

# CLOACA

**Alberto Peña, MD**

The 65<sup>th</sup> Workshop for the Surgical Treatment of Colorectal Problems in Children



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# 1982 Monterrey, Mexico

## First Posterior Sagittal Approach to repair a cloaca.

By Alberto Peña  
Maricela Zarate  
Marshall Schwartz



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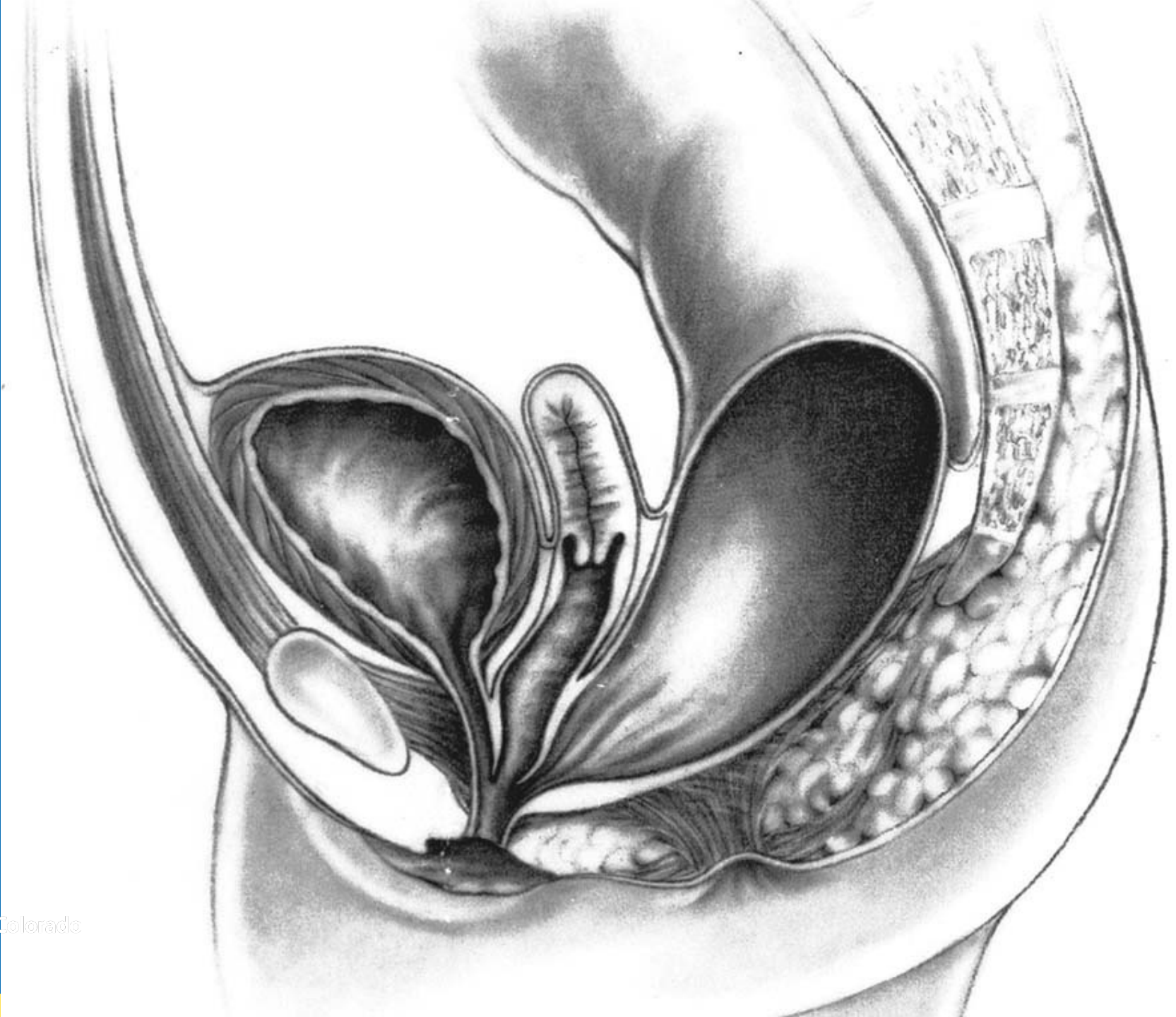
# March 2021

- More than **620** cloacas operated and counting...

## MANY LESSONS LEARNED!!

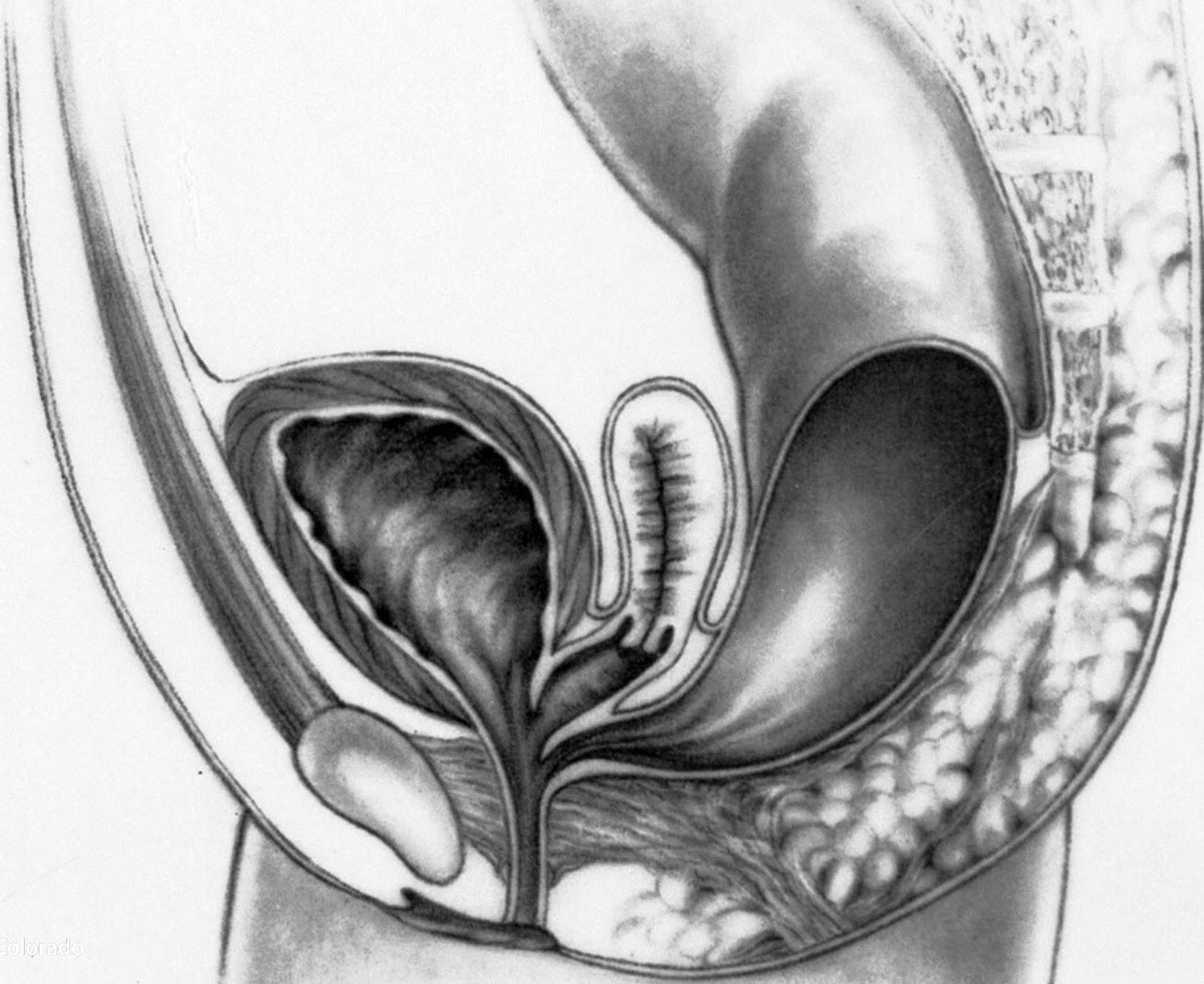
# The most effective way to diagnose a cloaca is by :

1. MRI
2. CAT Scan
3. Ultrasound
4. Clinical examination
5. Endoscopically



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# The frequency of associated urologic anomalies in cloacas is:

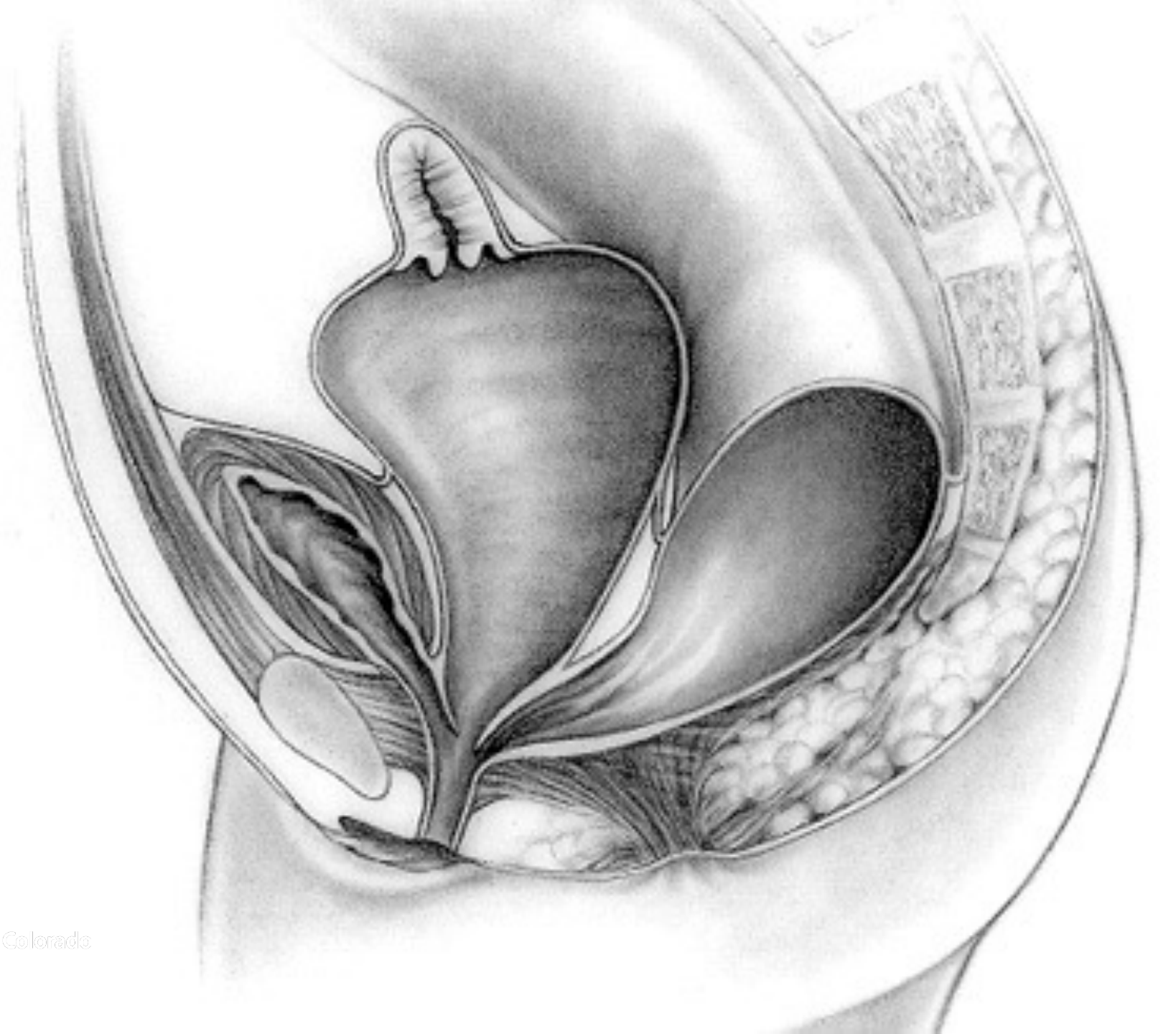
1. 90%
2. 70%
3. 40%
4. 20%
5. 10%



# The frequency of hydrocolpos in cloacas is:

1. 90%
2. 70%
3. 30%
4. 10%
5. 1%





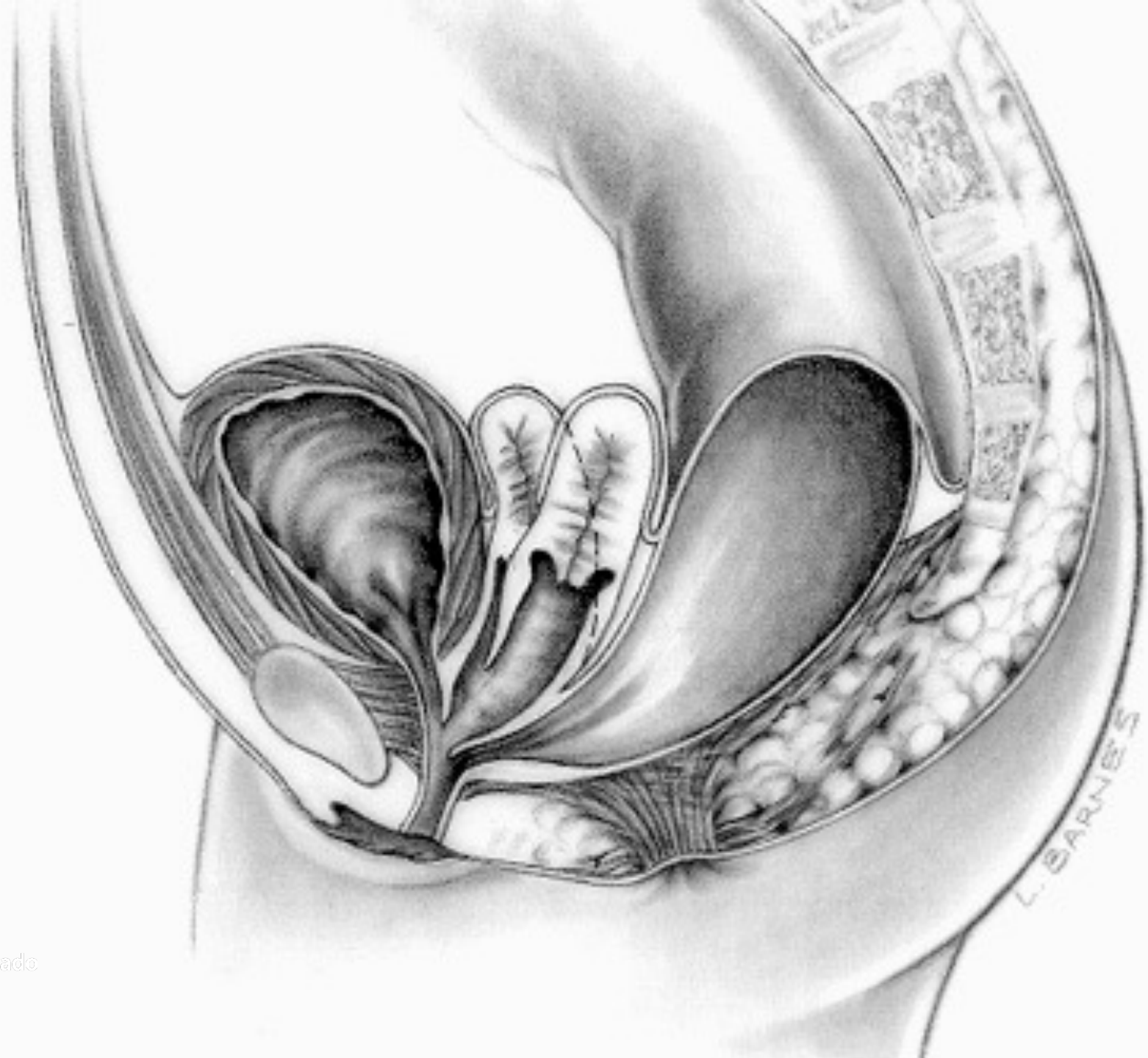
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# The frequency of duplication of the Mullerian structures in cloacas is:

1. 90%
2. 60%
3. 30%
4. 10%
5. 1%





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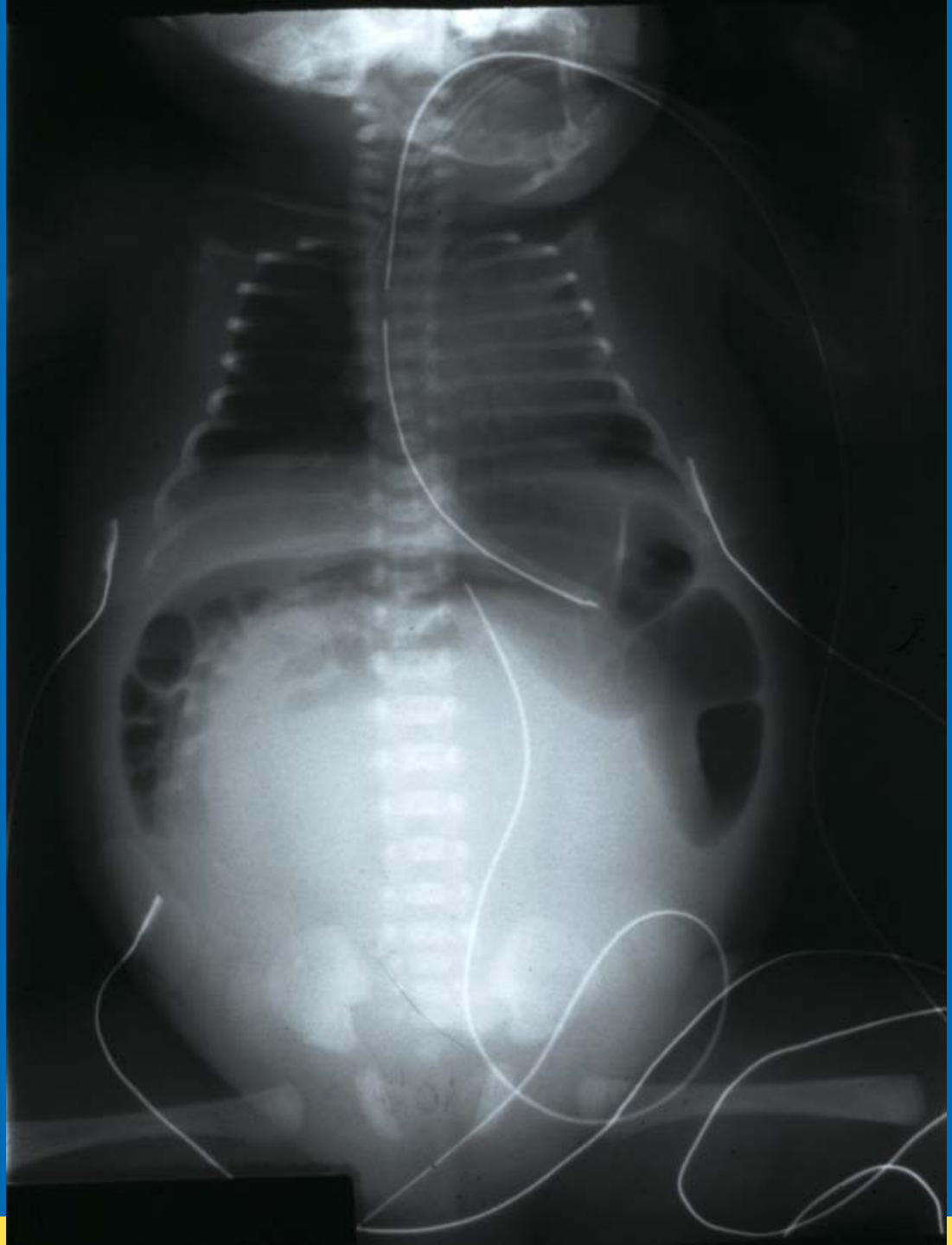
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# NEONATAL APPROACH



