



SOCIEDAD ARGENTINA DE PEDIATRIA
Comité nacional de Estudios Fetoneonatales (C.E.F.E.N.)



4 ° CONGRESO ARGENTINO DE NEONATOLOGIA
10 ° Jornadas Interdisciplinarias de Seguimiento de Alto Riesgo
4 ° Jornada de Perinatología
4 ° Jornada de Enfermería Neonatal
22, 23 y 24 de mayo de 2019
Panamericano Hotel & Resort - EXE Hotel Colon

Cirugía Minimamente Invasiva Selección de pacientes

Dr. Horacio Bignon



**Tras más de 25 años de desarrollo
de las técnicas
videoquirúrgicas pediátricas**

Hoy sabemos que...

**Las técnicas videoquirúrgicas
pueden aplicarse en la mayoría de las
patologías quirúrgicas neonatales.**

Toracoscopía

- Patología del Esófago
- Resecciones Pulmonares
- Patología Diafragmática
- Patología Mediastinal
- Patología del Espacio Pleural
- Cierre de Ductus
- Aortopexia
- Secuestros pulmonares

Video Cirugía Neonatal

Laparoscopía

Toracoscopía

Video Cirugía Neonatal

Laparoscopía

- Patología Diafragmática
- Patología Esófago-gástrica
- H. Píloro
- Atresia de Duodeno
- Vías Biliares
- Intestinal (Atresias, duplicaciones)
- Patología Retroperitoneal
- Malformaciones Ano Rectales
- Aganglionosis
- Tsc y otros tumores
- Intersexos
- Quistes y tumores de Ovario
- Patología Urológica

Sin embargo...

✓ Colelap



✓ Atresia de esófago



Videocirugía en el recién nacido...



Argumentos

- ✓ **Efectos del CO2 y la presión**
- ✓ **Falta instrumental adecuado**
- ✓ **Técnicamente inferior (mejor abierto)**
- ✓ **Entrenamiento caro y complicado**
- ✓ **Baja casuística para entrenar**

Argumentos

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- ✓ **Entrenamiento caro y complicado**
- ✓ **Baja casuística para entrenar**

Anestesiólogo pediátrico entrenado en anestesia neonatal





Bibliografía

Anestesia + CO2 + Neonatos

**Tobias JD, Holcomb GW, Brock JW et al:
Cardio respiratory changes in children during laparoscopy.
Journal of Pediatrics Surgery, Vol. 30, N 1. Jan 1995**

**Bax N.M, Ten years of maturation of endoscopic surgery in children.
Is the wine good? Journal of Pediatric Surgery, vol 39, N 2, 2004: pp 146-151**

**Rangel S, Henry M, Brindle M et al: Small evidence for small incisions:
Pediatric laparoscopy and the need for more rigorous evaluation of novel surgery
therapies. Journal of Pediatrics Surgery, Vol. 38, N 10. October 2003**

Carbon Dioxide Elimination During Laparoscopy in Children Is Age Dependent

By Merrill McHoney, Lucia Corizia, Simon Eaton, Edward M. Kiely, David P. Drake, Hock L. Tan, Lewis Spitz, and Agostino Pierro
London, England

The absorption of carbon dioxide (CO₂) used for positive pressure pneumoperitoneum may lead to an increased CO₂ load. CO₂ elimination during laparoscopy has not been investigated previously in paediatrics. The aim of this study was to characterise the pattern of CO₂ elimination during laparoscopic surgery in infants and children.

Methods: Twenty children undergoing laparoscopy and 19 children undergoing laparotomy for elective abdominal operations were studied. Pneumoperitoneum was achieved using insufflation of unheated CO₂. CO₂ elimination (metabolically produced + absorbed; milliliters per kilogram per minute) was measured minute by minute during the operation by indirect calorimetry. End-tidal CO₂ (kPa) was recorded every 10 minutes. The above variables were assessed before CO₂ insufflation, during pneumoperitoneum, and after desufflation.

Results: Before insufflation, CO₂ elimination was 4.6 ± 0.3 ml/kg/min and increased after 15 minutes of pneumoperitoneum to 5.2 ± 0.3 ($P < .001$). Post desufflation, CO₂ elimination decreased toward preinsufflation values, but did not return to baseline by the end of operation (5.8 ± 0.3 ; $P < .001$). End-tidal CO₂ was 4.7 ± 0.2 preinsufflation, peaked at 1 hour (5.3 ± 0.2 ; $P < .001$) and subsequently decreased in response to ventilatory adjustments. The total amount of

CO₂ insufflated was positively correlated with patient age ($r^2 = 0.27$; $P < .01$). CO₂ elimination was age related, as indicated by multilevel model analysis and by negative correlations between maximum increase in CO₂ elimination and both age ($r^2 = 0.27$; $P < .01$) and weight ($r^2 = 0.29$; $P < .01$). These data suggest that the younger or smaller the child, the larger the increase in CO₂ elimination. Seven patients (35%) responded to desufflation with a sharp transient increase in CO₂ elimination, which did not appear to be related to patient age, length of pneumoperitoneum, abdominal pressure, or type of operation.

Conclusions: During pneumoperitoneum, younger children absorb proportionately more CO₂ than older individuals. The short-lived increase in CO₂ elimination postdesufflation may be related to an increase in venous return from the lower limbs after release of the abdominal pressure. These findings suggest that small children warrant close monitoring during laparoscopy and during the immediate postoperative period. *J Pediatr Surg* 38:105-110. Copyright 2003, Elsevier Science (USA). All rights reserved.

INDEX WORDS: Laparoscopy, paediatrics, carbon dioxide elimination, metabolism, indirect calorimetry, pneumoperitoneum.

Journal of Pediatric Surgery, Vol 38, No 1 (January), 2003: pp 105-110

✓ CO₂ absorción inversamente proporcional a la edad

Surg Endosc (2007) 21: 303–308
DOI: 10.1007/s00464-006-0044-1

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and Other Interventional Techniques

Multicentric assessment of the safety of neonatal videosurgery

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Guillaume Podevin,⁶ Yves H eloury,⁶ Francois Becmeur,⁷ Isabelle Talon,⁷ Luke Harper,⁸ Pierre Vergnes,⁸
Dominique Forgues,¹ Manuel Lopez,¹ Marie-Pierre Guibal,¹ Rene-Benoit Galifer¹

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Received: 18 January 2006/Accepted: 31 May 2006/Online publication: 13 December 2006

Table 1. Indications for laparoscopy ($n = 204$) and thoracoscopy ($n = 14$)

	Indication	Number of cases
Laparoscopy		
	Hypertrophic pyloric stenosis	85
	Ovarian cysts	63
	Volvulus with malrotation	10
	Congenital diaphragmatic hernias	9
	Intestinal duplications	9
	Duodenal atresias	7
	Gastro-esophageal reflux*	2
	Biliary atresia	1
	Exploratory laparoscopies**	11
	Others***	10
Thoracoscopy		
	Esophageal atresias	7
	Tracheoesophageal fistula	2
	Congenital diaphragmatic hernias	2
	Congenital adenomatoid cystic malformation	2
	Others****	1

- 7 centros
- 218 neonatos
- 0 mortalidad
- Morbilidad (curva de aprendizaje)
- 12% Incidentes anestésicos (no graves)
- Identifican factores de riesgo edad, hipotermia, insuflación torácica, alta presión flujo de CO₂, duración)

Laparoscopy Is Safe in Infants and Neonates with Congenital Heart Disease: A National Study of 3684 Patients

Jina Kim, MD,¹ Zhifei Sun, MD,¹ Brian R. Englum, MD,¹ Alexander C. Allori, MD,²
Obinna O. Adibe, MD,³ Henry E. Rice, MD,³ and Elisabeth T. Tracy, MD³

Abstract

Purpose: Concerns have been raised about the use of laparoscopic surgery (LS) in infants with congenital heart disease (CHD) due to their unique physiology. Prior studies on the safety and effectiveness of laparoscopy in children with CHD are limited in scope and cohort size.

Materials and Methods: We identified children <1 year of age with CHD who underwent abdominal surgery in the 2012–2013 American College of Surgeons National Surgical Quality Improvement Project Pediatric database. Patients were stratified by surgical approach: open surgery (OS) versus LS. We then compared postoperative complications, postoperative length of stay, and 30-day mortality by using multivariable regression methods.

Results: In total, 3684 patients met study criteria: 2502 underwent OS while 1182 underwent LS. Infants who underwent LS were older (98 days versus 36 days), larger by weight (4.2 kg versus 3.2 kg), and more likely to require nutritional support preoperatively (74.7% versus 60.5%) (all $P < .001$). After multivariable adjustment, LS was associated with lower overall complication rate (odds ratio [OR] 0.42, 95% confidence interval [CI] 0.34–0.52, $P < .001$) and shorter postoperative length of stay (effect size -1.8 days, 95% CI -1.8 – -1.2 , $P < .001$). LS and OS demonstrated similar 30-day mortality (OR 0.71, 95% CI 0.38–1.32, $P = .28$).

Conclusions: Laparoscopy can be performed safely in infants with CHD who need abdominal surgery. Although further studies may be useful in determining which infants with congenital cardiac disease benefit the most from use of laparoscopy, minimally invasive techniques can be applied to routine and complex abdominal procedures.

Neonatal brain oxygenation during thoracoscopic correction of esophageal atresia

**Stefaan H. A. J. Tytgat¹ · Maud Y. A. van Herwaarden¹ · Lisanne J. Stolwijk^{1,2} ·
Kristin Keunen² · Manon J. N. L. Benders² · Jurgen C. de Graaff³ ·
Dan M. J. Milstein⁴ · David C. van der Zee¹ · Petra M. A. Lemmers²**

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Conclusion The impact of neonatal thoracoscopic repair of EA with insufflation of CO₂ at 5 mmHg was studied. Intrathoracic CO₂ insufflation caused a reversible decrease in SaO₂ and pH and an increase in paCO₂. The rScO₂ was higher at anesthesia induction but remained stable and within normal limits during and after the CO₂ pneumothorax, which suggest no hampering of cerebral oxygenation by the thoracoscopic intervention. Future studies will focus on the long-term effects of this surgery on the developing brain.

Carbon dioxide gas pneumoperitoneum induces minimal microcirculatory changes in neonates during laparoscopic pyloromyotomy

Stefaan H. A. J. Tytgat · [David C. van der Zee](#) ·
Can Ince · Dan M. J. Milstein

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Surg Endosc (2013) 27:3465–3473



Fig. 1 Perioperative setup of sidestream dark field (SDF) imaging instrument sublingually in a neonate

(e.g., a bifurcation or vascular crossing) as a landmark for obtaining reproducible (continuous) diameter measurements across all time points. Hence, the same BVD was measured for each of the 20 blood vessels in all three 20 s video clips corresponding to before, during, and after PP insufflation.

Statistical analysis

All data analysis was performed using GraphPad Prism version 5.0 for Windows (GraphPad Software Inc., La Jolla, CA, USA). Normal distribution of all parameters and microcirculation data was confirmed with the D'Agostino and Pearson omnibus normality test. Comparative analysis of blood gas, electrolytes, and buccal capillary density was performed using a two-sided paired *t* test. All basic intraoperative hemodynamic parameters and microcirculation parameters (i.e., T_{VD}, P_{VD}, PPV, BV_d) were evaluated

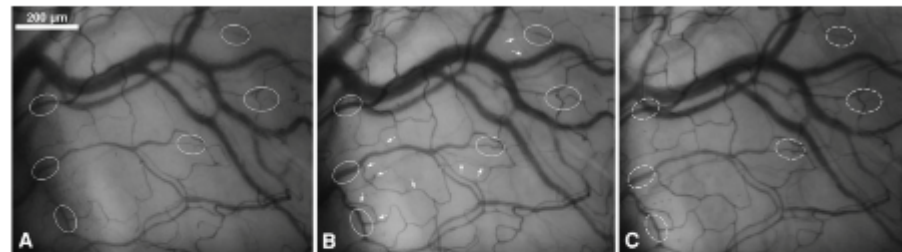


Fig. 3 Intraoperative sidestream dark-field (SDF) imaging of the sublingual microcirculation in a neonate before (baseline) (A), during (B), and after (C) carbon dioxide (CO₂) gas pneumoperitoneum. The images demonstrate consistent reproducibility at all time points across the surgical procedure. To demonstrate changes in vascular diameters in the microcirculation images, six ovals have been inserted in A that coincide with the same vasculature observed in B (dotted ovals) and C (dashed ovals). B Microvascular vasodilation (dotted ovals) with

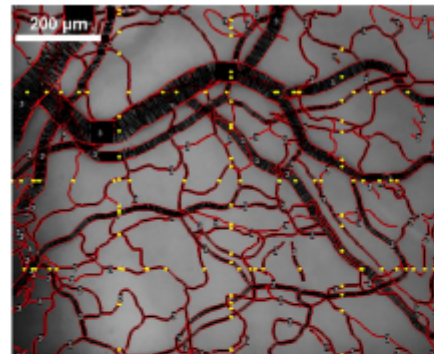


Fig. 4 Typical completed microcirculation analysis procedure using the automated vascular analysis (AVA v3.0) software. The selection of all the blood vessels, or skeletonization, illustrated by the red contour lines in combination with the black filling of the vascular lumens, is an important component in determining total vessel density (TVD), perfused vessel density (PVD), and proportion of perfused vessels (PPV). Each vessel has been assigned a microvascular flow index (MFI) score of 3 (i.e., continuous flow). Microvascular analysis was based on evaluating blood vessels smaller than 25 μ m

subsequent recruitment of microvasculature (arrows) during insufflation. The darker contrasting of blood indicates an increase in red blood cells (RBCs) and blood flow. C Reduced vascular diameters and decreased contrasting of blood in the image showing a reduction in RBCs and blood flow respectively after cessation of pneumoperitoneum. Despite observed inherent changes in vascular calibers driven by CO₂ gas through laparoscopic pneumoperitoneum, no significant differences in microcirculation densities were found

Table 4 Serial intraoperative microcirculatory measurements obtained with sidestream dark-field (SDF) imaging before (baseline), during, and after 8 mmHg carbon dioxide (CO₂) gas insufflation

	Before	During	After
TVD (mm/mm ²)	42.6 ± 3.7	41.4 ± 4.8	43.2 ± 4.0
TVD (%)	100 ± 0	97 ± 9	102 ± 12
PVD (mm/mm ²)	42.6 ± 3.7	41.4 ± 4.8	43.2 ± 4.0
PVD (%)	100 ± 0	97 ± 9	102 ± 12
PPV (%)	95 ± 3	96 ± 4	97 ± 3
BVd (μ m)	8.8 ± 2.4	9.3 ± 2.5*	8.2 ± 2.3*#
MFI (AU)	3 ± 0	3 ± 0	3 ± 0

All data are presented in mean ± standard deviation

TVD total vessel density, PVD perfused vessel density, PPV proportion of perfused vessels, BVd blood vessel diameter, MFI microvascular flow index, AU arbitrary units

* $p < 0.05$ vs before insufflation (baseline)

$p < 0.01$ vs during insufflation

the installation of CO₂ gas PP during laparoscopic pyloromyotomy procedures alters microcirculatory perfusion by inducing changes in microvascular diameters but does not alter microcirculation density in neonates. Furthermore, the implementation of a continuous monitoring approach

Conclusion The installation of CO₂ gas PP during laparoscopic pyloromyotomy procedures regulates microcirculatory perfusion by inducing changes in microvascular diameters but does not alter microcirculation density in neonates.

- Cambio de calibre microvascular
- No cambia la densidad vascular



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KARL STORZ LECTURE

Endoscopic surgery in children – the challenge goes on[☆]

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Invited lecture

Storz

ABSTRACT

Paediatric endoscopic surgery is greatly indebted to Karl Storz for developing paediatric endoscopic instruments. In more recent years, there is an increasing interest in endoscopic surgery in neonates. Now more complex procedures are being performed, although it will take another generation before these will be more generally applied. One of the key factors to success is training. More sophisticated training models are becoming available, allowing practicing in a safe environment before putting the procedure to practice. A key question in performing complex procedures is whether such procedures should not be concentrated into centres of expertise. Finally, a critical appraisal is warranted in regard to safety of surgery in neonates, as they fail to have cerebral autoregulation. As endoscopy may add additional risk factors, close monitoring is obligatory.

Level of evidence: V.

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of cardiac failure. By contrast, in the group of piglets insufflated with only 5 mmHg, no problems were encountered and all values remained within normal limits. The same experience was confirmed in a series of 15 infants undergoing thoracoscopic oesophageal atresia repair [34]. The rScO₂ was higher at anaesthesia induction but remained stable and within normal limits during and after the CO₂ pneumothorax, which suggests no hampering of cerebral oxygenation by thoracoscopic intervention.

Presión en Tórax hasta 5mmHg

CO₂

- Presiones Bajas

Tórax: Hasta 5 mmHg

Abdomen: 8 a 10 mmHg

- Bajo Flujo de CO₂

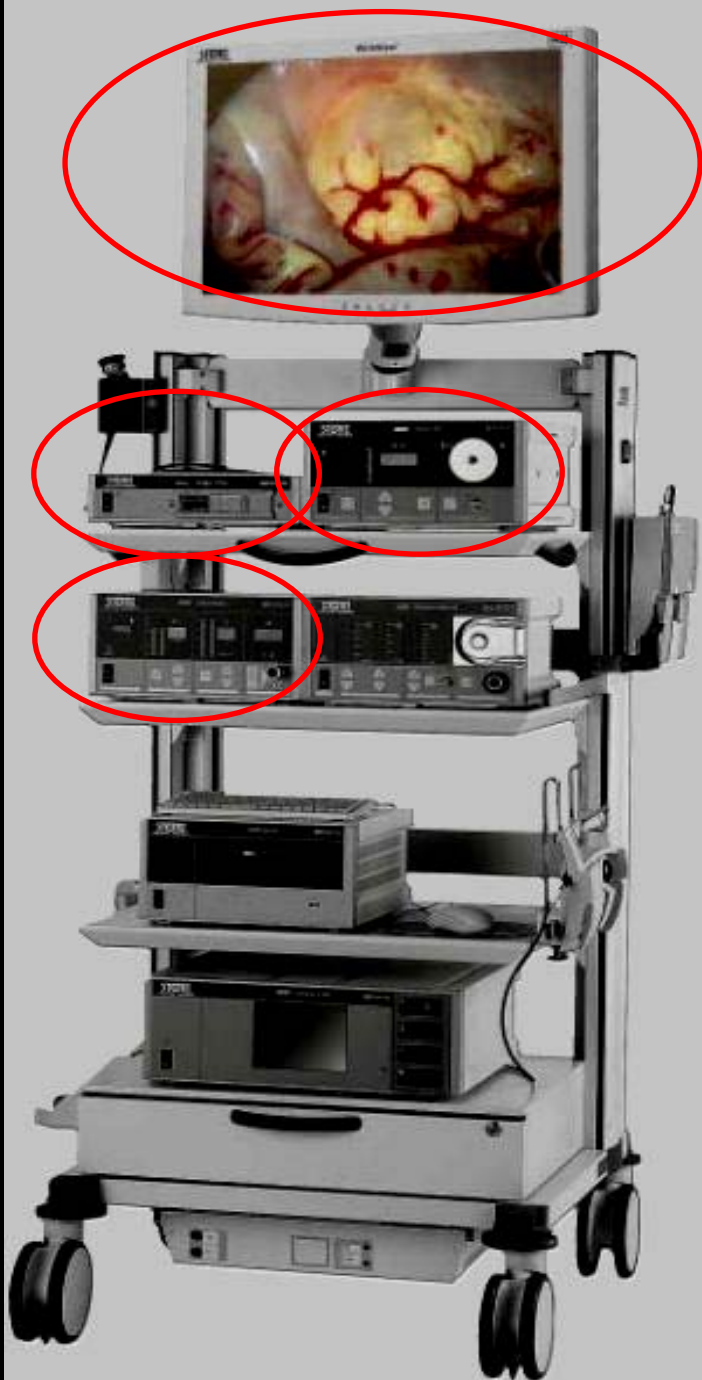
Hasta: 5 l/min

- Medir End Tidal CO₂

Argumentos

- ✓ Efectos del CO2 y la presión
- ✓ **Falta instrumental adecuado**
- ✓ **Técnicamente inferior (mejor abierto)**
- ✓ **Entrenamiento caro y complicado**
- ✓ **Baja casuística para entrenar**

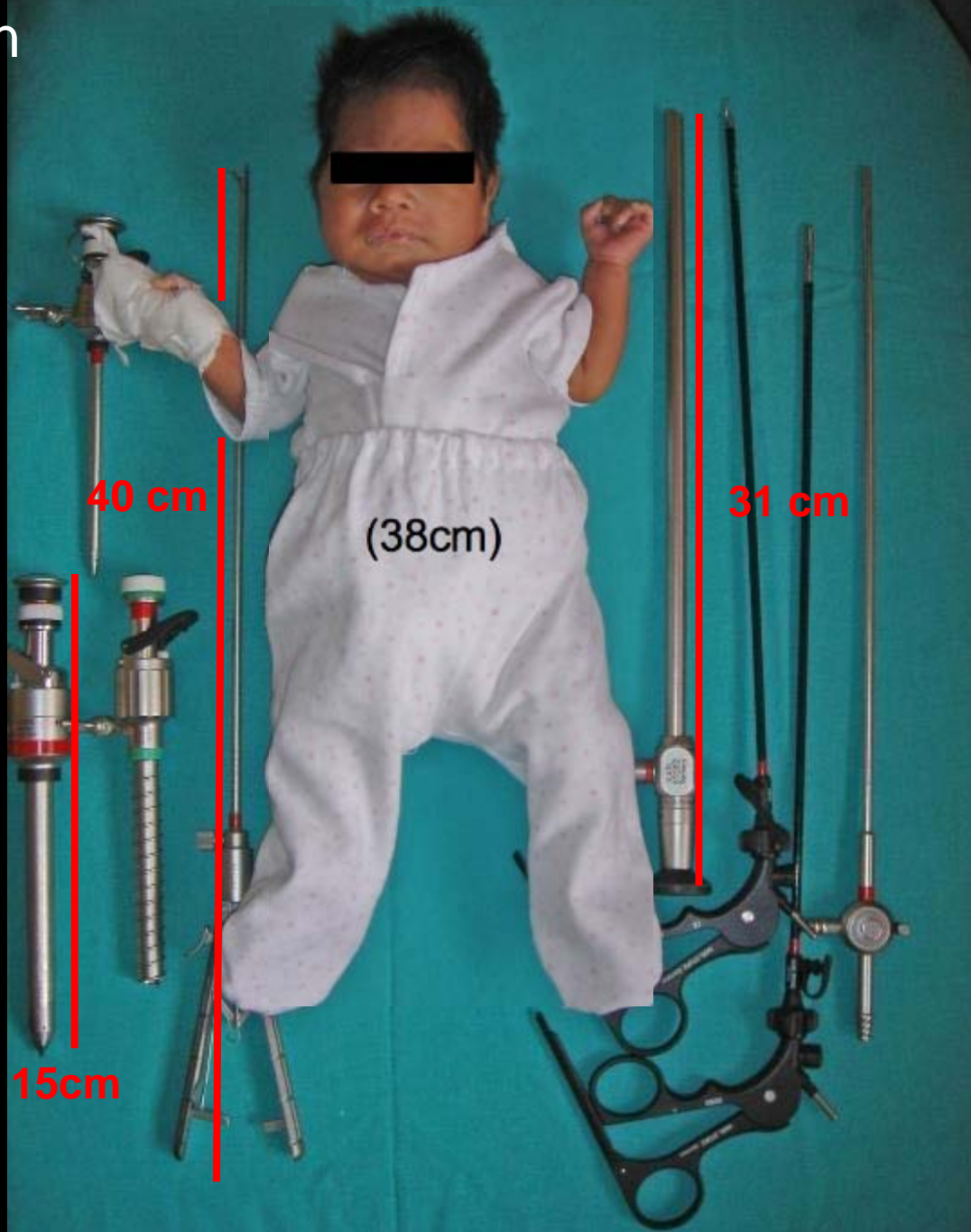
Equipamiento e Instrumental



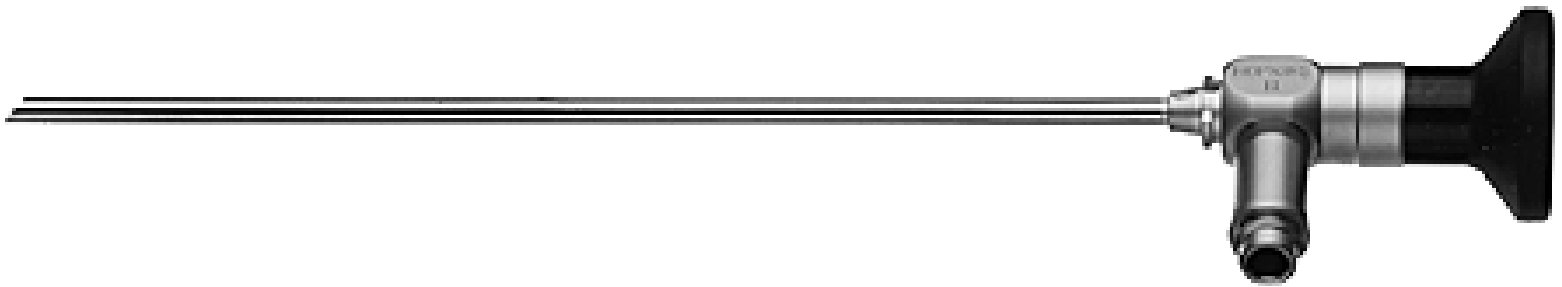
Aparatos y accesorios:

- | | |
|----------------|---|
| 9526 NB | Monitor de pantalla plana 26" |
| 20 1331 01-1 | Fuente de luz fría XENON 300 SCB |
| 22 2010 11S102 | IMAGE1 HUB™ HD, unidad de control de cámara SCB, con módulo SDI |
| 22 2200 55-3 | Cabezal de cámara de tres chips HD IMAGE1™ H3-Z |
| 26 4320 08-1 | Thermoflator® SCB |
| 26 3310 09-1 | ENDOMAT® SCB de HAMOU®, accesorios opcionales necesarios |
| 20 0409 11 | KARL STORZ AIDA® compact NEO HD Communication |
| 20 5352 01-115 | AUTOCON® II 400 SCB |
| 29005 HFS | Soporte para pedal doble |
| 29005 HFH | Soporte para pedal doble |
| 26120 J | Cánula para neumoperitoneo de VERESS |
| 27805 | Electrodo neutro |
| 27806 | Cable de conexión para electrodo neutro |
| 26005 M | Cable de alta frecuencia unipolar |
| 26176 LE | Cable de alta frecuencia bipolar |
| 20 0138 30 | Interruptor de doble pedal |
| 29005 LAP | Unidad móvil |

Desproporción

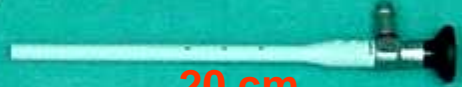
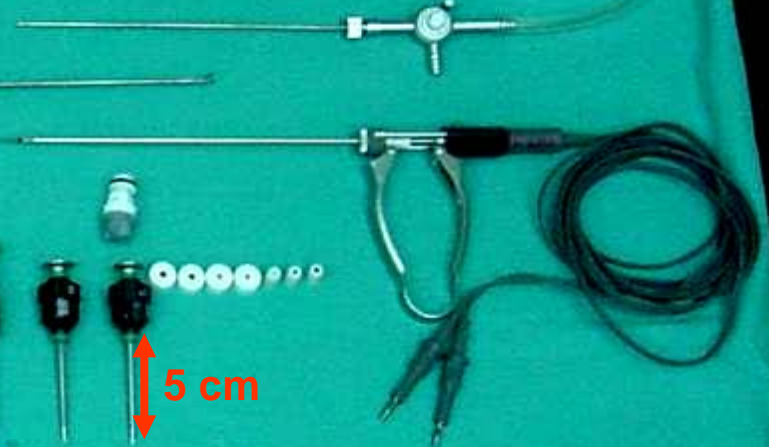
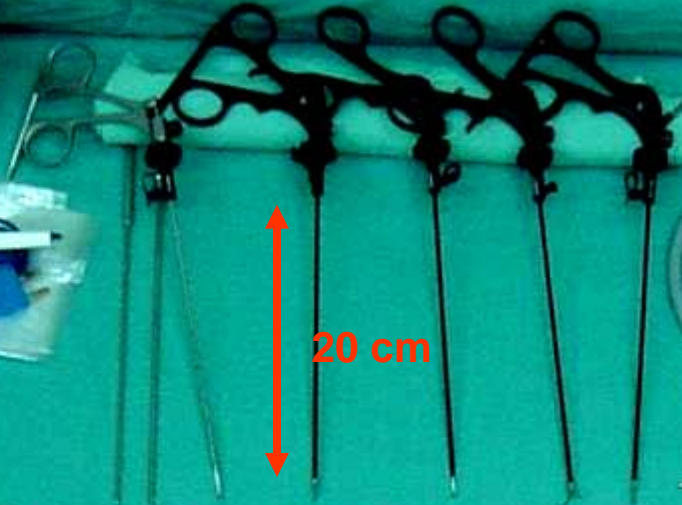


Optica



Artroscopio

- 4 mm
- 30 grados
- Wide Angle (gran angular)
- 20 cm



Nuevo Instrumental...



