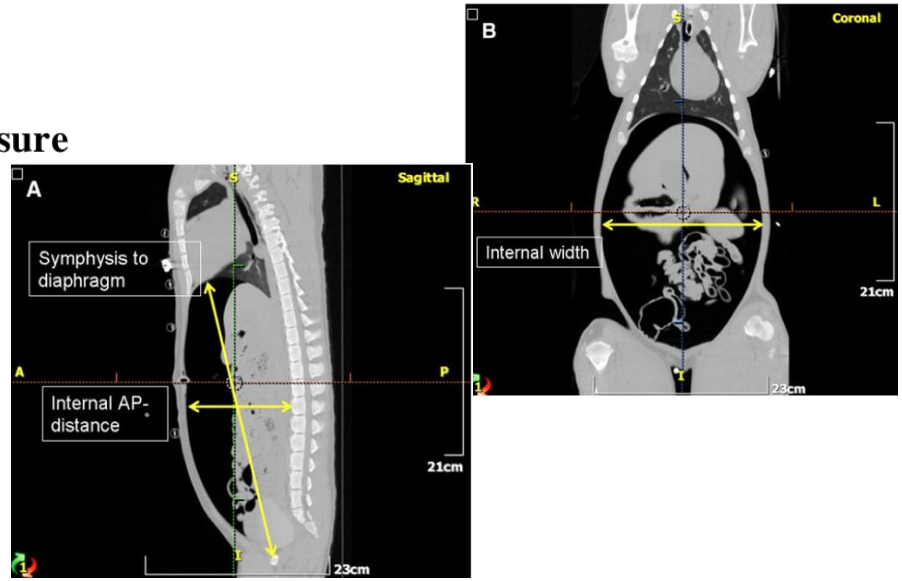
M.L.N.G. Malbrain et al. / Best Practice & Research Clinical Anaesthesiology 27 (2013) 249–270

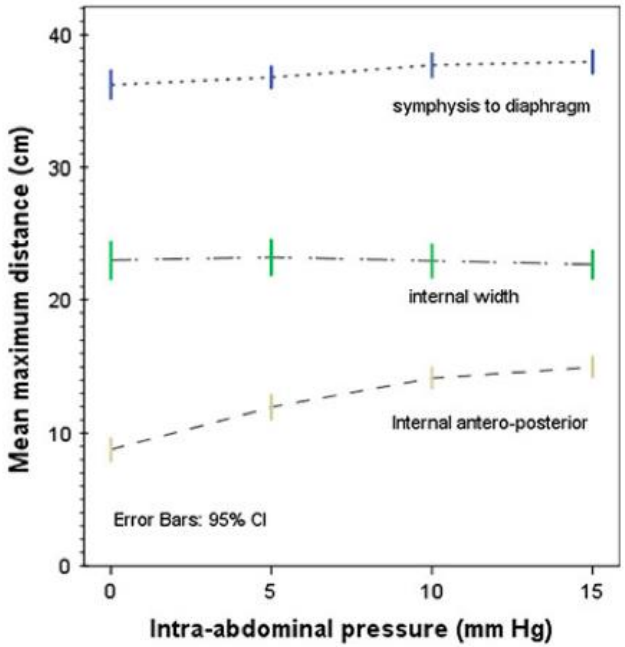


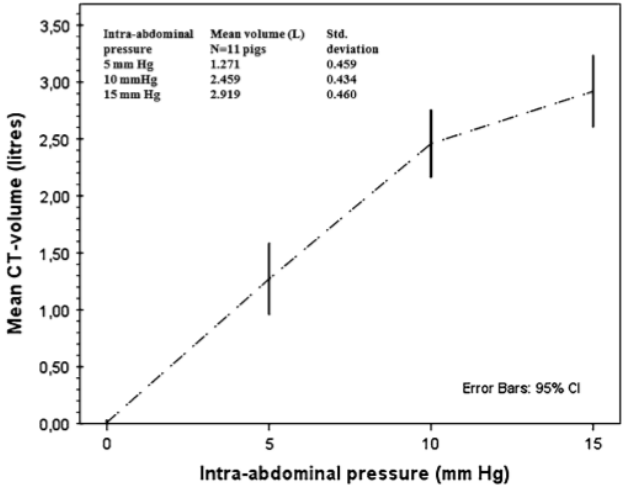
Surg Endosc
DOI 10.1007/s00464-012-2654-0