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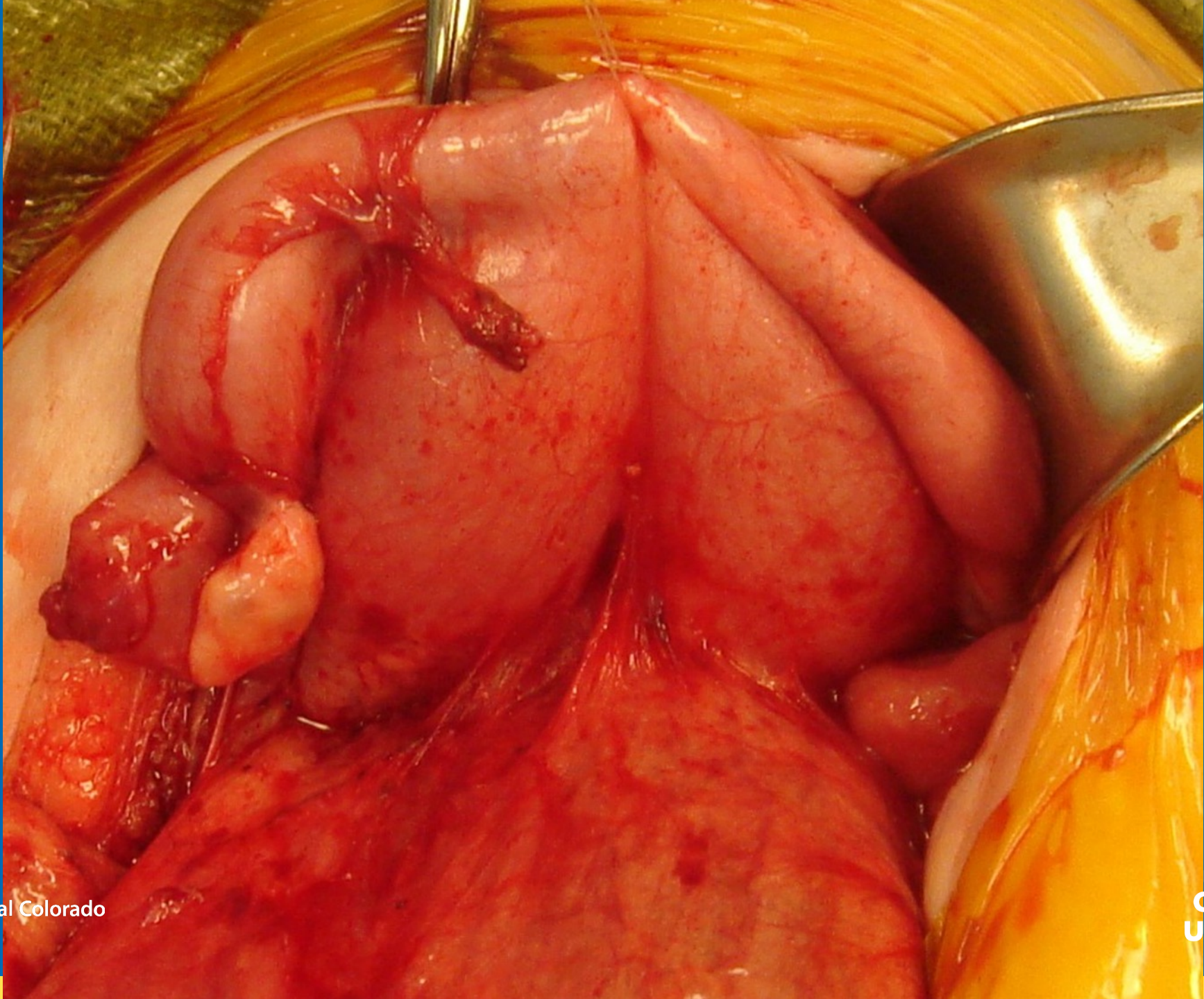
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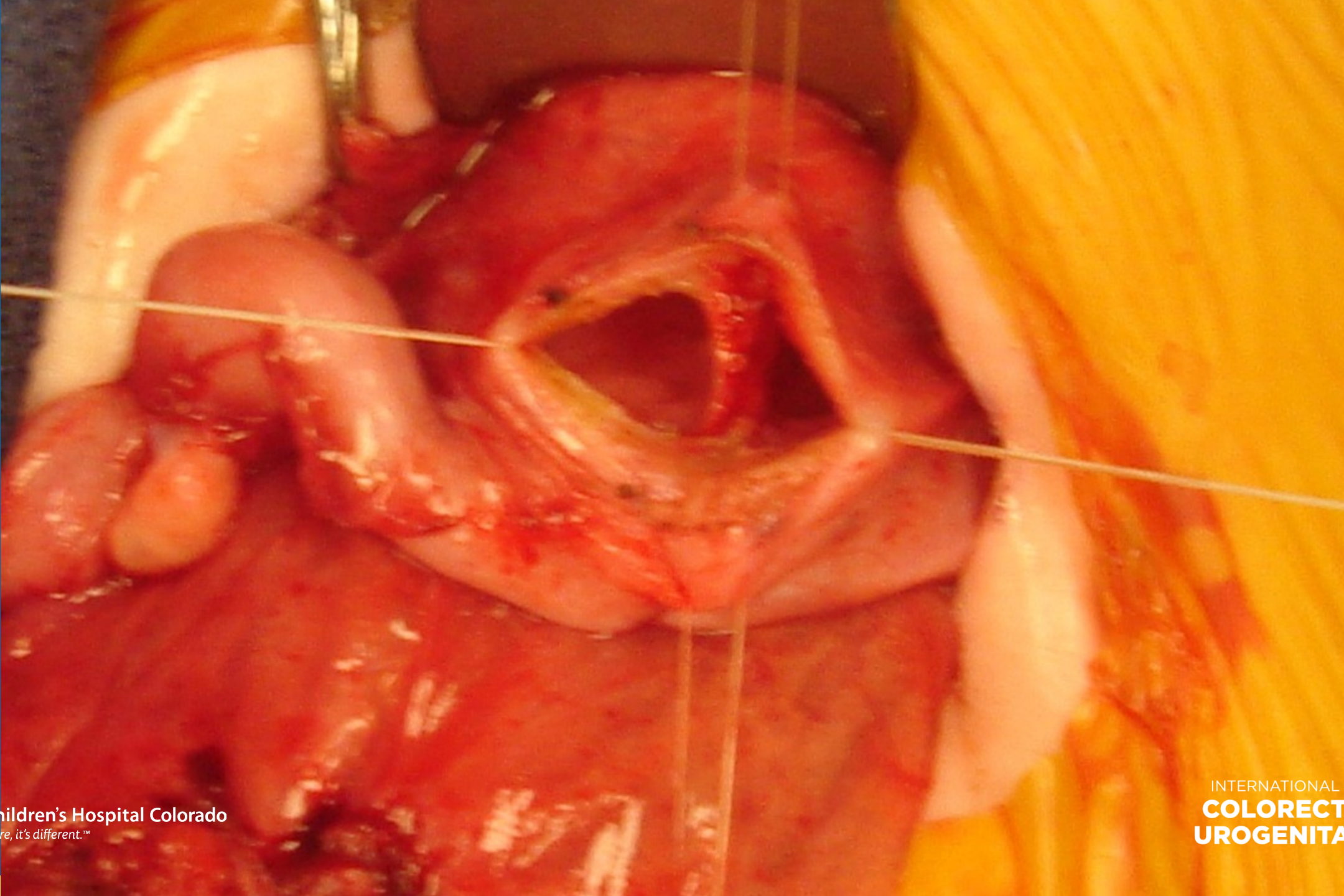
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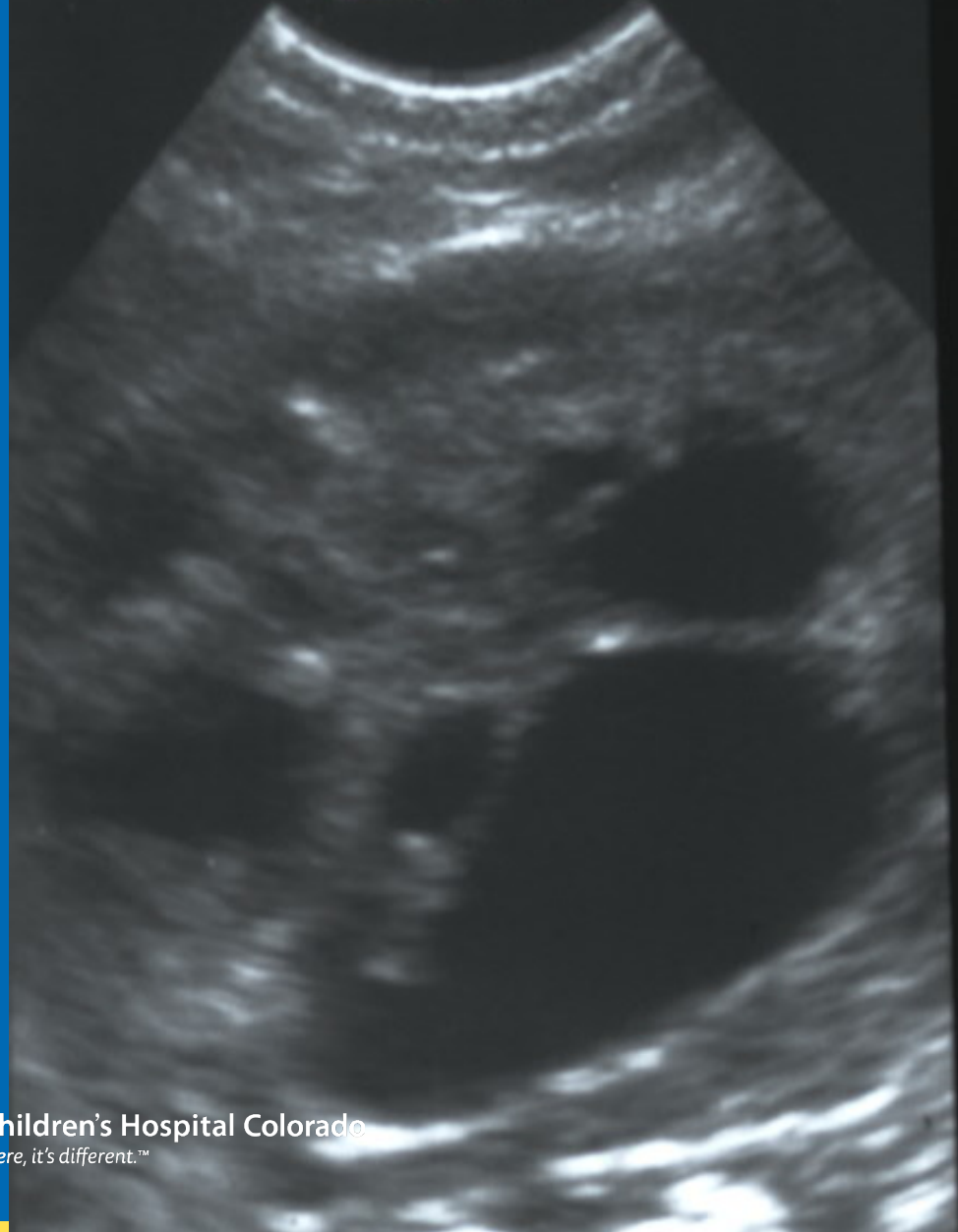


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3-FEB-96 BG: 35 NG: 0 FG: 3  
16:01:43 DYN: 3 ENH: 2 SCC: 1

LONG RT



06:35:50 DYN: 3 ENH: 2 SCC: 1

LONG RT

D1: 43.2mm



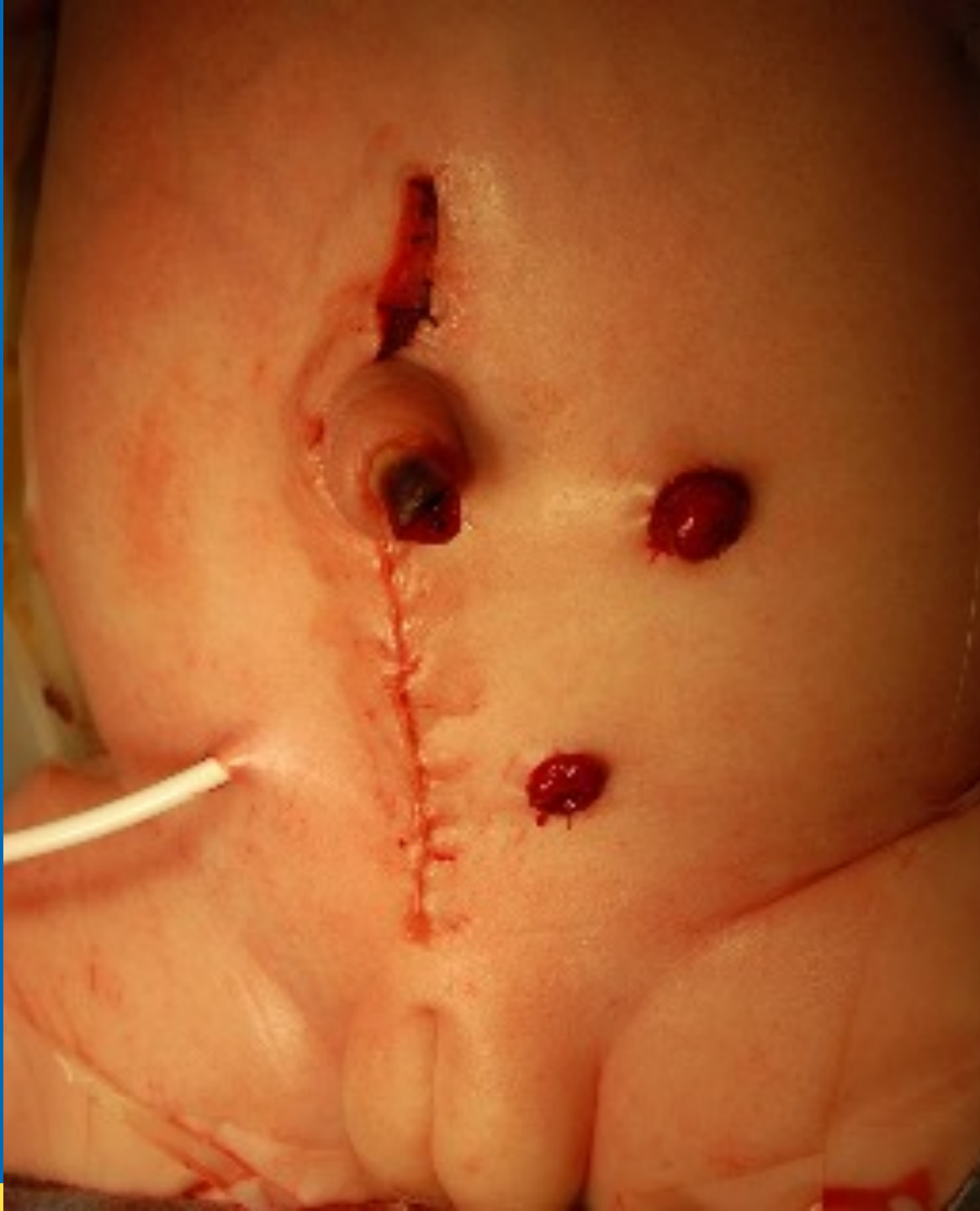
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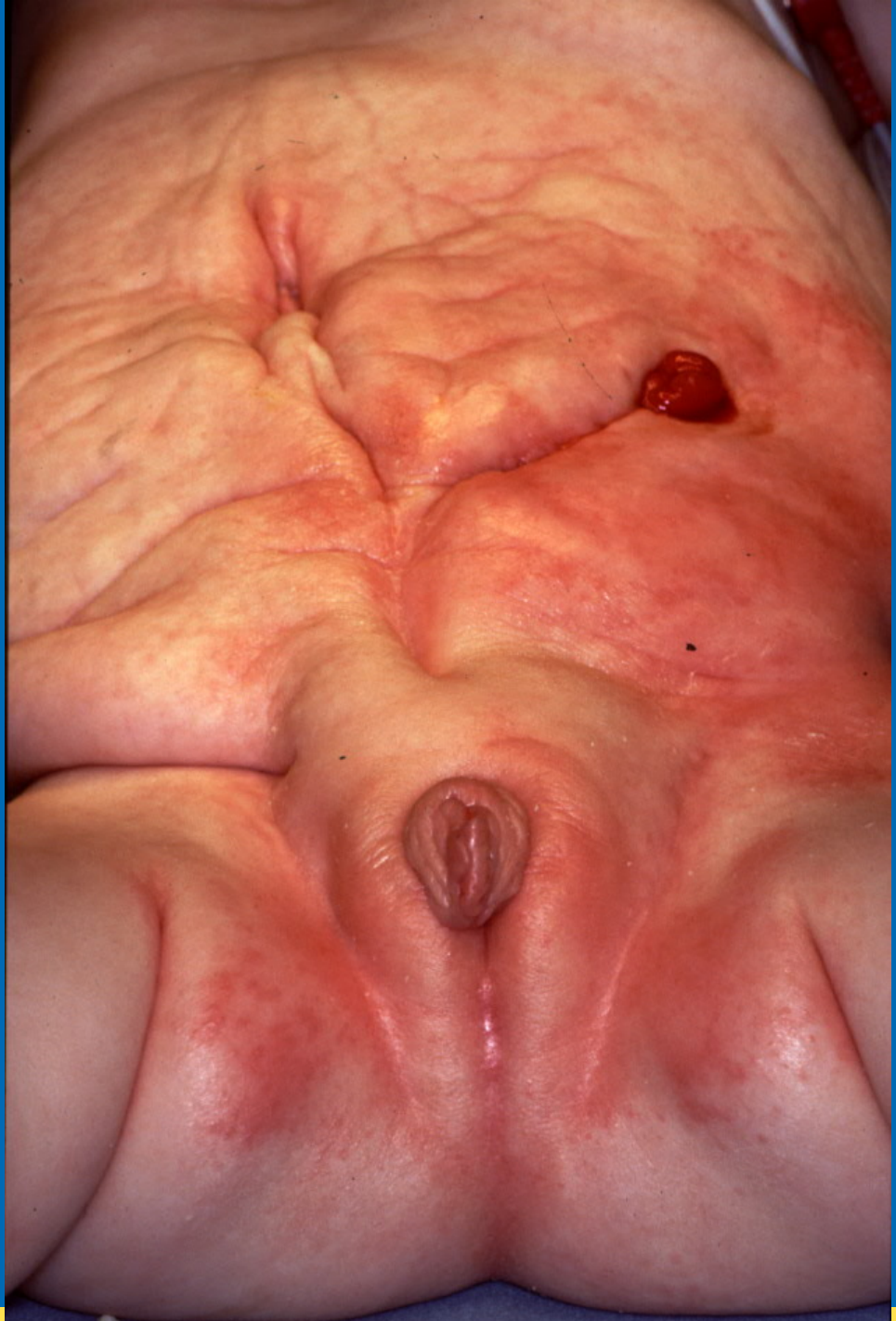
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# MAIN REPAIR



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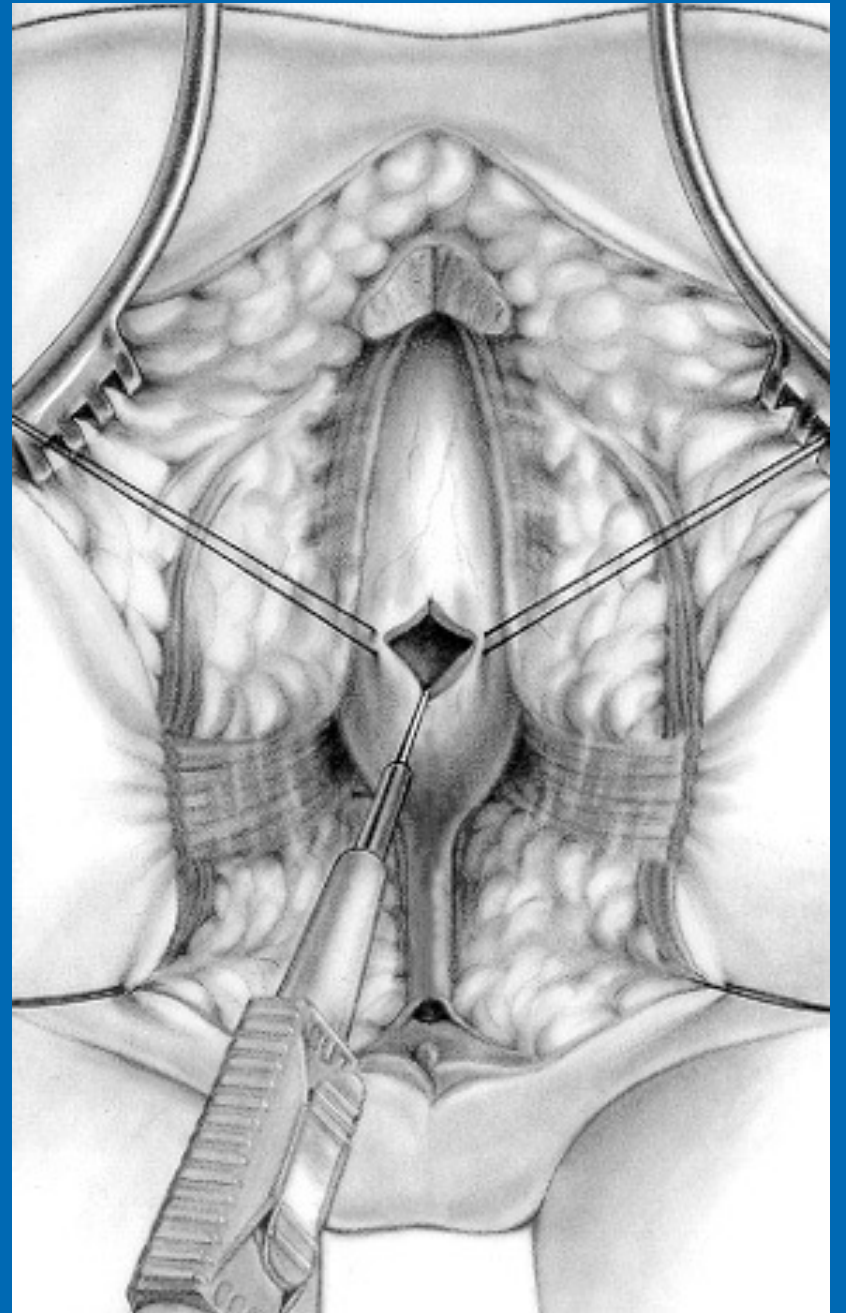
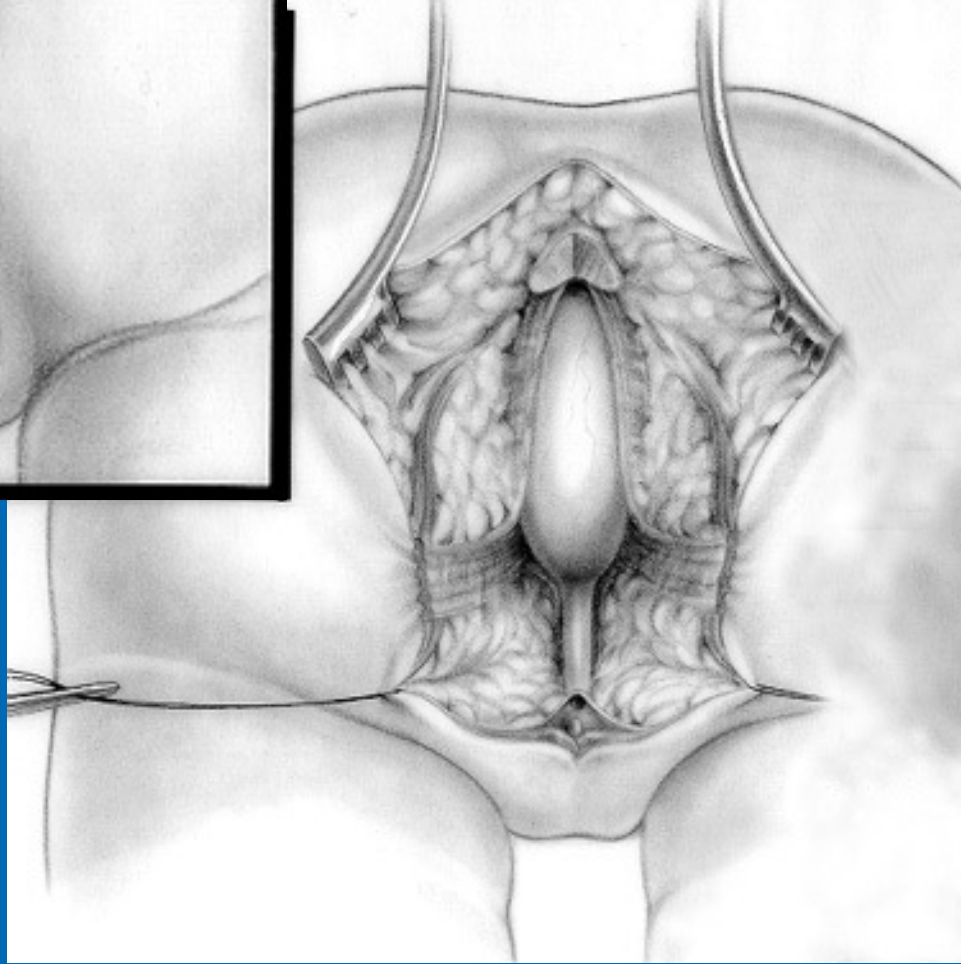
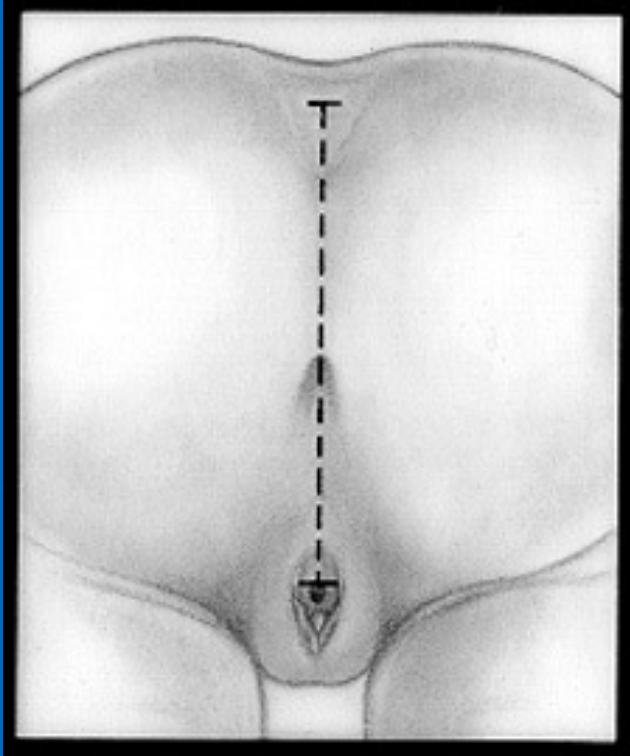
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# Original PSARVUP