Prof. Hock Tan

RoTaLock™

2, 5 y 6 mm (5cm)

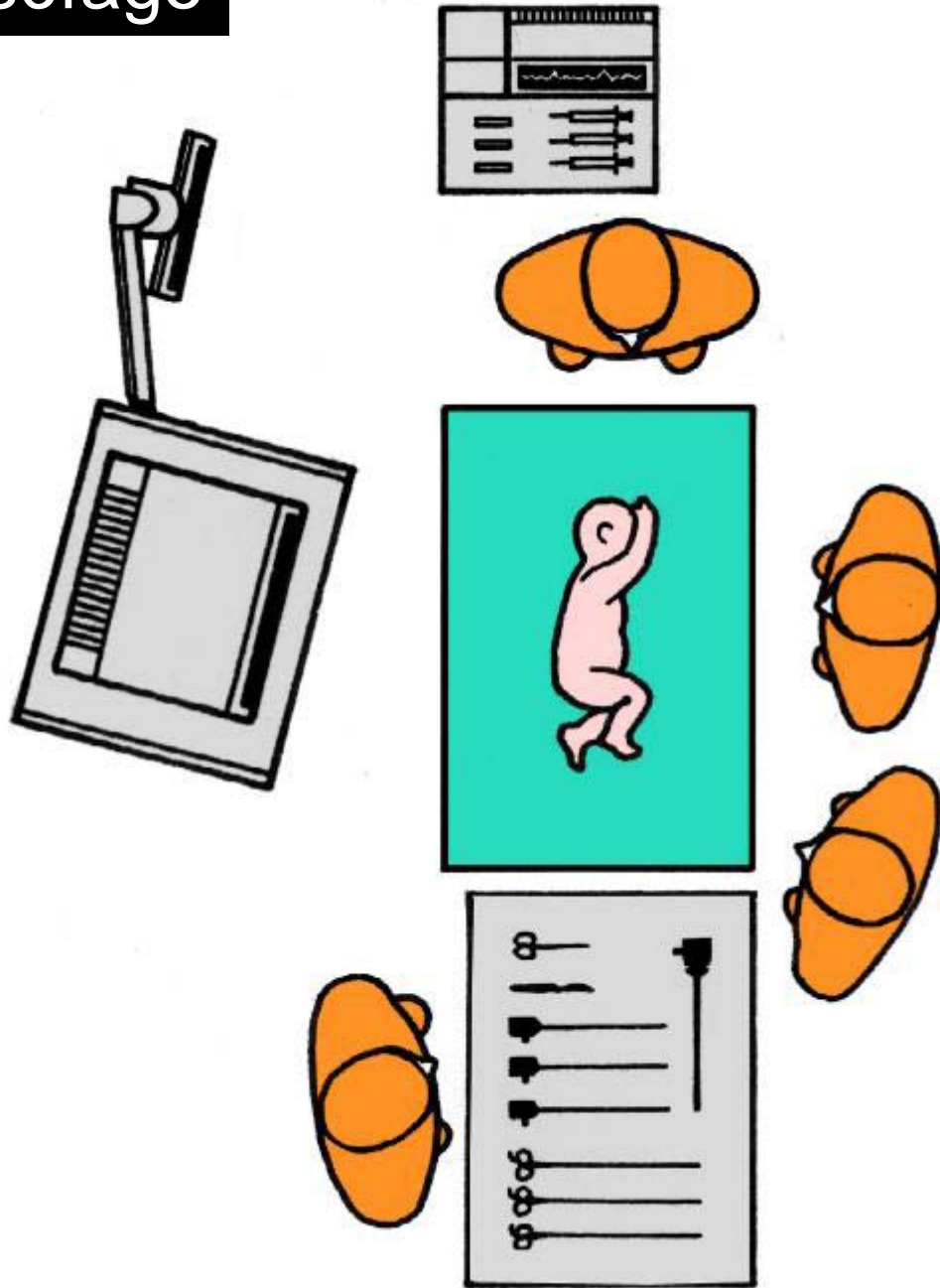


RoTaLock™

Posicionamiento (Cambio de paradigma)

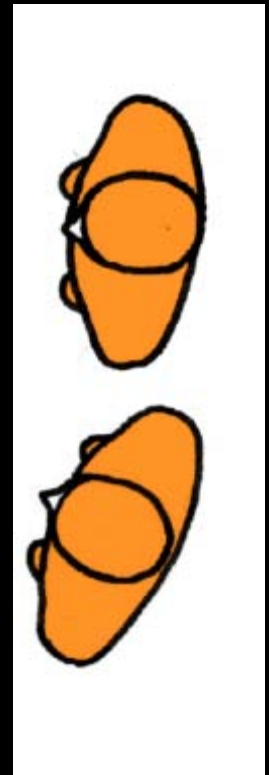
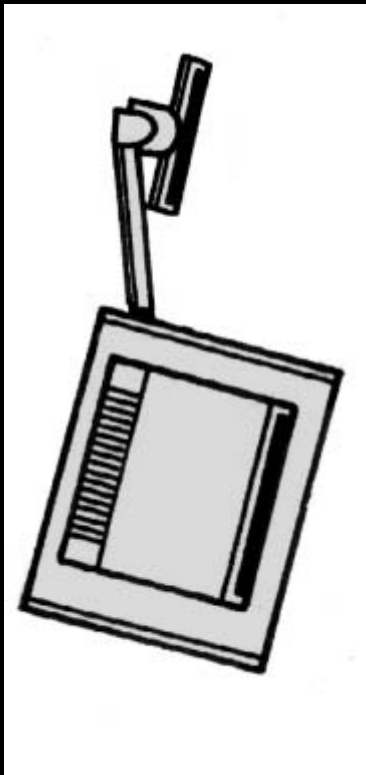
- Cirujano y ayudante del mismo lado
- Paciente cambia de posición según el monitor
- Utilizar la gravedad
- Elevar al paciente ↑ movilidad de instrumentos

Atresia de Esófago



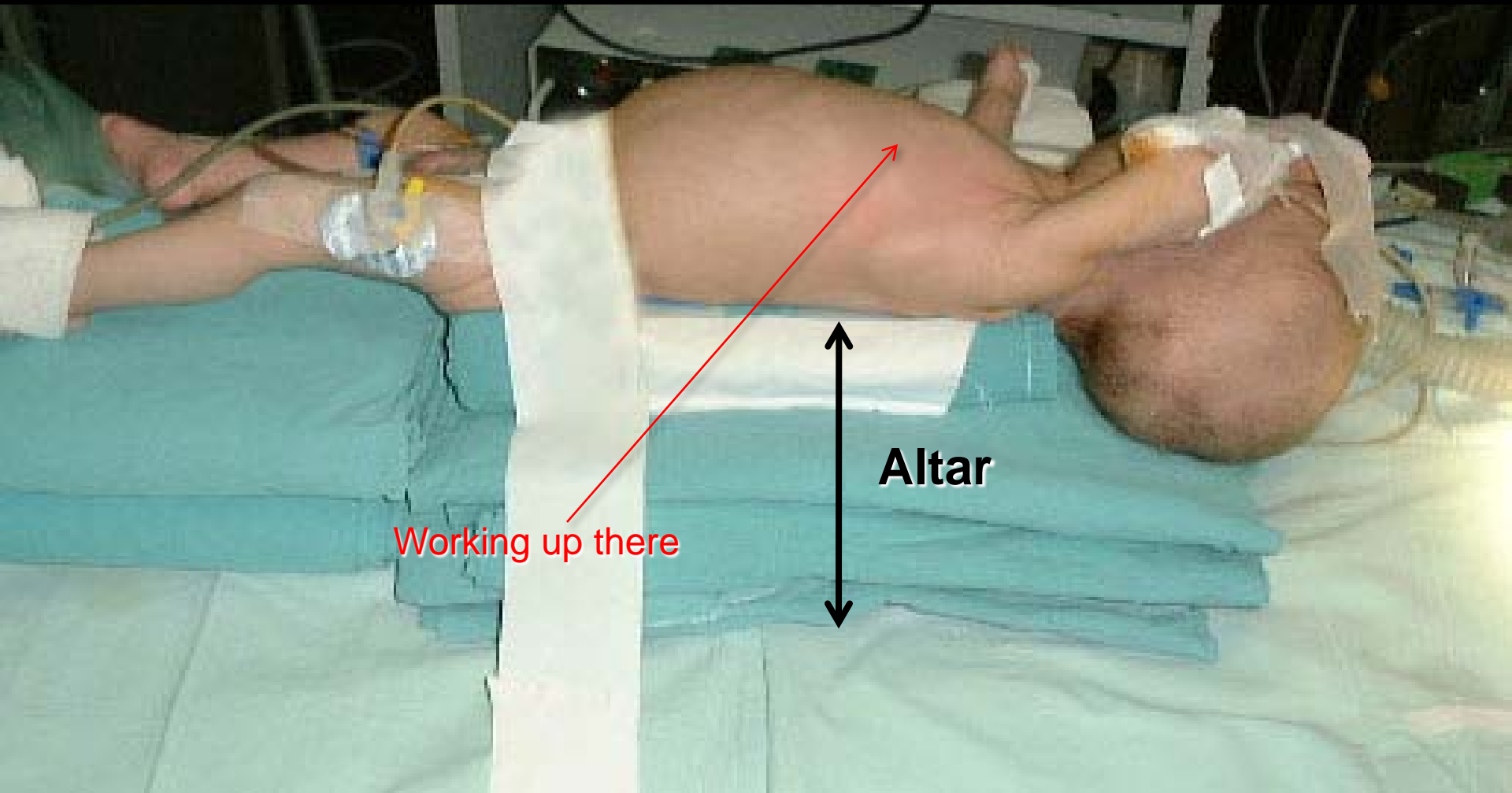
Atresia de Esófago

$\frac{3}{4}$ Decúbito Prono izquierdo

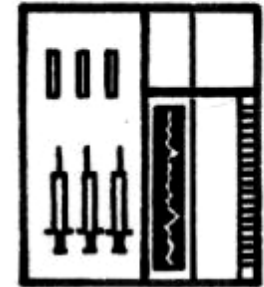
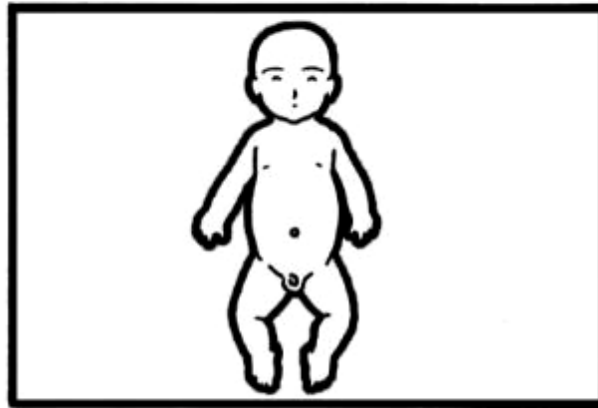
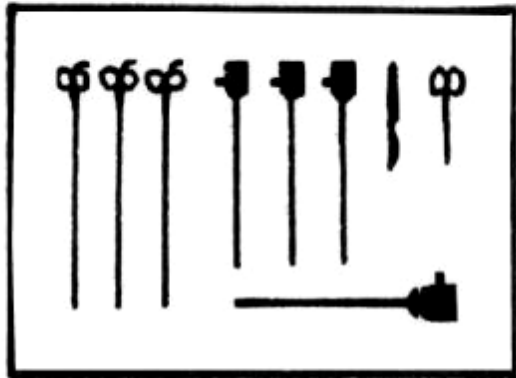
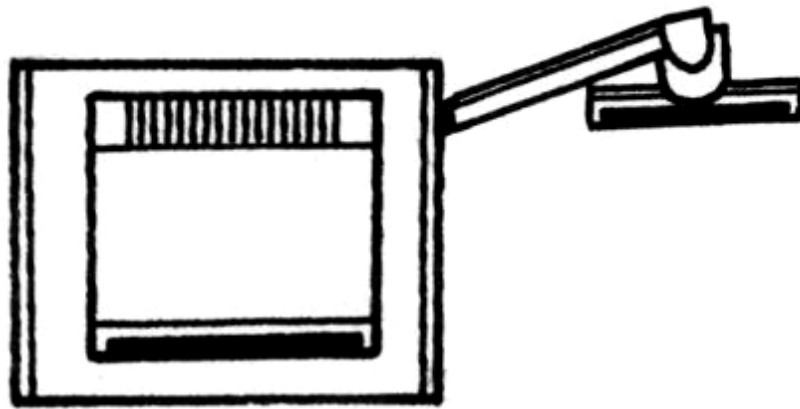


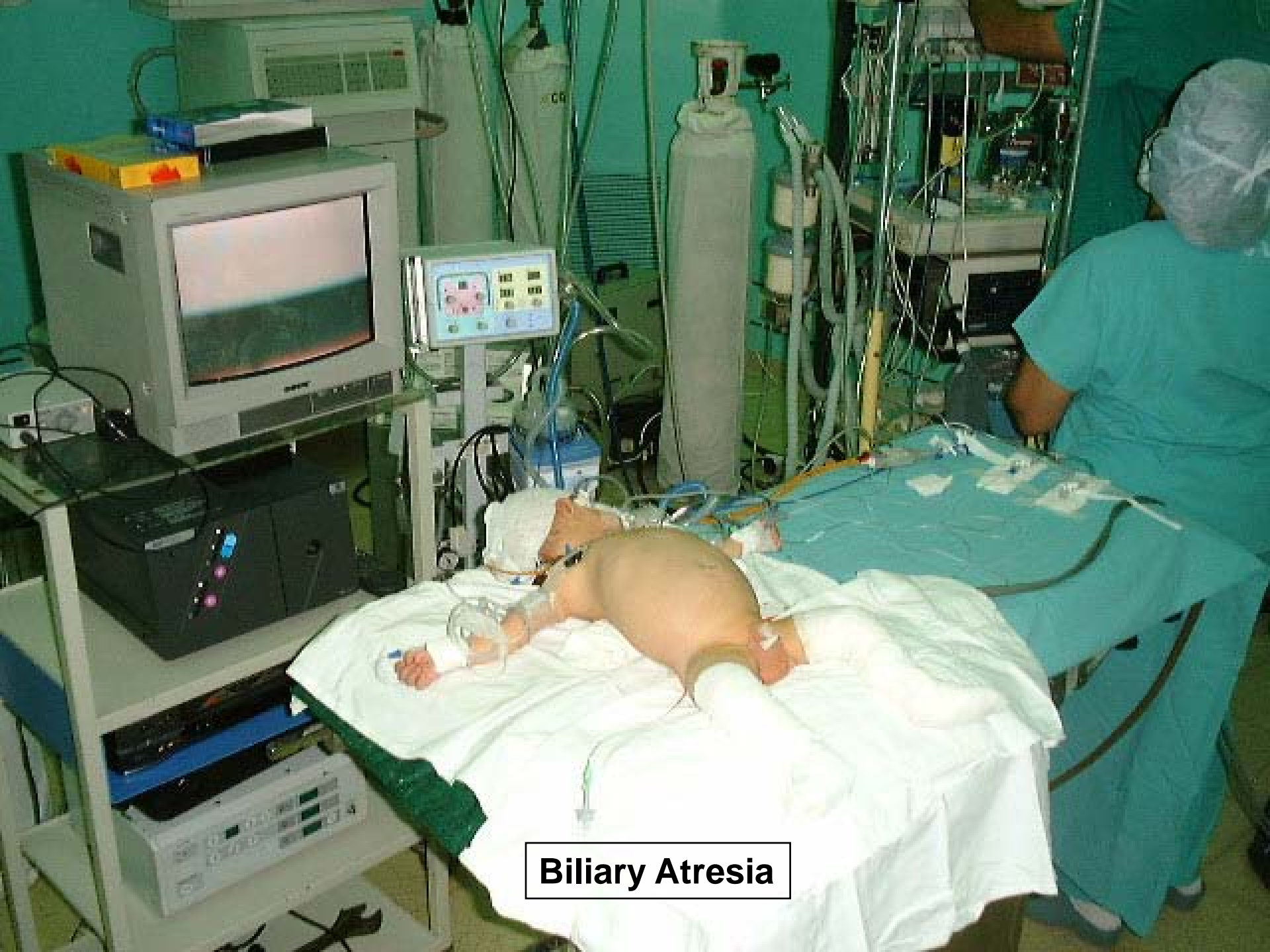
Aortopexia

$\frac{3}{4}$ Decúbito Supino Derecho



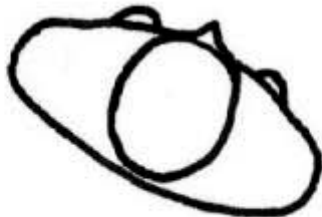
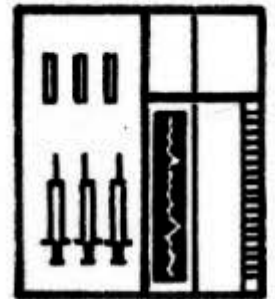
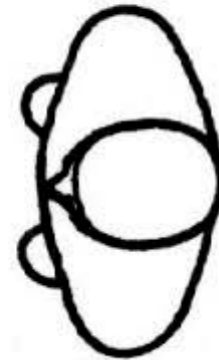
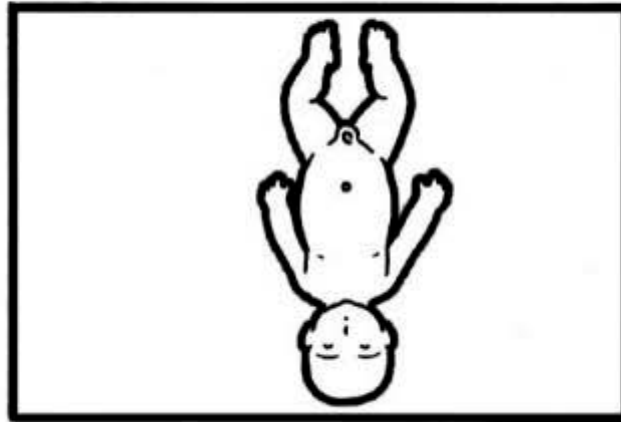
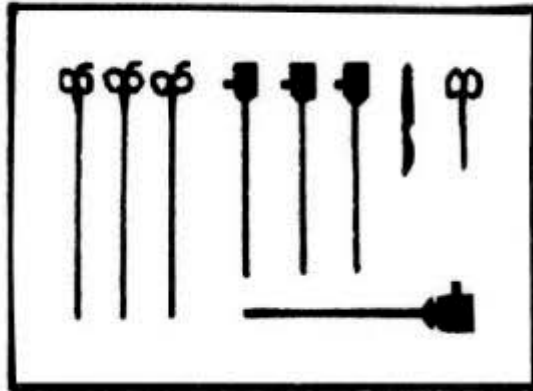
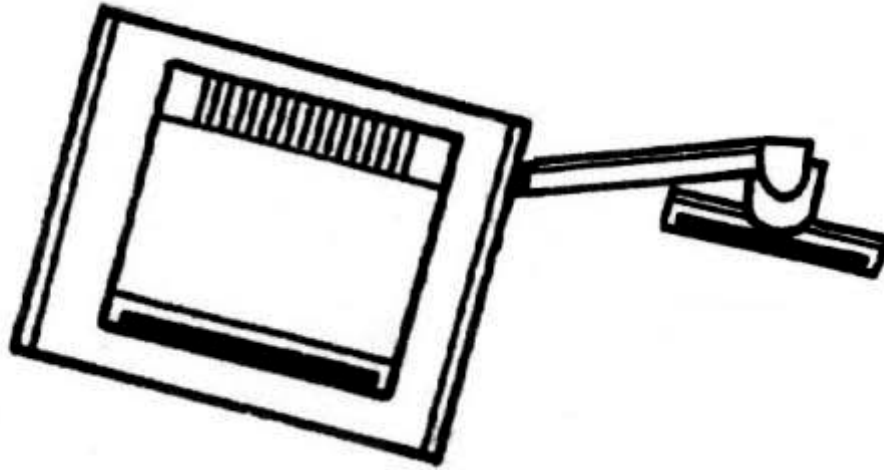
Abdomen superior
Cabeza hacia el monitor





Biliary Atresia

Abdomen inferior/Pelvis
Pies hacia el monitor





Malformación Anorrectal

Argumentos

- ✓ Efectos del CO2 y la presión
- ✓ Falta instrumental adecuado
- ✓ **Técnicamente inferior (mejor abierto)**
- ✓ Entrenamiento caro y complicado
- ✓ Baja casuística para entrenar

Toracoscopía

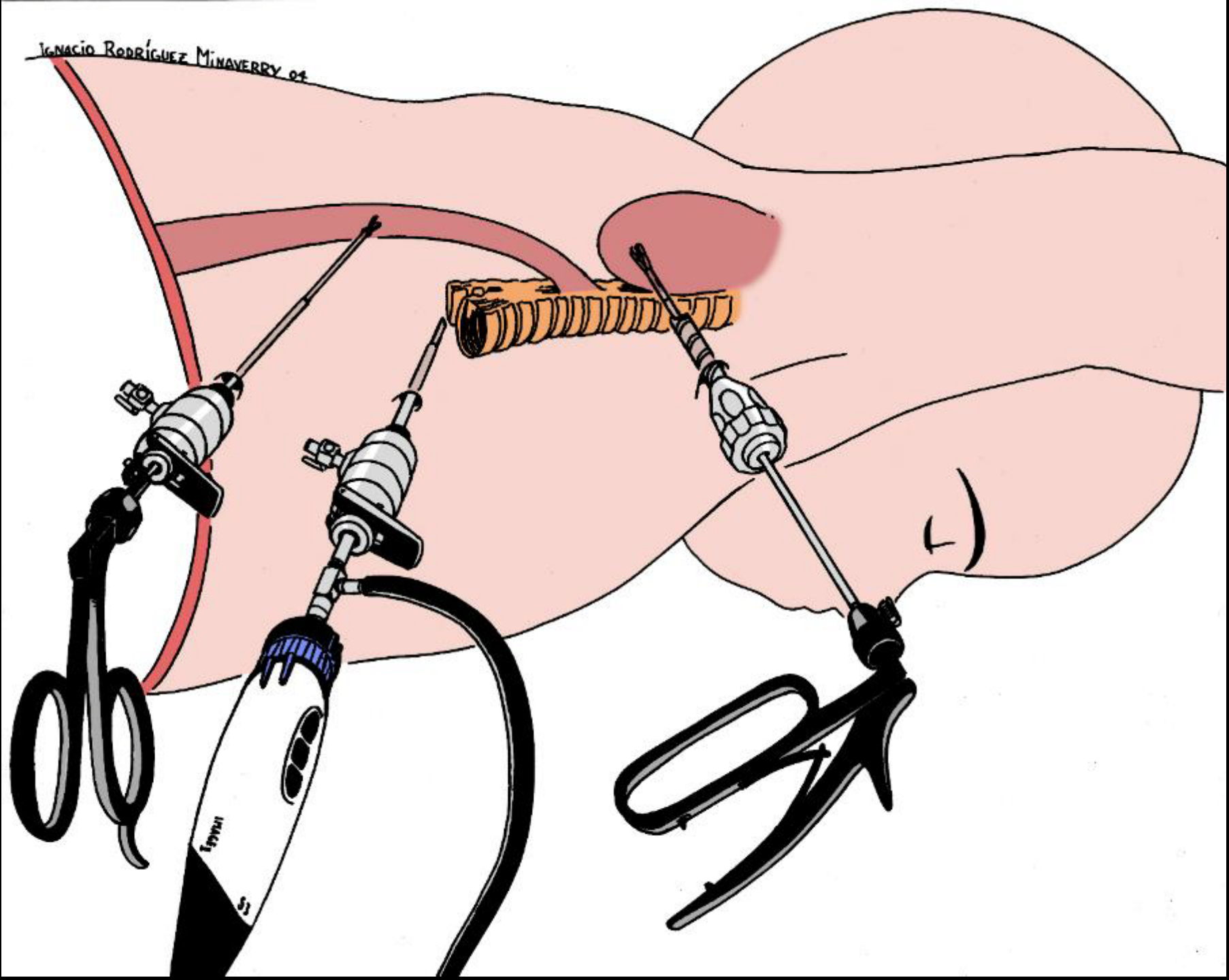
- Patología del Esófago
- Resecciones Pulmonares
- Patología Diafragmática
- Patología Mediastinal
- Patología del Espacio Pleural
- Cierre de Ductus
- Aortopexia
- Secuestros pulmonares