Optimizing working space in porcine laparoscopy: CT measurement of the effects of intra-abdominal pressure

John Vlot · Rene Wijnen · Robert Jan Stolker · Klaas Bax





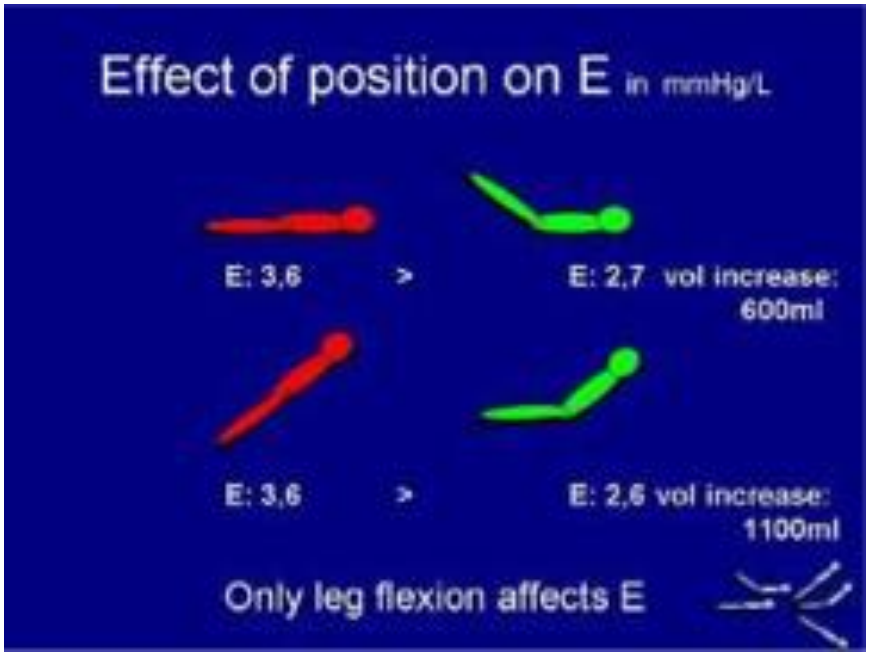


Surg Endosc (2010) 24:1398–1402
DOI 10.1007/s00464-009-0785-8

Impact of the patient's body position on the intraabdominal workspace during laparoscopic surgery

Jan Paul J. Mulier · Bruno Dillemans · Sebastiaan Van Cauwenberge

Received: 27 August 2009 / Accepted: 18 November 2009 / Published online: 7 January 2010
© The Author(s) 2010. This article is published with open access at Springerlink.com



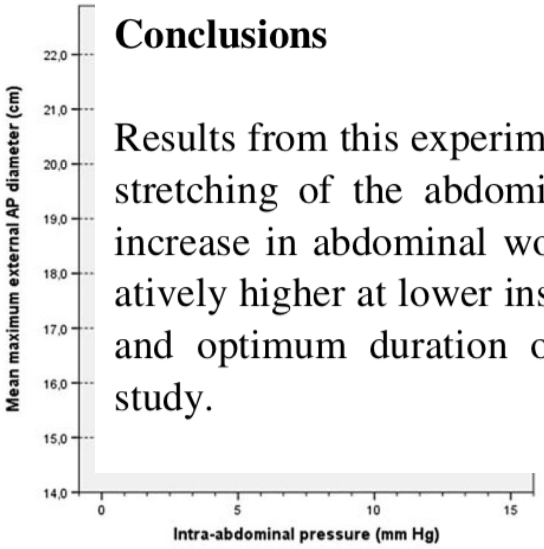
Surg Endosc
DOI 10.1007/s00464-013-3229-4