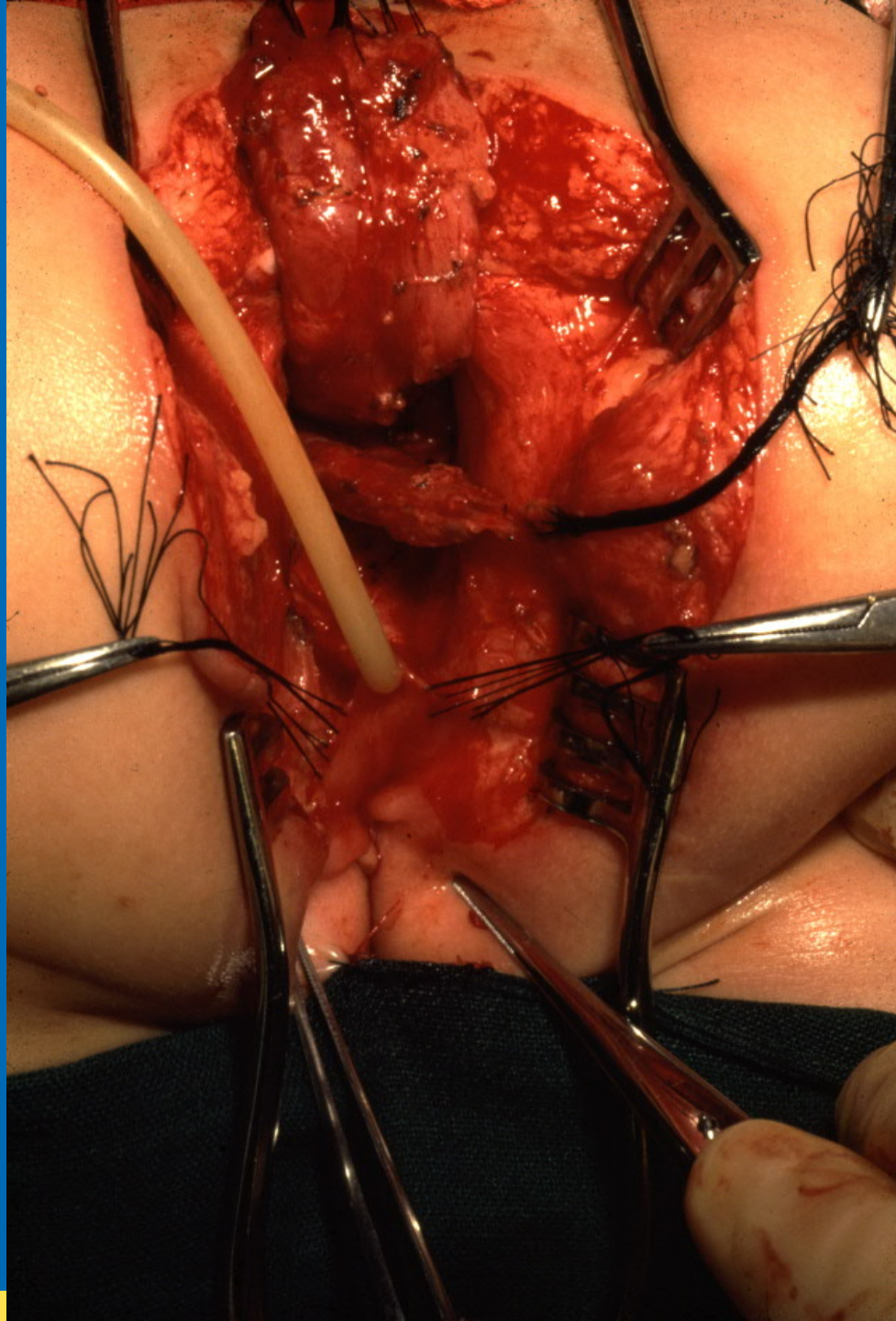


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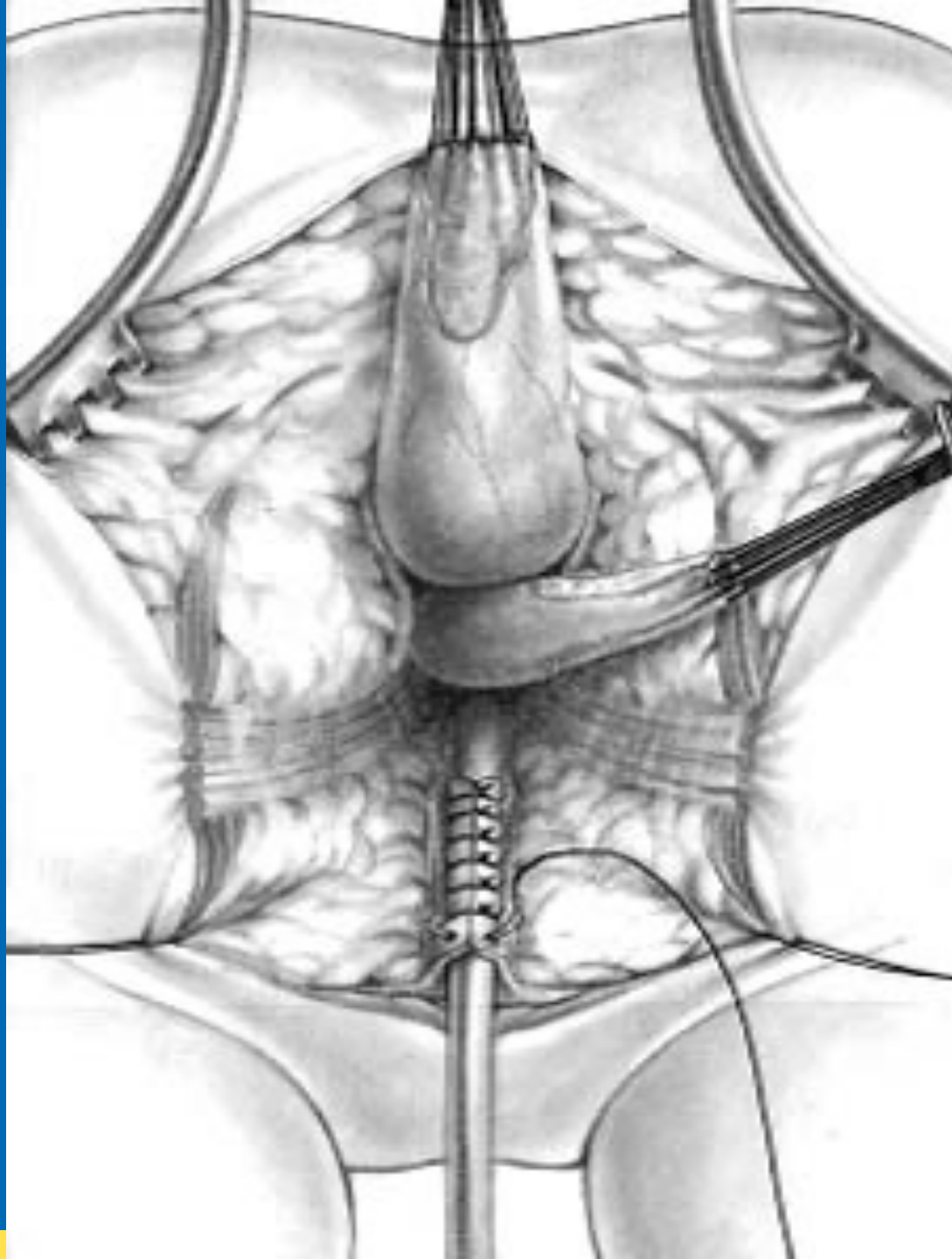
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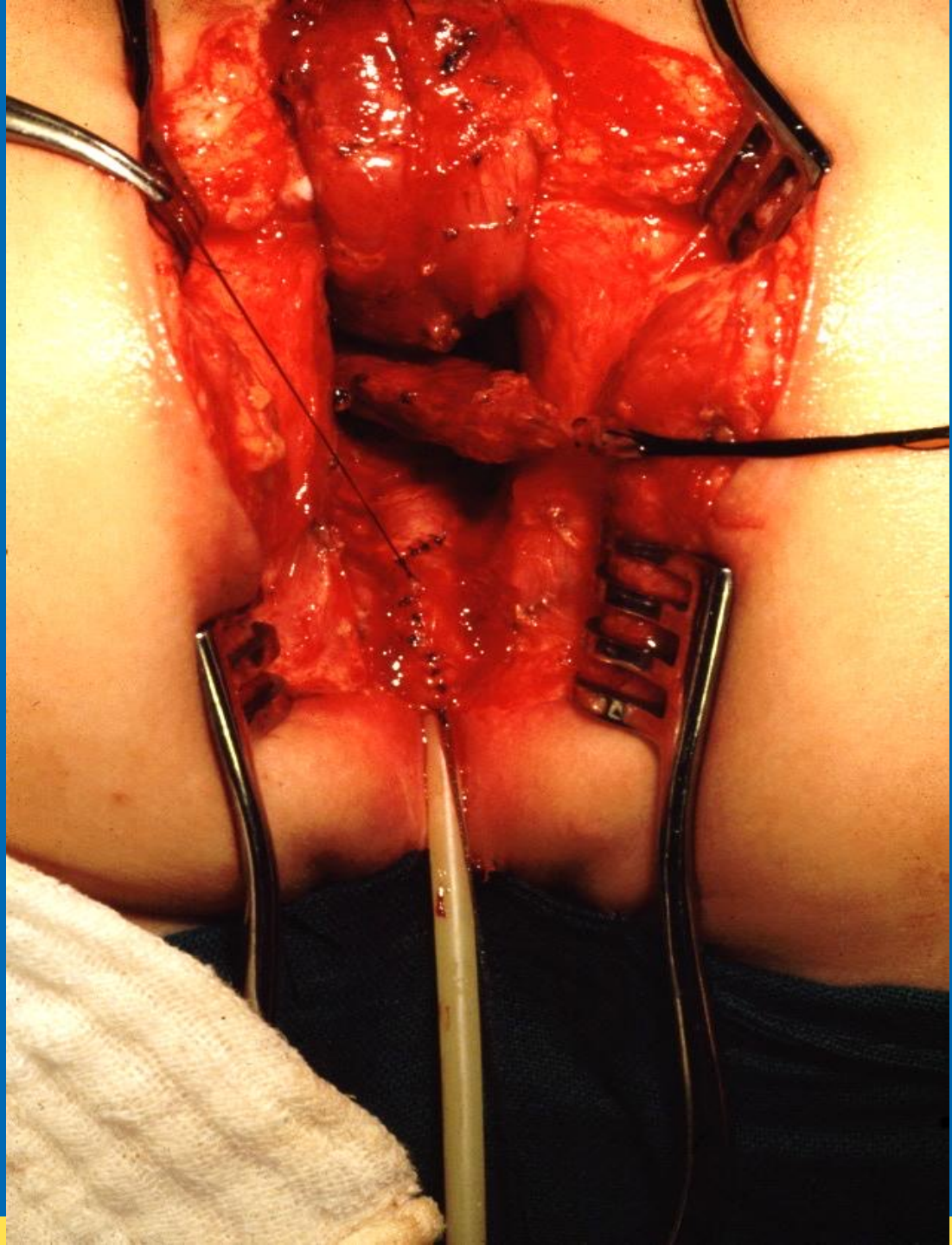
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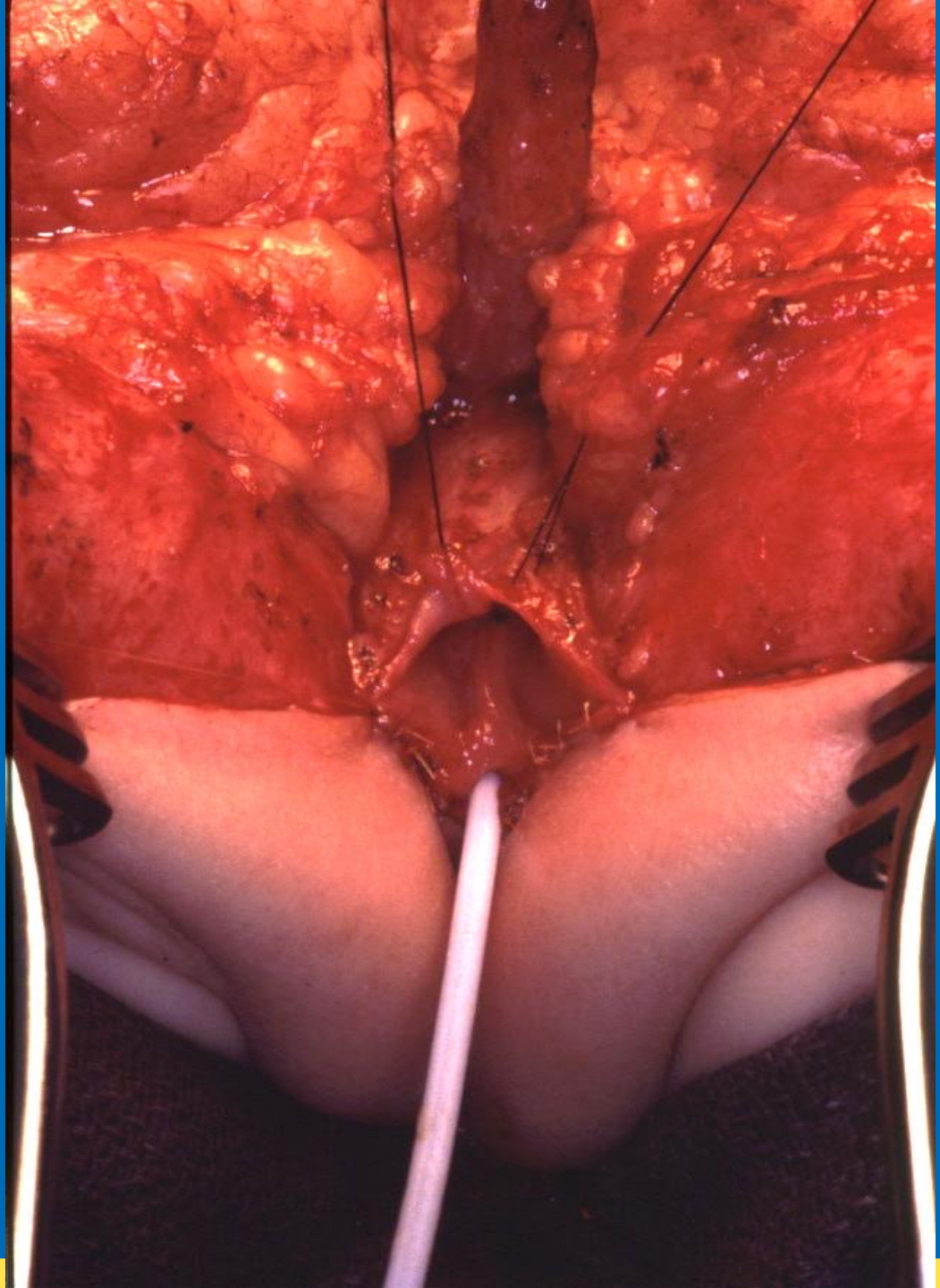
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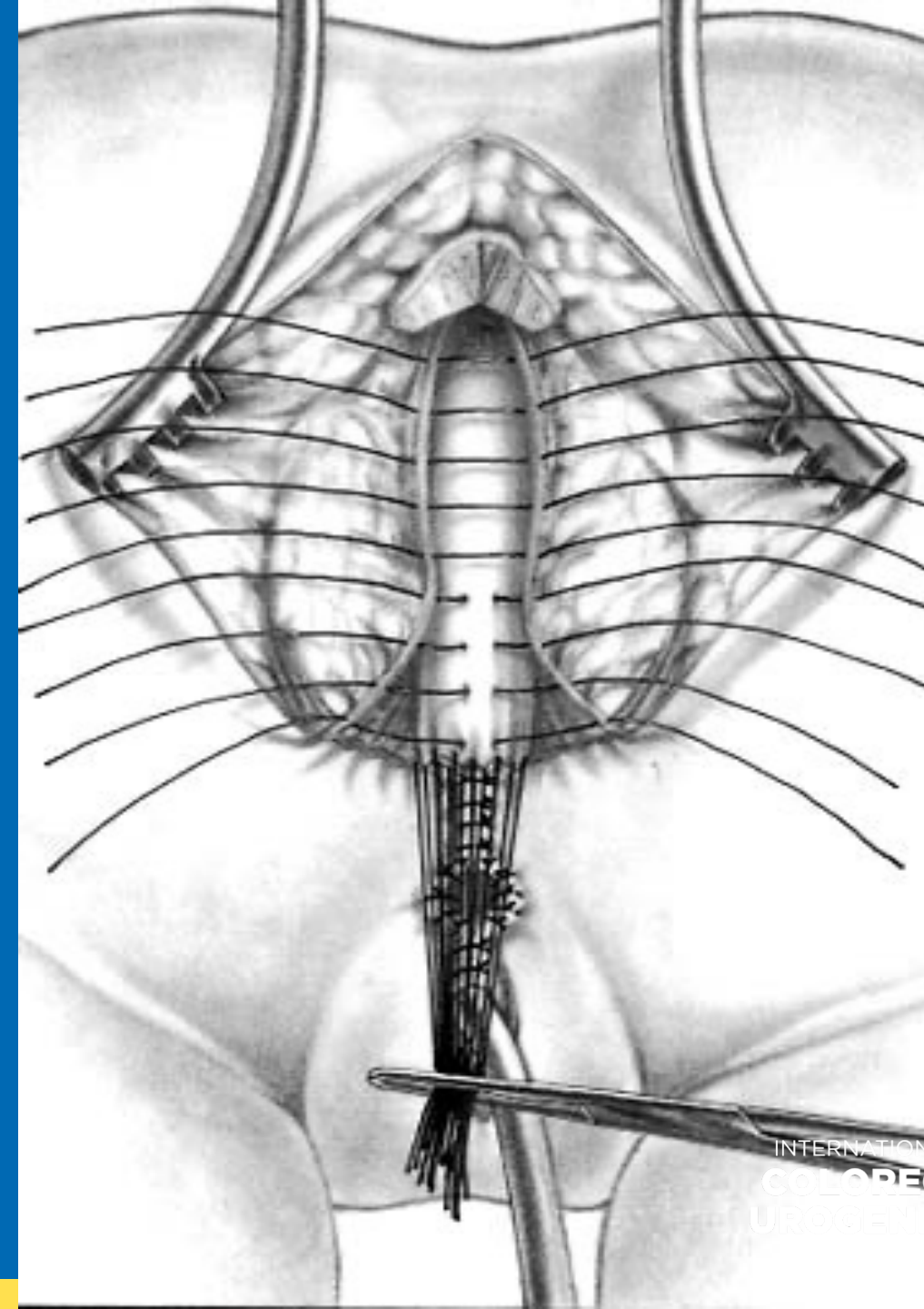
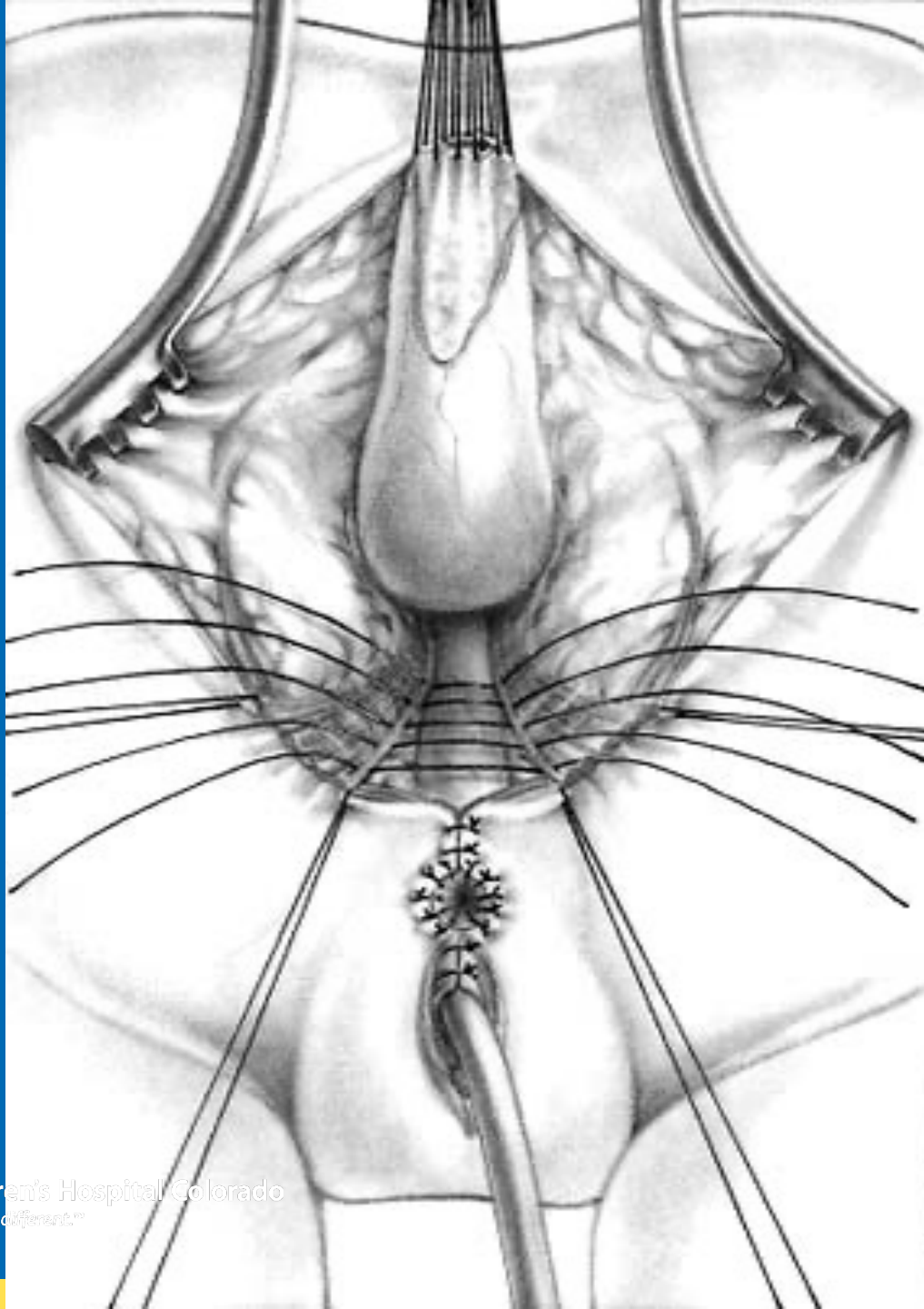
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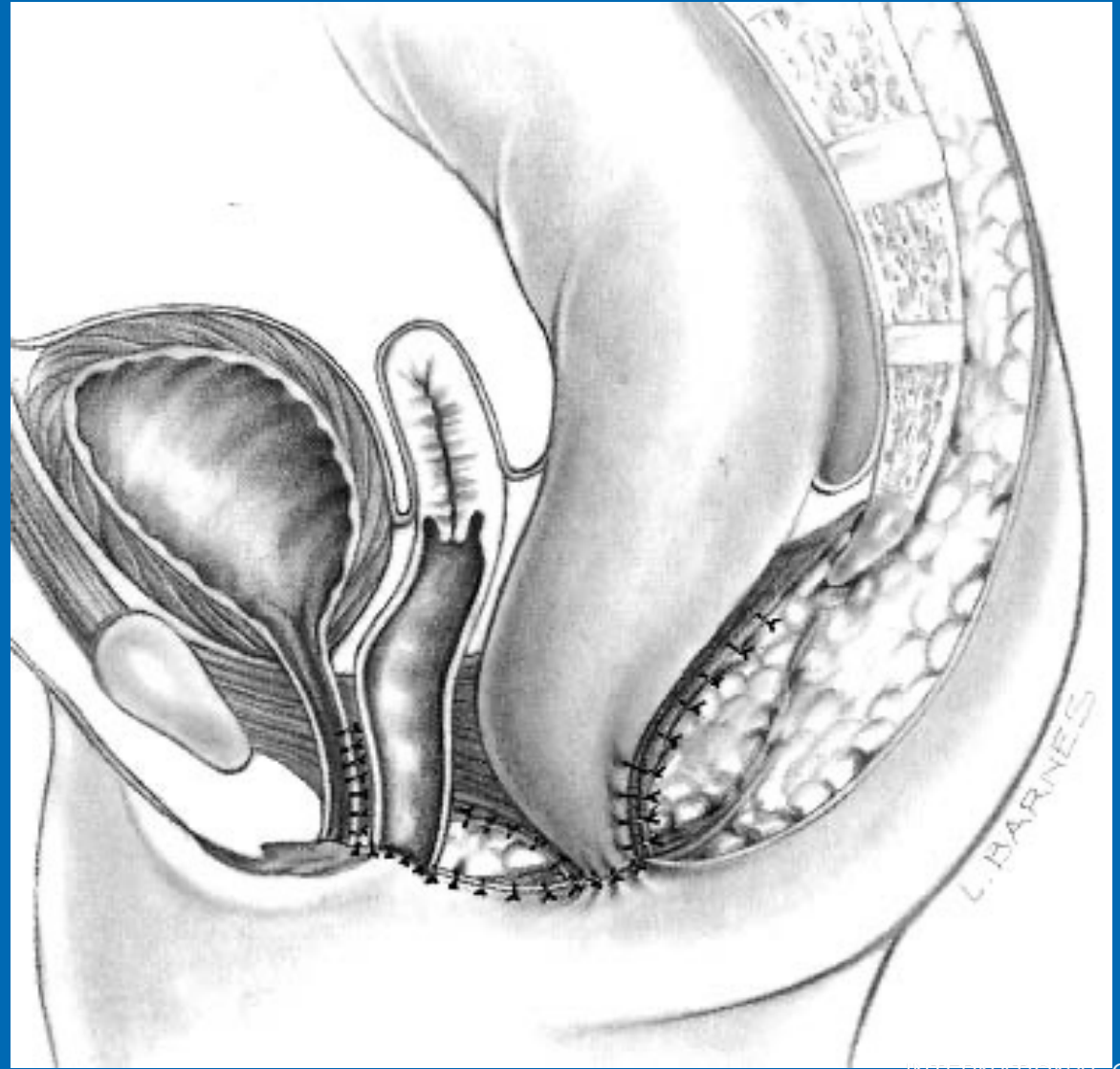
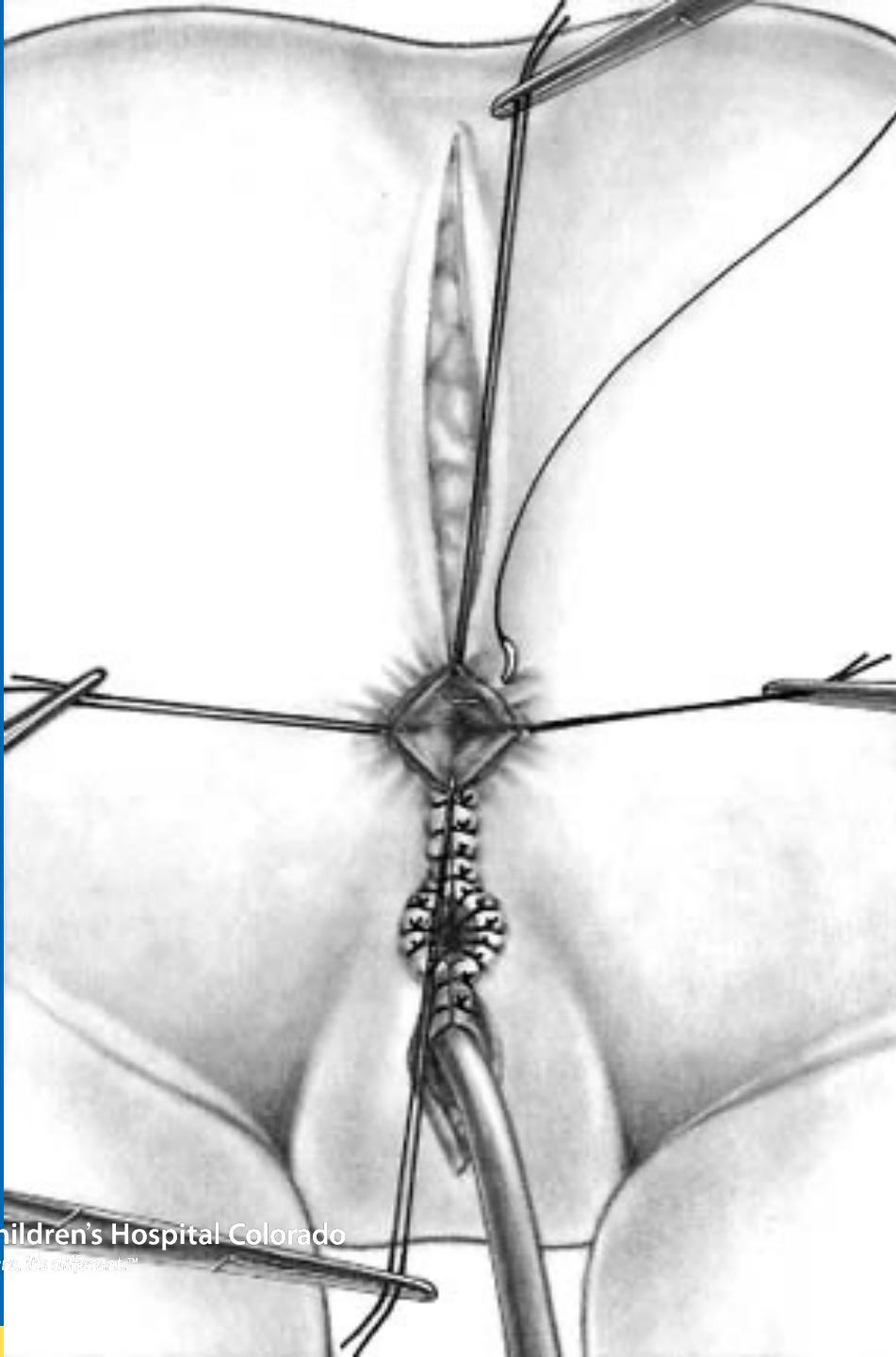
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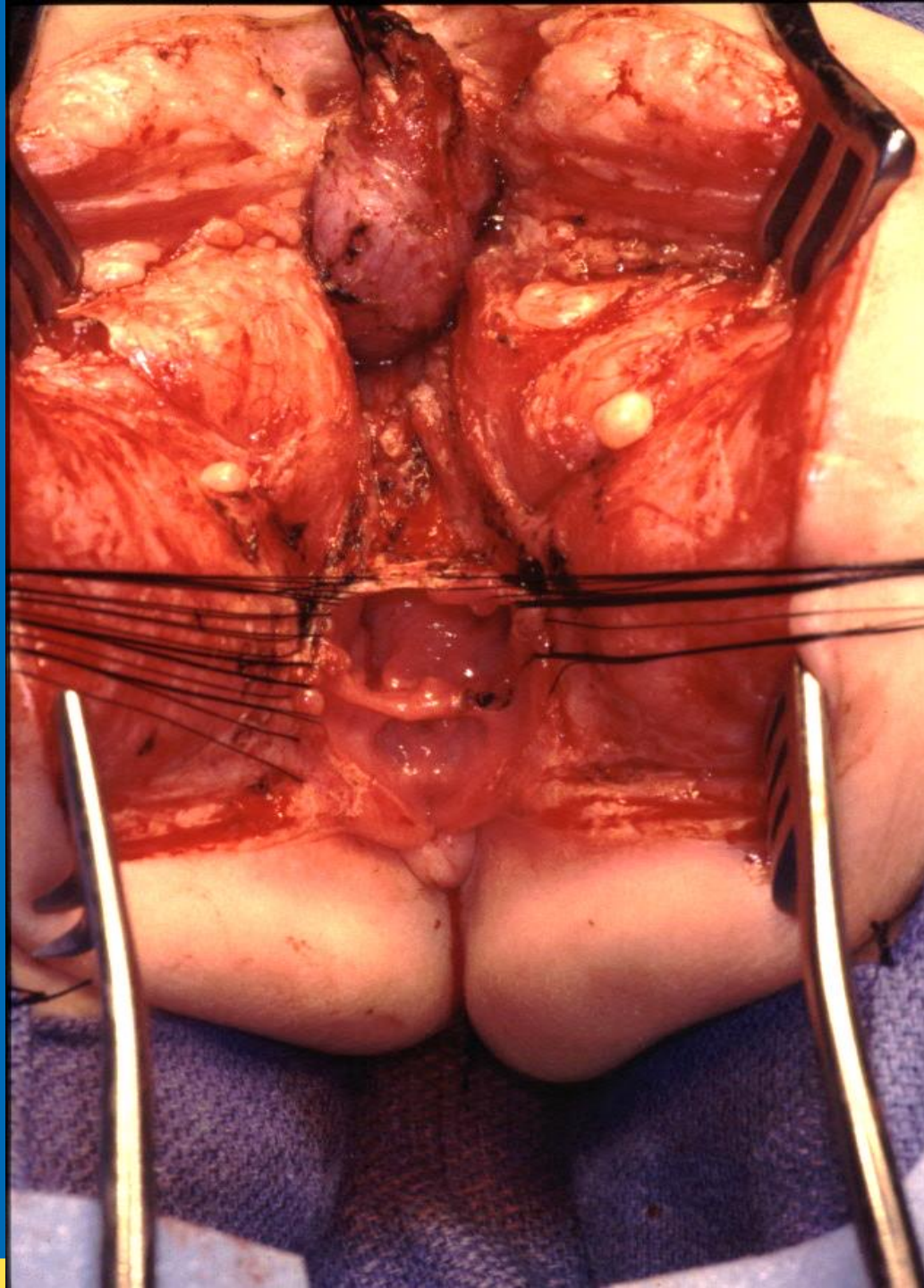
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# 1cm Common Channel