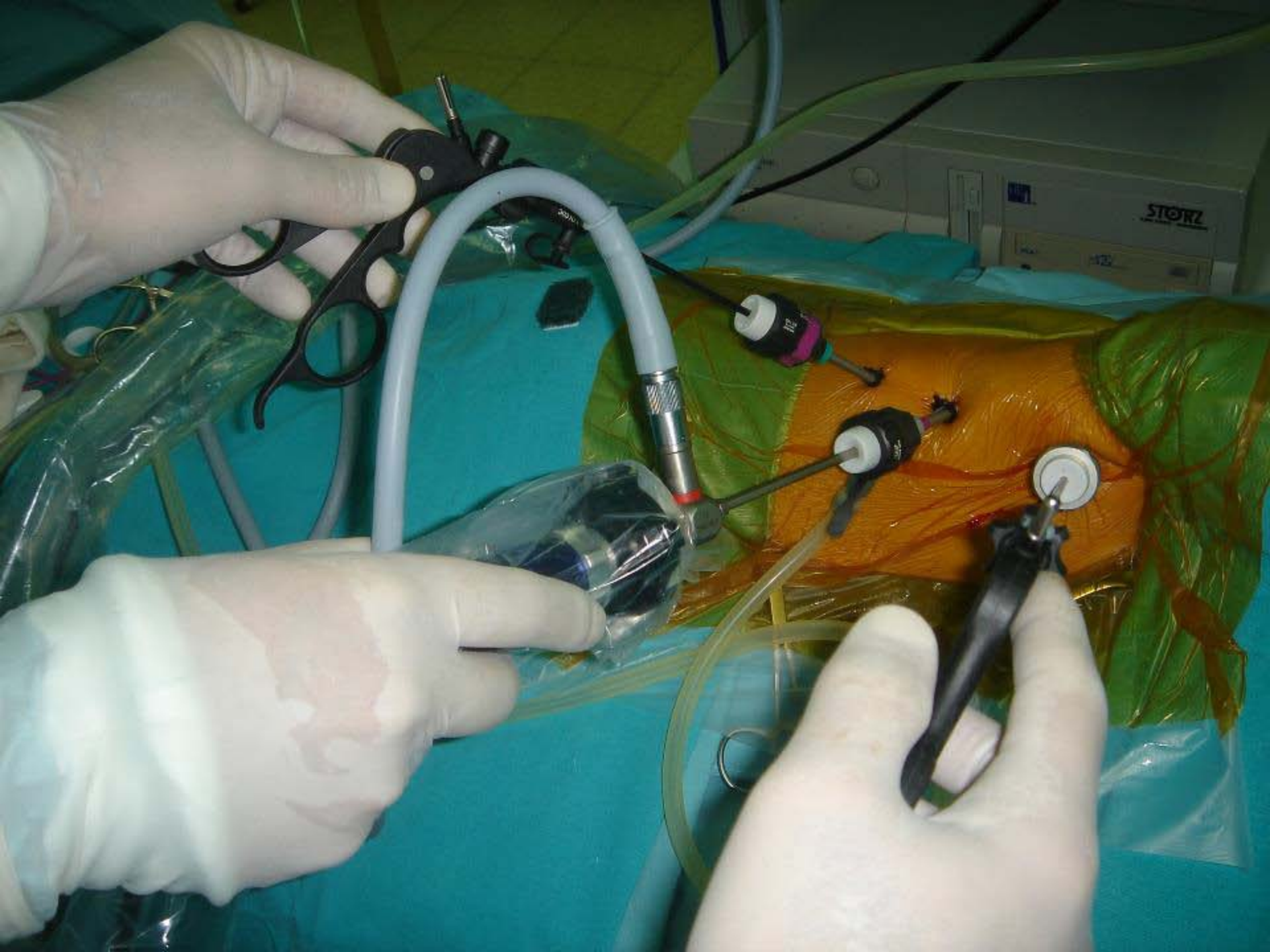
Video Cirugía Neonatal

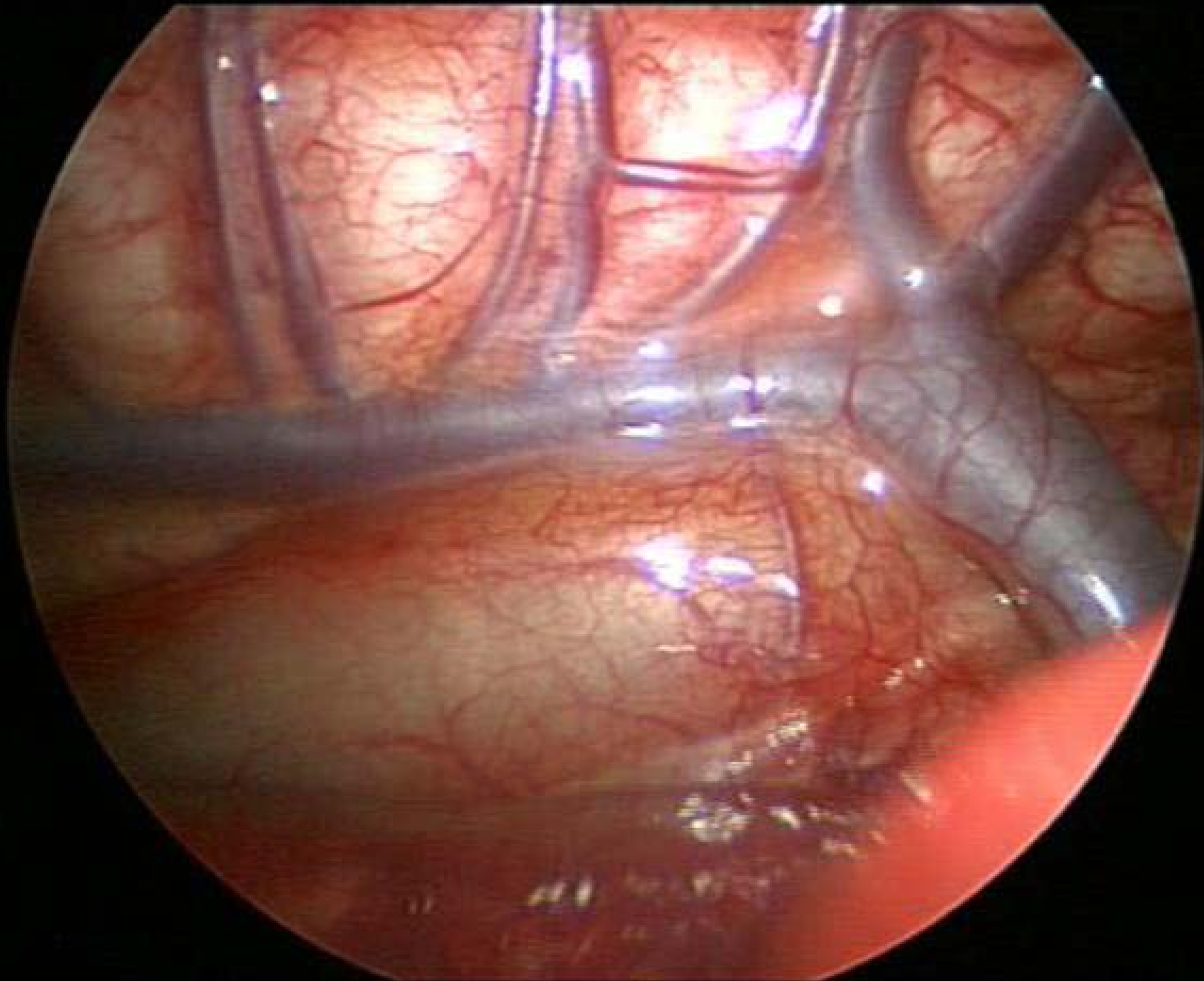
Laparoscopía

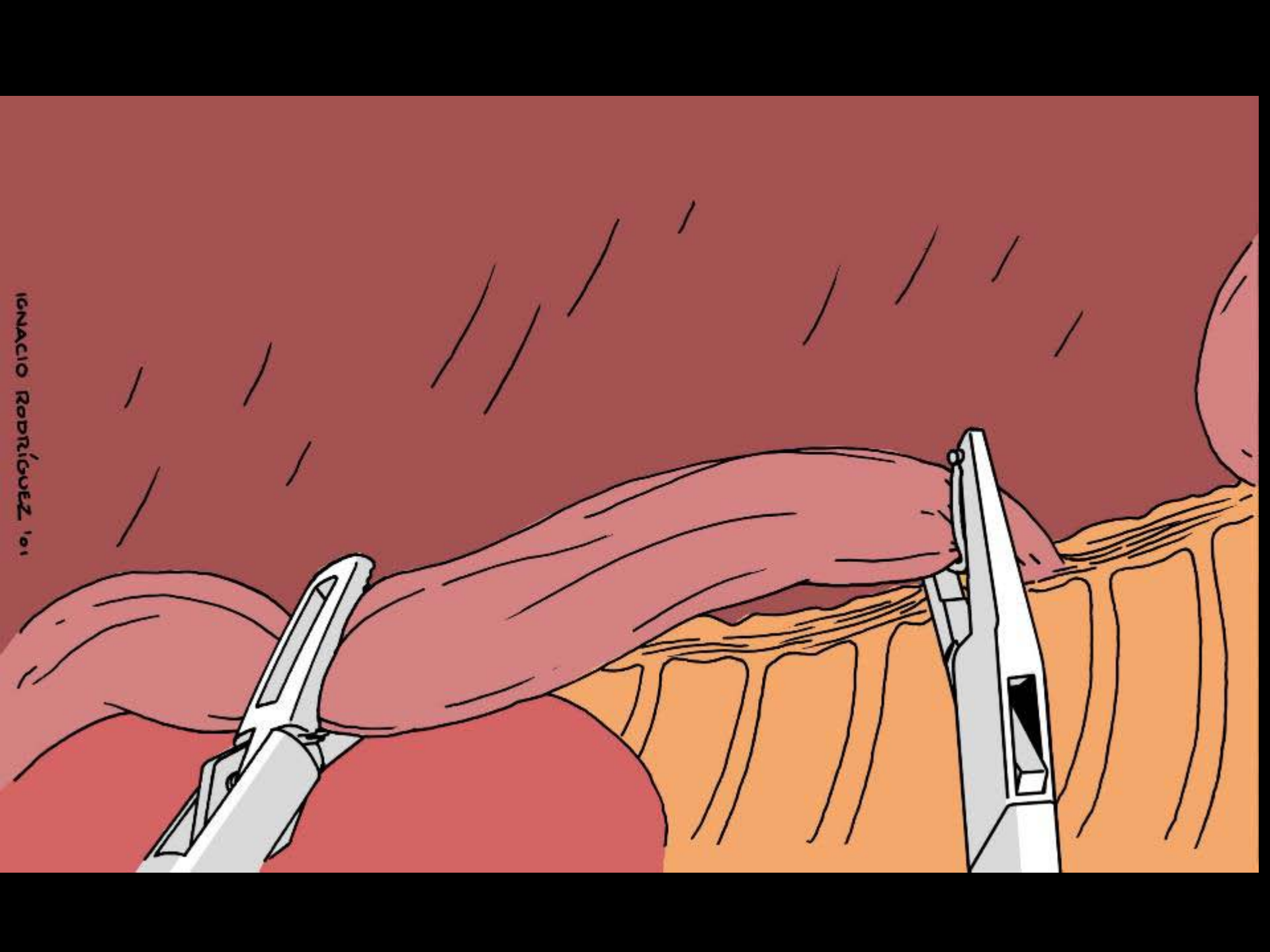
Atresia de Esófago

IGNACIO RODRÍGUEZ MINAVERRY 04

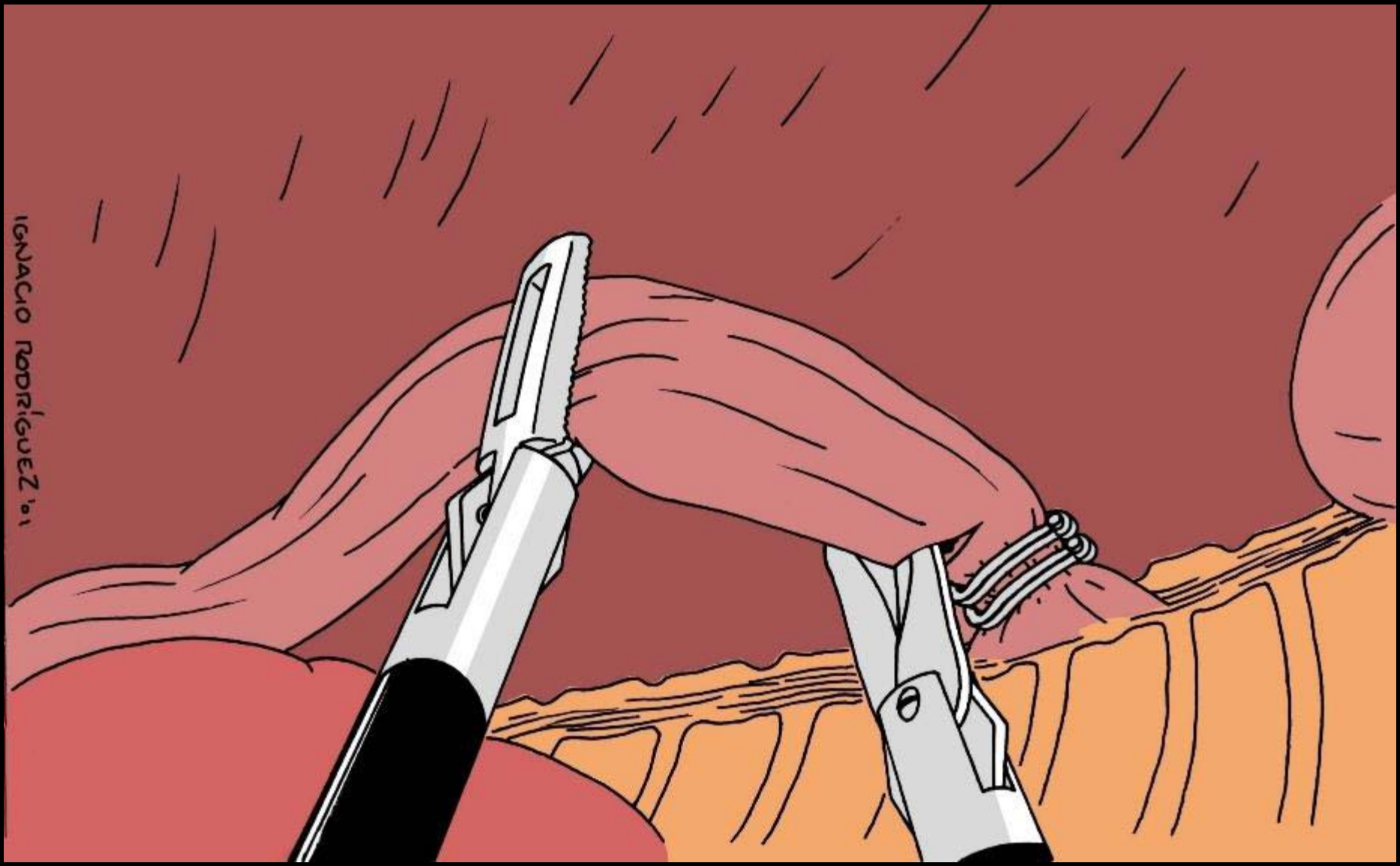




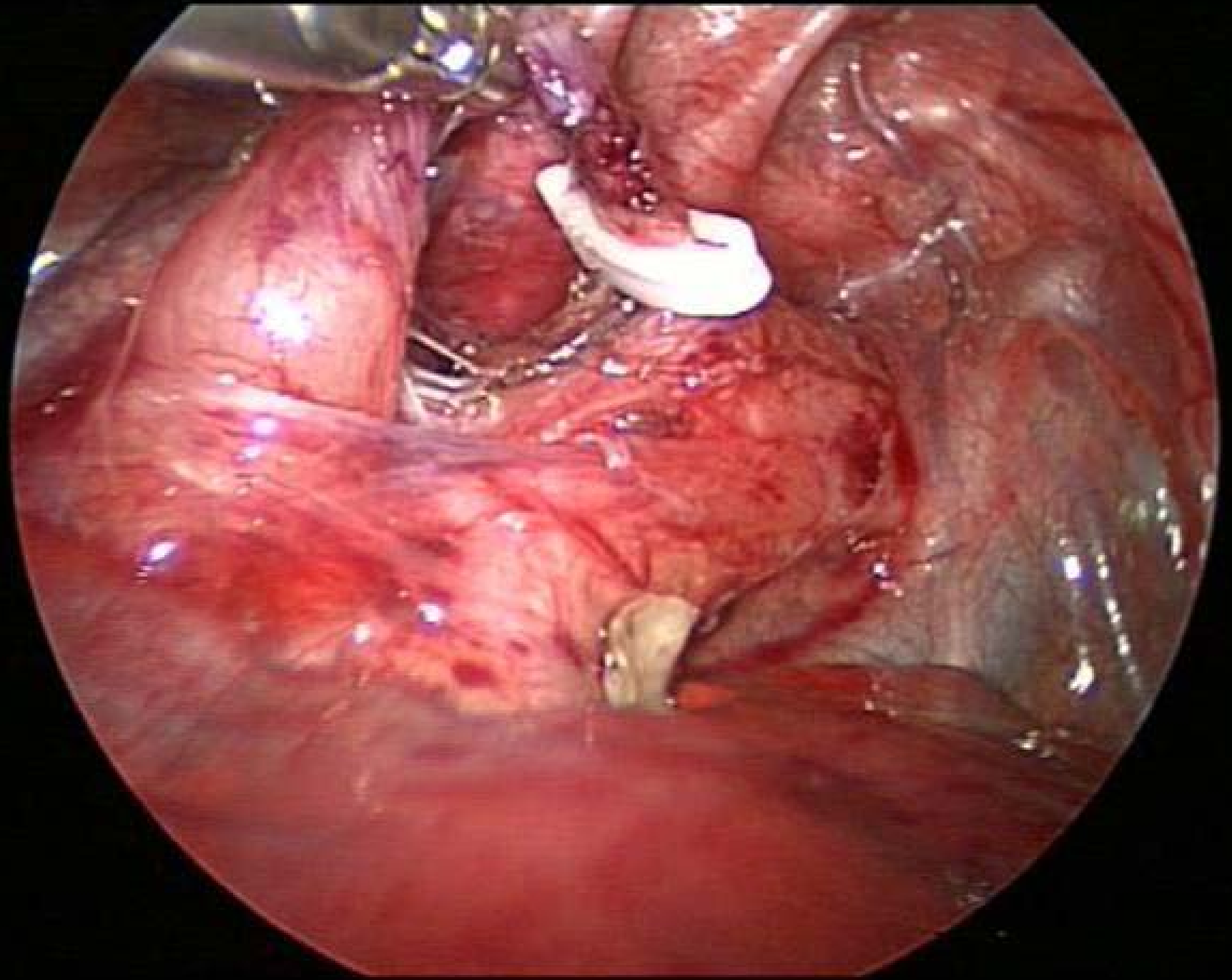




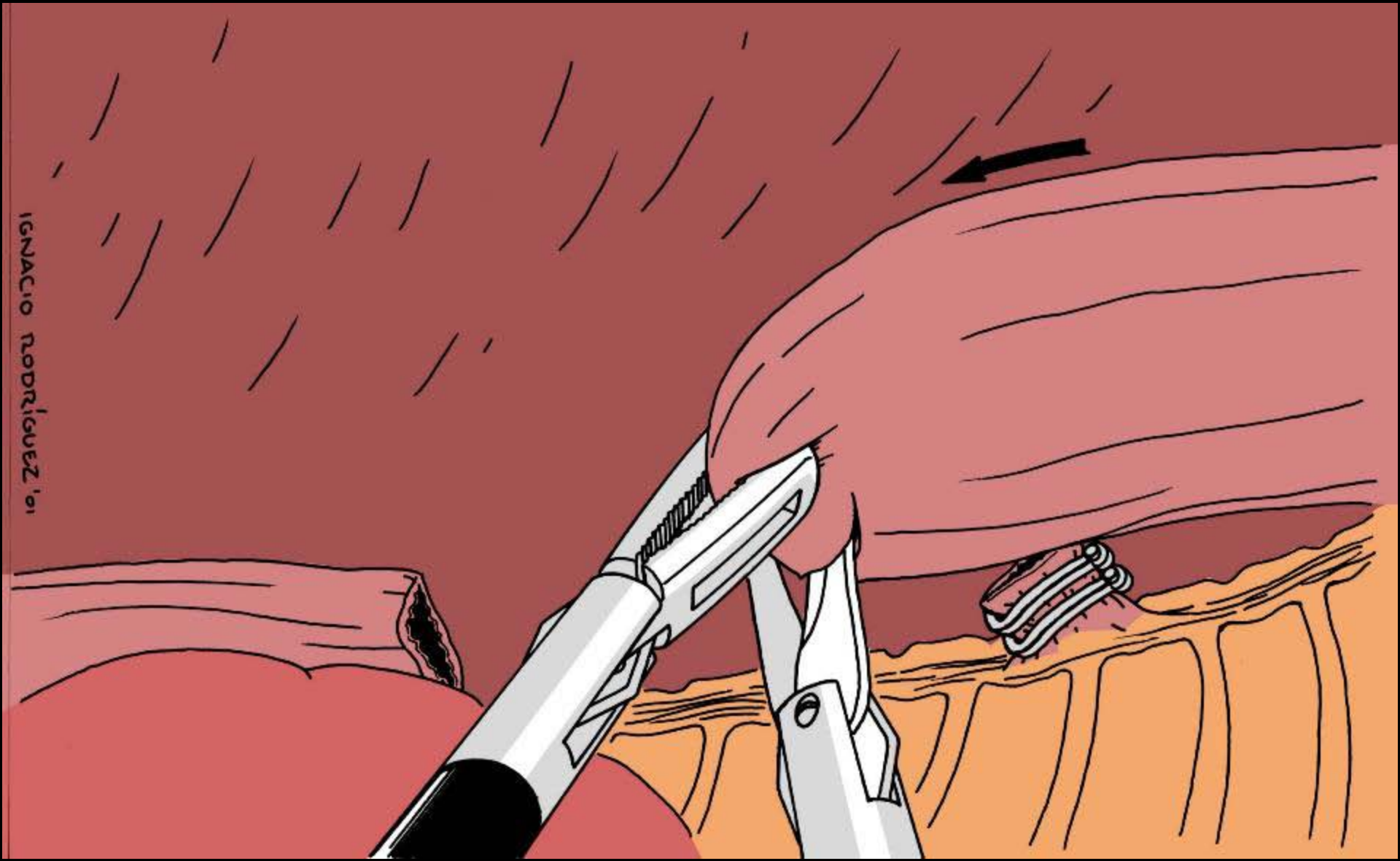
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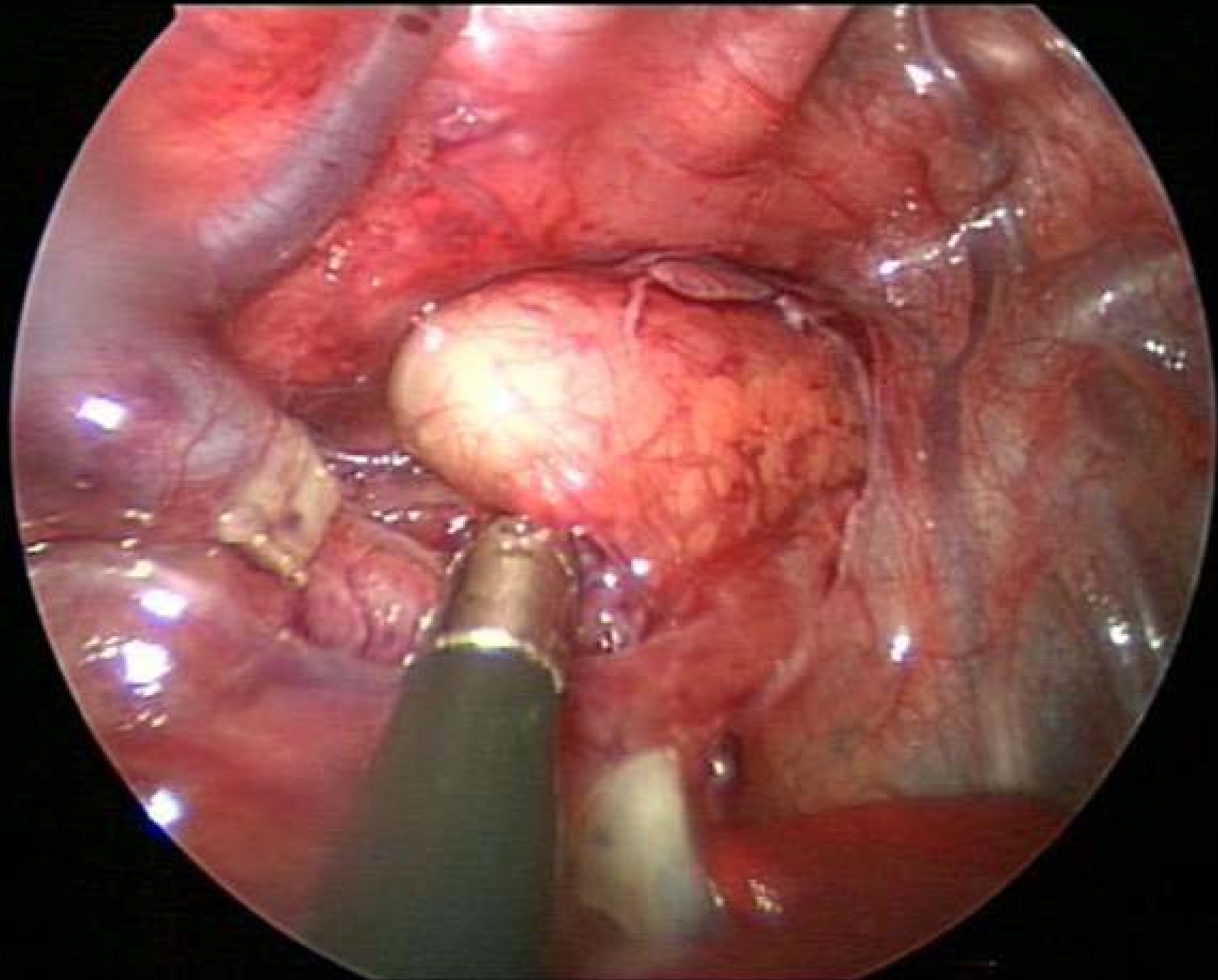