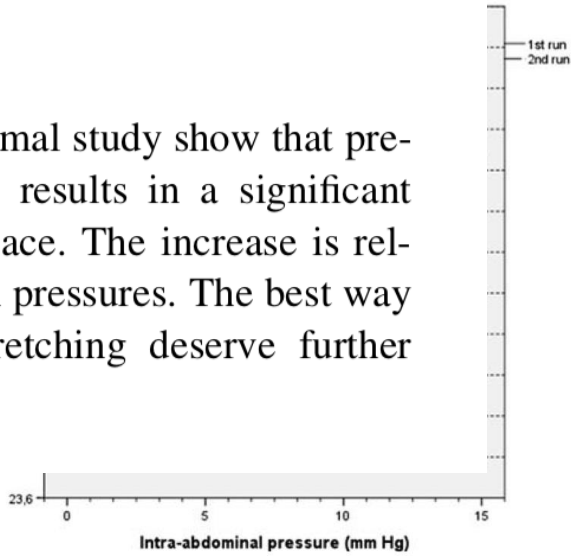
Optimizing working space in laparoscopy: CT measurement of the effect of pre-stretching of the abdominal wall in a porcine model

John Vlot · René Wijnen · Robert Jan Stolker · Klaas (N) Bax

Conclusions

Results from this experimental animal study show that pre-stretching of the abdominal wall results in a significant increase in abdominal working space. The increase is relatively higher at lower insufflation pressures. The best way and optimum duration of pre-stretching deserve further study.





ONE SIZE DOES NOT FIT ALL

Medicina personalizada

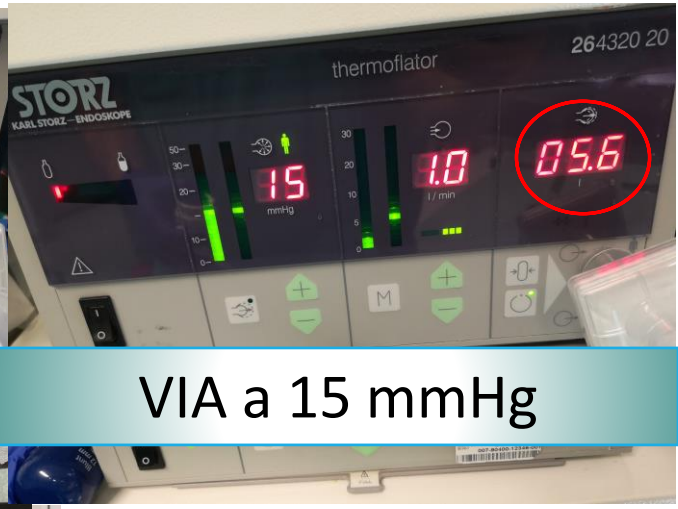
- El paciente se beneficiará de la menor PIA, debemos adaptarnos a sus características Move the focus to the patient. Patients need the lowest intrabdominal pressure, We must adapt the insufflation pressure to the individual patient. Personalized medicine
- Unas op **The right therapy, for the right patient at the right time.** menor duración.
- La optimización de todos los factores que mejoran el volumen intraabdominal puede facilitar finalizar más cirugías a presiones bajas.