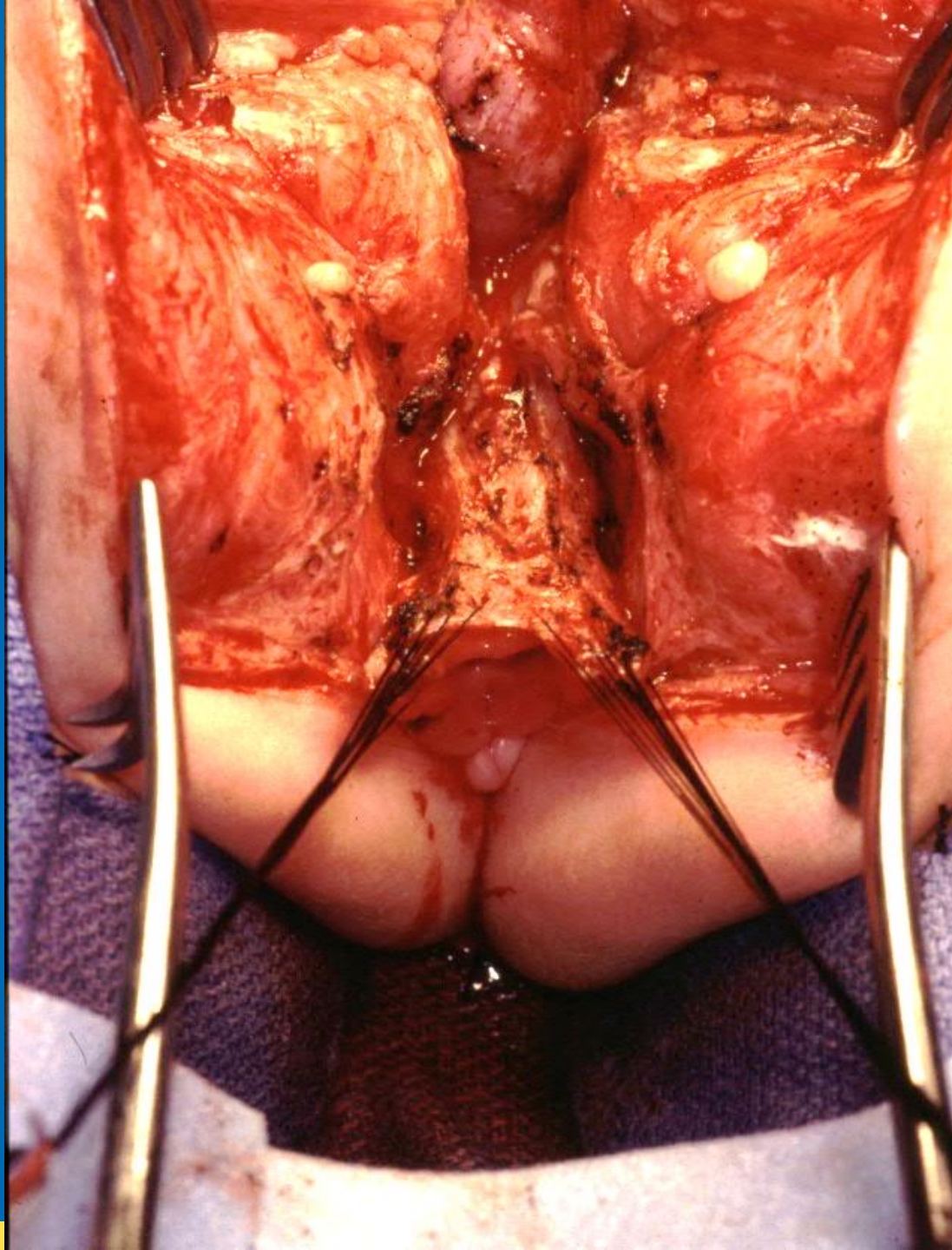
- Excellent Functional Prognosis for Bowel and Urinary Control
- Only Requires Rectal Repair and Introitoplasty  
(No Separation of vagina from urethra, No urogenital mobilization)





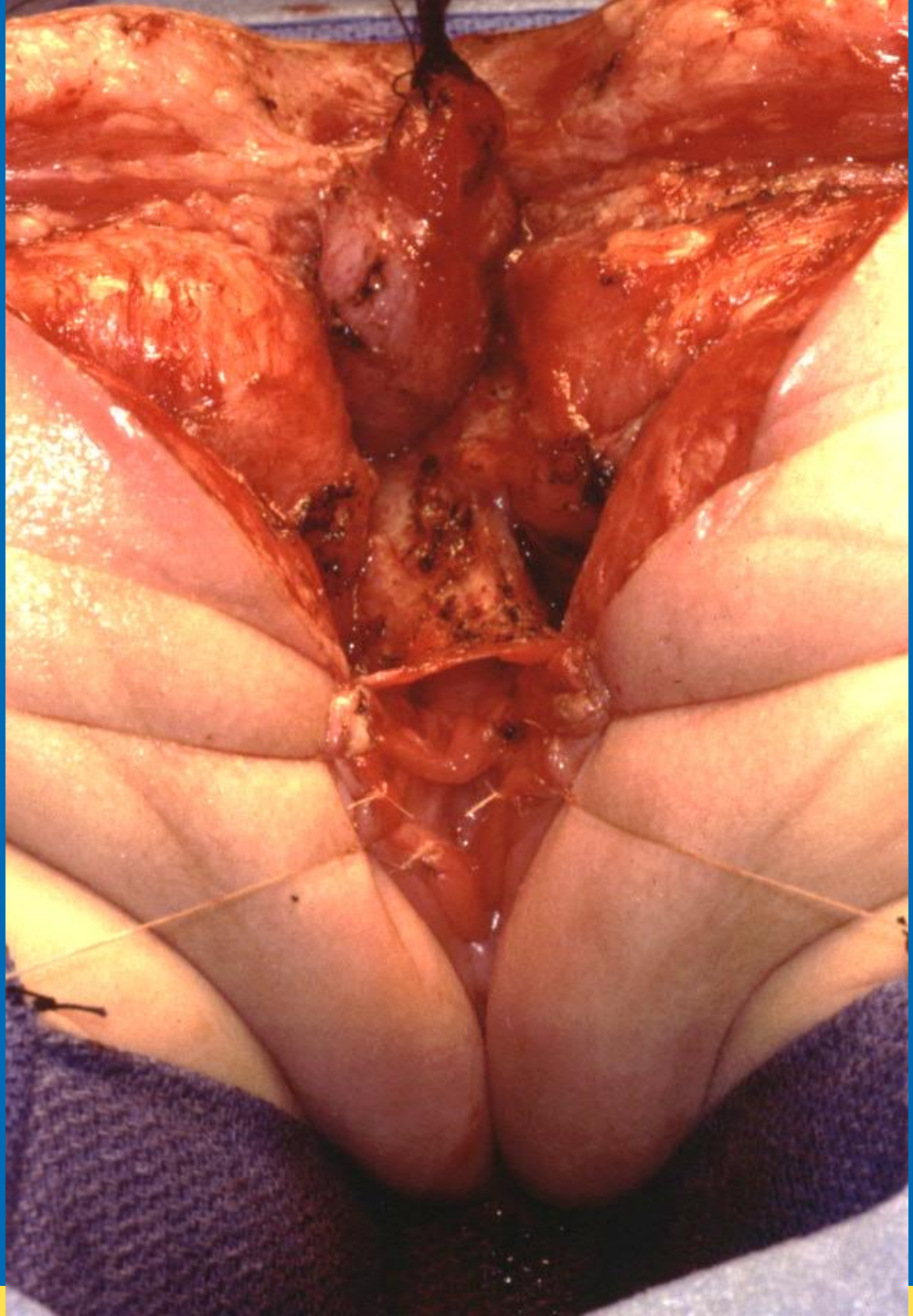
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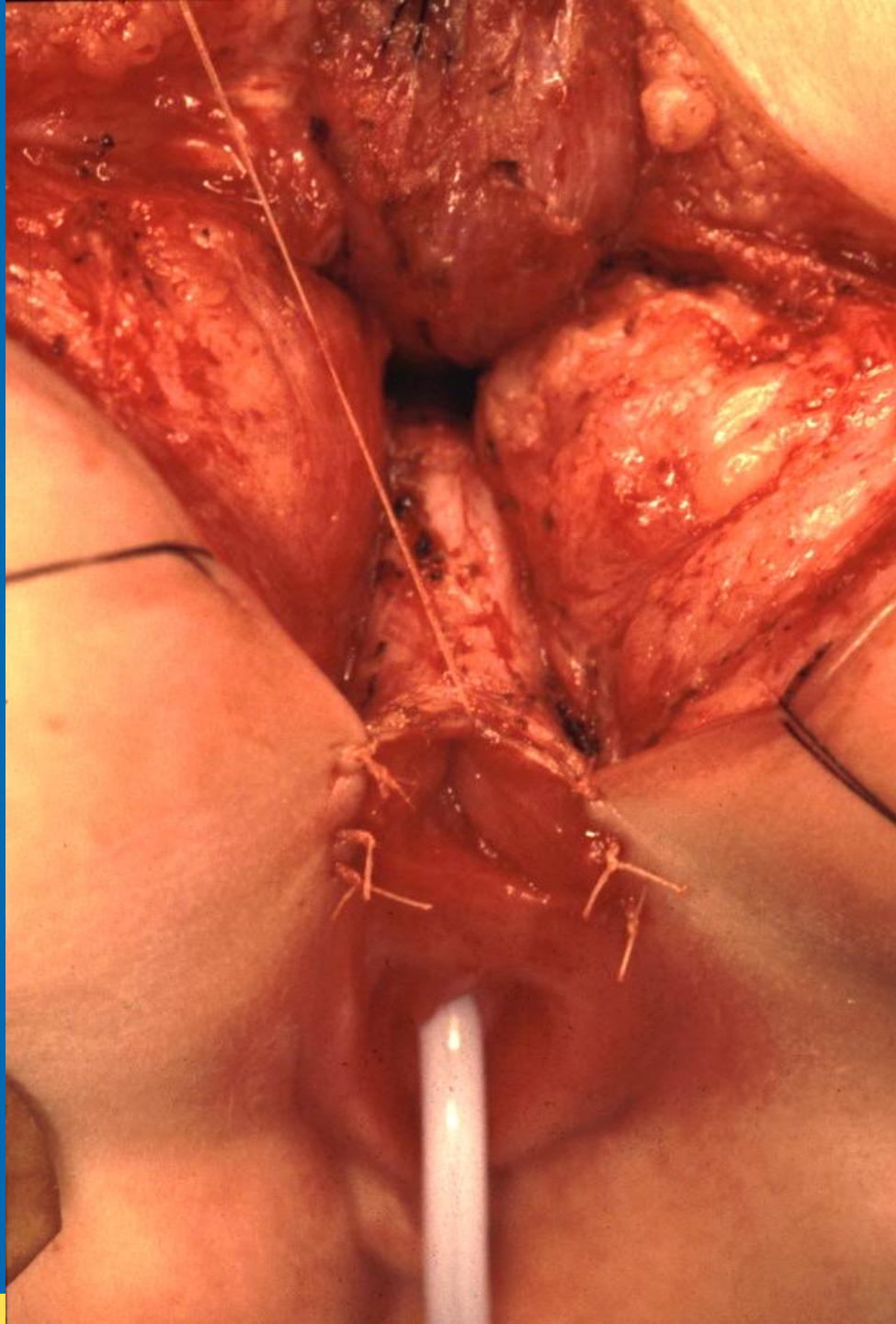
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# TOTAL UROGENITAL MOBILIZATION



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**February 21, 1992**

**First Total Urogenital  
Mobilization**



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# Cloacas – 620

## Common Channel Length

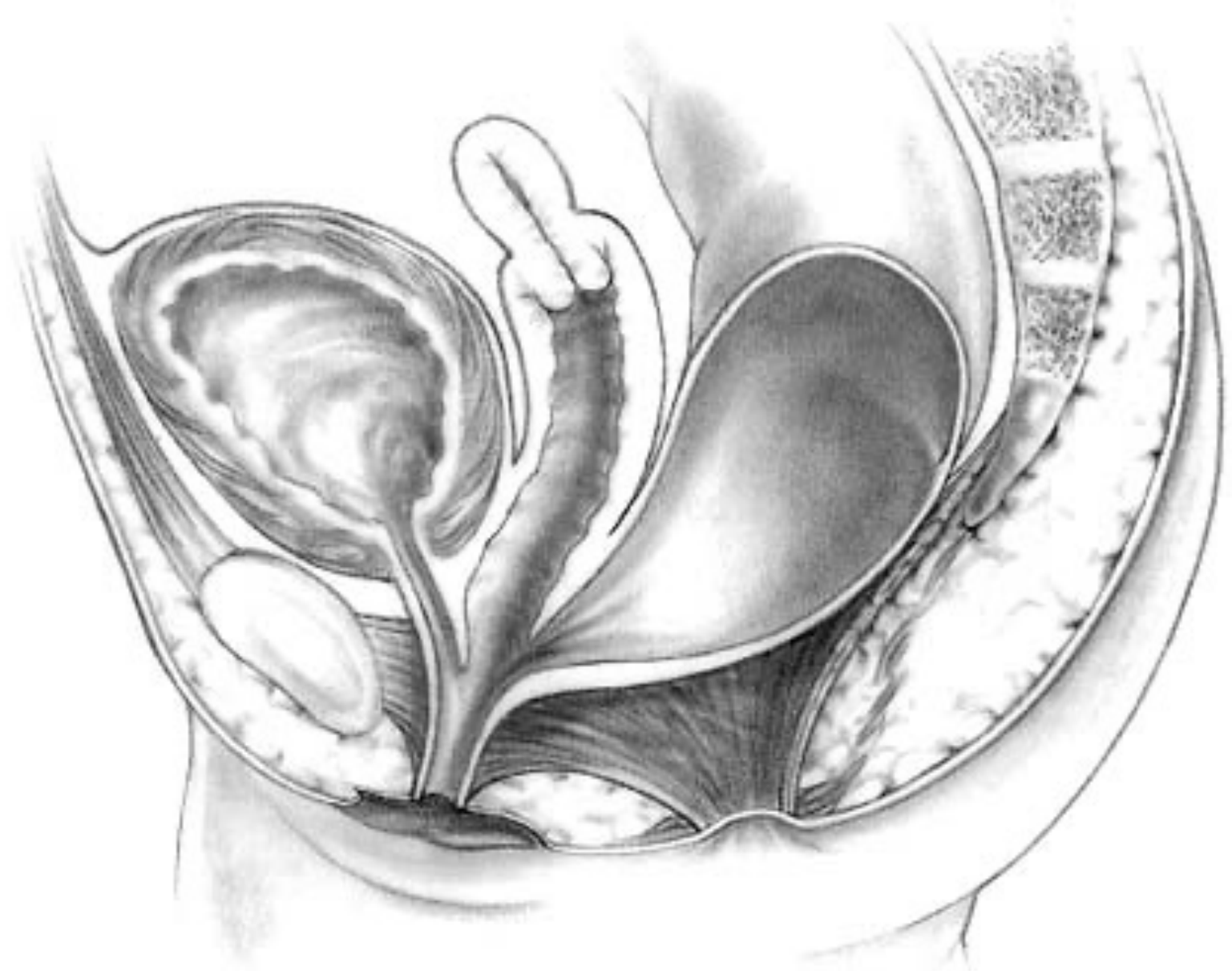
- 1cm = 7%
- 1 - 3cm = 35%
- 3 - 5cm = 30%
- More than 5cm = 8%
- No information (Redos) = 20%