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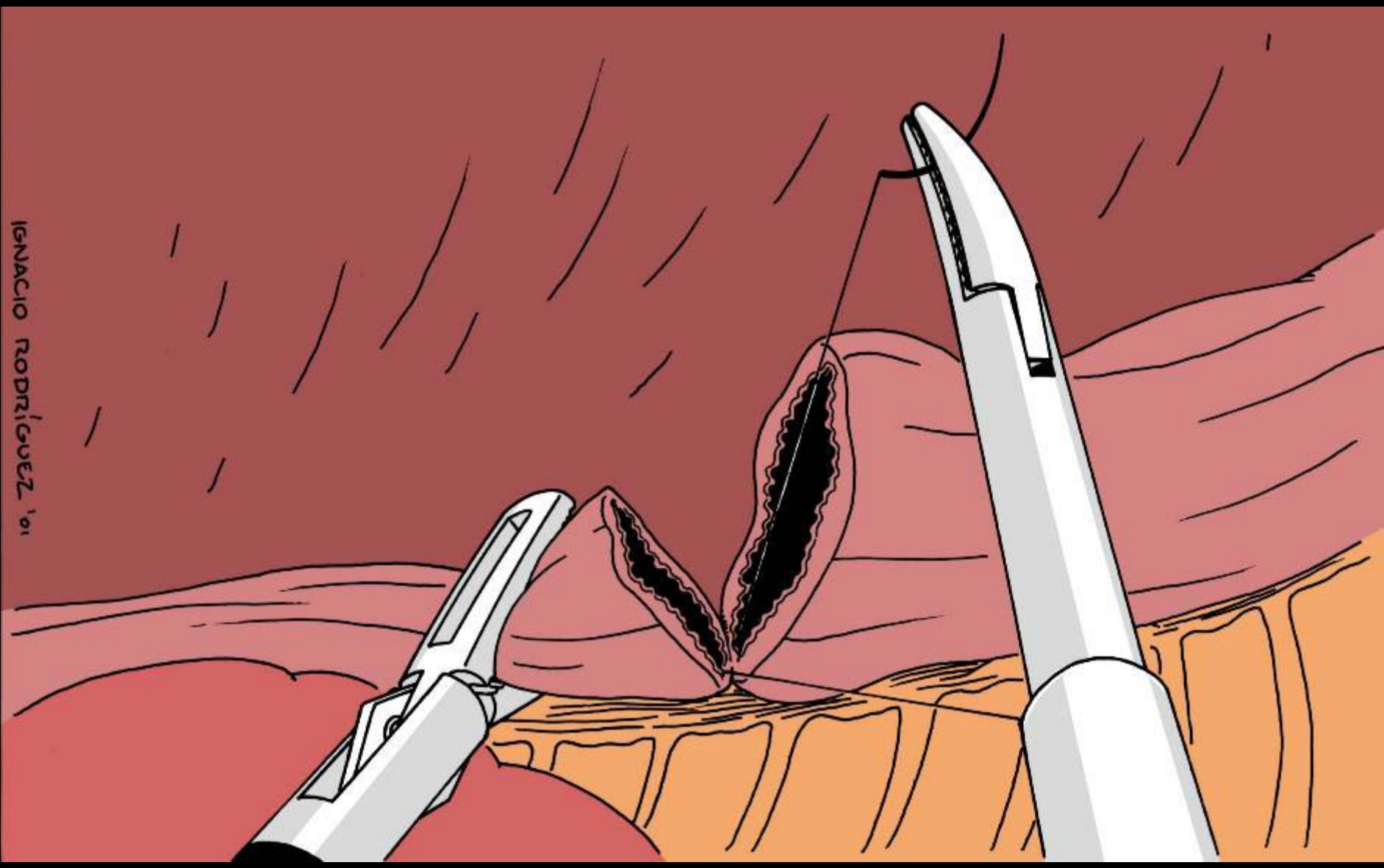
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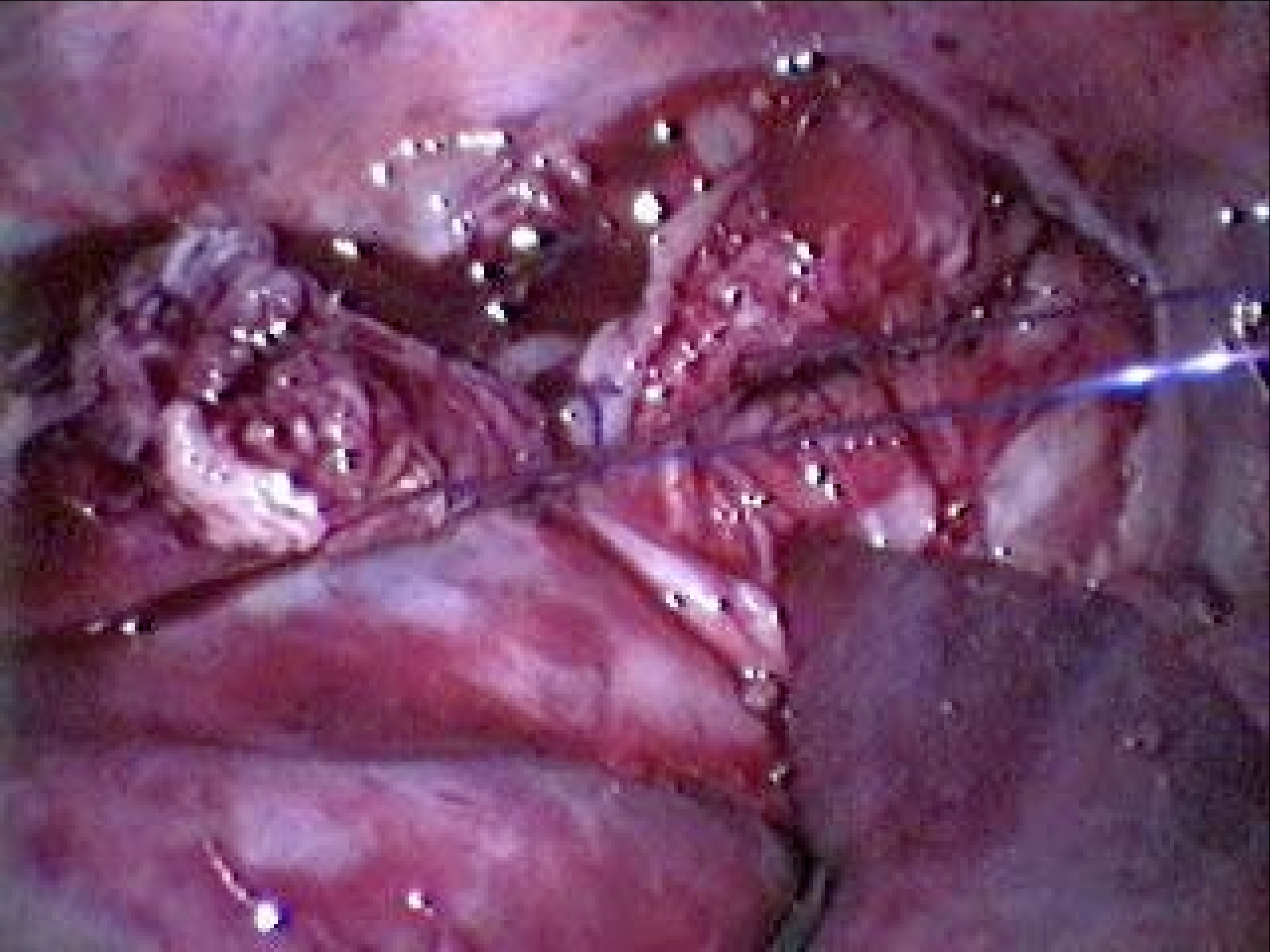




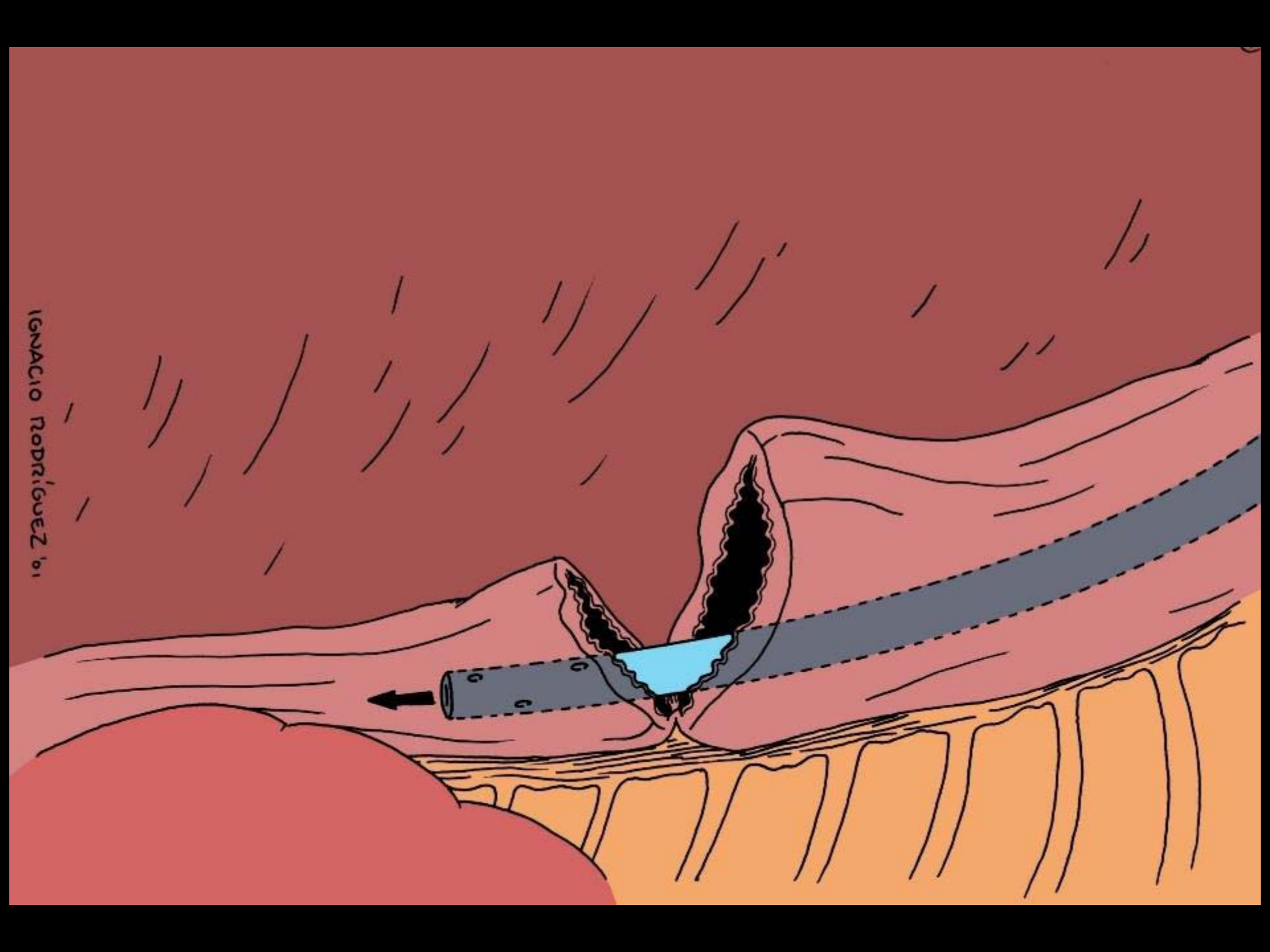


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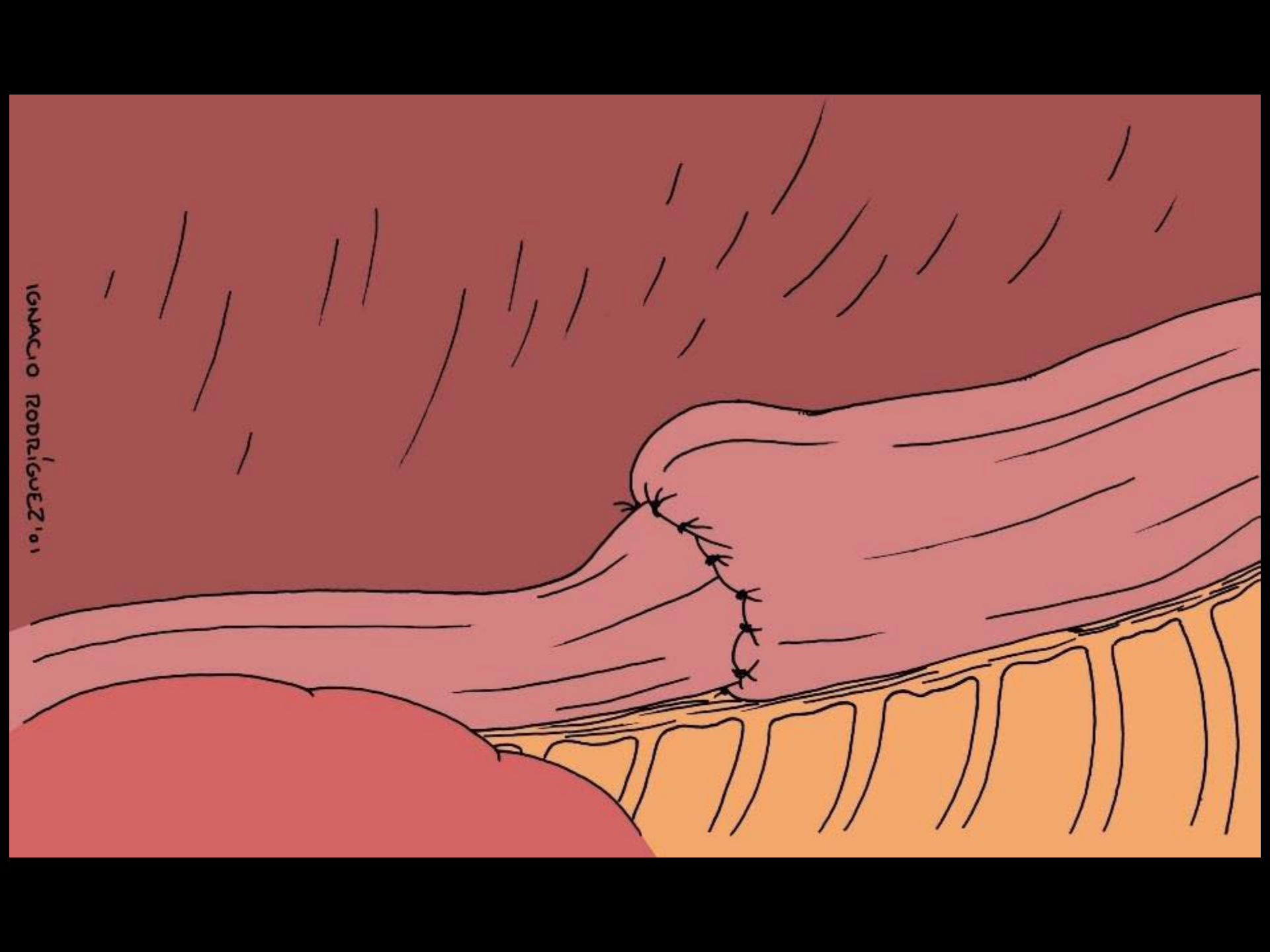




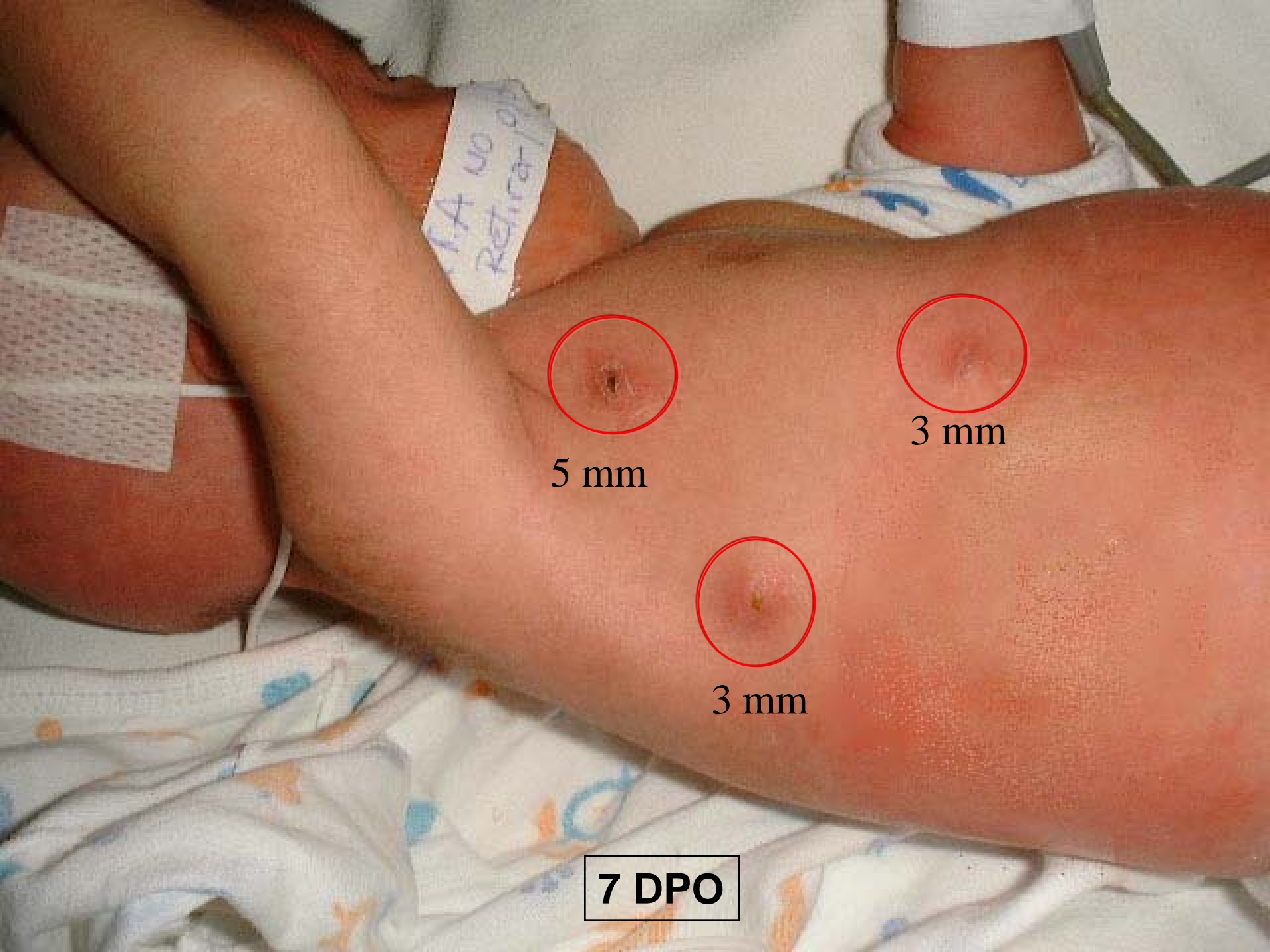
IGNACIO RODRÍGUEZ '01



IGNACIO RODRÍGUEZ '01







A 40
Retirado



5 mm



3 mm



3 mm

7 DPO

1 Mes





2 Meses



6 Meses



3 años Postop



15 años postop

PM 7:37 FEB/17/2017

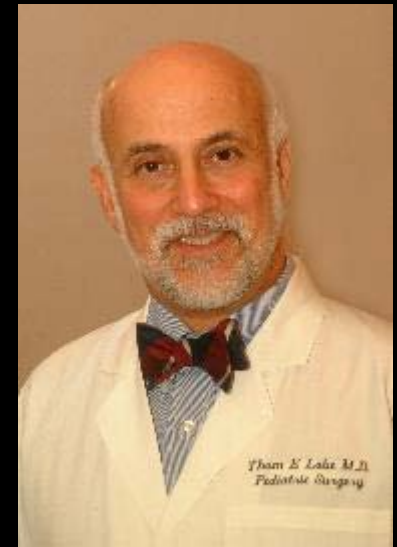
Case Report

Thoracoscopic Repair of Esophageal Atresia in an Infant: A Surgical First

THOM E LOBE, M.D.,¹ STEVEN ROTHENBERG, M.D.,²
JEURGEN WALDSCHMIDT, M.D.,³ and LUTZ STROEDTER, M.D.³

ABSTRACT

A 3.4-kg infant born with long-gap esophageal atresia underwent thoracoscopic repair of her defect after serial bougienage successfully approximated the two ends of the esophagus. A new technique for bronchial blockade of the right mainstem bronchus was used to collapse the right lung. A three-trocar, transpleural approach was used, with the patient situated in a lateral, semiprone position. Extracorporeal knots were placed circumferentially to complete the anastomosis.



Thom Lobe
1999

Case Report

Thoracoscopic Repair of a Tracheoesophageal Fistula in a Newborn Infant

STEVEN S. ROTHENBERG, M.D.

ABSTRACT

Background: Recent advancements in technique and instrumentation have allowed more complex and delicate procedures to be performed even in neonatal infants.

Methods: An infant with a tracheoesophageal fistula and esophageal atresia was treated thoracoscopically using a technique similar to the open operation.

Results: A swallow study on postoperative day 9 showed no leak or stricture.

Conclusion: Although the technical hurdles of this operation are formidable, the thoracoscopic approach provides several benefits, including superior visibility of the fistula. Eventually, thoracoscopic repair may be routine.



Steve Rothenberg
2000

Thoracoscopic Repair of Esophageal Atresia with Fistula: Initial Experience

MARCELO MARTINEZ-FERRO, MD, GASTON ELMO, MD,
and HORACIO BIGNON, MD

ABSTRACT

We present the first nine neonates with esophageal atresia and distal tracheoesophageal fistula (TEF) treated by the authors with a primary thoracoscopic repair.

To close the fistula and create the esophageal anastomosis, a three-trocar approach with carbon dioxide insufflation is required.

Primary correction was accomplished in all cases. No operative complications were encountered. The mean operative time was 105 minutes (range, 70–189 minutes). Three patients (33%) developed anastomotic stricture that required periodic balloon dilation; results were good. Two patients (22%) developed anastomotic leak; one case was mild and secondary to gastric perforation. The cosmetic results were significantly better than those observed after open thoracotomy.

Although thoracoscopic primary repair of TEF appears to offer considerable advantages, further experience and a larger number of cases are required to advance the learning curve; thus, at this stage, the rates of stricture and leakage seem to be higher than those observed historically.

Marzo 2001- Marzo 2002

9 Casos

TABLE 2. DETAILED RESULTS BY PATIENT

<i>Case</i>	<i>Operative time (min)</i>	<i>Long gap</i>	<i>Postoperative complications</i>	<i>Follow-up</i>
1	189		Stenosis (4 dilations)	OK
2	120		Stenosis (3 dilations)	Mild tracheomalacia
3	87		Stenosis (1 dilation)	OK
4	120		Minor leak	OK
5	100	Yes		OK
6	70			OK
7	75			OK
8	100	Yes	Leak	OK
9	75			OK



FIG. 12. Excellent cosmetic results observed 2 months after surgery.

Toracotomía Convencional

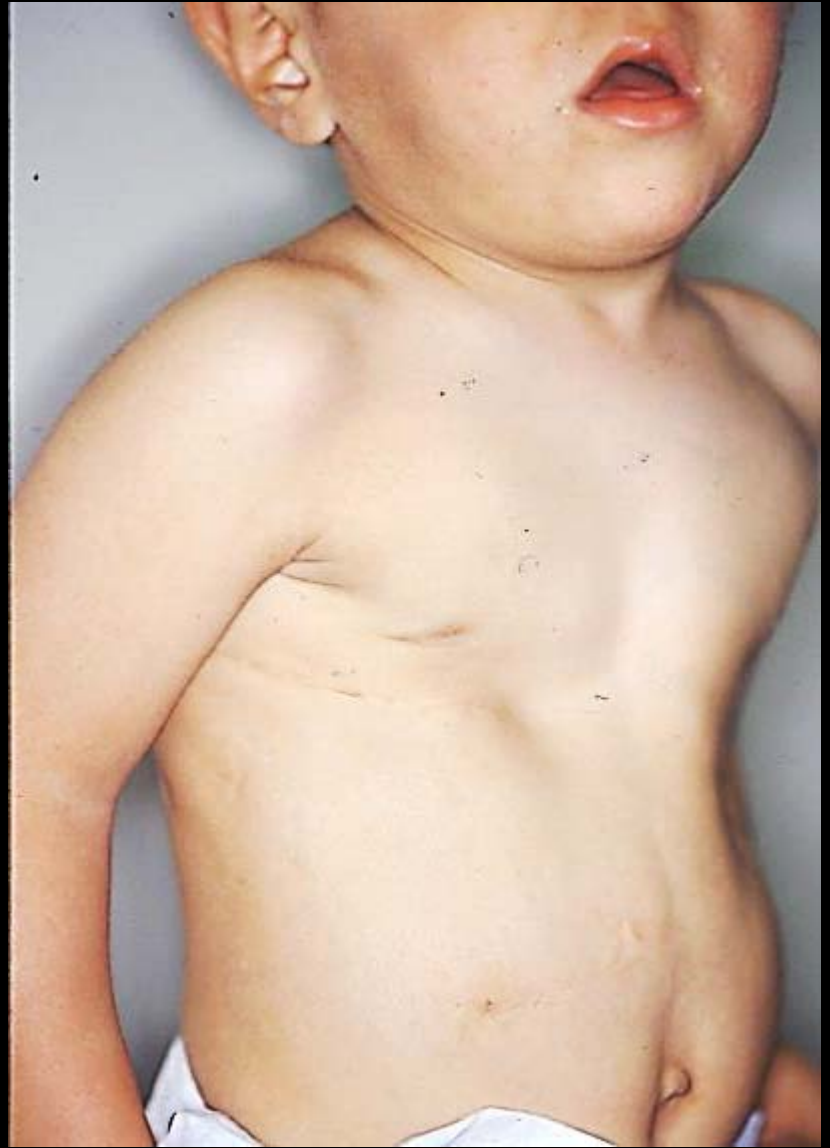


Secuelas alejadas:

- Escápula Alata
- Asimetría torácica
- Pectus Excavatum
- Fusiones Costales

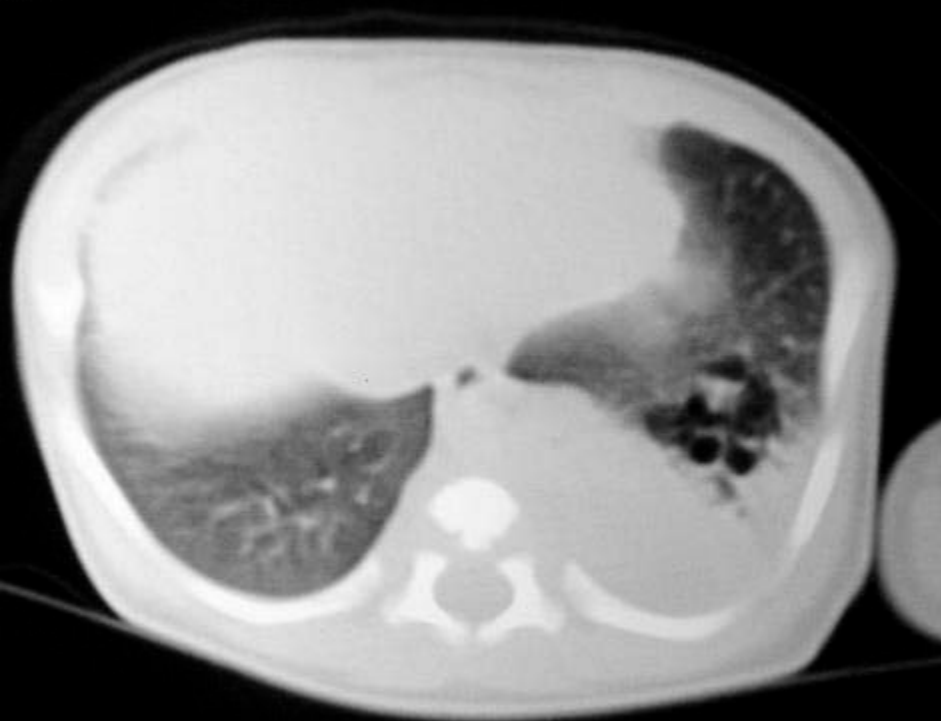




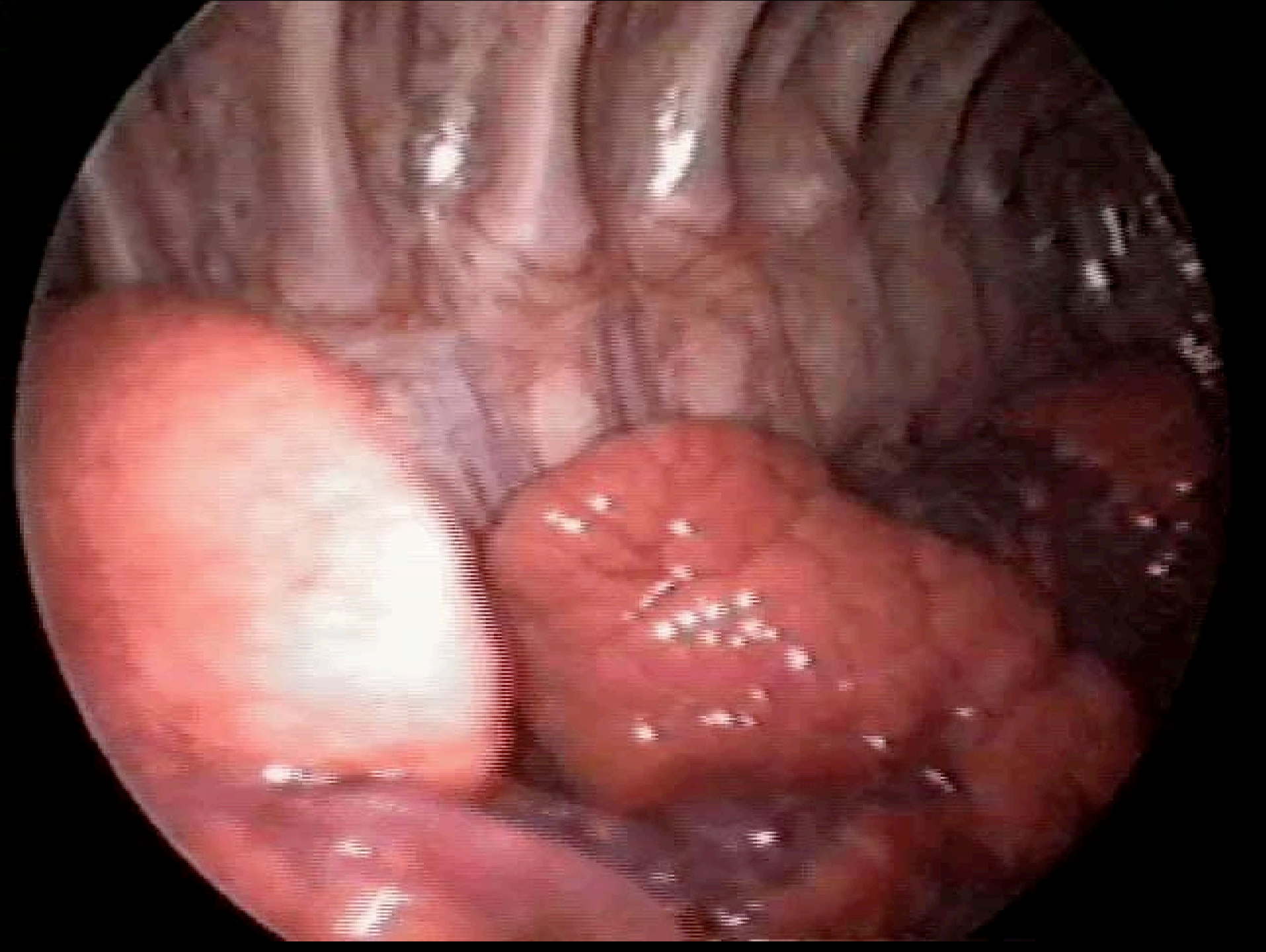


Resecciones Pulmonares

00cm



MAR: 1 2 3 4 5 6 7 8 9 10 11 12

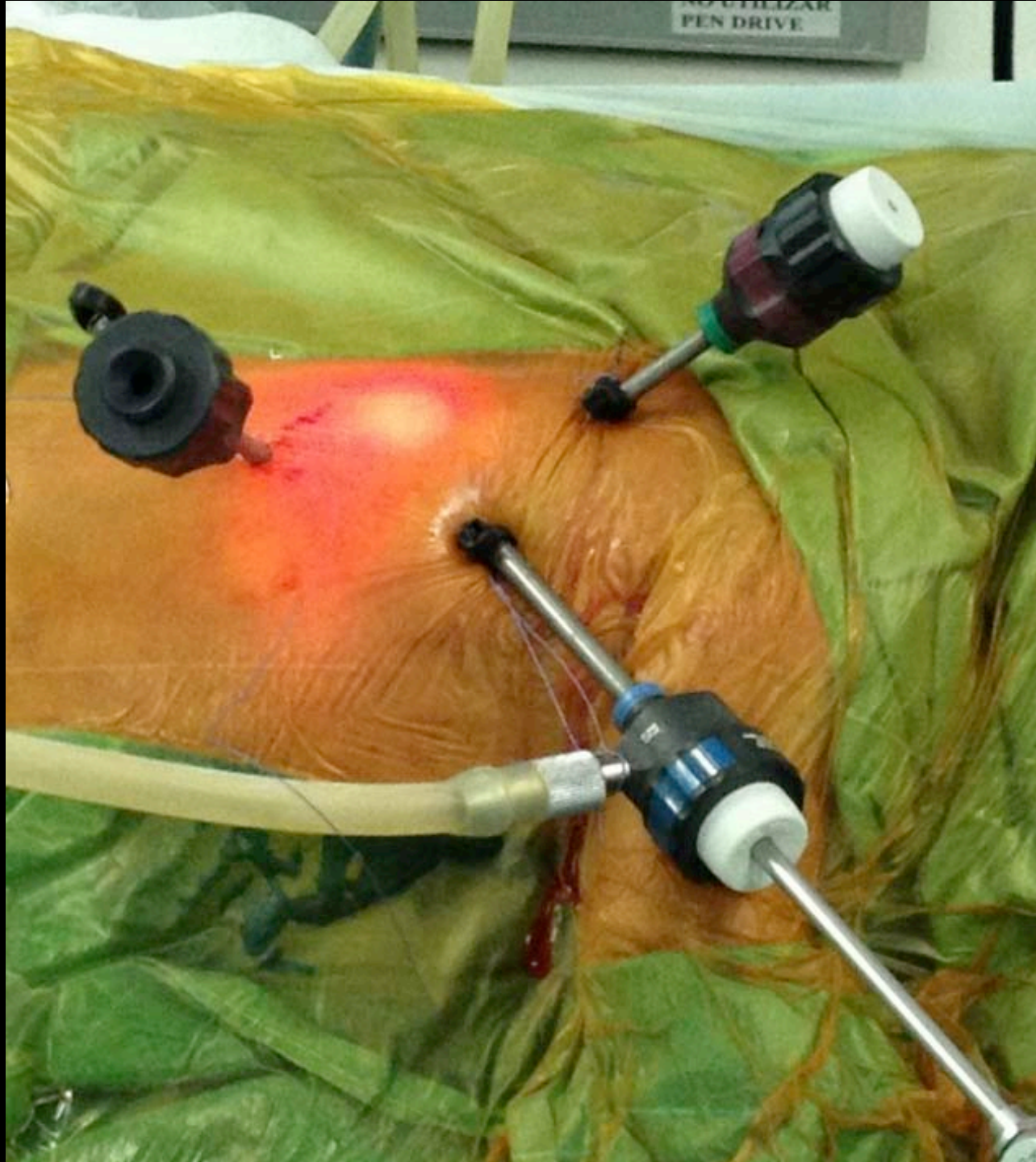


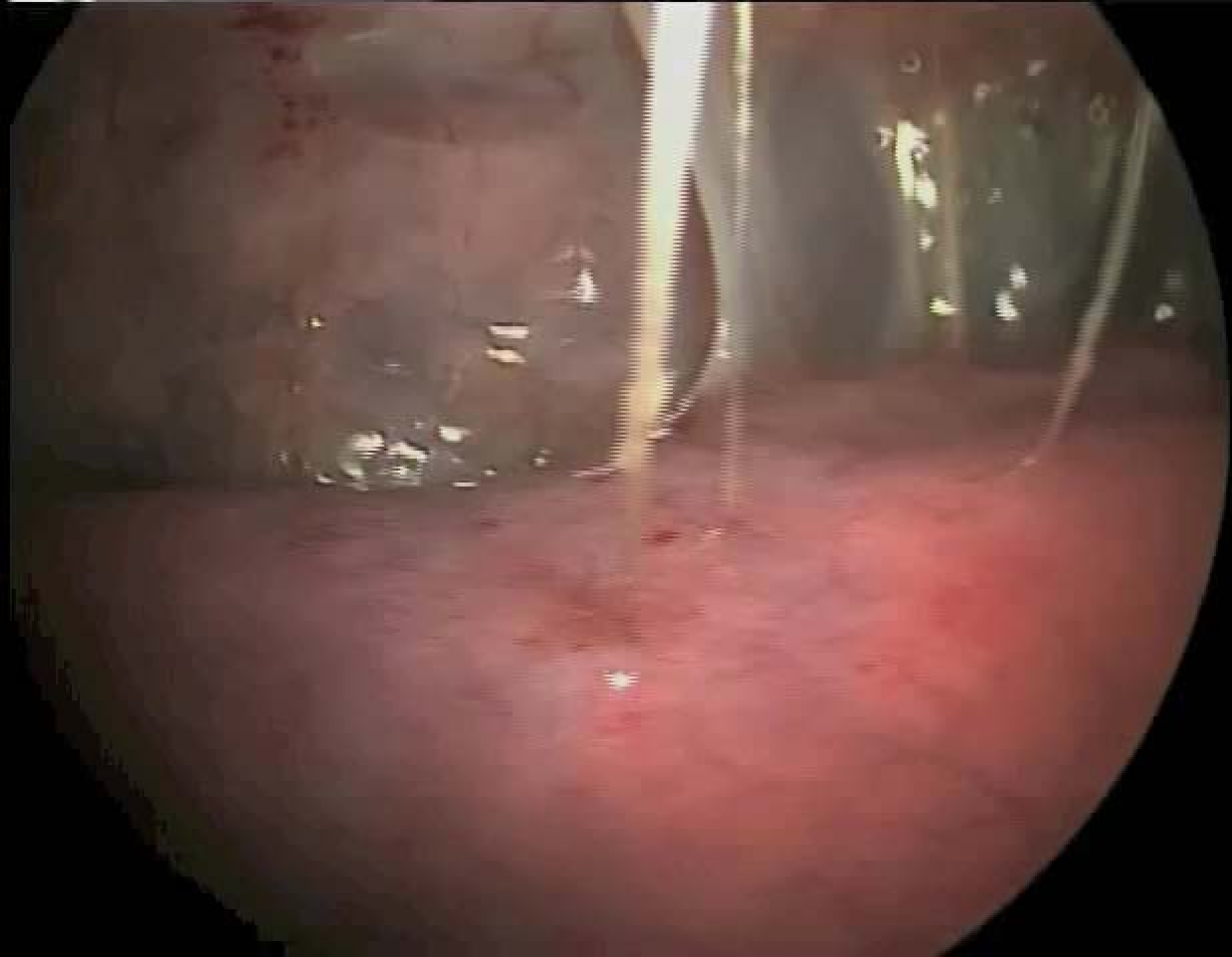


Ligadura del Conducto Torácico (Quilotorax Refractario)

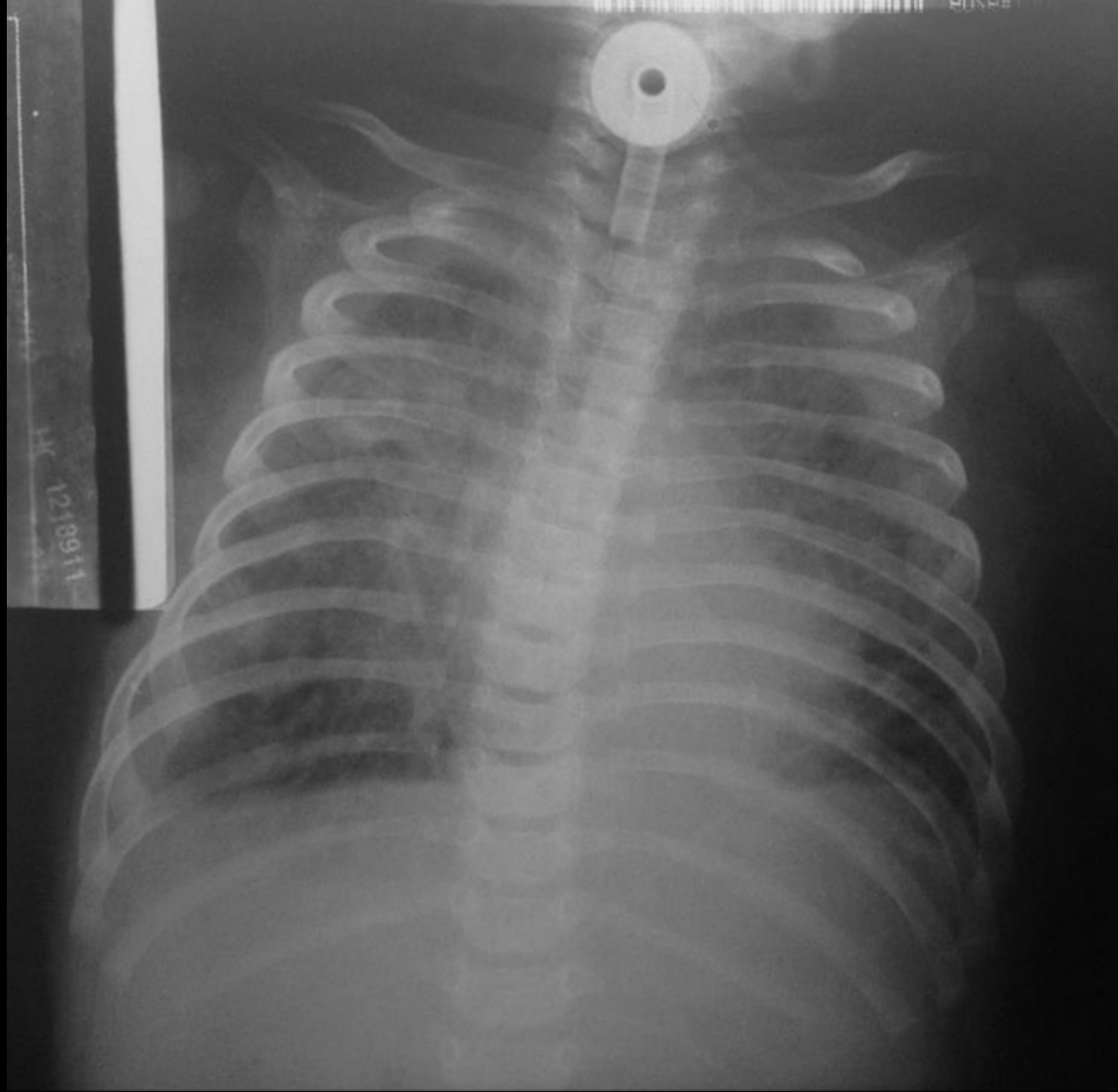












HK 1218911



Toracoscopía

Video Cirugía Neonatal

Laparoscopía

- Patología Diafragmática
- Patología Esófago-gástrica
- H. Píloro
- Atresia de Duodeno
- Vías Biliares
- Intestinal (Atresias, duplicaciones)
- Patología Retroperitoneal
- Malformaciones Ano Rectales
- Aganglionosis
- Enterocolitis Necrotizante
- Intersexos
- Quistes y tumores de Ovario
- Patología Urológica