Goal Directed Therapy Individualized titration IAP

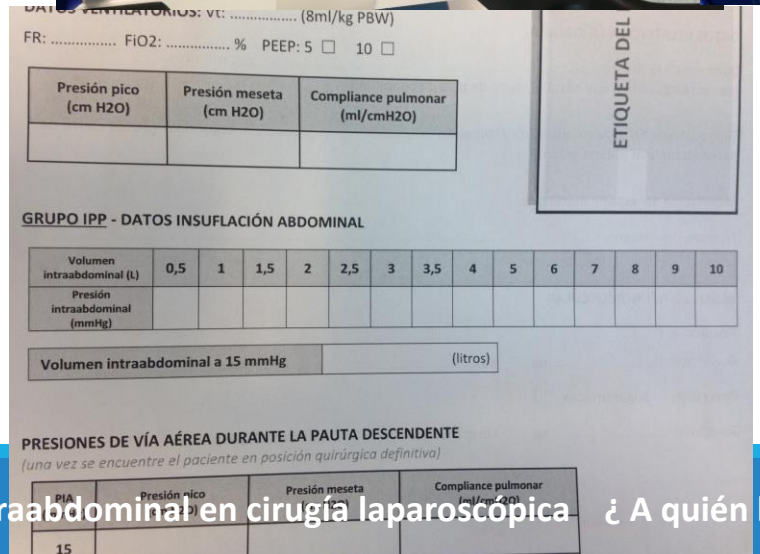
Practice Key points

Preset

IAP a 3l VIA



VIA a 15 mmHg



DATOS VENTILATORIOS: Vt: ..... (8ml/kg PBW)

FR: ..... FiO2: ..... % PEEP: 5 ☐ 10 ☐

Presión pico (cm H2O)	Presión meseta (cm H2O)	Compliance pulmonar (ml/cmH2O)

ETIQUETA DEL

GRUPO IPP - DATOS INSUFLACIÓN ABDOMINAL

Volumen intraabdominal (L)	0,5	1	1,5	2	2,5	3	3,5	4	5	6	7	8	9	10
Presión intraabdominal (mmHg)														

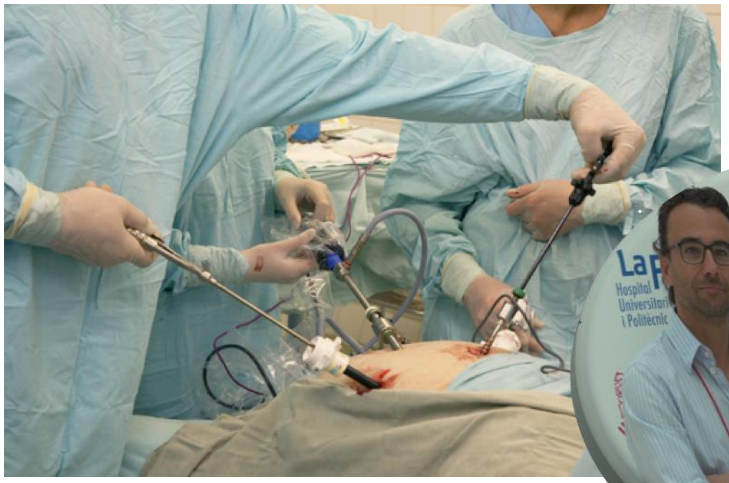
Volumen intraabdominal a 15 mmHg	(litros)

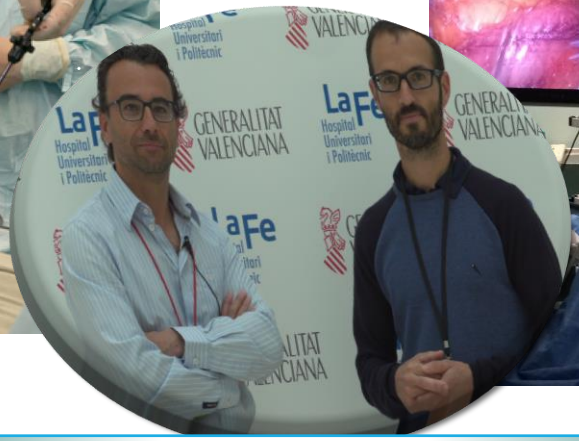
PRESIONES DE VÍA AÉREA DURANTE LA PAUTA DESCENDENTE

(una vez se encuentre el paciente en posición quirúrgica definitiva)

PIA	Presión pico	Presión meseta	Compliance pulmonar
15			

Perioperative Multidisciplinary Team





Cirujano-Anestesiólogo