# 1 – 3cm

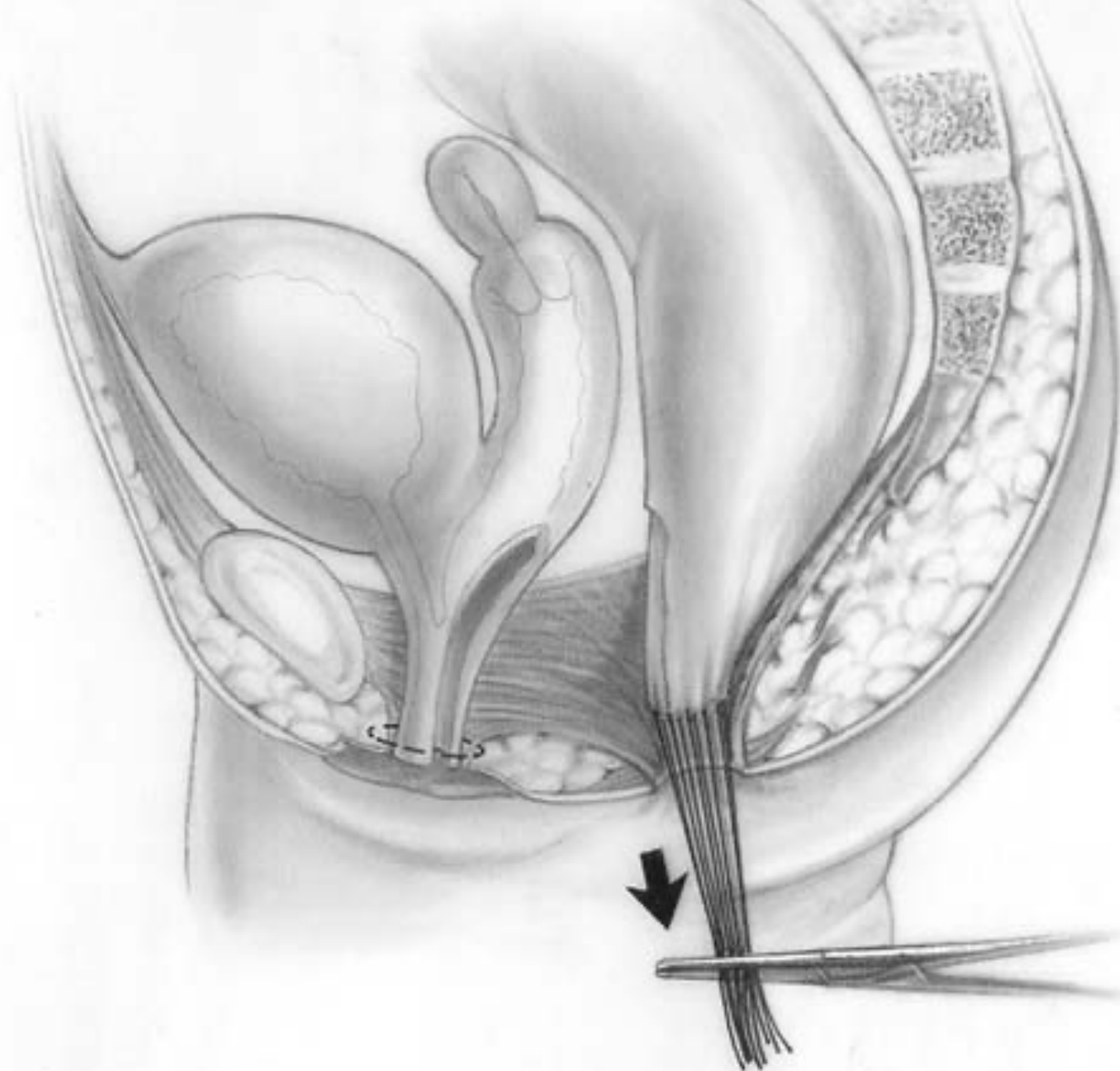
- Most common defect
- Total Urogenital Mobilization
- No laparotomy
- Reproducible operation
- Good prognosis





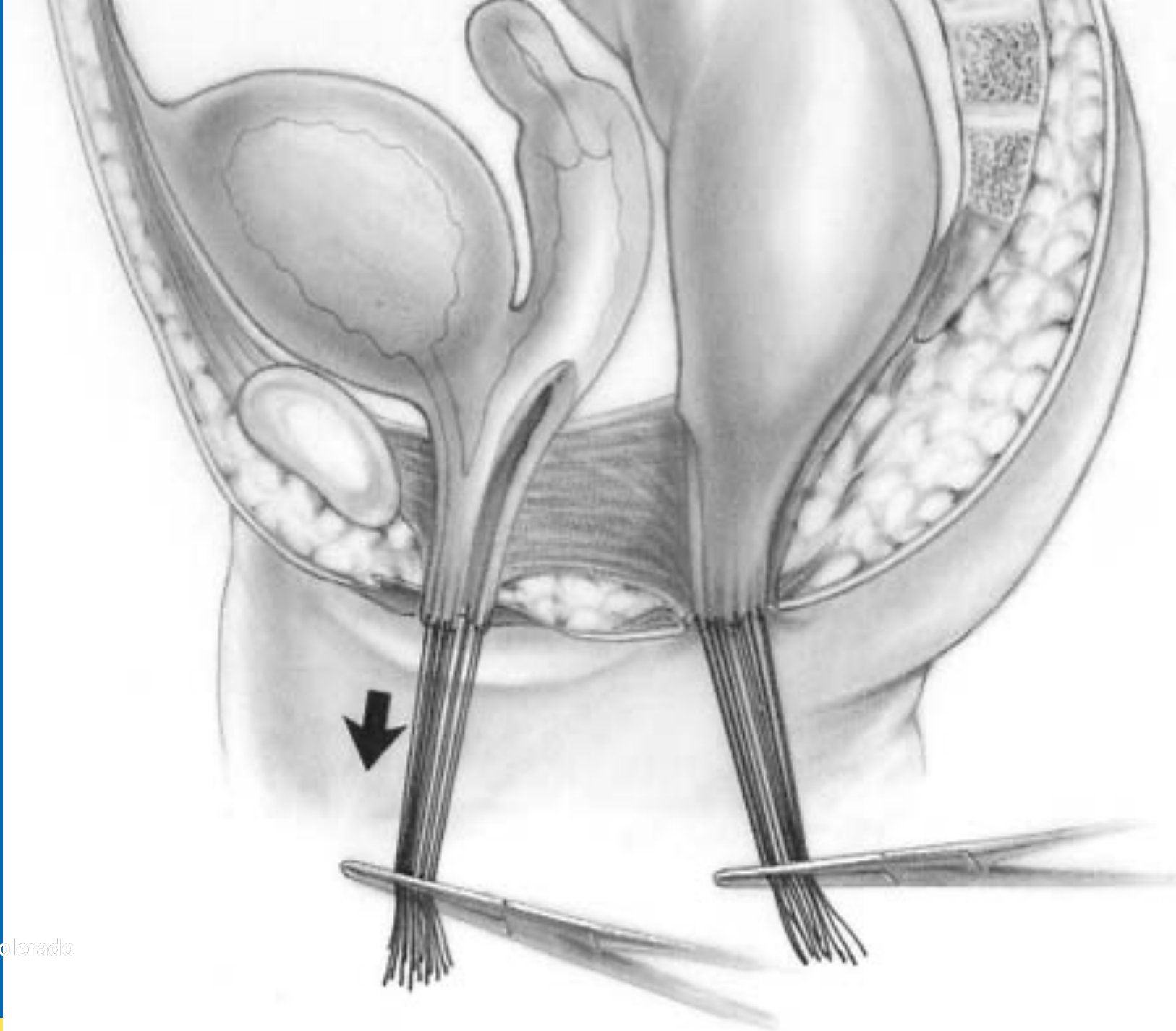
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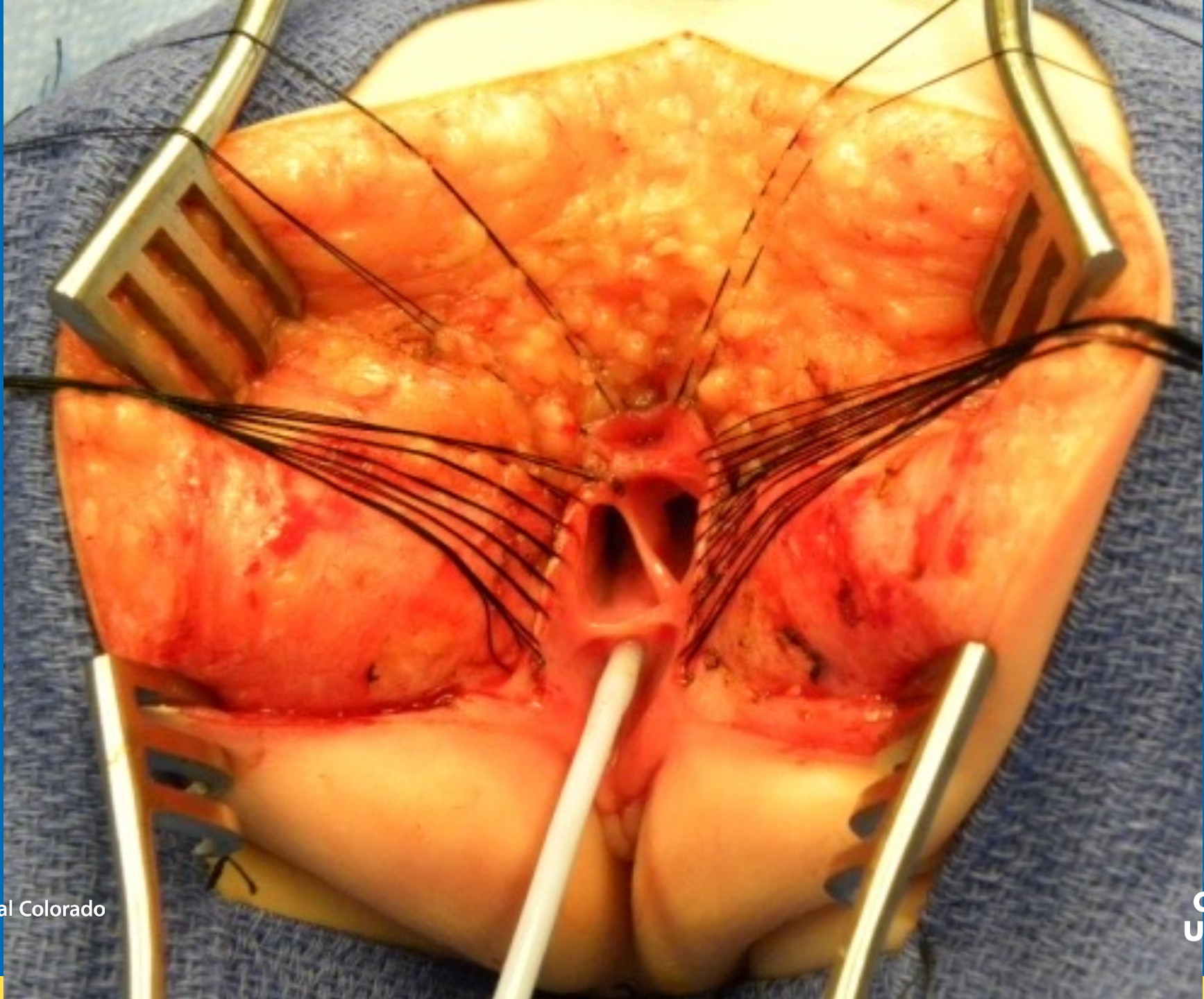
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# Total Urogenital Mobilization