Hipertrofia de Píloro

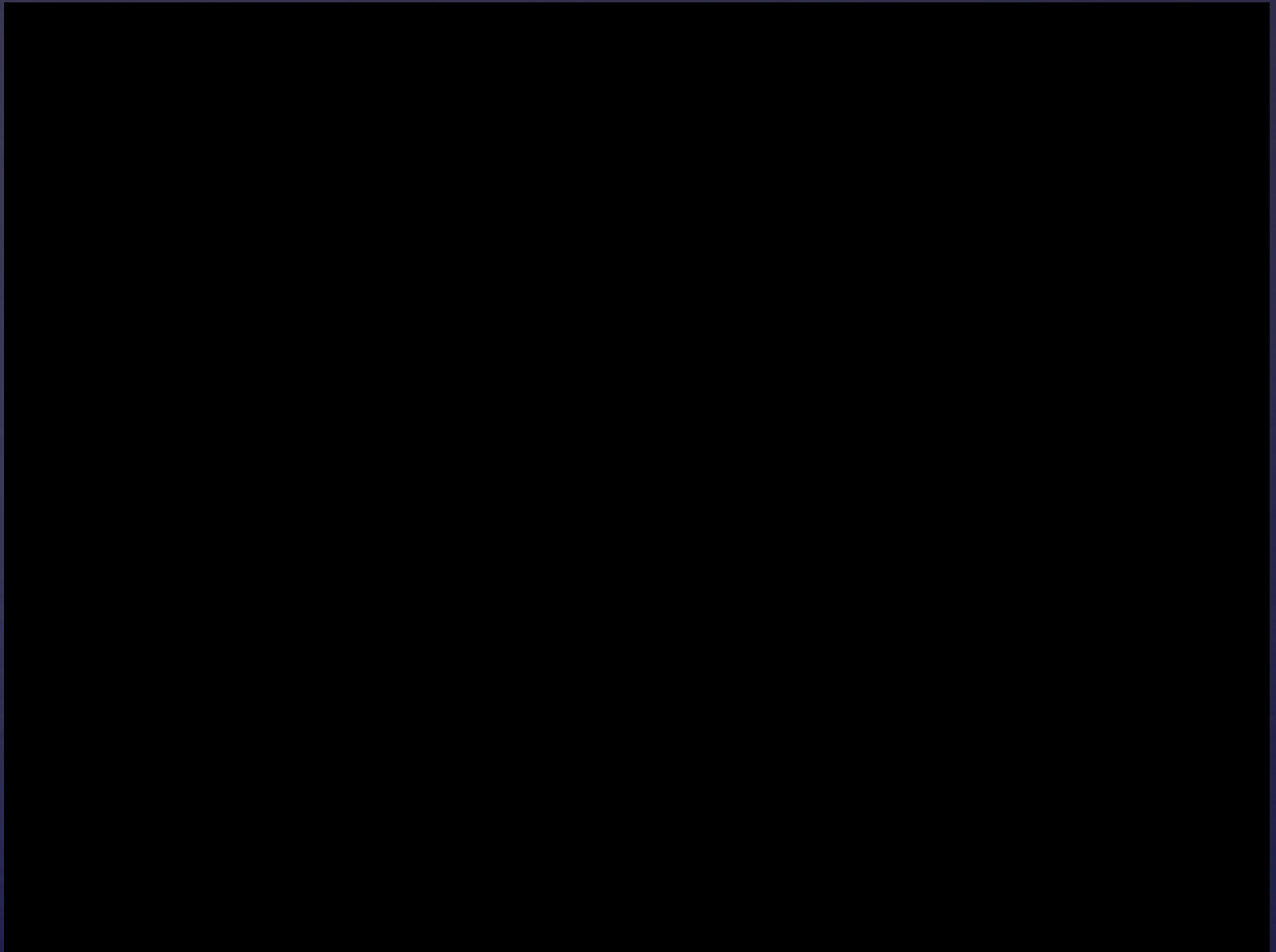


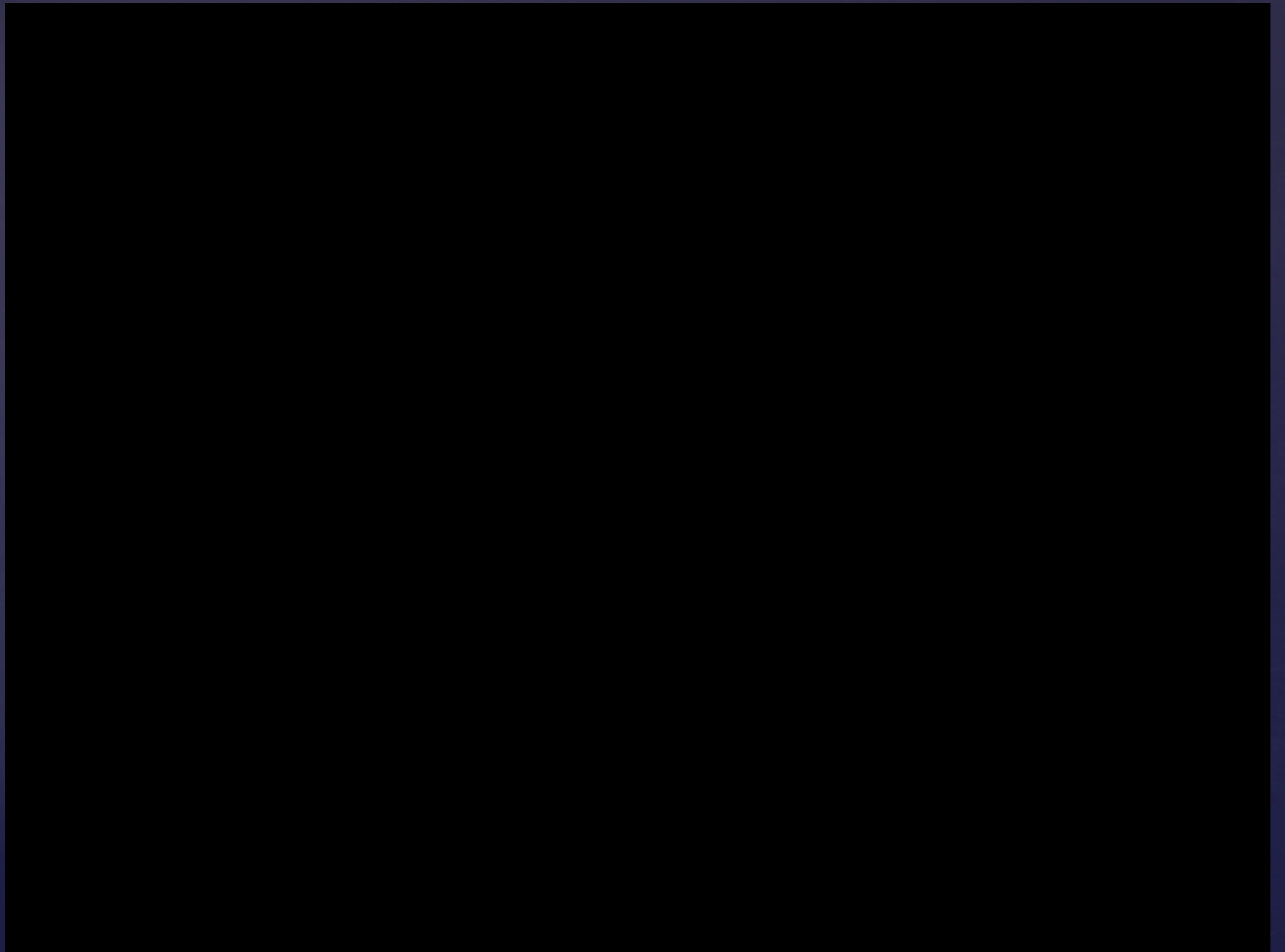
Hernias Inguinales

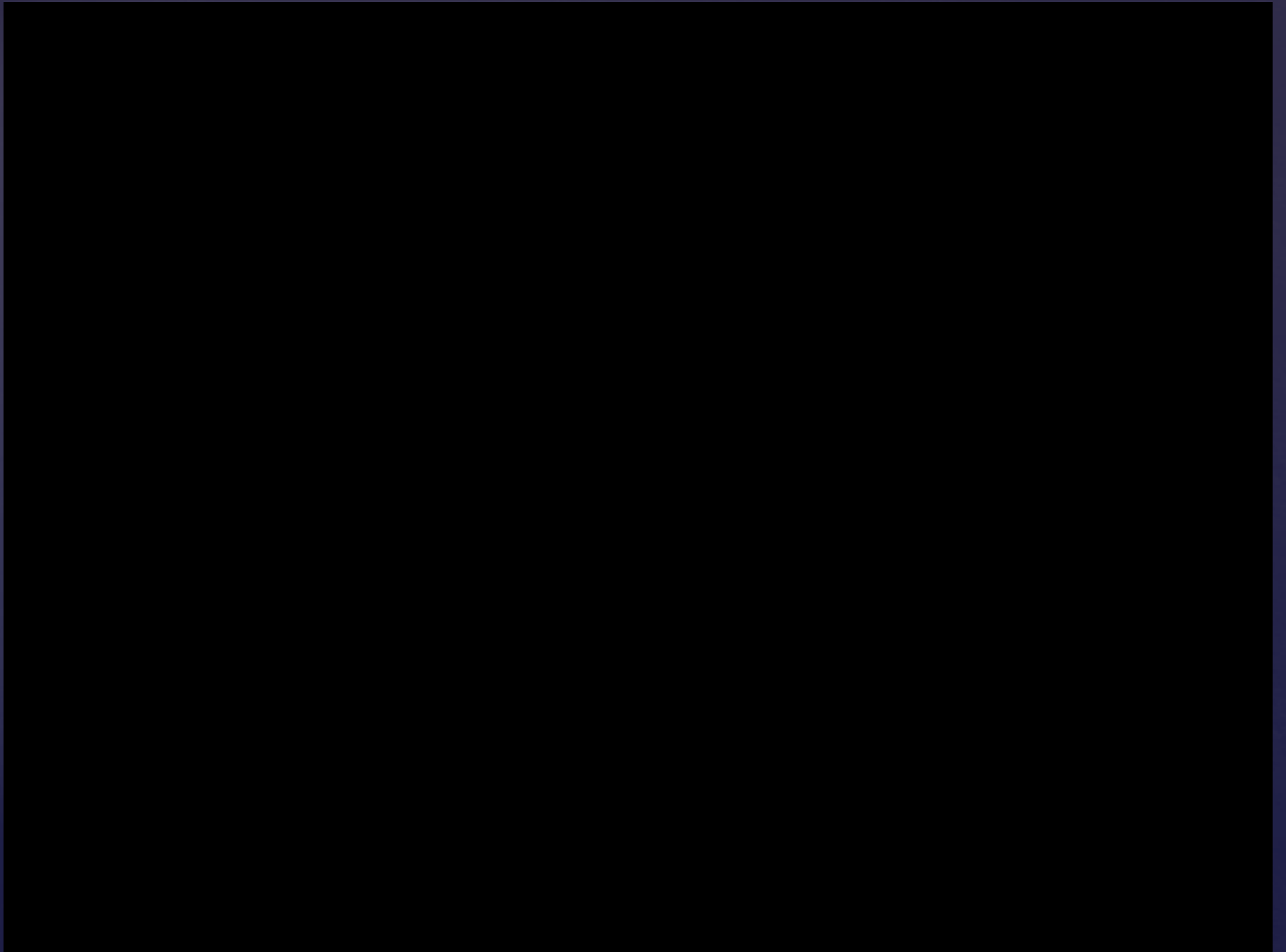


Atresia de Duodeno



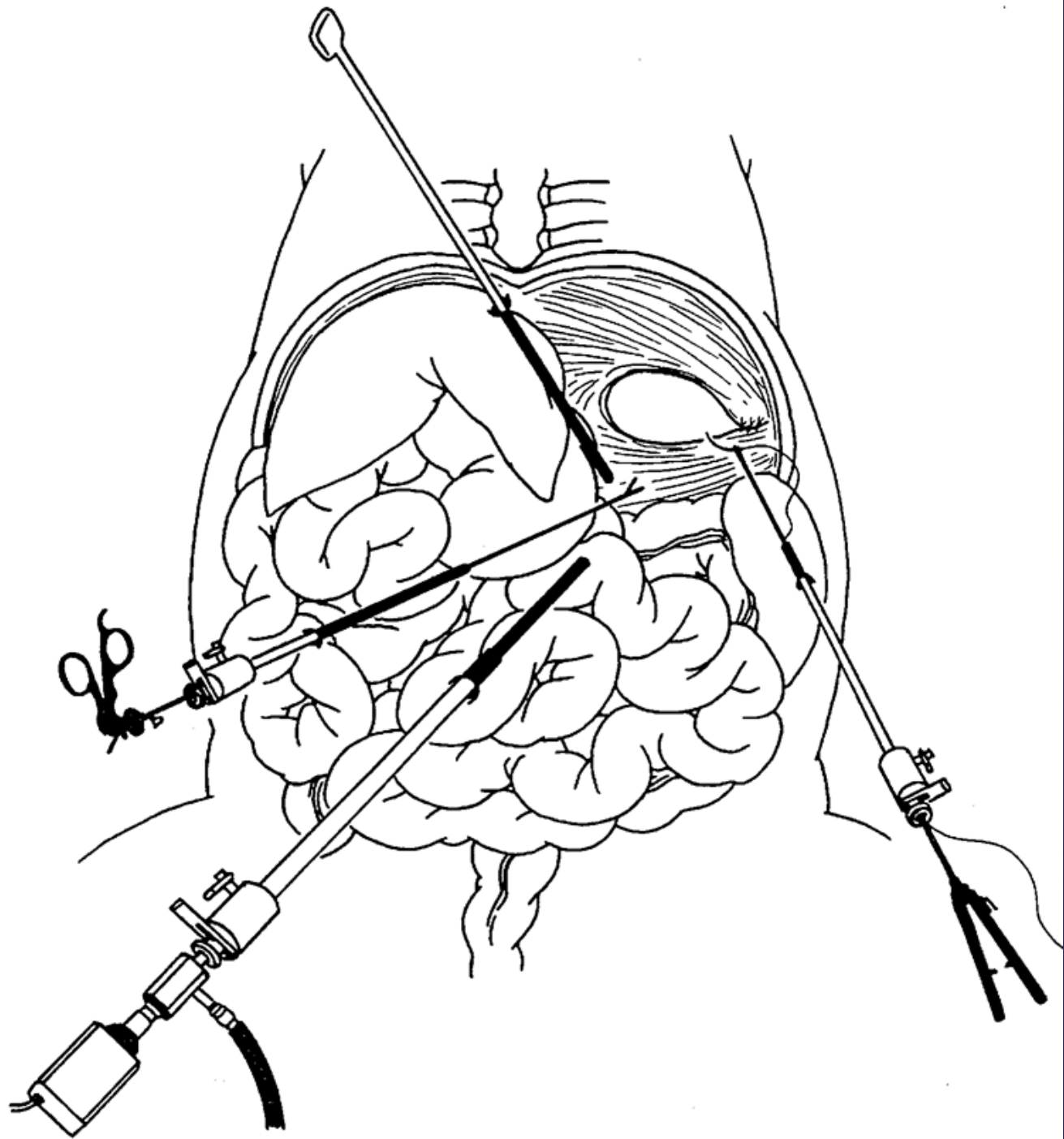




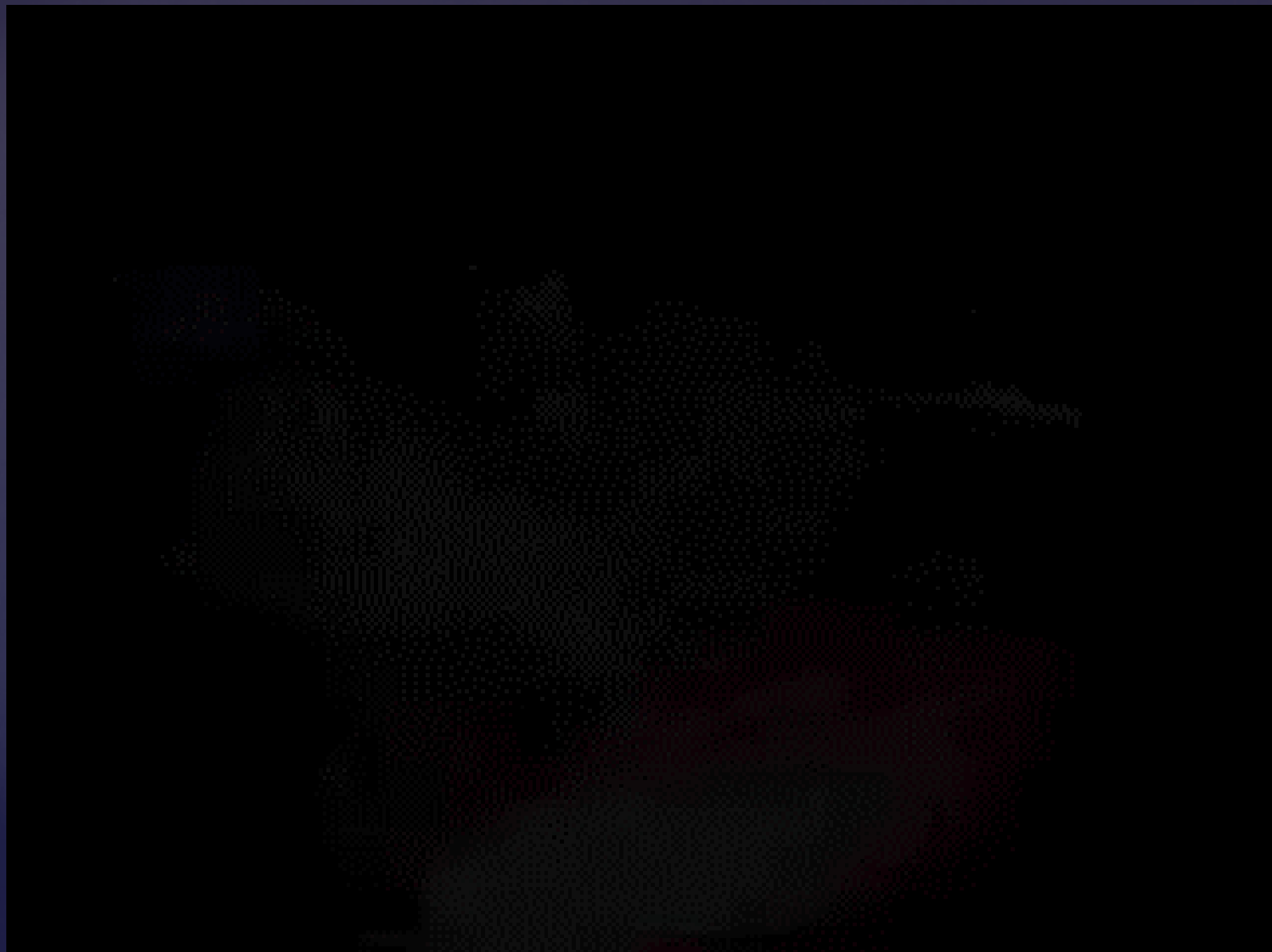


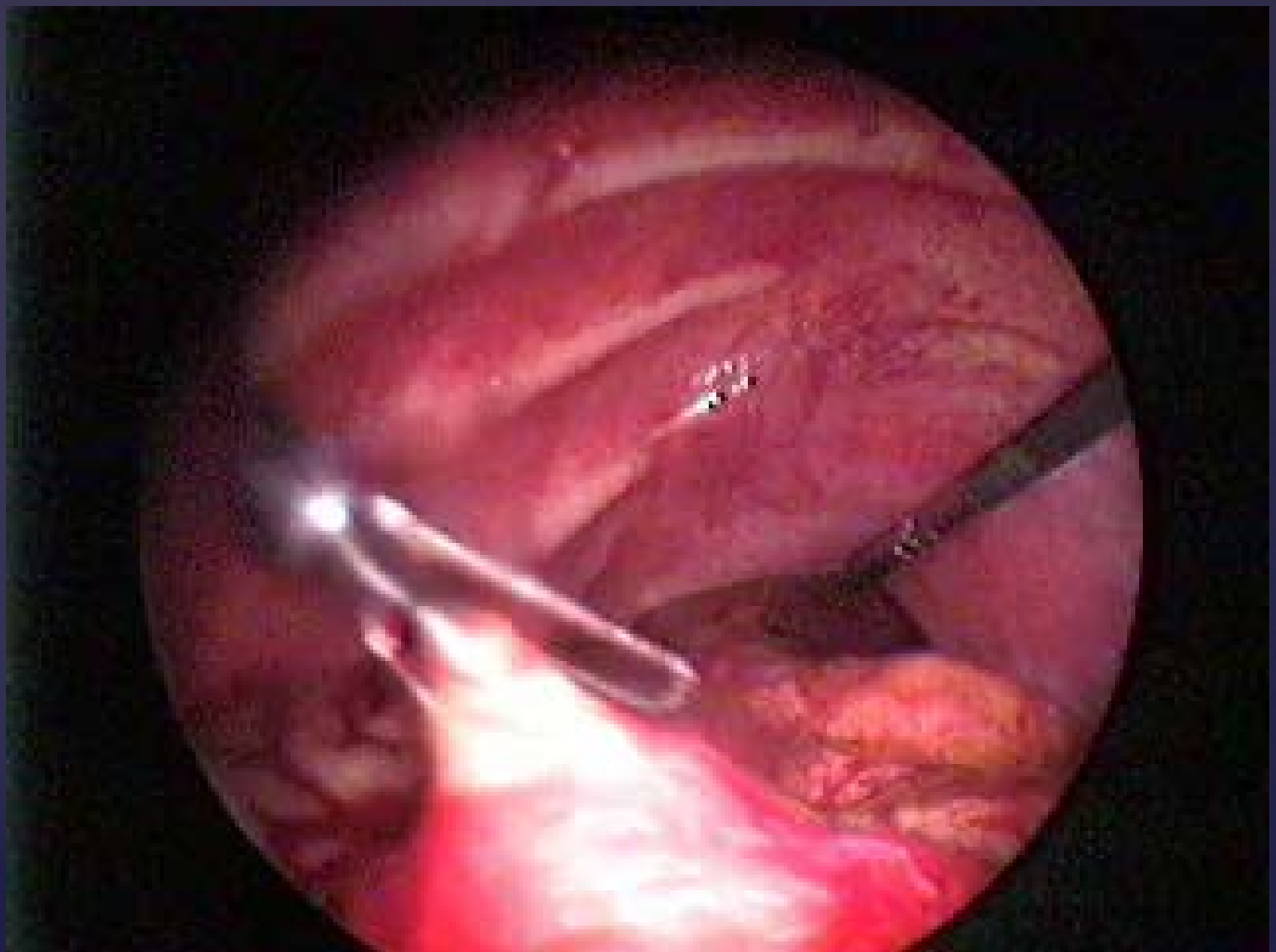


Corrección laparoscópica de los defectos diafragmáticos Neonatales











30 DIAS po

Estenosis Post Enterocolitis Necrotizante

Laparoscopic Treatment of Postnecrotizing Enterocolitis Colonic Strictures

Marcelo Martinez-Ferro, MD,¹ Steven Rothenberg, MD,² Shawn St. Peter, MD,³
Horacio Bignon, MD,¹ and George Holcomb, MD, MBA²

Abstract

The current report is a multicenter study of a series of infants who developed colonic strictures (CS) as a sequelae of necrotizing enterocolitis (NEC) and who were treated successfully with laparoscopic intestinal resection and primary anastomosis. During 2005–2008, 11 neonates (gestational ages, 32–38 weeks), with a mean birth weight of 1.7 kg (range, 0.96–2.2) and a mean weight at operation of 3.04 kg (range, 1.6–4.4) were approached laparoscopically, following the diagnosis of a post-NEC-CS. The two surgical techniques were: 1) laparoscopic mobilization with extracorporeal resection and anastomosis (LERA) in 4 (36%) and 2) laparoscopic mobilization with intracorporeal resection and anastomosis (LIRA) in 7 (64%) patients. Laparoscopy was effectively performed in all cases without conversion to open surgery. The median operative time was 93 minutes (range, 80–121). The anastomosis was colocolic in all patients, except in 1 case, in which it was colorectal. There were no operative complications. All babies recovered uneventfully and started oral feeding at a median time of 3.5 days (range, 1–11) postoperatively. Hospital discharge was at a median time of 9 days (range, 2–29) following operation. No recurrent strictures have developed.

2010
Multicéntrico 11 pacientes

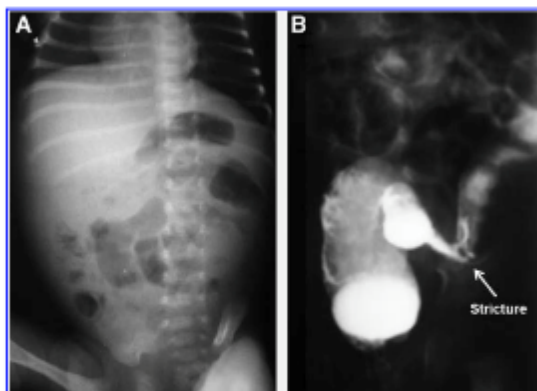


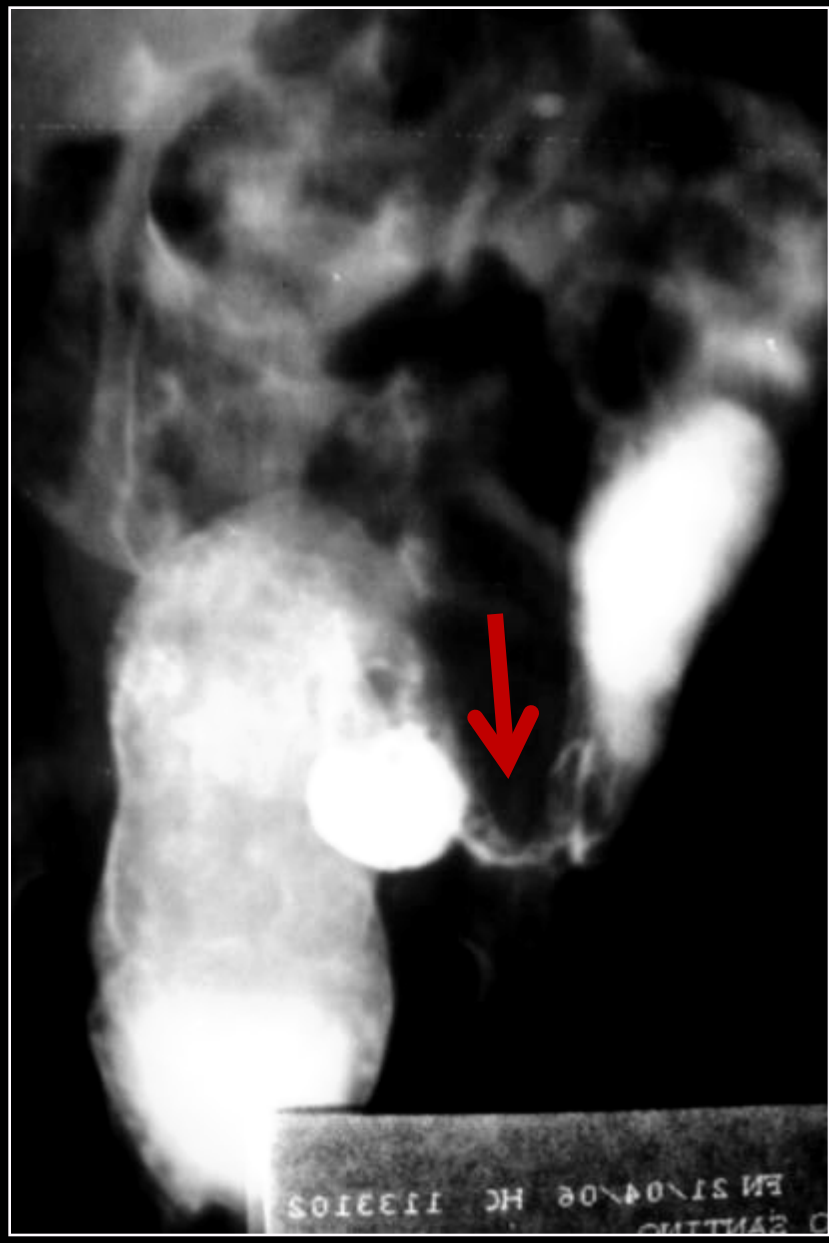
FIG. 1. (A) The radiographic findings revealed an irregular air distribution and pneumatosis intestinalis (in the lower right abdomen). (B) The contrast enema study (barium enema) shows a stricture (arrow) in the proximal sigmoid colon consistent with a stricture following necrotizing enterocolitis (case 11).

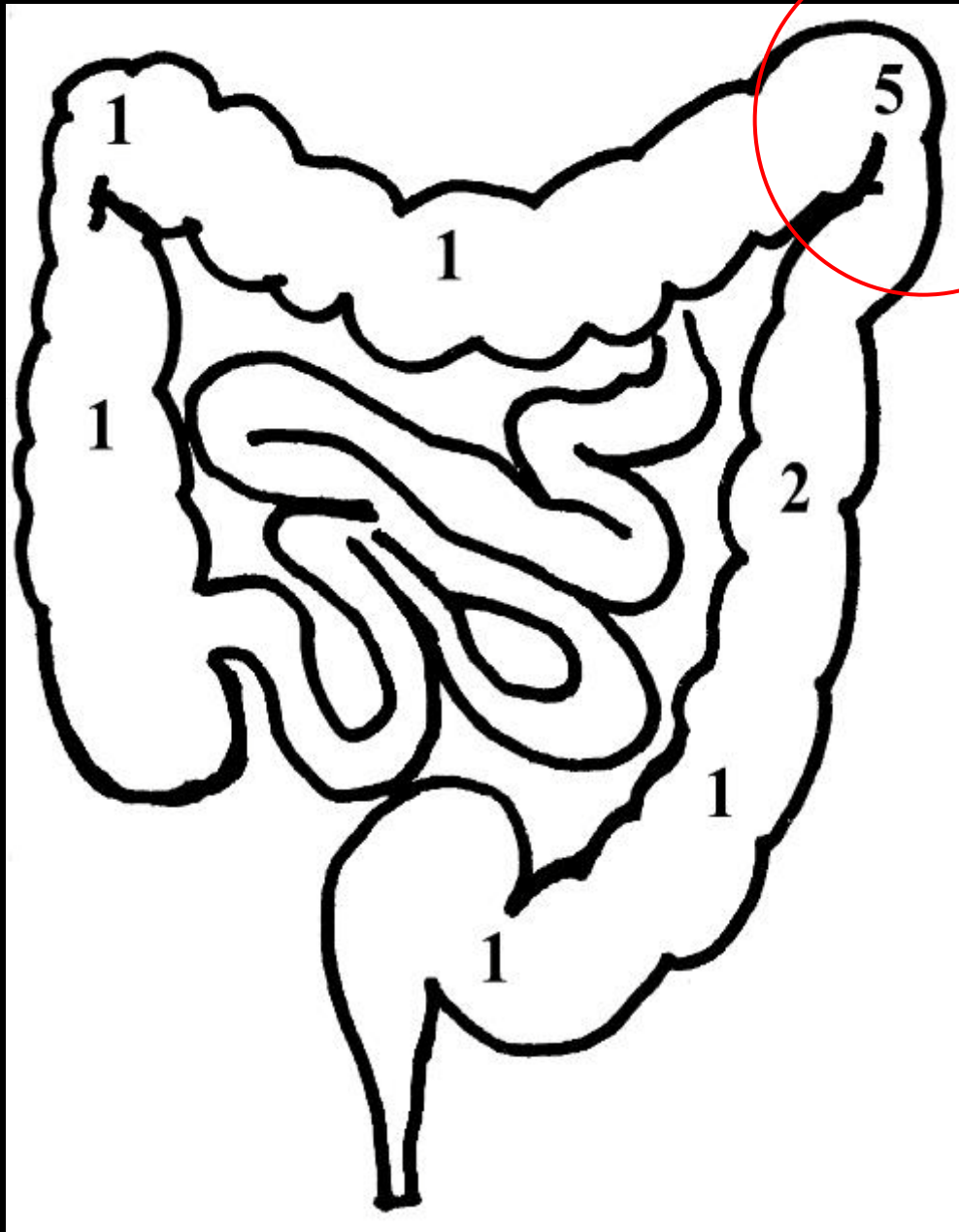
¹Department of Pediatric Surgery, Fundación Hospitalaria, Hospital Privado de Niños, Buenos Aires, Argentina.

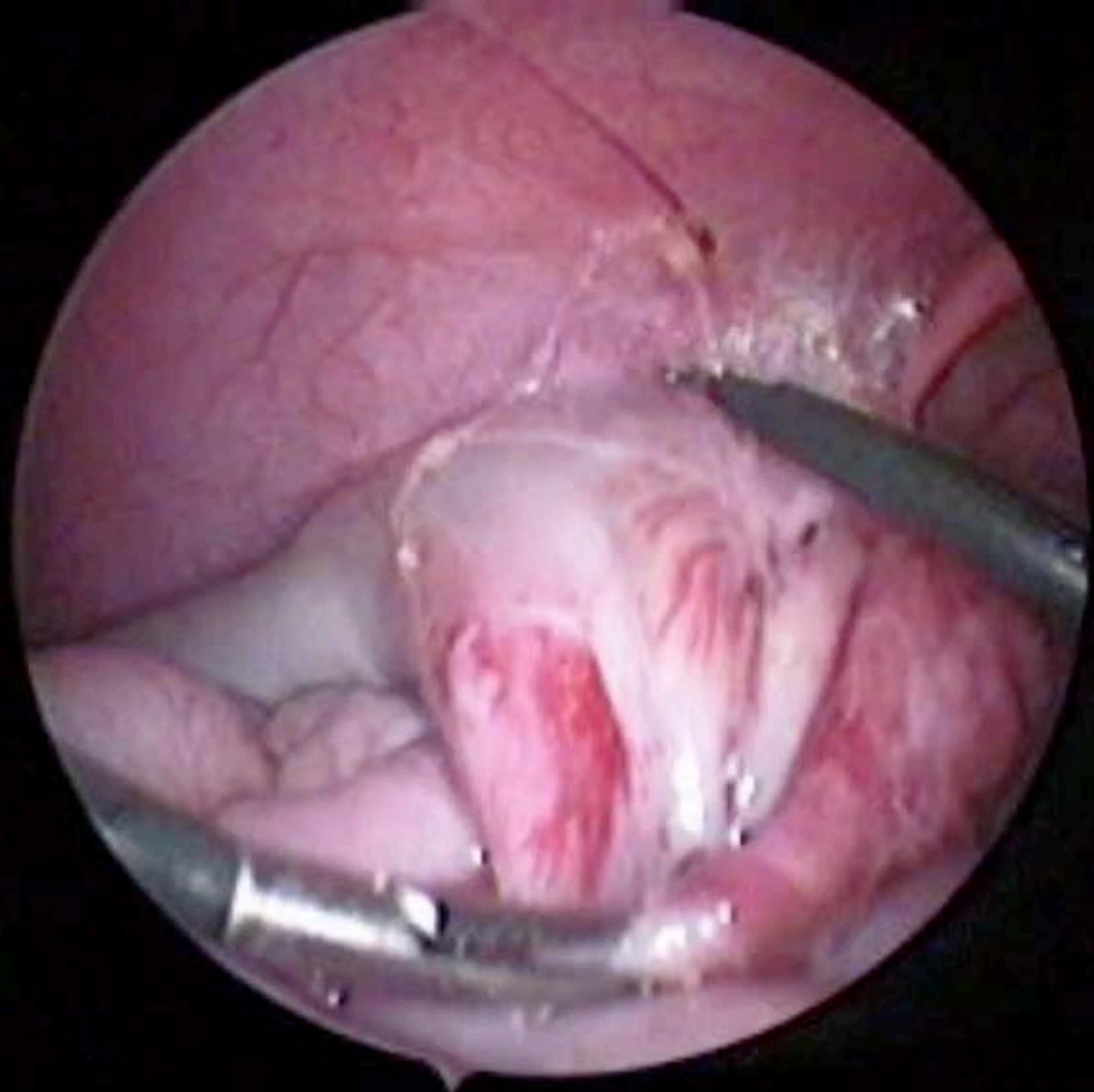
²Department of Pediatric Surgery, The Rocky Mountain Hospital for Children, Denver, Colorado.

³Department of Surgery, Children's Mercy Hospital, Kansas City, Missouri.

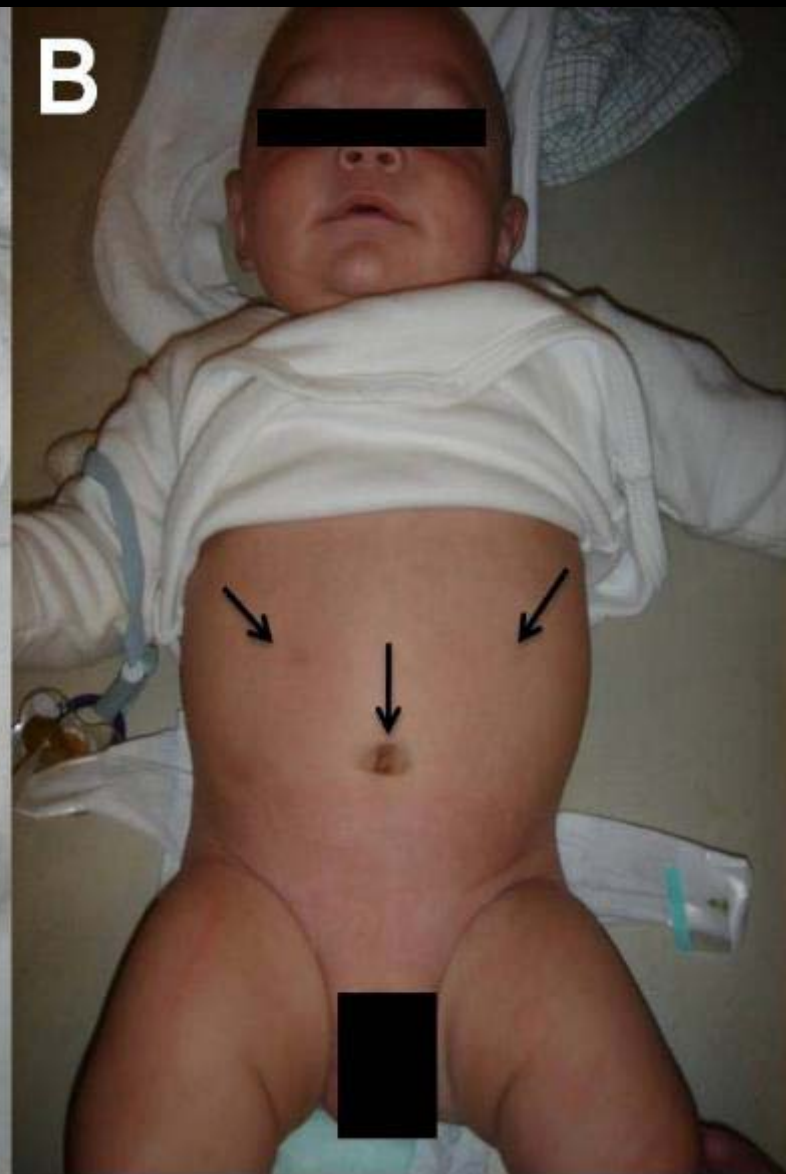
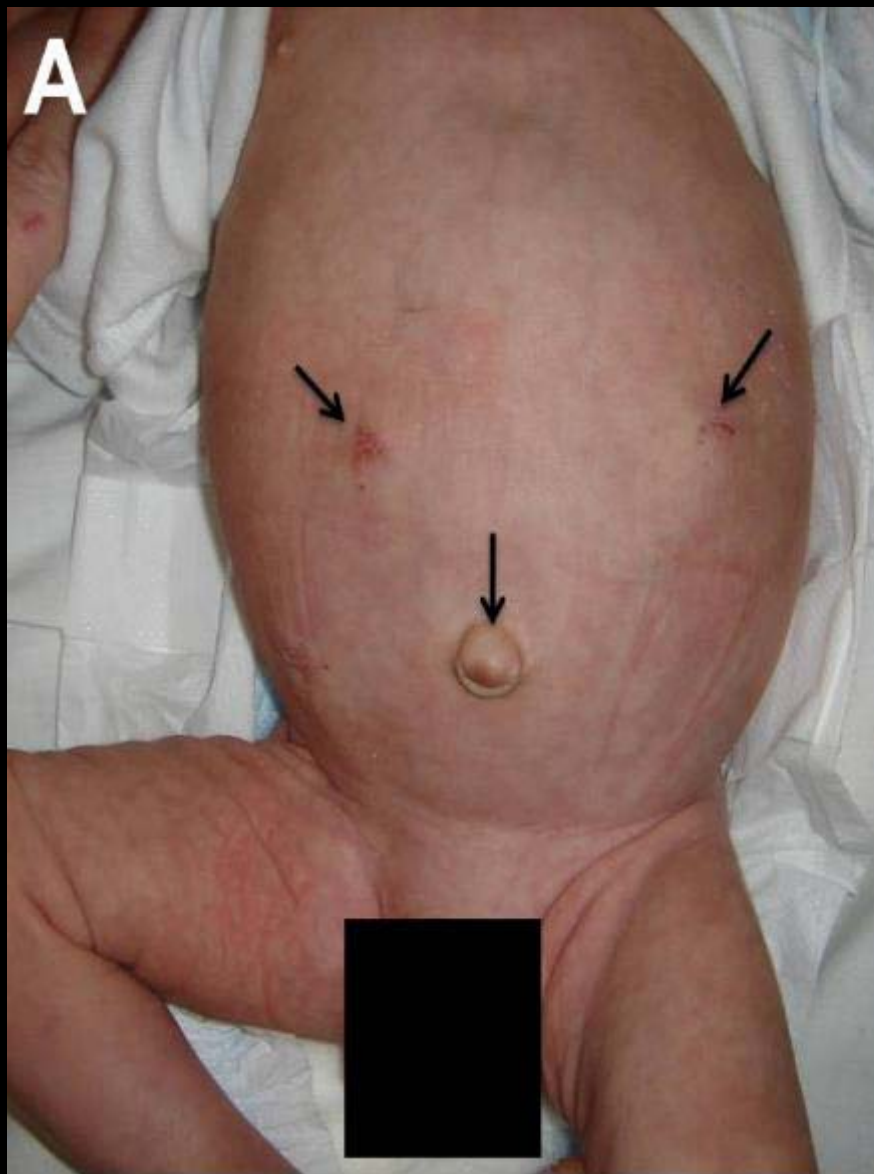
This article was presented at the 19th Annual Congress for Endosurgery in Children in Waikoloa, Hawaii, June 8–12, 2010.