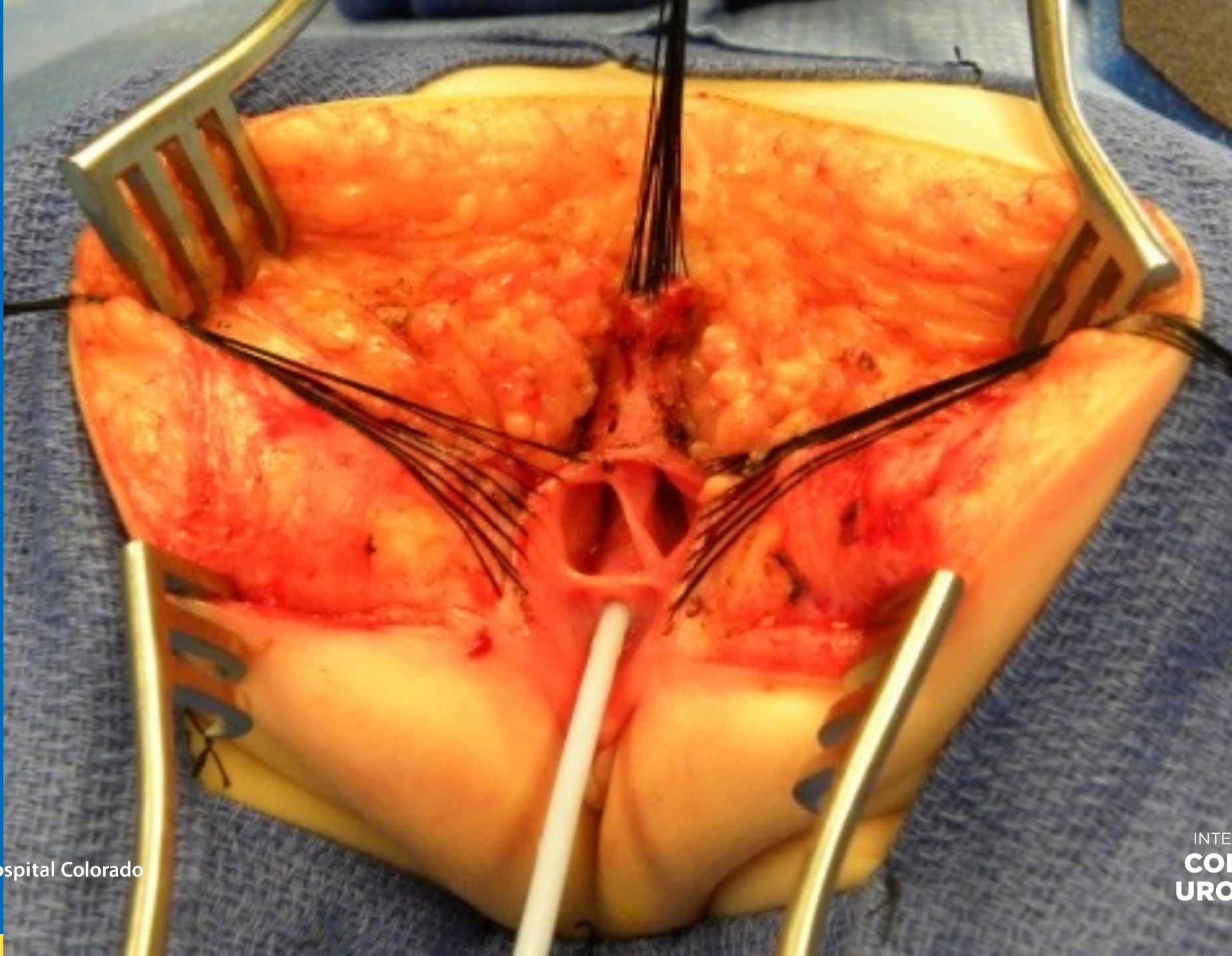
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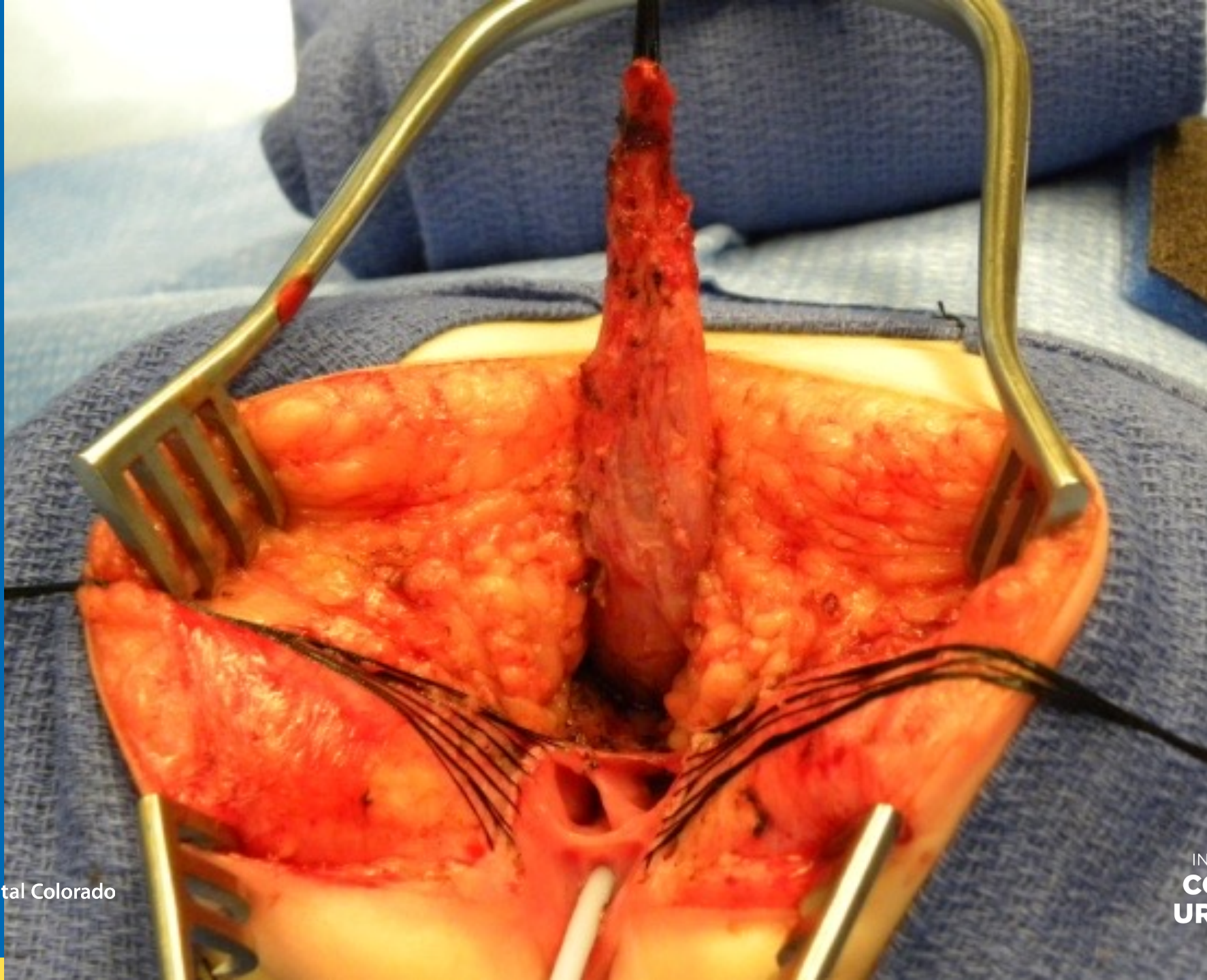
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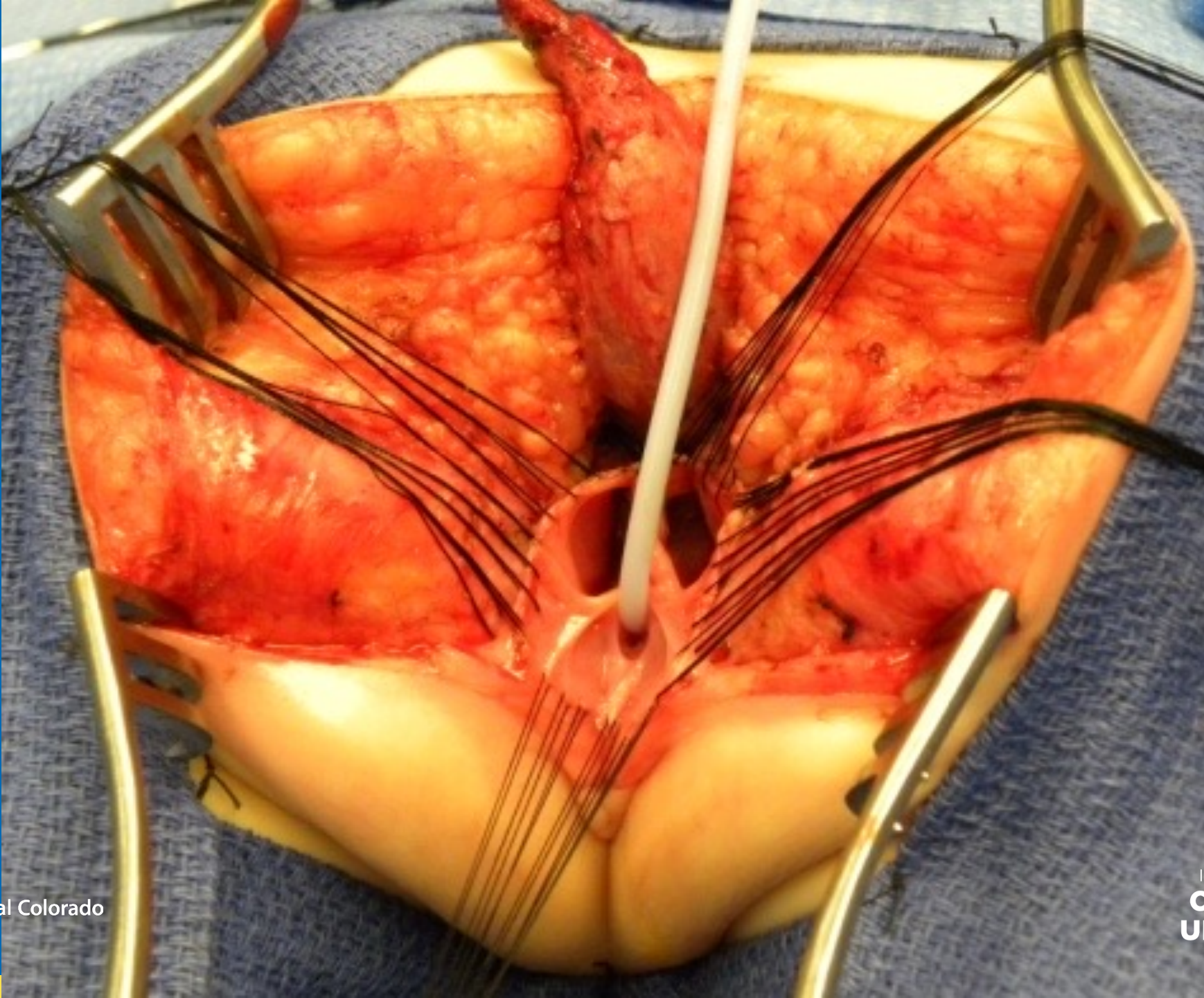
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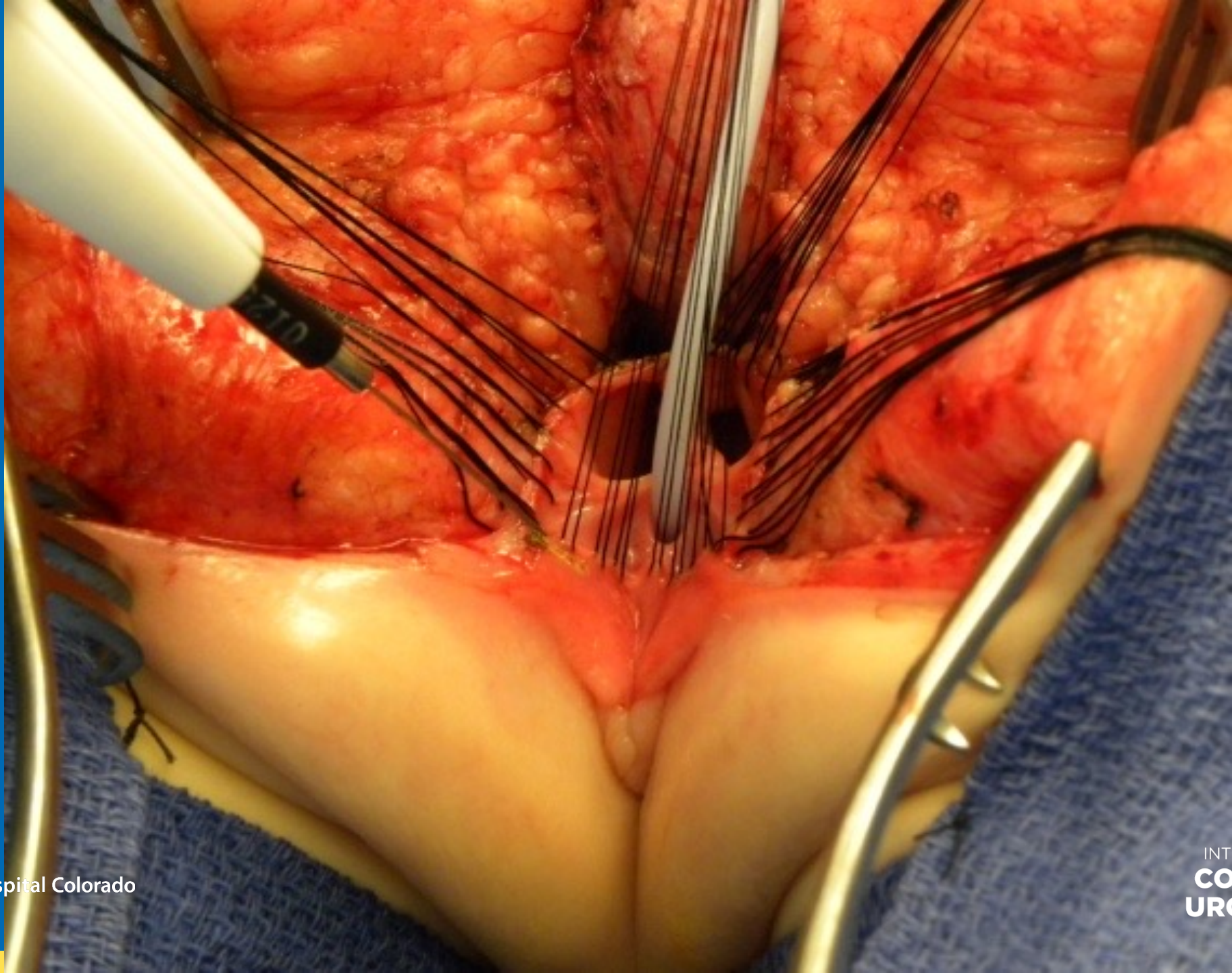
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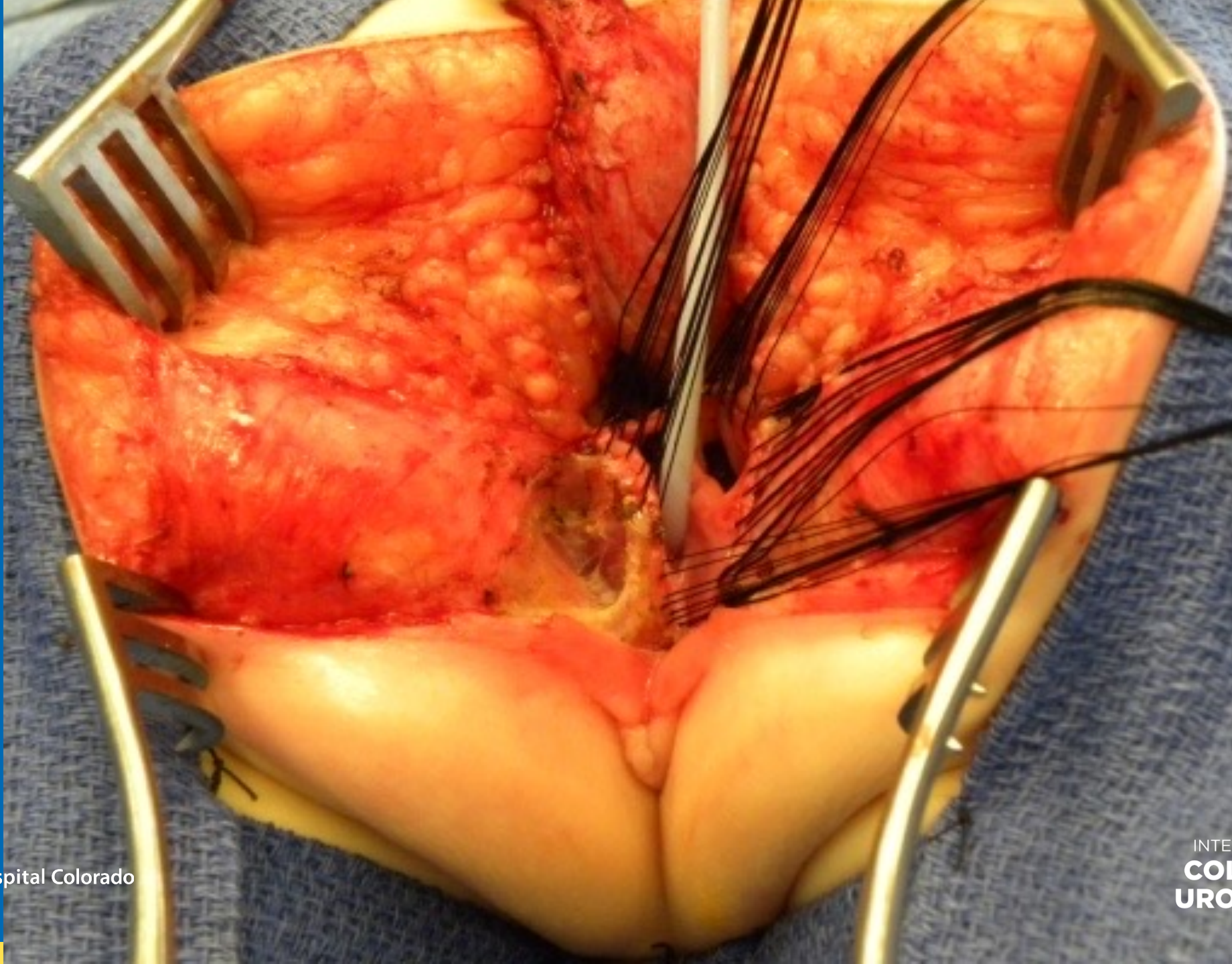
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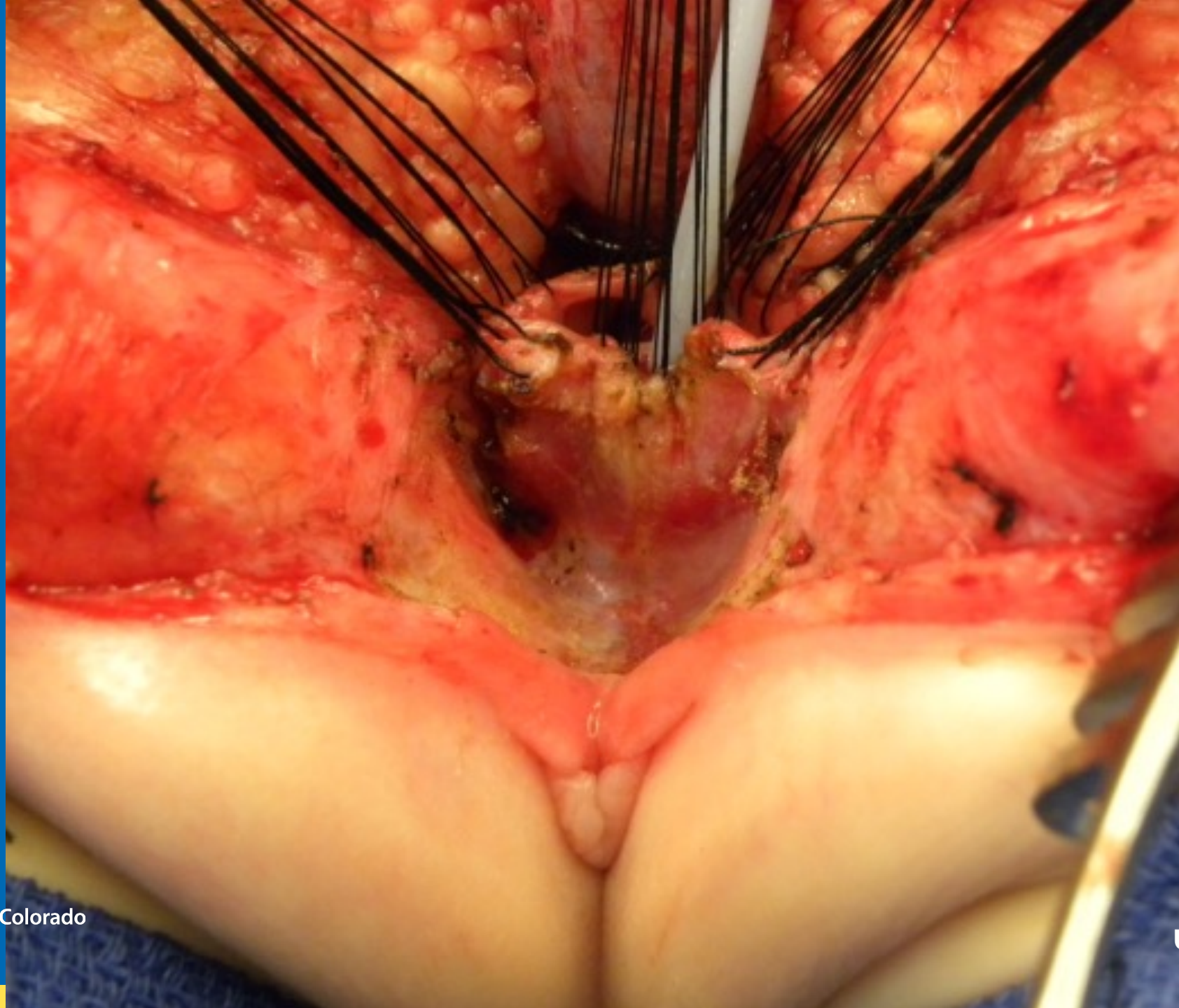
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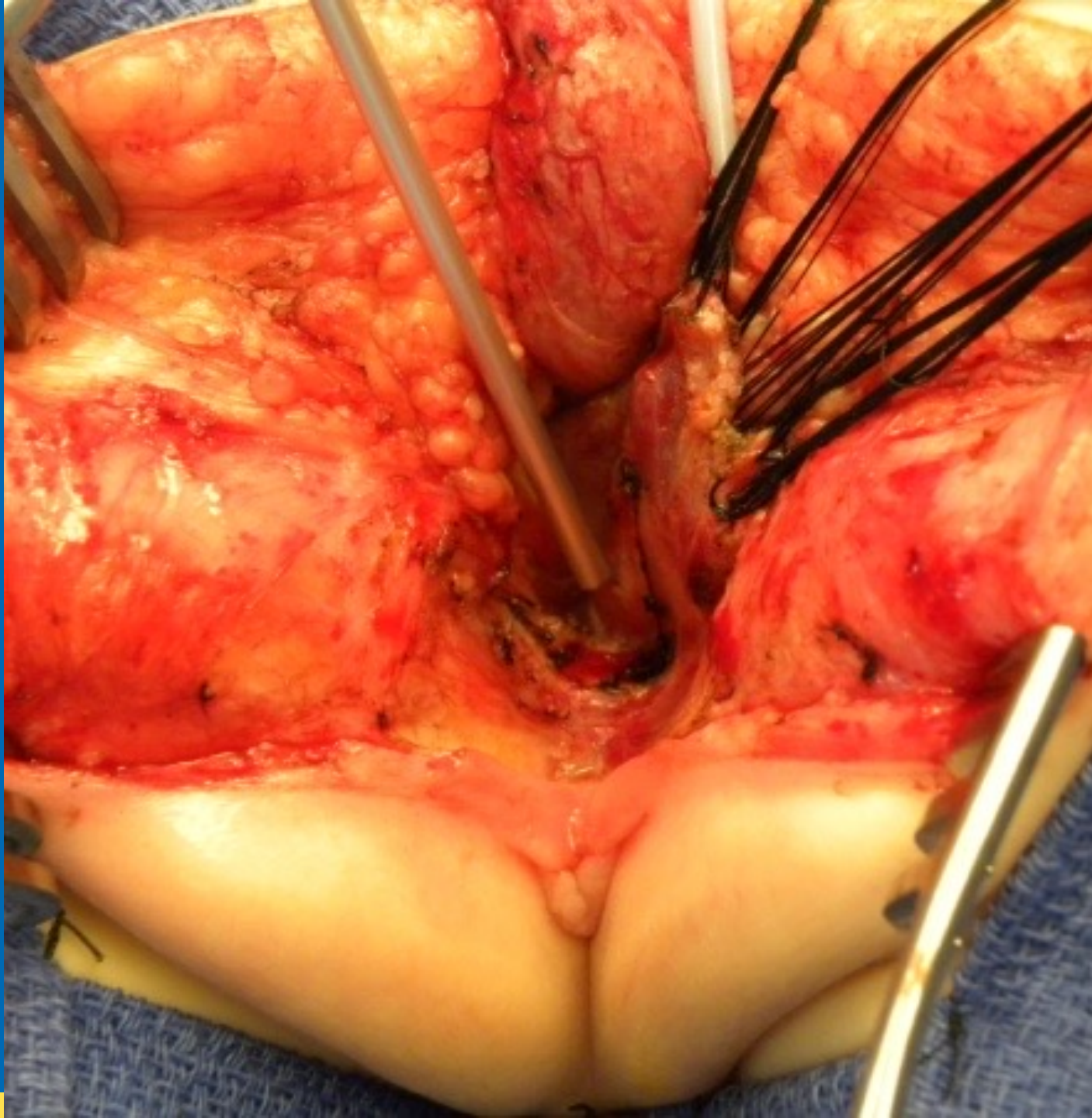
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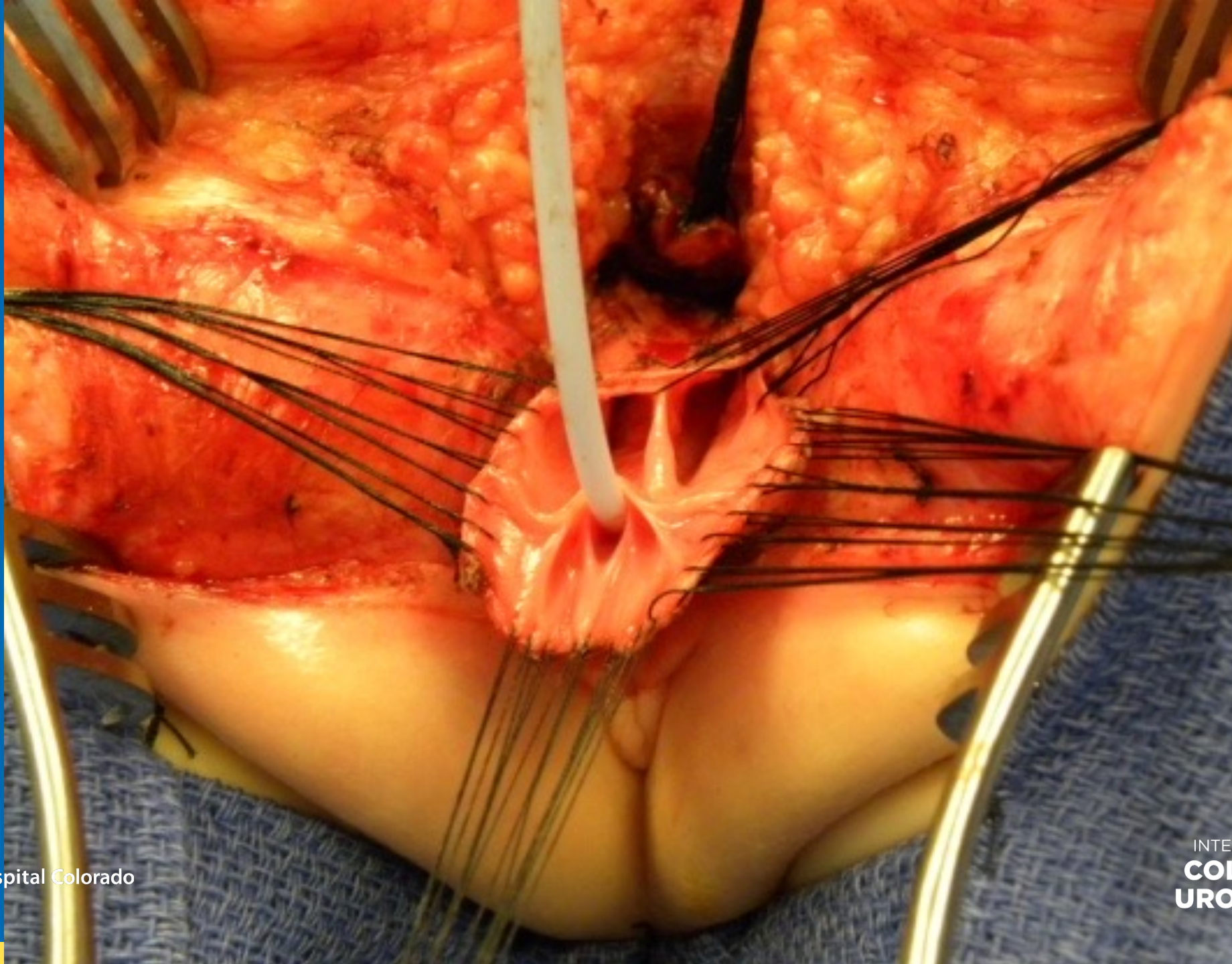
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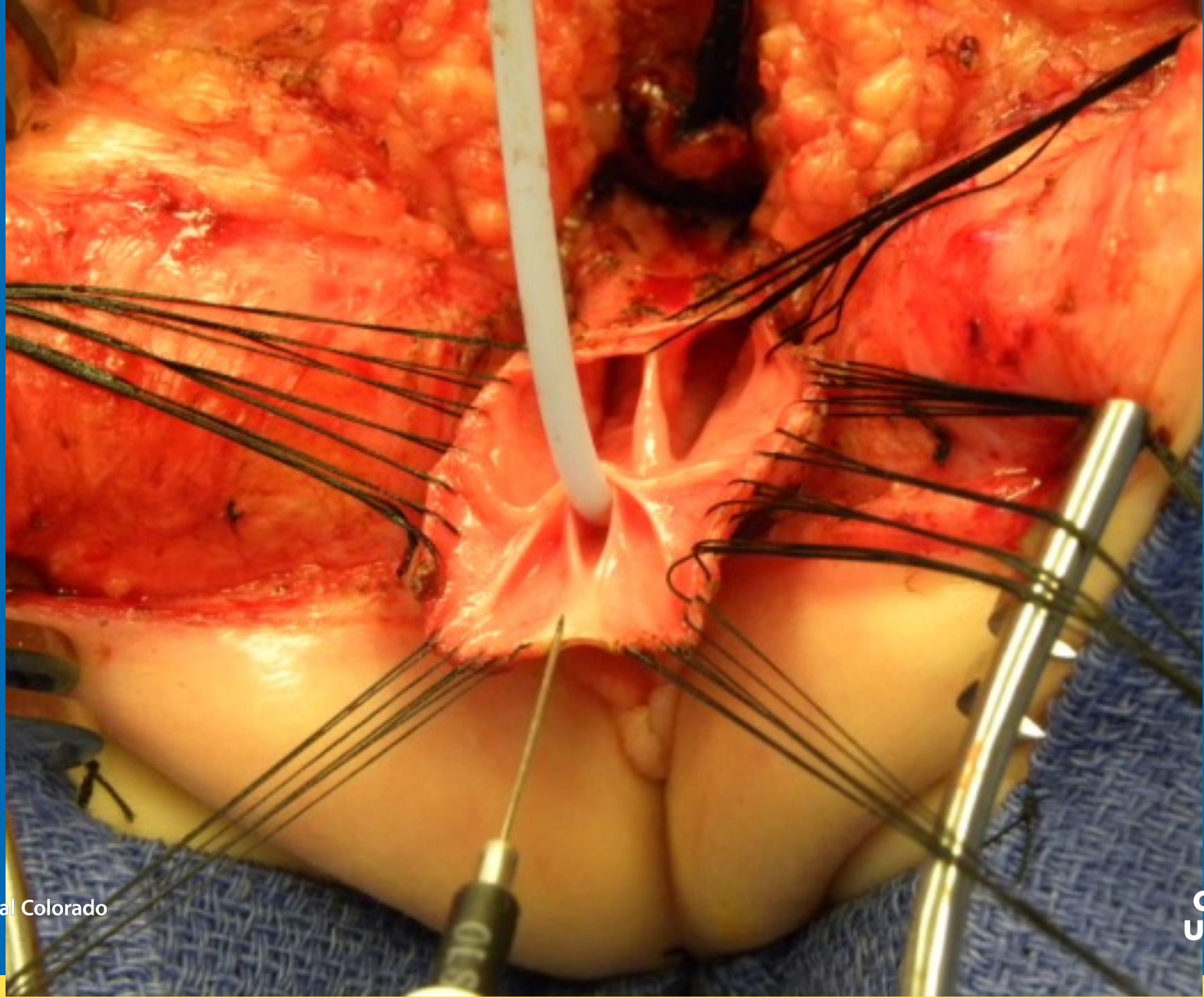