Resultados



Resultados

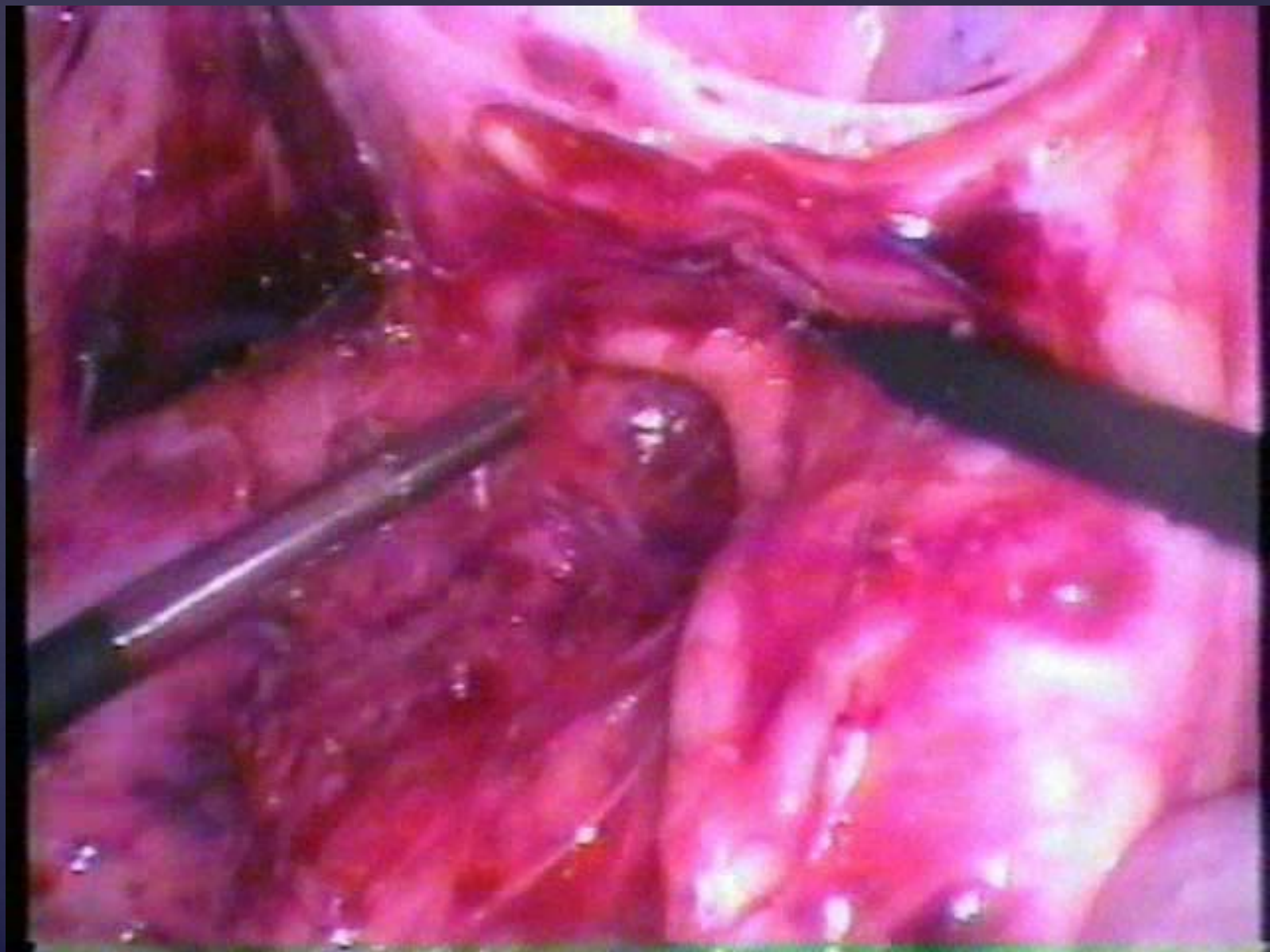


Malformación Anorrectal Abordaje Laparoscópico













Quiistes de Ovario

Quistes de Ovario Neonatales



Simple (+ 5 cm)



Complejos

Punción
Ecográfica



No Resolución / Recidiva

Laparoscopia



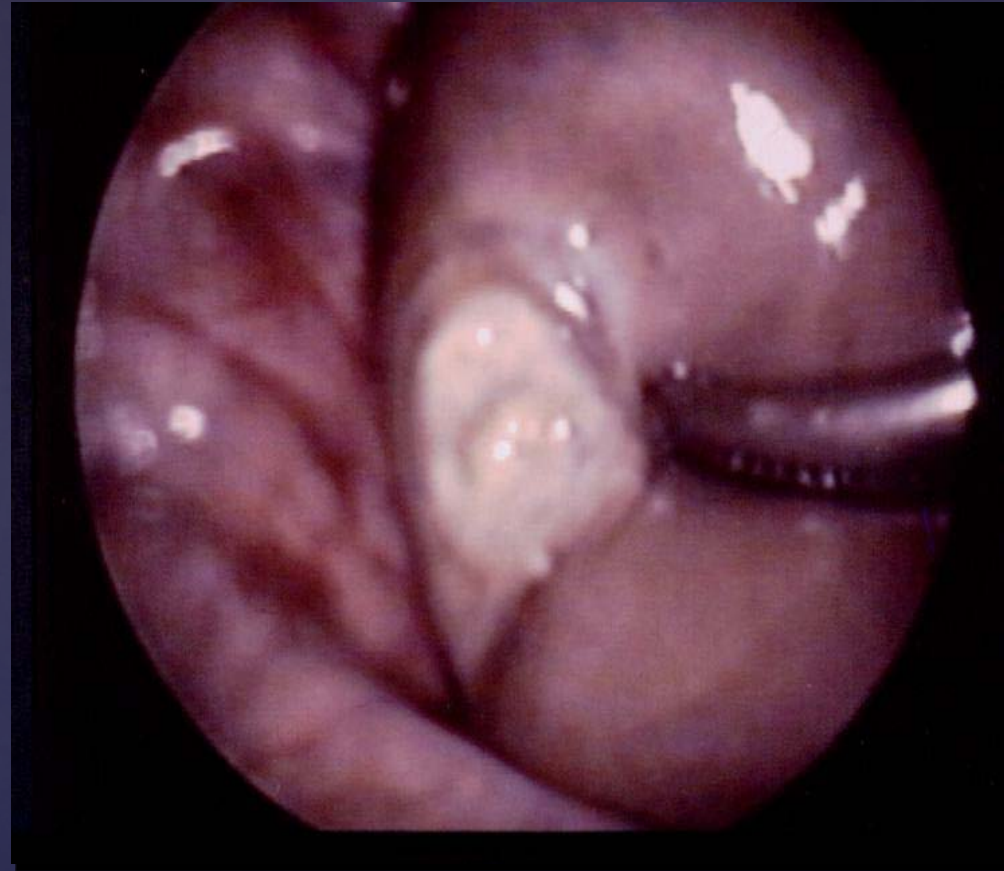




Quistes de Ovario Neonatales

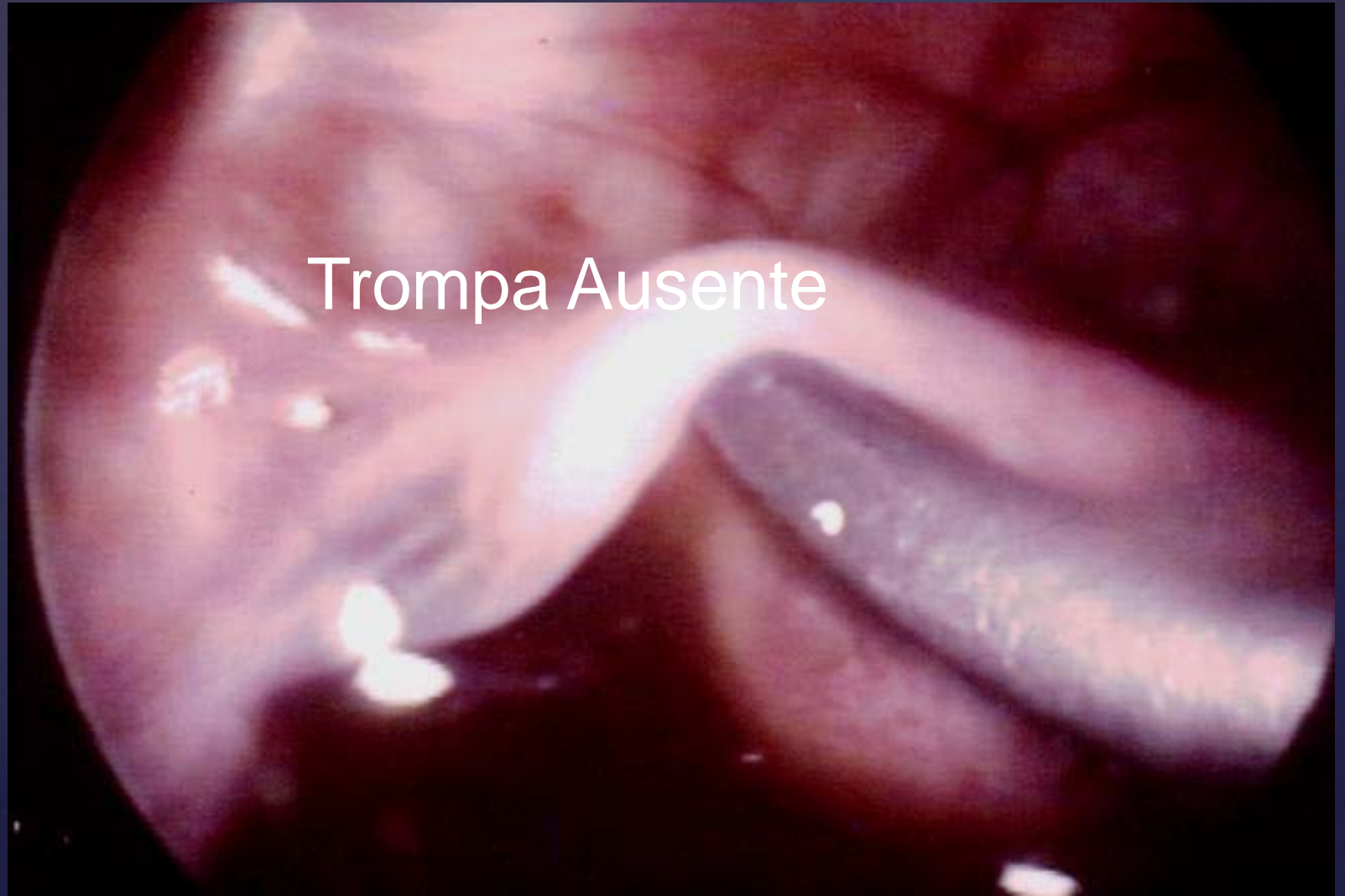


Adherencias
Intestinales



Autoamputación

Autoamputación de Ovario



QUILOPERITONEO CONGÉNITO











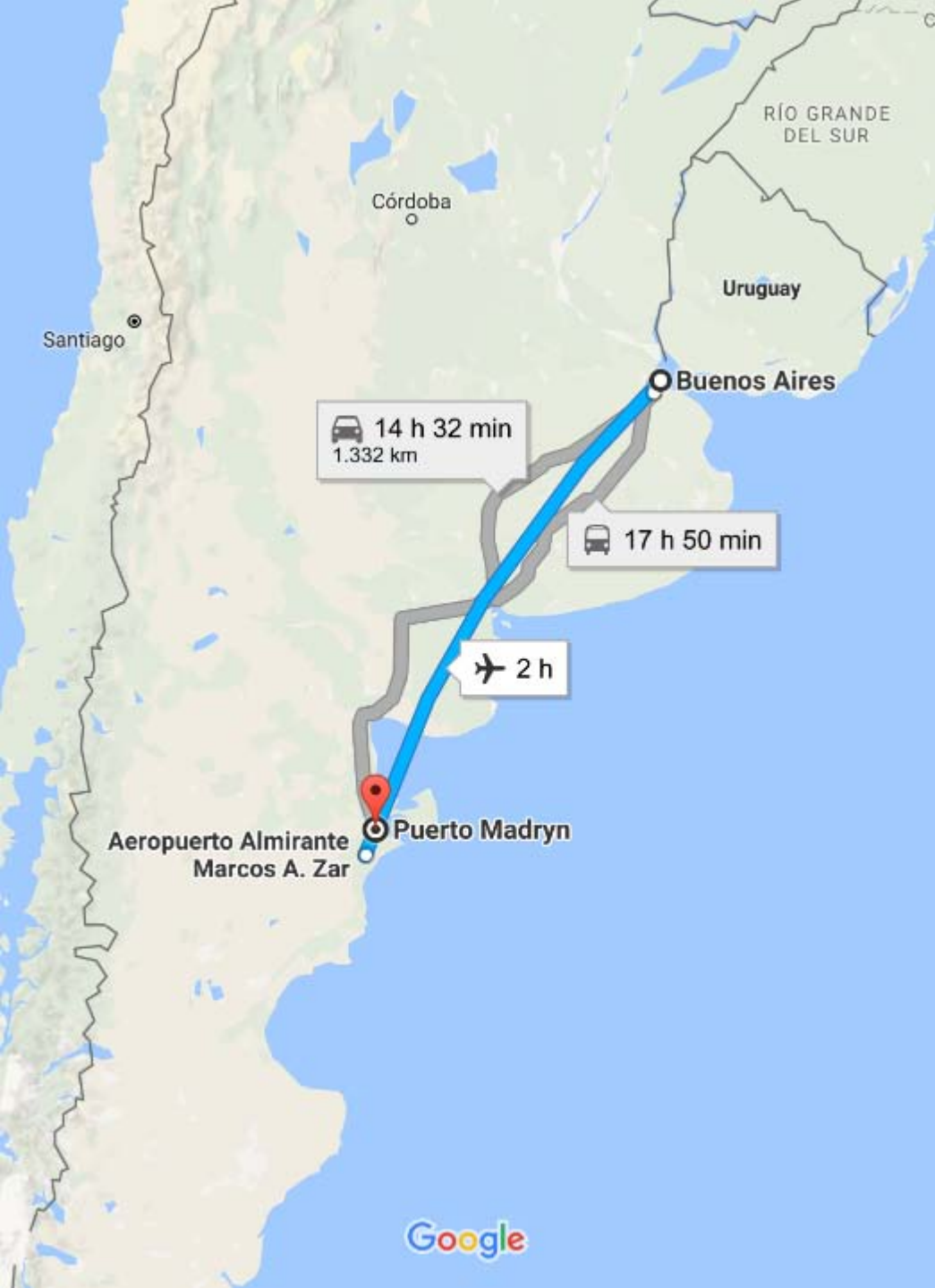




Argumentos

- ✓ **Efectos del CO2 y la presión**
- ✓ **Falta instrumental adecuado**
- ✓ **Técnicamente inferior (mejor abierto)**
- ✓ **Entrenamiento caro y complicado**
- ✓ **Baja casuística para entrenar**

Puerto Madryn Chubut, Argentina 100.000 hab





Entrenamiento del Dr Julio Pratesi (Nissen Laparoscópico)

- Videos Youtube (gratis)
- Skype (gratis)
- Trainer casero

**Puerto Madryn
Argentina**

Dr. Julio Pratesi

Dra. Carolina Millan



Argumentos

- ✓ Efectos del CO2 y la presión
- ✓ Falta instrumental adecuado
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- ✓ Entrenamiento caro y complicado
- ✓ **Baja casuística para entrenar**









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Validation of an inanimate low cost model for training minimal invasive surgery (MIS) of esophageal atresia with tracheoesophageal fistula (AE/TEF) repair[☆]



Maximiliano Alejo Maricic^{a,*}, María Marcela Bailez^a, Susana P. Rodriguez^b

^a Pediatric Surgery Department, D.A.D.I.—Surgical Simulation Center CeSim, “Prof. Dr. Juan P. Garrahan” Children’s Hospital—S.A.M.I.C., Combate de los Pozos No. 1881 (C1245AAM), Ciudad Autónoma de Buenos Aires, República Argentina

^b Teaching and Research Department, D.A.D.I.—Surgical Simulation Center CeSim, “Prof. Dr. Juan P. Garrahan” Children’s Hospital—S.A.M.I.C., Combate de los Pozos No. 1881 (C1245AAM), Ciudad Autónoma de Buenos Aires, República Argentina

1430

M.A. Maricic et al. / Journal of Pediatric Surgery 51 (2016) 1429–1435

surgery (MIS) [1]. Surgery training is classically done in the operating room under the supervision of the senior surgeon, and MIS training is usually done with conventional training devices with general programs focused on endosuturing and precision tasks [3,4]. The difficult learning curve (not clear), combined with the few cases per year and the selection of cases that will be repaired by thoracoscopy, makes the number of cases of MIS TEF/EA very low; even in reference centers worldwide [6].

Training in experimental animal models is under debate nowadays.

Excellent models that combine inanimate materials using 3D printing technology and biological material for specific training have been published [7,8].

We have worked on developing a completely inanimate, portable, reproducible model and at a very low cost, which aims to meet the training needs in MIS TEF/EA reparative surgery for surgeons in training, as intermediate or senior surgeons who want to perfect or improve their technique.

Our plan is to develop a model that not only can be used in simulation scenarios but also brings experience and training as much as possible to reality, in a safe teaching environment.

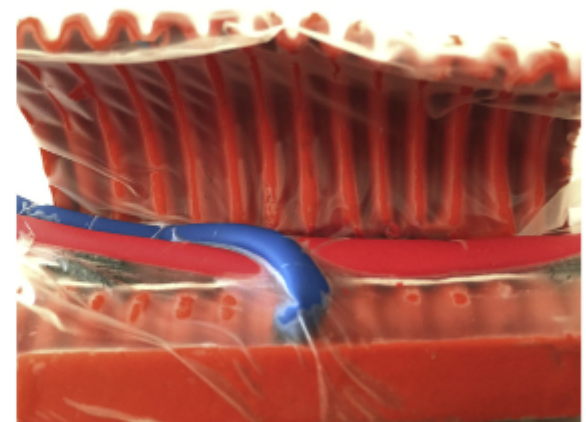
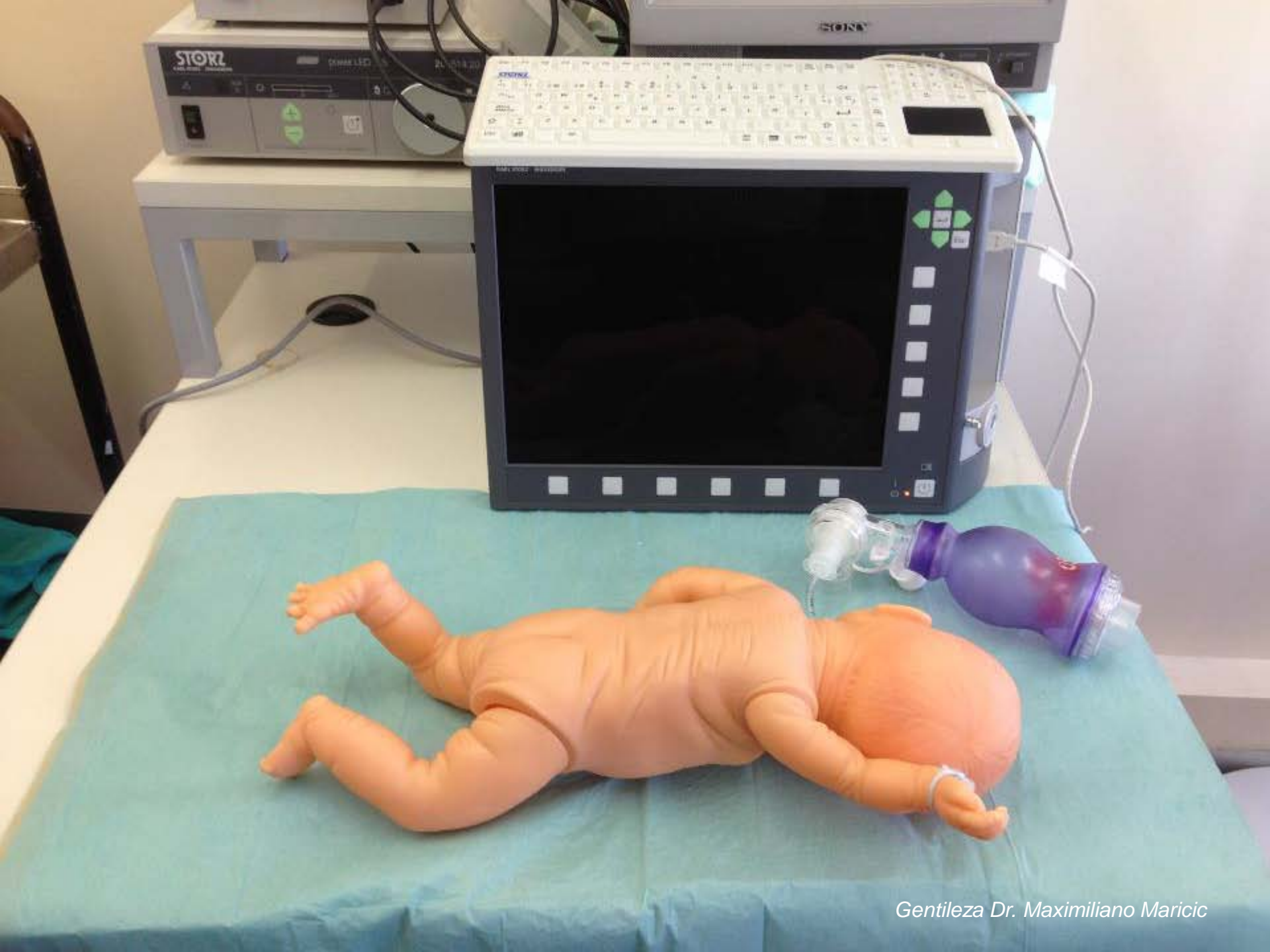
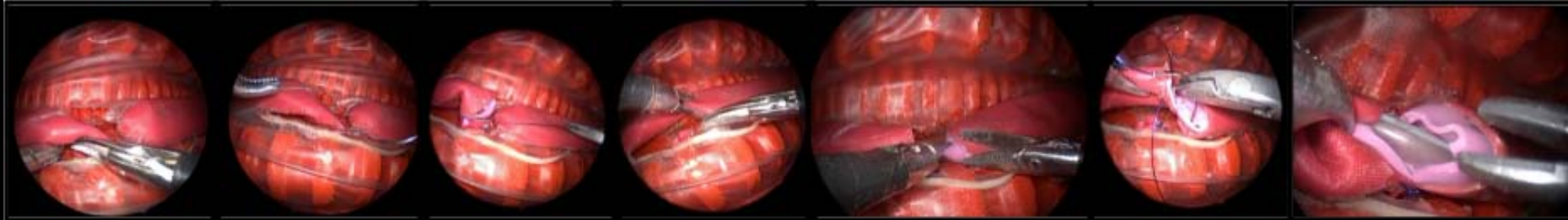


Fig. 1. Base model ready to be used. With anatomical replaceable silicone structures positioned.