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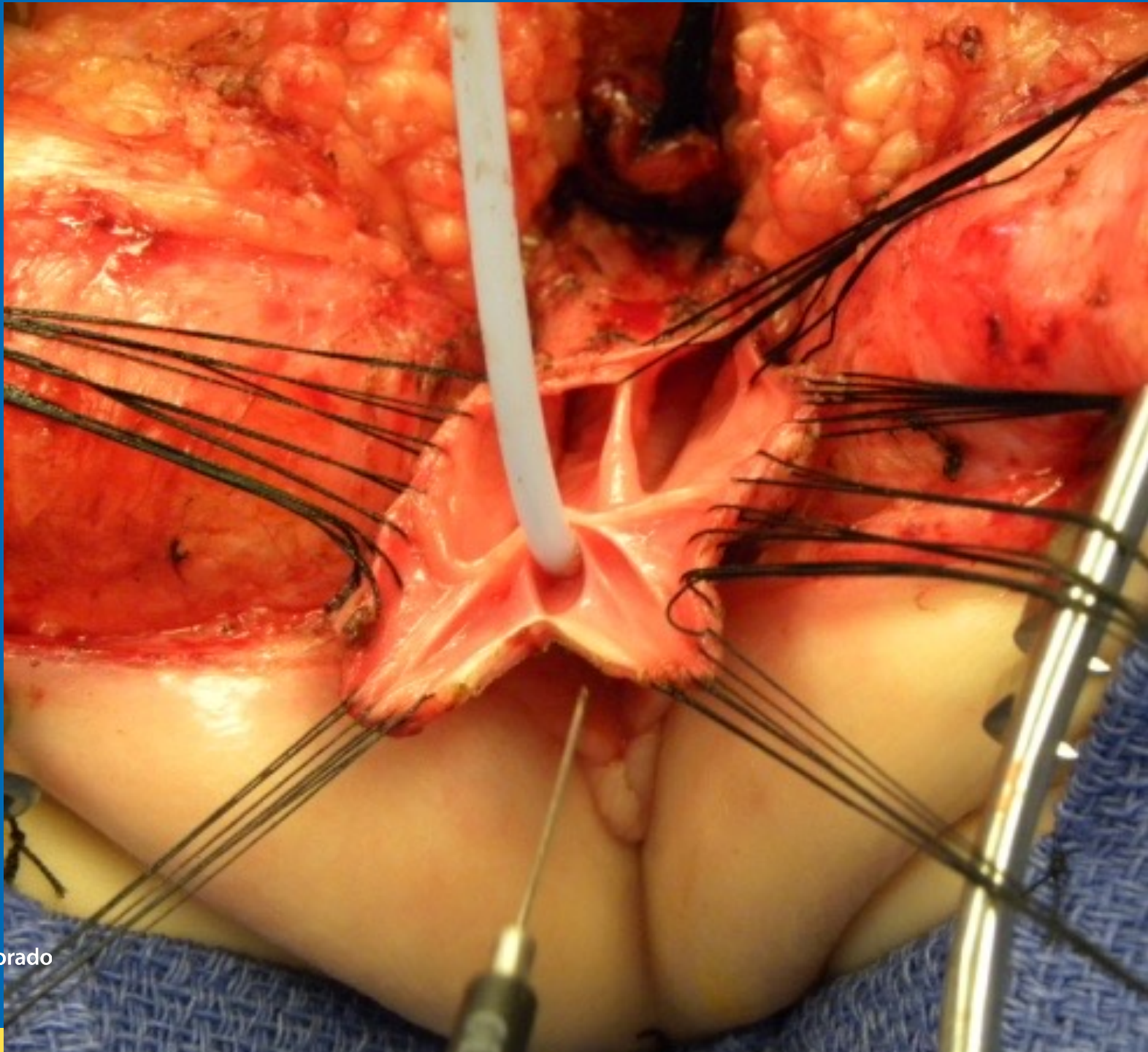
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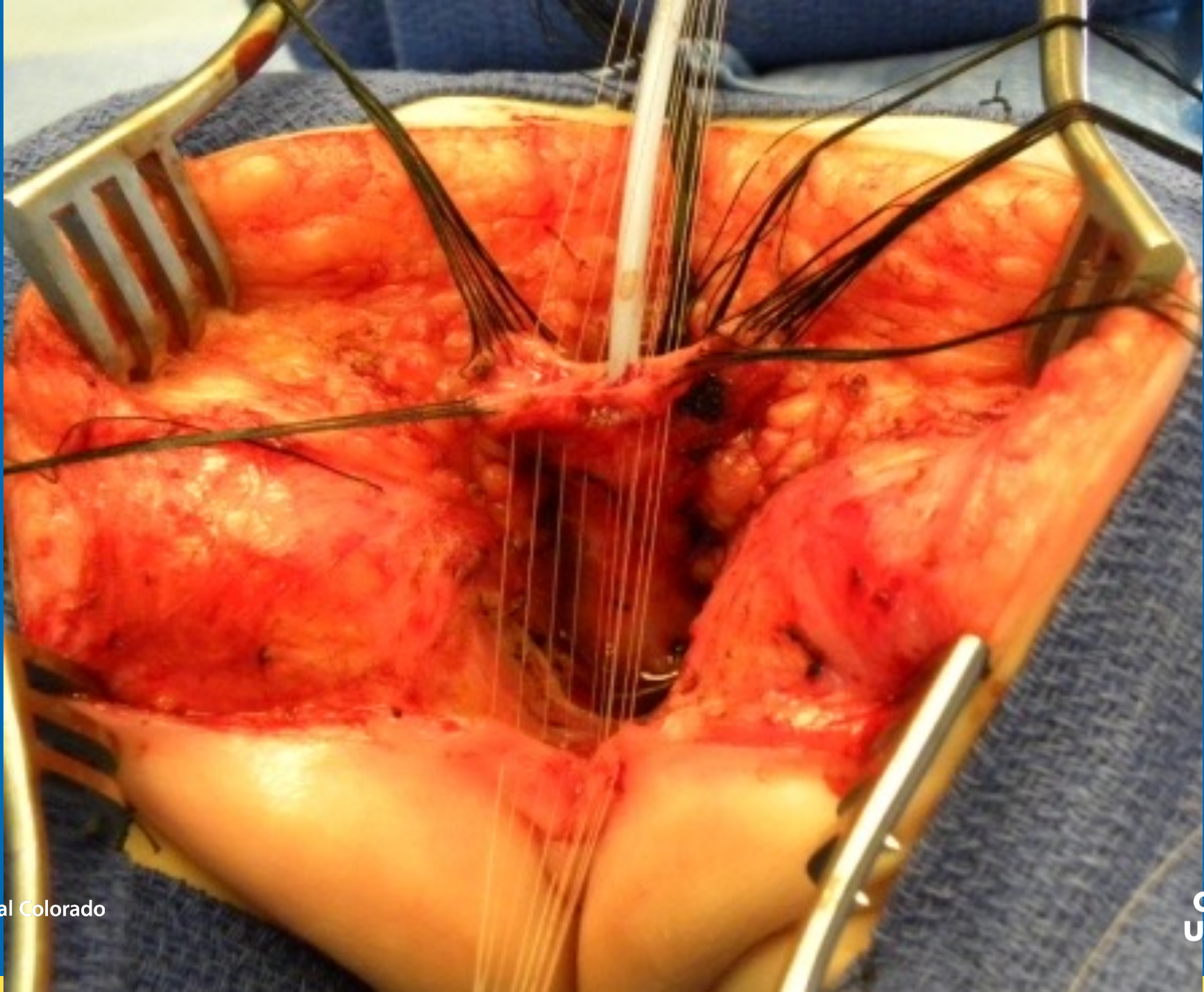
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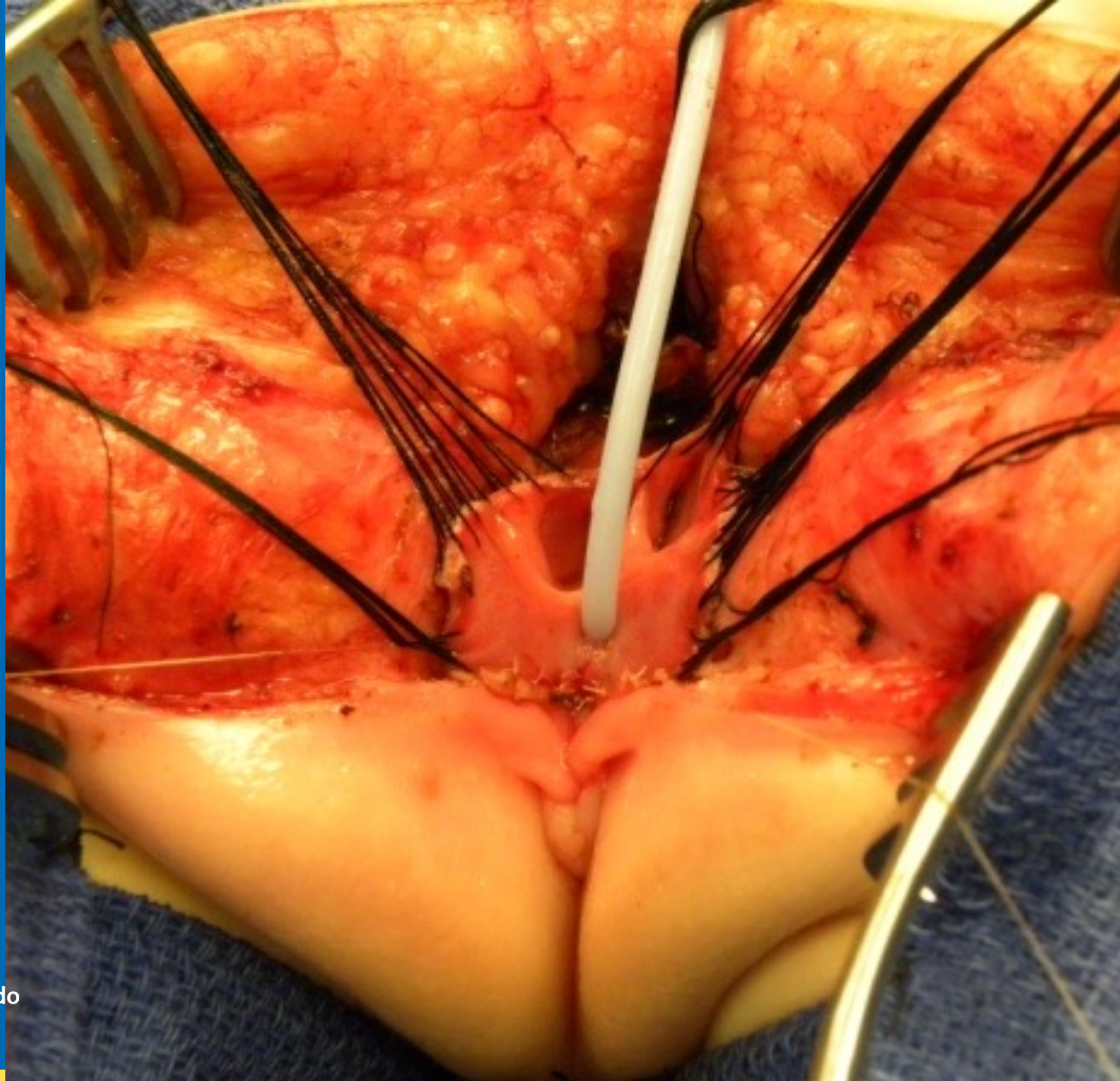
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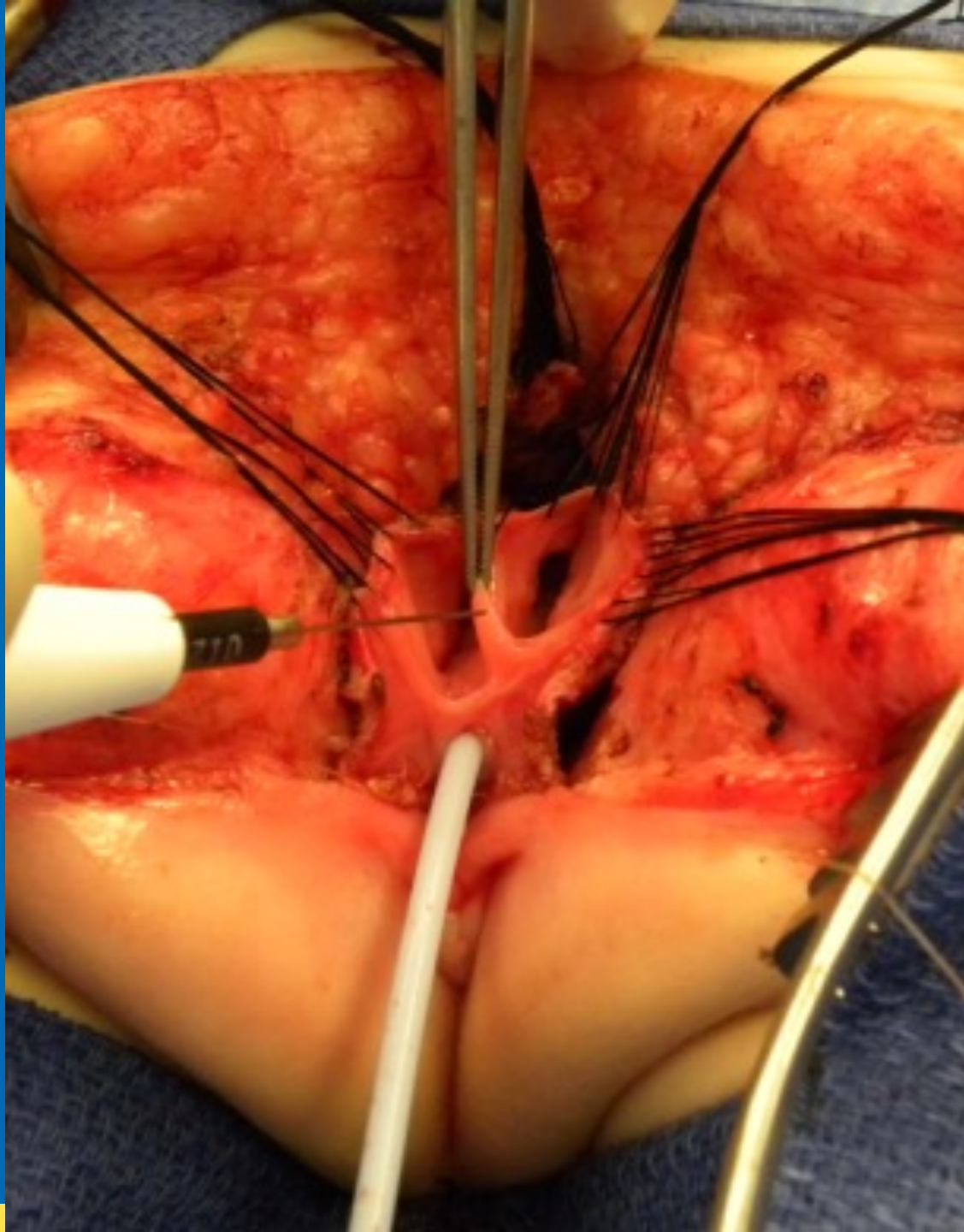
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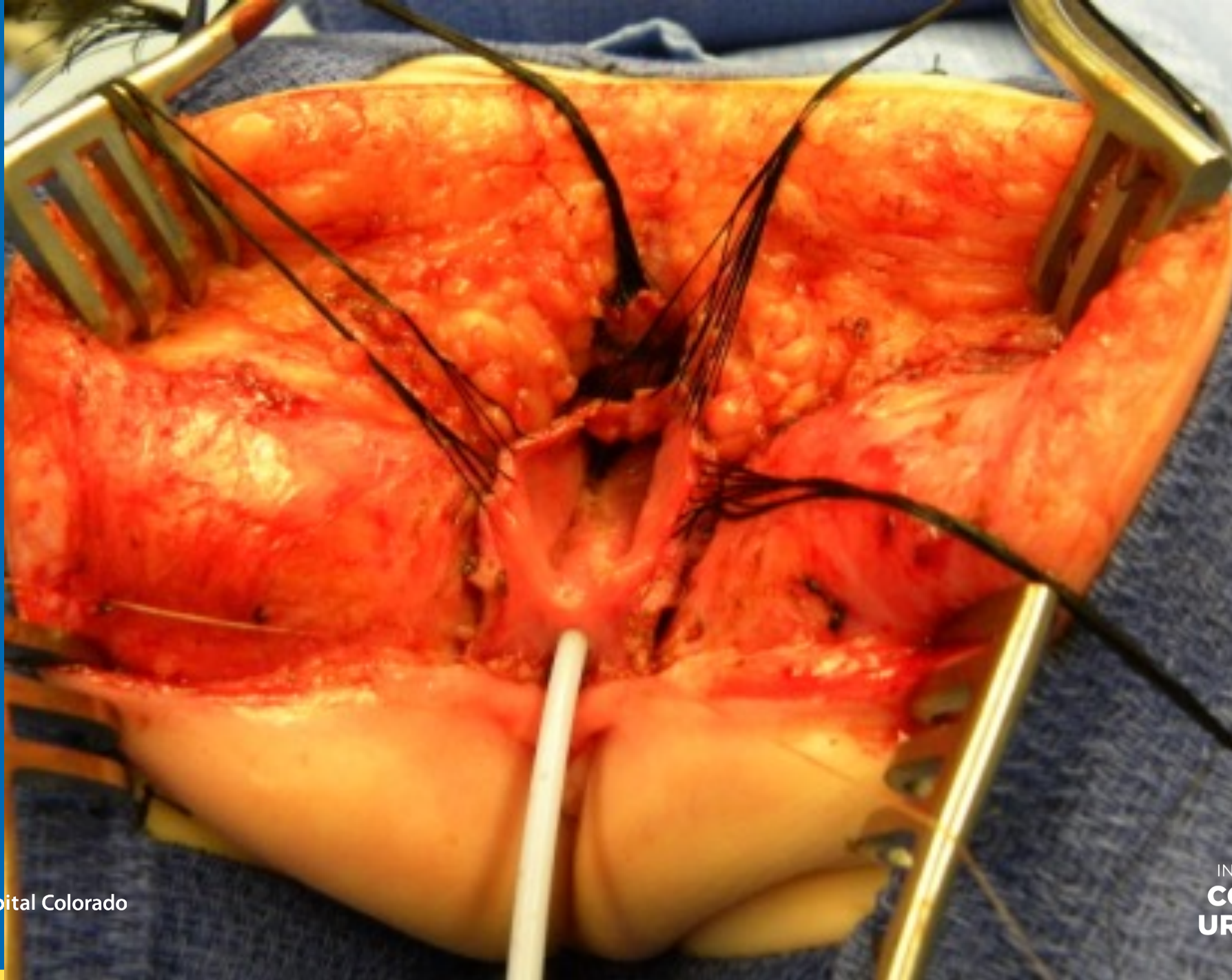
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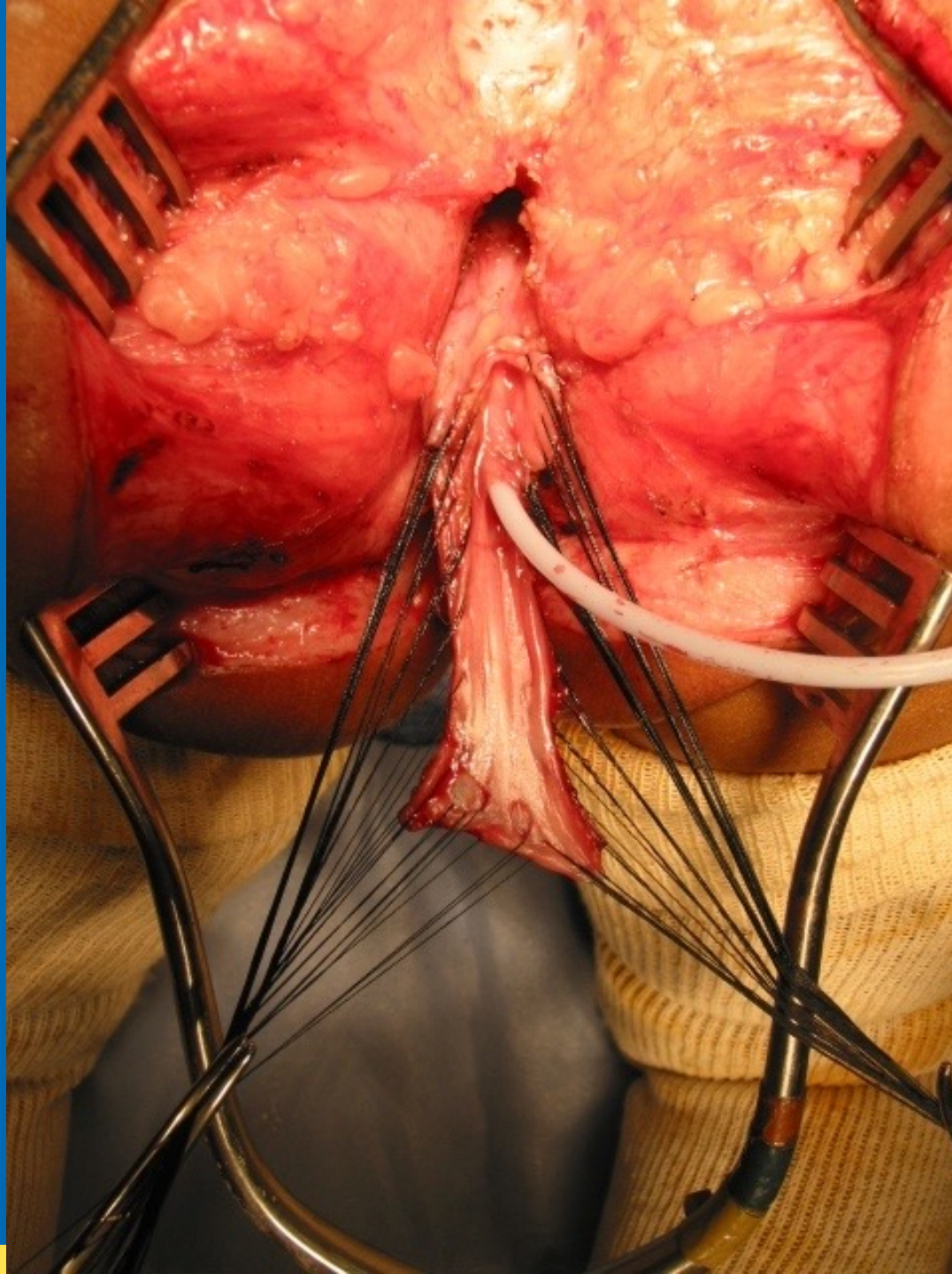
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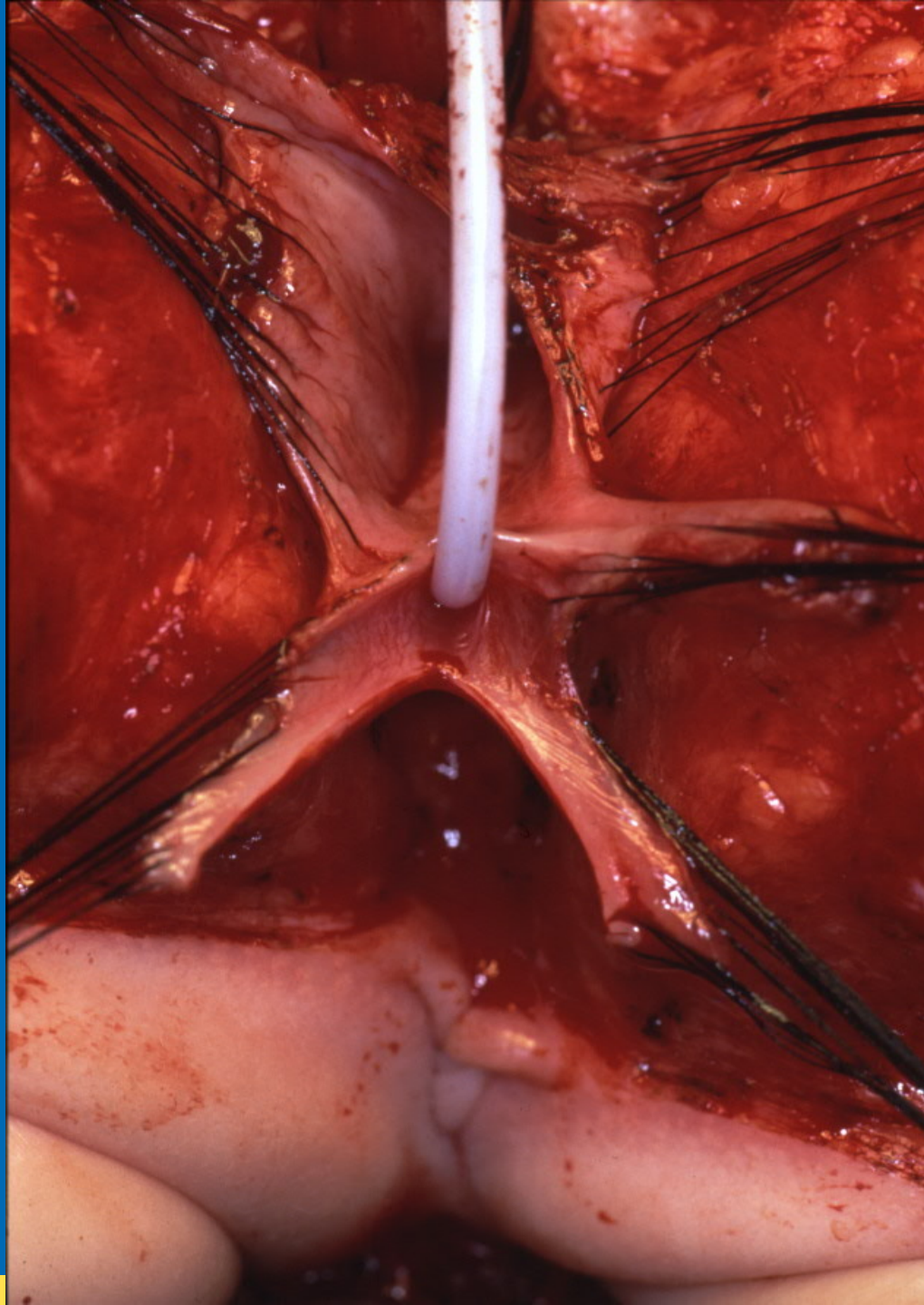
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## 3 – 5cm