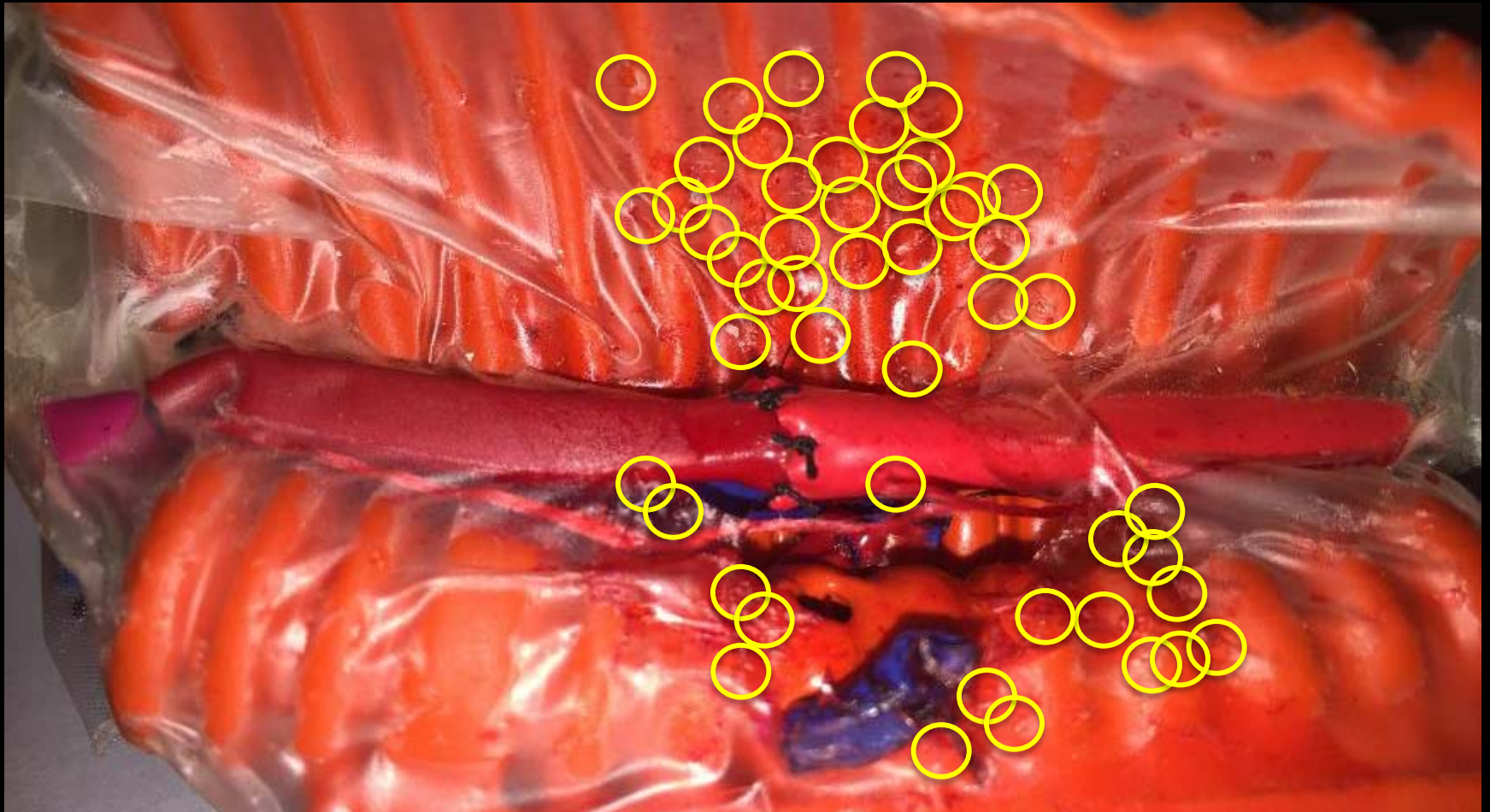


Visión Endoscópica del Modelo AE/TEF



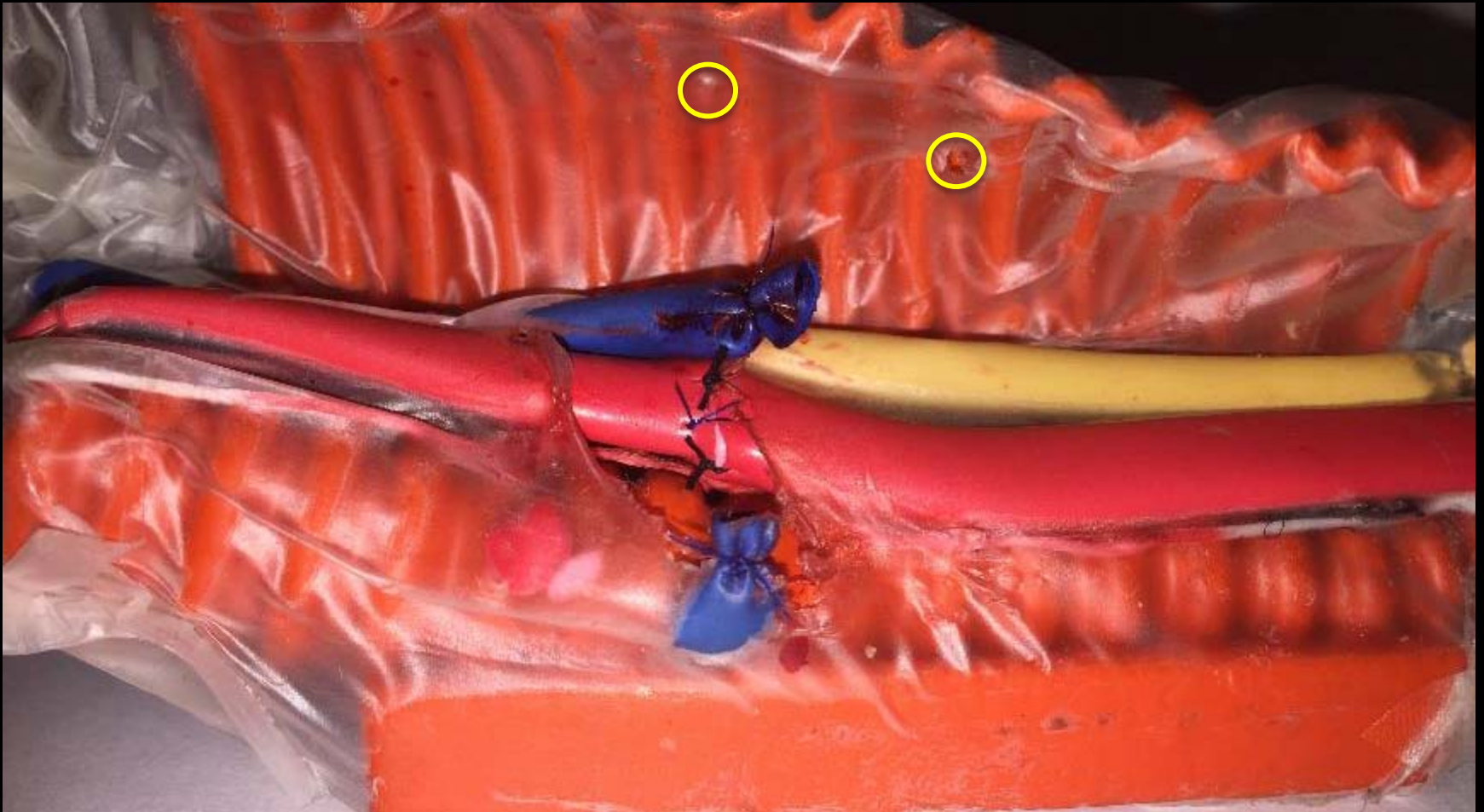
VALIDACIÓN

Principiante



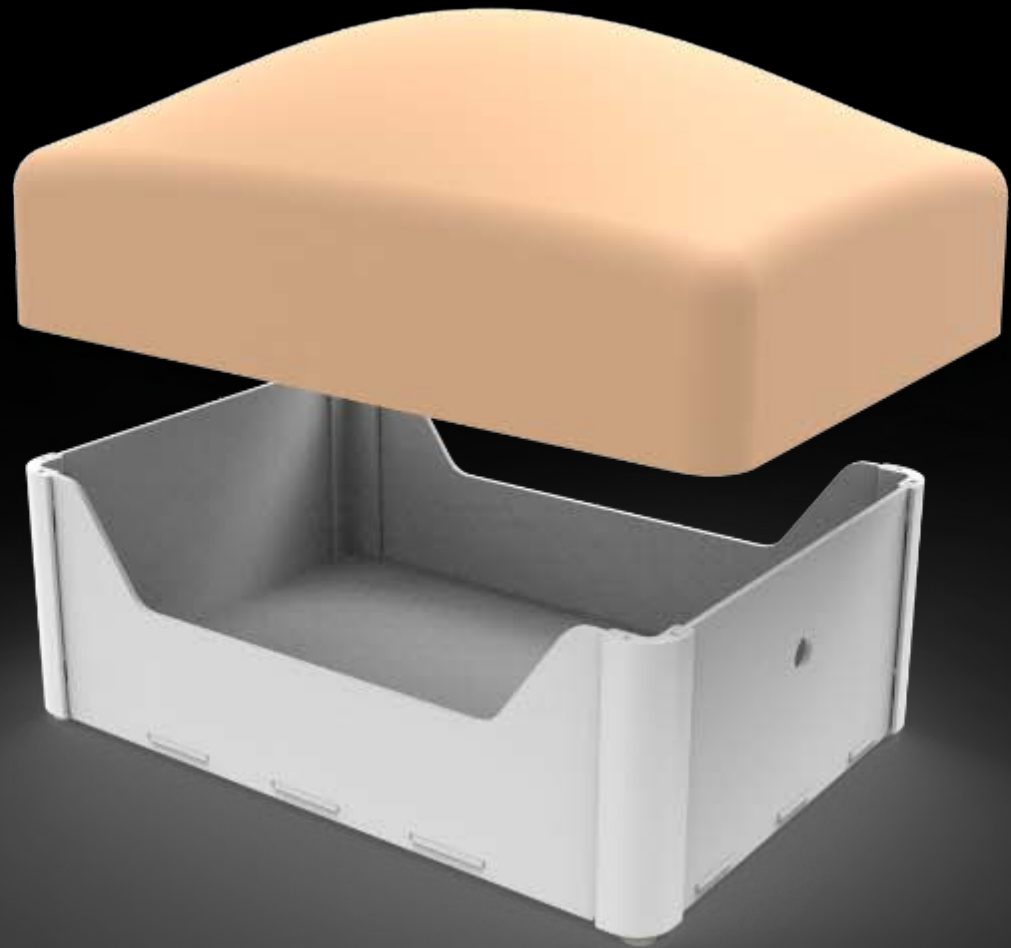
VALIDACIÓN

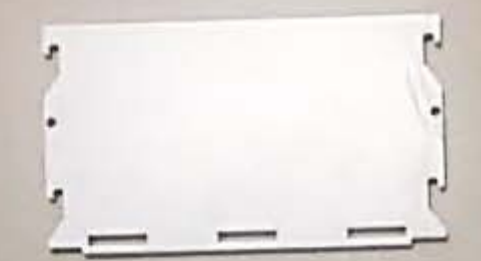
Experto





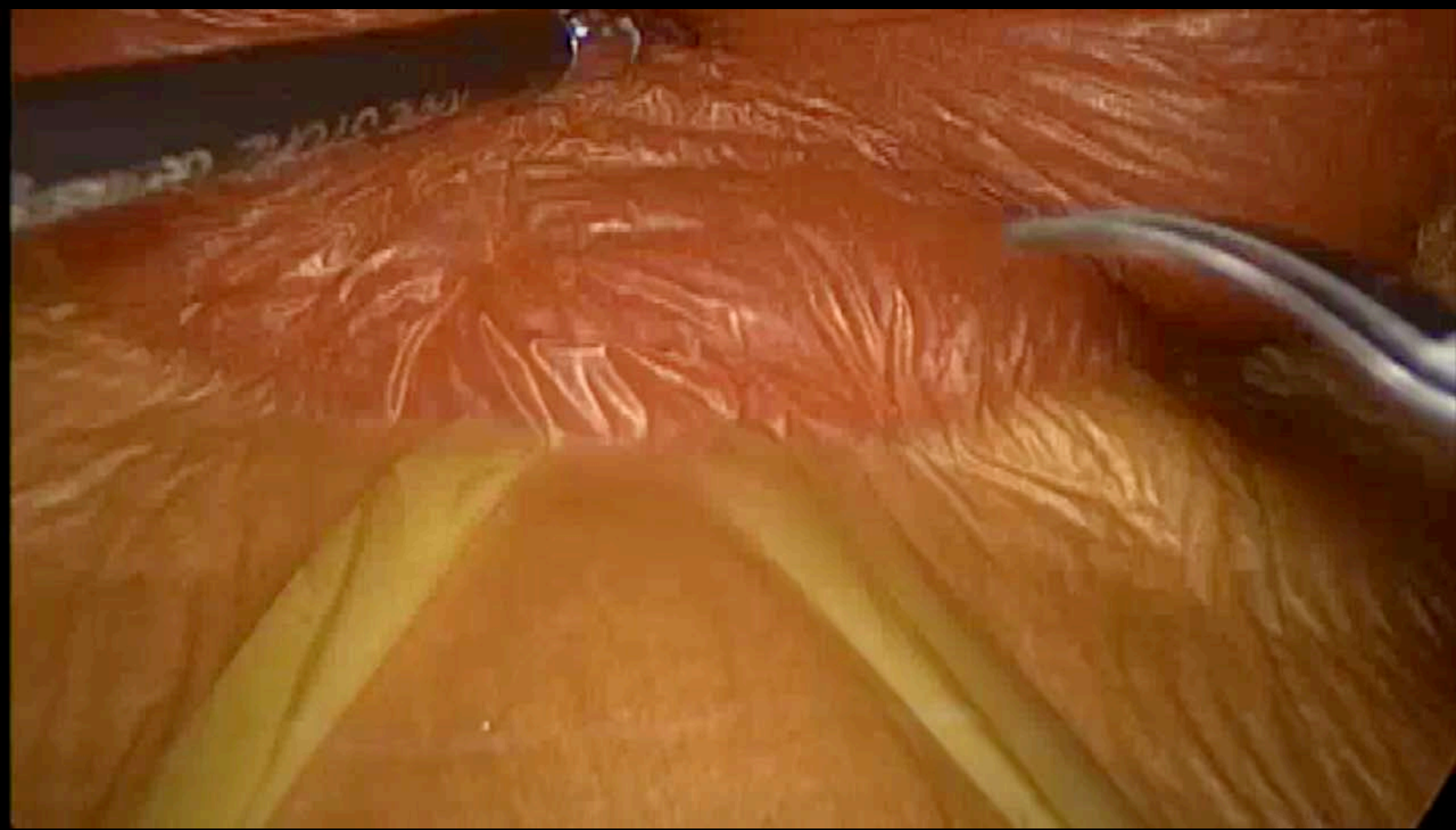
Dra Carolina Millan

















Argumentos

- ✓ Efectos del CO2 y la presión
- ✓ Falta instrumentación adecuada
- ✓ Técnicamente mejor (mejor abierto)
- ✓ Entrenamiento complicado
- ✓ Baja casuística para entrenar



Fin

Antecedentes Prenatal

- ⌘ Madre: 33 años
- ⌘ Diagnostico Prenatal: 32s
 - ⌘ Eco prenatal: Sexo Femenino



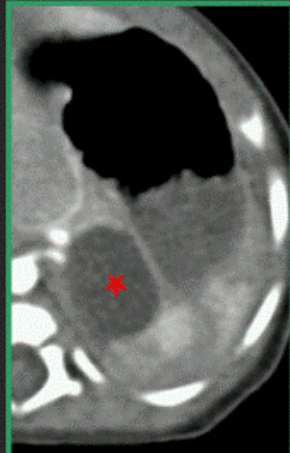
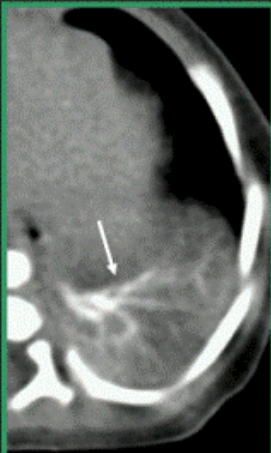
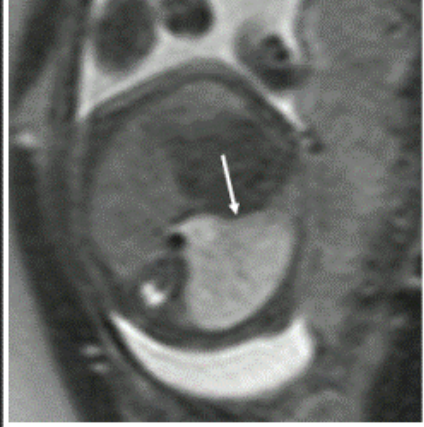
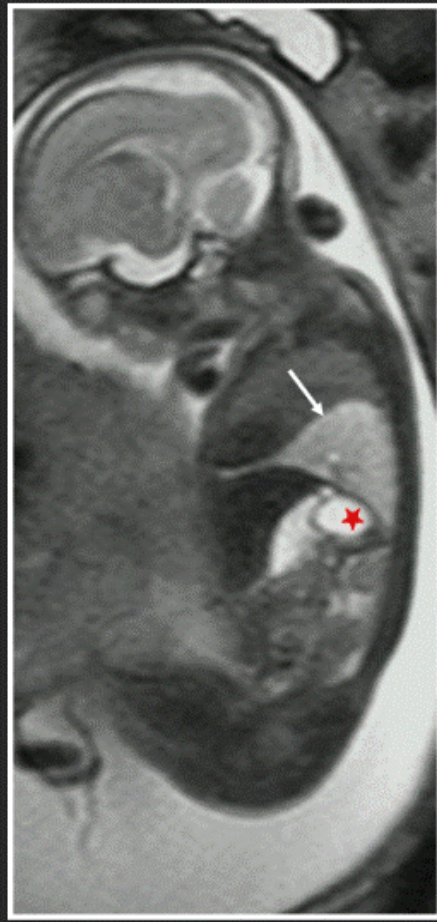
1- Estomago

2- Imagen retrogastrica

3- Polihidramnios

Antecedentes Prenatal

- ↳ Madre: 33 años
- ↳ G1P0C0
- ↳ Diagnostico Prenatal:
 - ∅ 32s Ecografia Fetal
 - ∅ 33s RMN Fetal



Antecedentes Posnatal

↳ Parto Vaginal

↳ 38s

↳ 3300g

↳ Masa palpable en HI

↳ Vomitos biliosos

Posnatal: Estudios

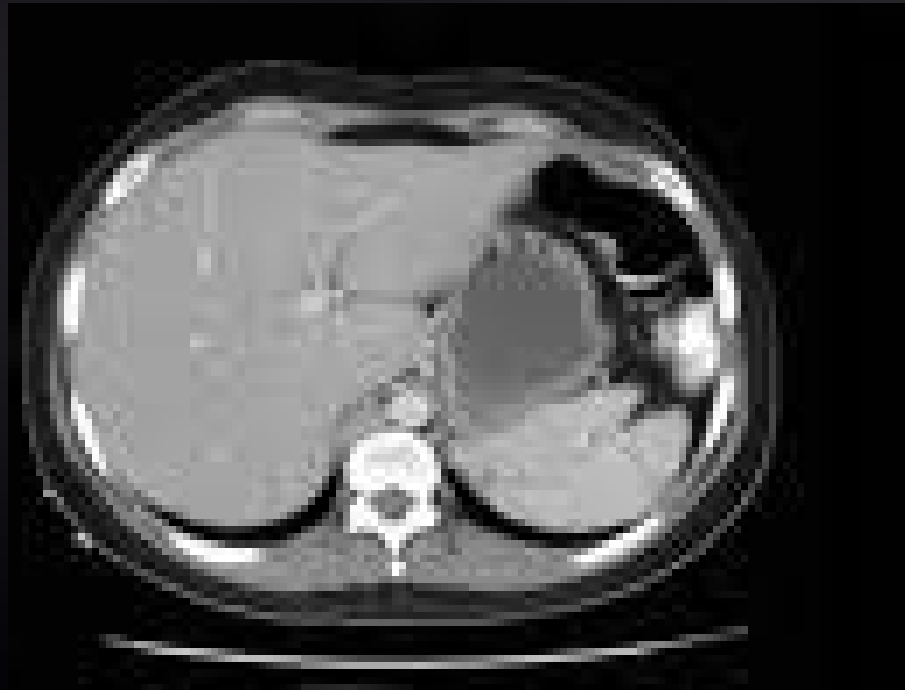


Rx Abdomen



SEGD

Posnatal: Estudios

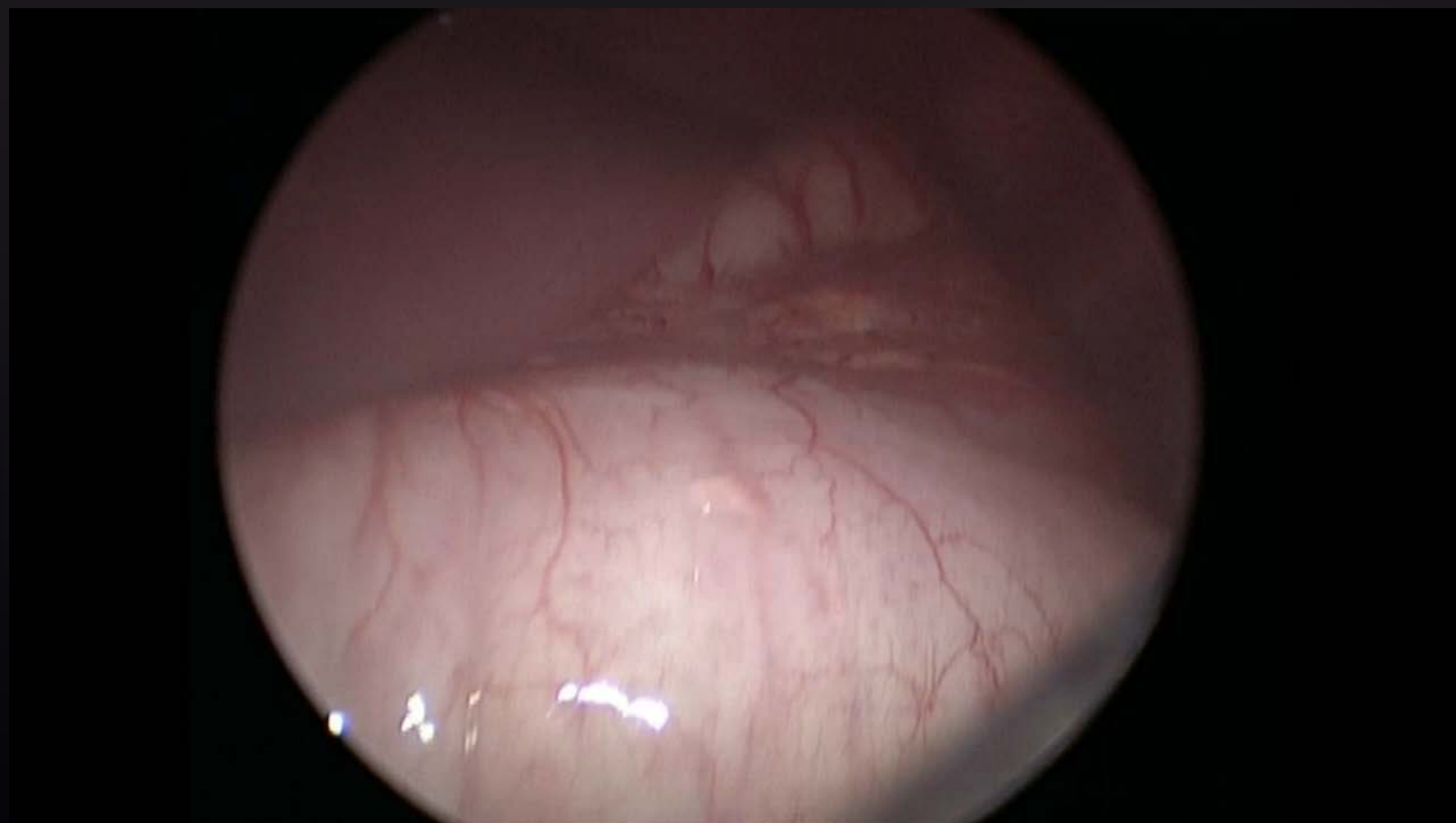


Diagnostico

Tumor quístico retrogastrico







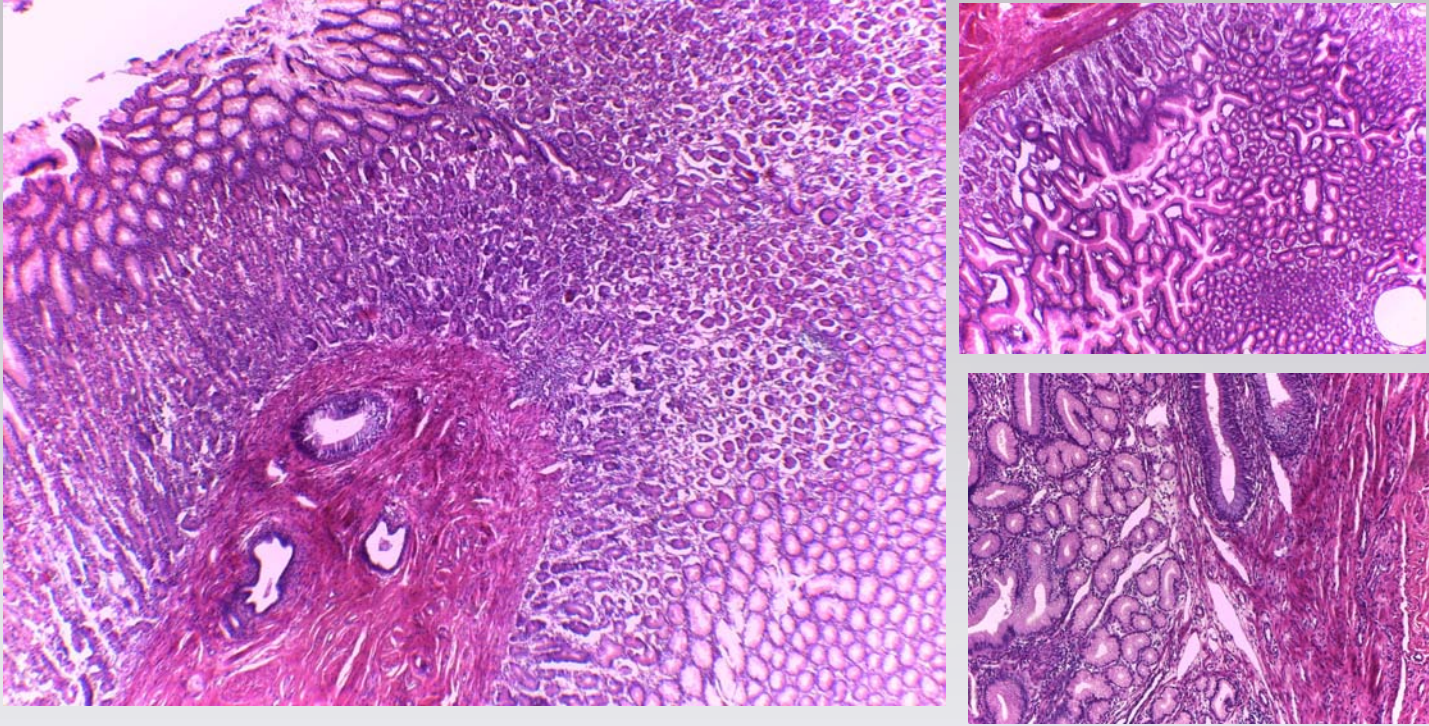
Evolucion POP

⌘ Sin complicaciones intraoperatoria ni pos quirurgica

⌘ Tolerancia oral 48hs

⌘ Alta hospitalaria 5 dia

Anatomia Patologica



Epitelio Ciliado columnar focal compatible con mucosa gástrica ectopica

Duplicaciones intestinales, nuestra experiencia

M.A. Cárdenas Elias, F. Vázquez Rueda, J.E. Betancourth-Alvarenga, M. Centeno Haro, F.J. Murcia Pascual, R.M. Paredes Esteban

UGC de Cirugía Pediátrica. Hospital Universitario Reina Sofía. Córdoba.

RESUMEN

Objetivo. Las duplicaciones intestinales (DI) son anomalías congénitas raras (1/10.000 recién nacidos vivos). Analizamos las características clínicas, manejo y tratamiento de DI en nuestro centro.

Material y métodos. Análisis descriptivo retrospectivo de las DI confirmados por histología desde 1993-2014 en nuestro centro. Revisamos como variables: edad, sexo, presentación clínica, localización, tipo anatómico, enfermedades asociadas, presencia de tejido heterotópico, tratamiento y complicaciones.

Resultados. Se diagnosticaron 10 pacientes con DI, 6 fueron varones, la edad media fue de 2,72 años (12 días-7 años). 3 debutaron con abdomen agudo; otros 3 con hemorragia digestiva alta, 2 con masa abdominal; uno con obstrucción intestinal y uno con dolor crónico. De estos el 30% tuvo diagnóstico prenatal. Los estudios de imagen incluyeron ecografía, gammagrafía, resonancia magnética y tránsito intestinal. La localización anatómica más frecuente fue yeyuno-ileal (60%) de predominio quístico; la gástrica, duodenal, cólica fue de 10% respectivamente; y una localización ectópica con sospecha de masa suprarrenal.

El tratamiento consistió en resección completa mediante laparotomía en 8 casos y laparoscopia en dos. En la DI duodenal que se practicó mucossectomía y resección parcial. En 6 casos se llegó a realizar resección intestinal. Se halló tejido gástrico heterotópico en 7 y pancreático en uno. Como complicaciones destaca un caso de invaginación intestinal postoperatoria.

Conclusiones. El diagnóstico preoperatorio es poco frecuente, aunque se está incrementando el diagnóstico prenatal. Las manifestaciones clínicas se relacionan con la localización de la DI y con la existencia de mucosa heterotópica gástrica. Actualmente la laparoscopia es el tratamiento de elección en casos no complicados.

Duplicaciones intestinales, nuestra experiencia

M.A. Cárdenas Elias, F. Vázquez Rueda, J.E. Betancourth-Alvarenga, M. Centeno Haro, F.J. Murcia Pascual, R.M. Paredes Esteban

UGC de Cirugía Pediátrica. Hospital Universitario Reina Sofía. Córdoba.

Periodo 10 años

· 10 pacientes

Edad 12 d a 7 a (2,7)

Presentacion:

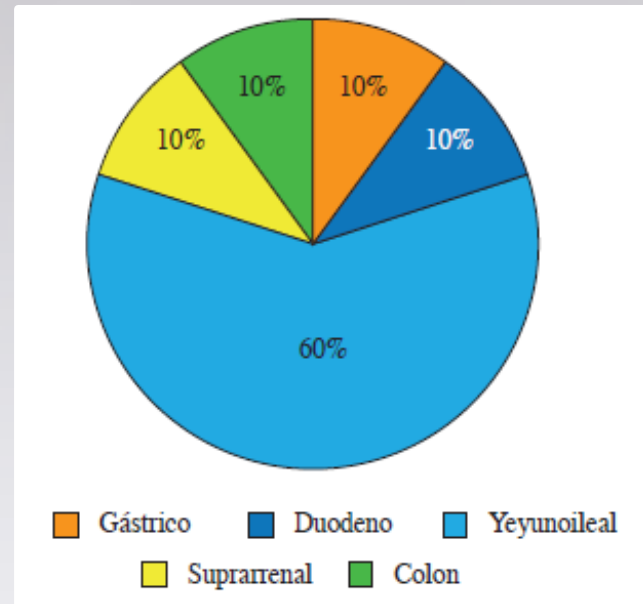
3 Abdomen Agudo

3 Hemorragia Digestiva

2 Masa palpable

1 Obstriccion Intestinal

1 Dolor cronico



Localizaciones

1- Yeyuno-ileal

2- Esofago

3- Colon

4- Gastricas

5-Recto

6- Duodeno

30% Diagnostico Prenatal

Duplicaciones intestinales, nuestra experiencia

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RESUMEN

Objetivo. Las duplicaciones intestinales (DI) son anomalías congénitas raras (1/10.000 recién nacidos vivos). Analizamos las característi-

El tratamiento consistió en resección completa mediante laparotomía en 8 casos y laparoscopia en dos. En la DI duodenal que se practicó

Conclusiones. El diagnóstico preoperatorio es poco frecuente, aunque se está incrementando el diagnóstico prenatal. Las manifestaciones clínicas se relacionan con la localización de la DI y con la existencia de mucosa heterotópica gástrica. Actualmente la laparoscopia es el tratamiento de elección en casos no complicados.

El diagnóstico prenatal. Los estudios de imagen fueron ecografía, gammagrafía, resonancia magnética y tránsito intestinal. La localización anatómica más frecuente fue yeyuno-ileal (60%) de predominio quístico; la gástrica, duodenal, cólica fue de 10% respectivamente; y una localización ectópica con sospecha de masa suprarrenal.

Muchas Gracias!