- Technically demanding procedure.
- Decision making process requires experience and training in pediatric urology.
- Most cases require an abdominal approach.
- Not very reproducible.

# EXTENDED TRANSABDOMINAL UROGENITAL MOBILIZATION



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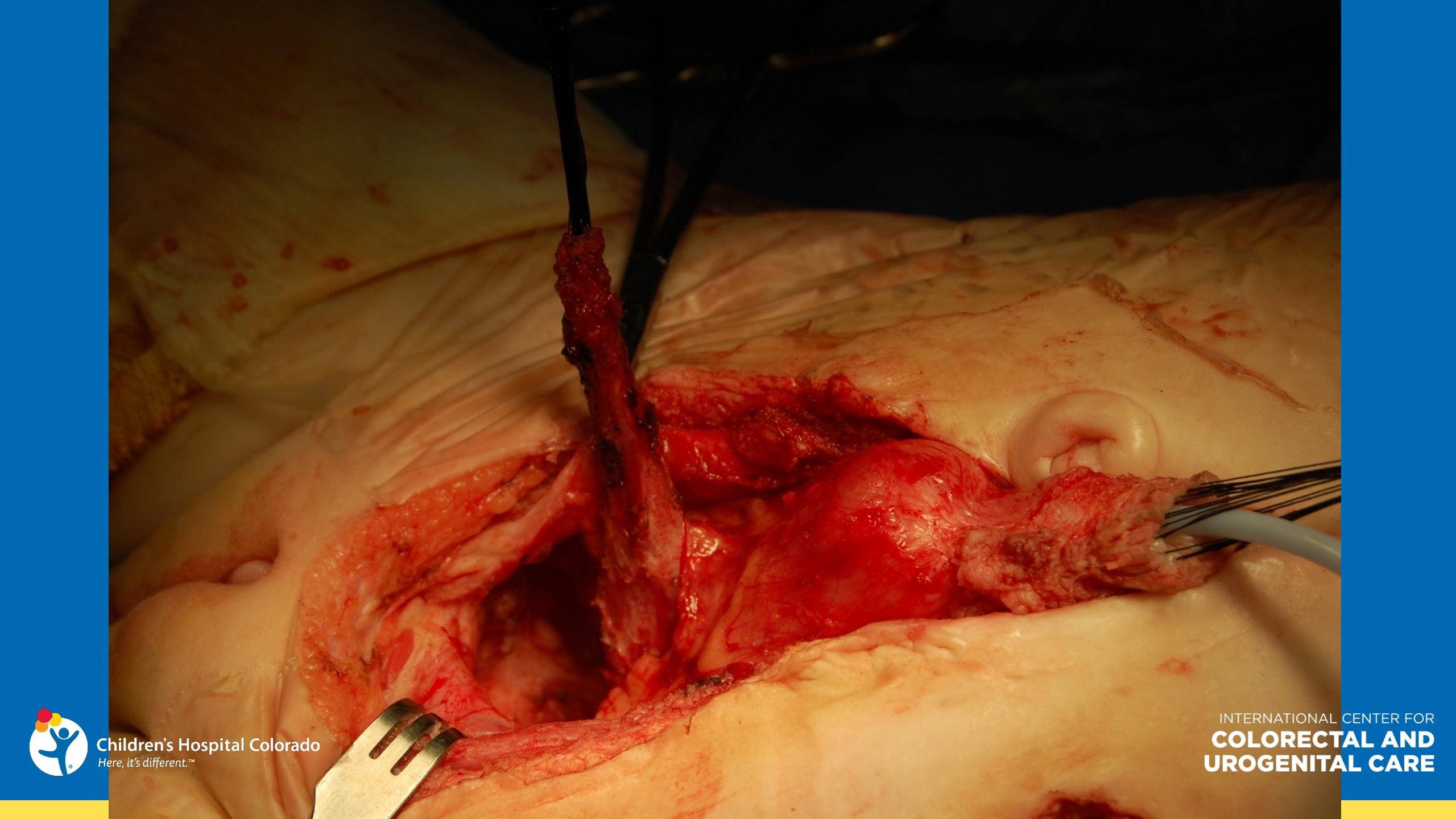
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# PSARVUP for the Repair of Cloaca with Intermediate Common Channel



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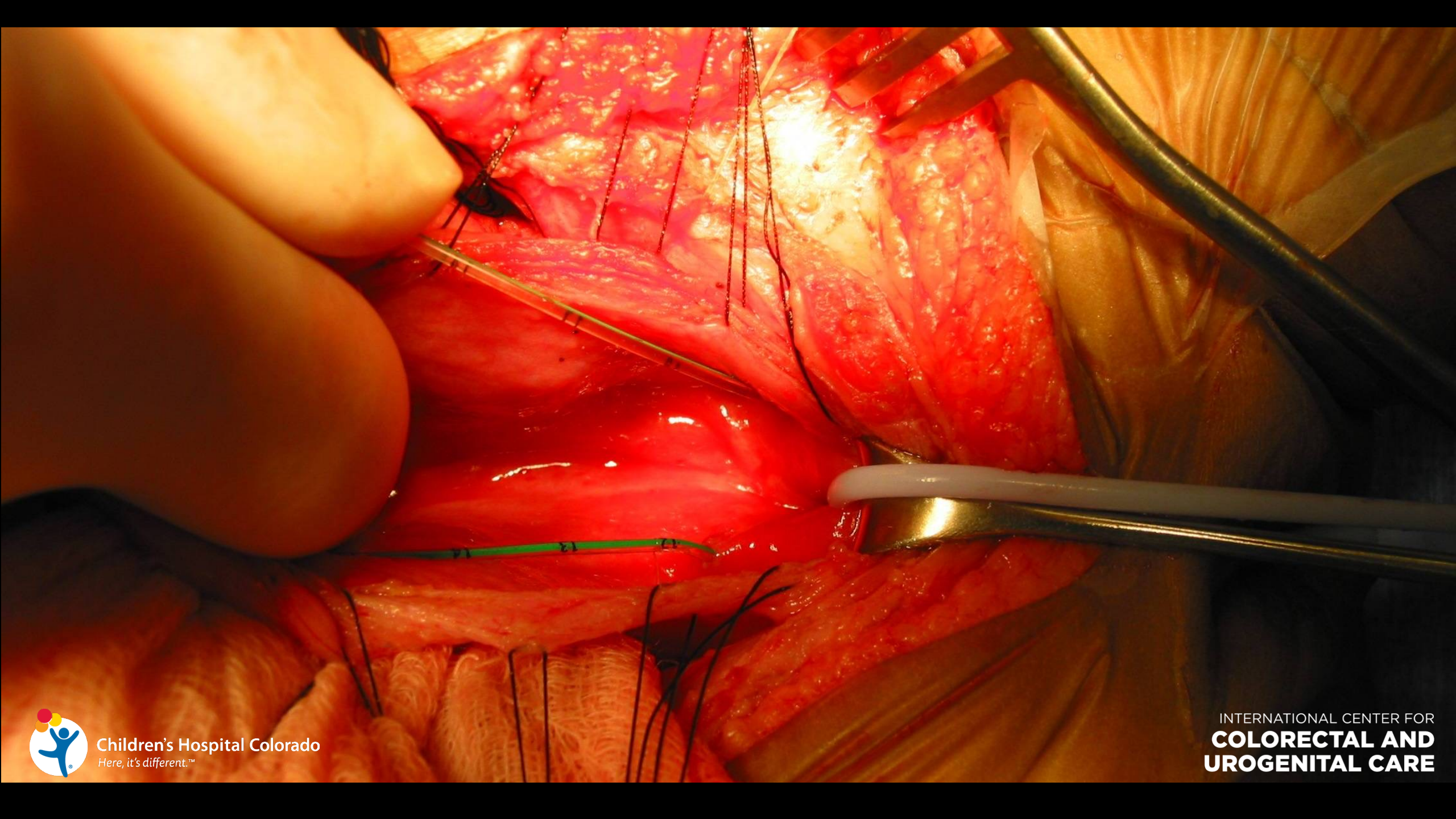
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# Separation of vagina/vaginas from the urinary tract



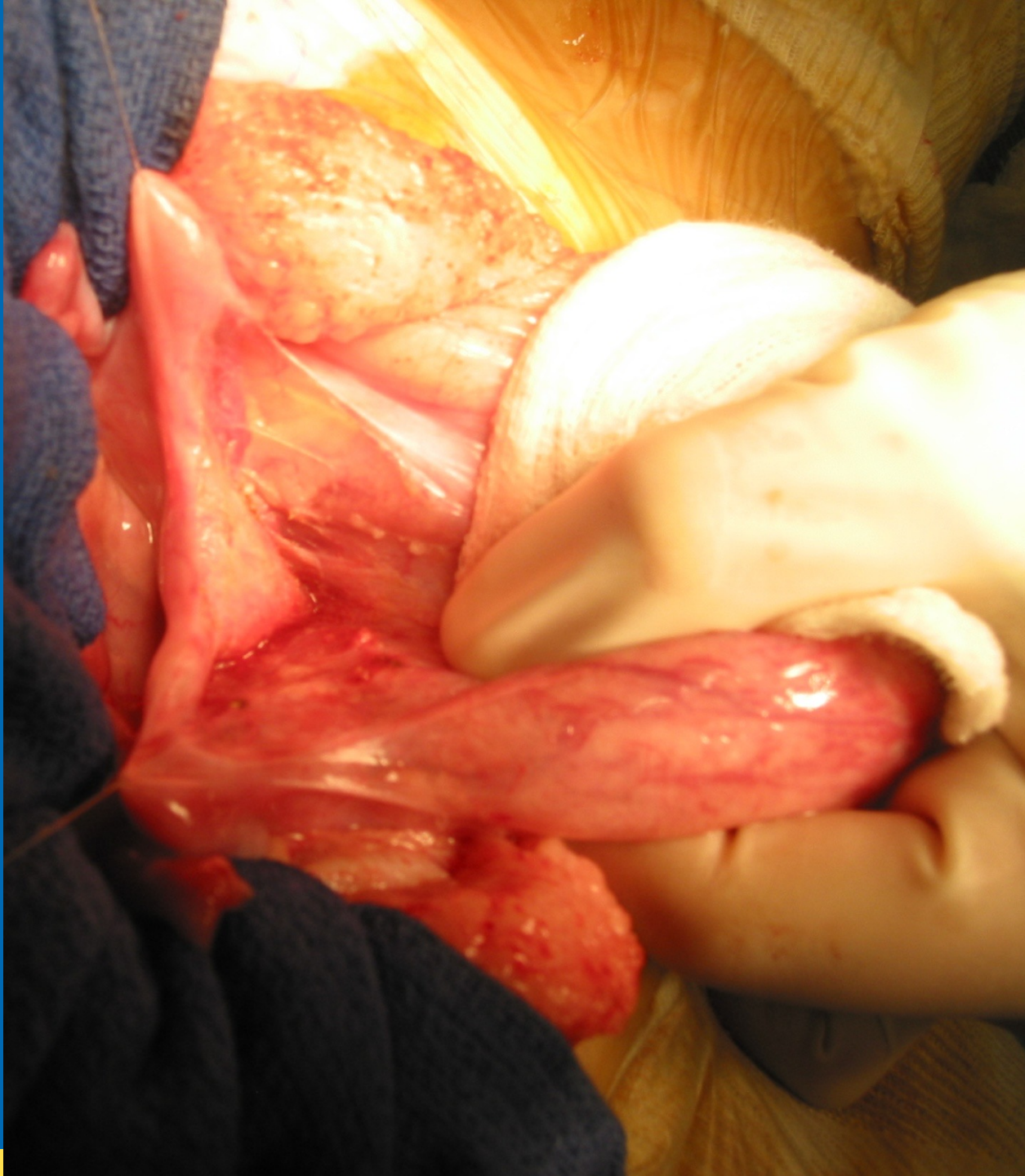
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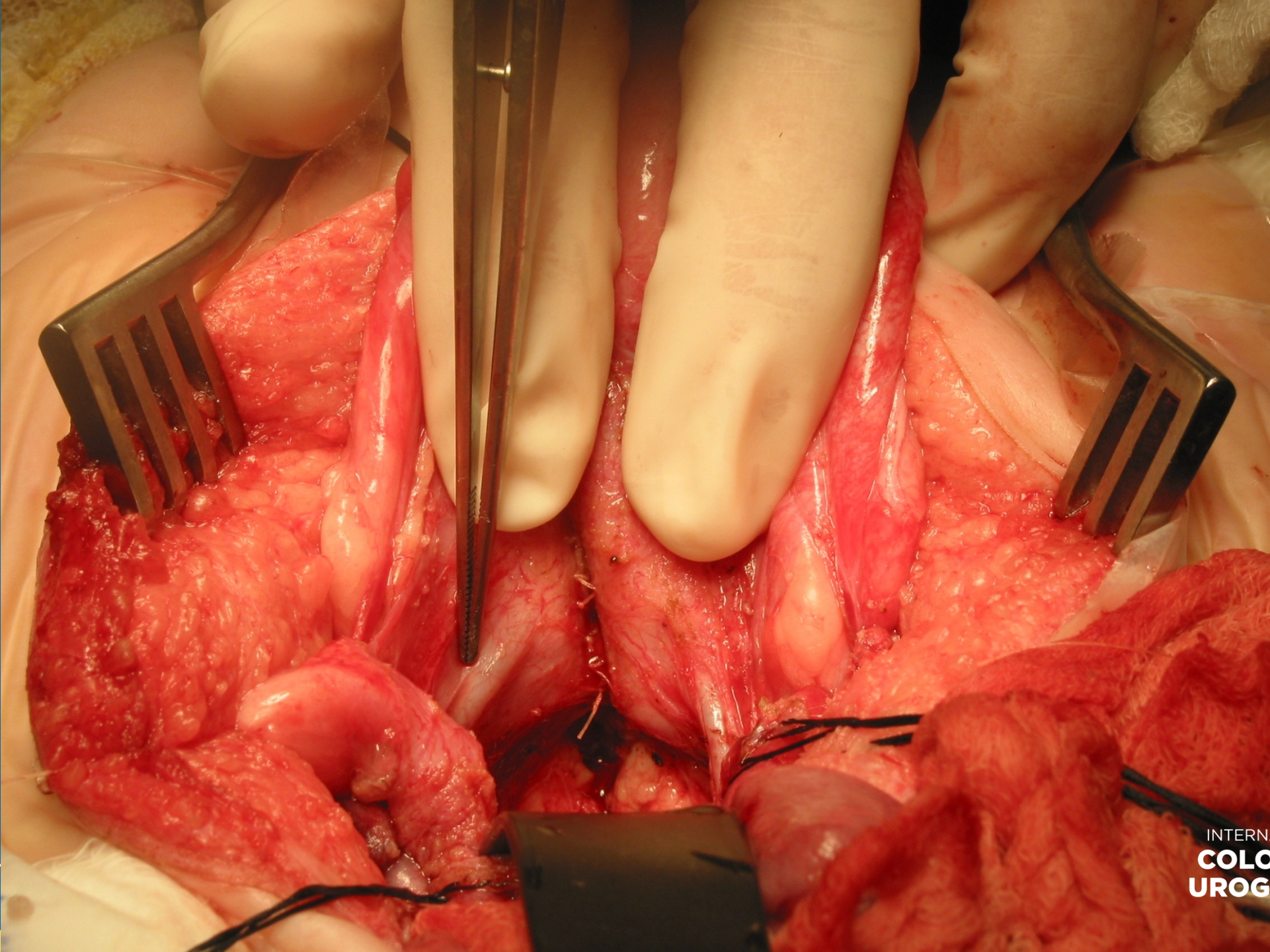
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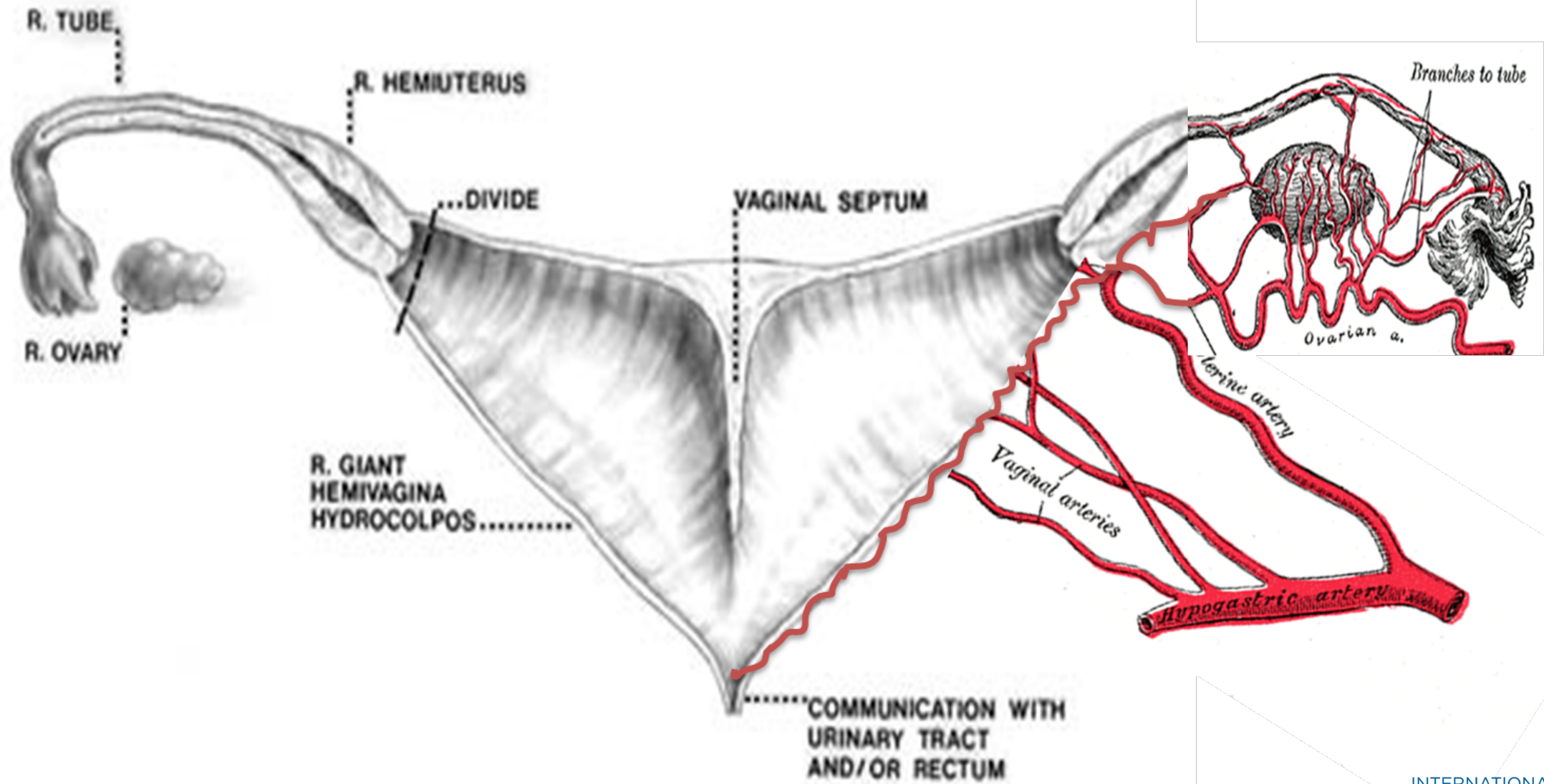
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# Vaginal Switch



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(RIGHT HEMIHERECTOMY)

RESECTED  
VAGINAL SEPTUM.....

R. HEMIVAGINA  
SWITCHED DOWN .....

PRESERVED  
L. HEMIUTERUS.....

Branches to tube

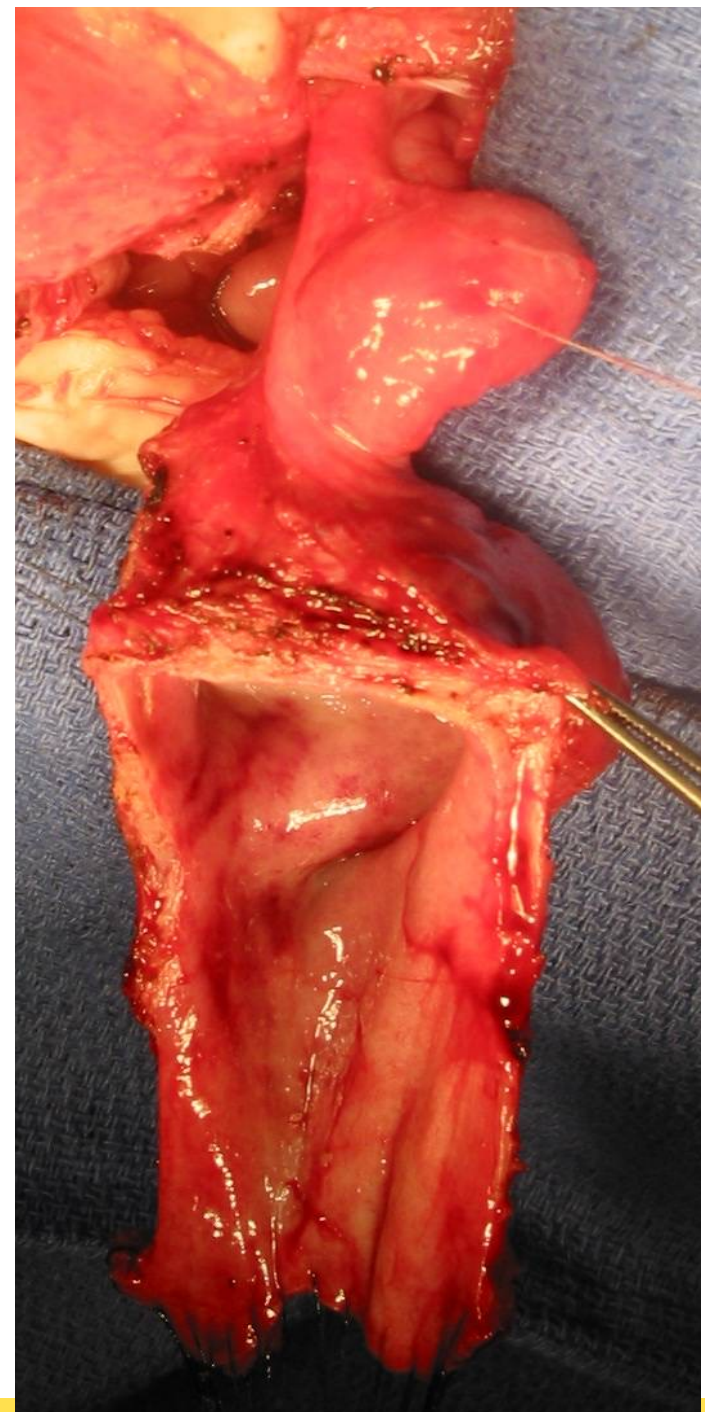
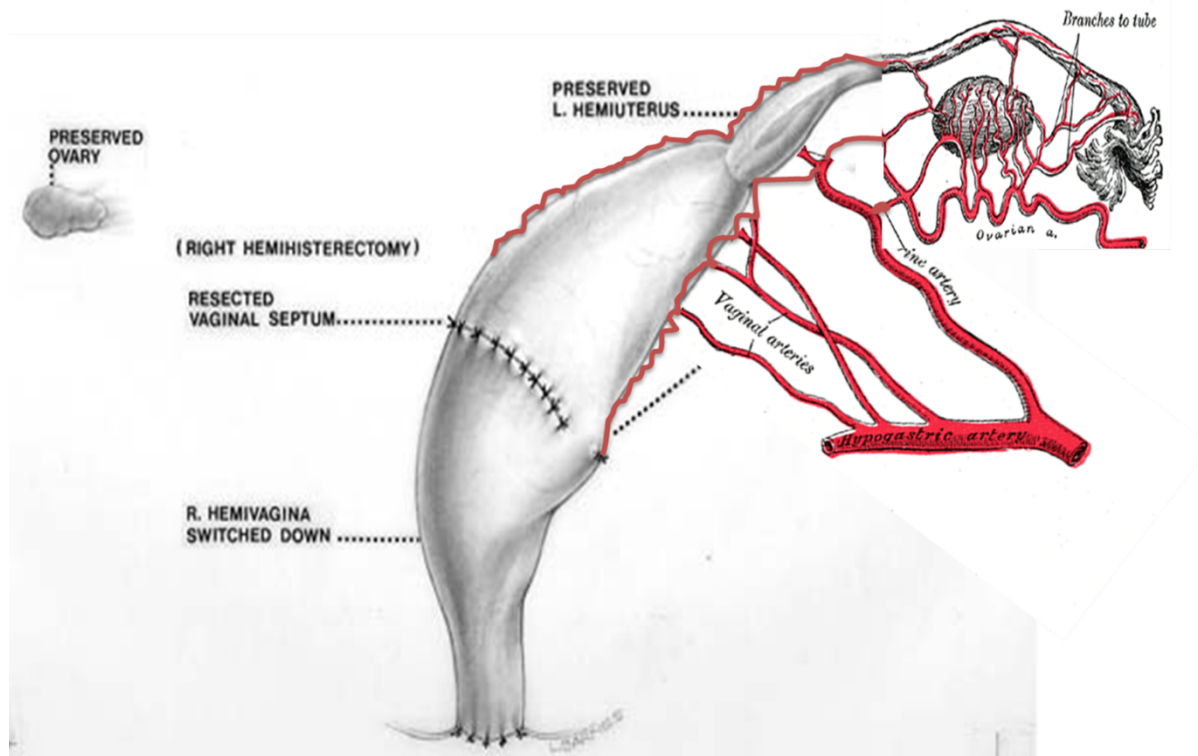
Ovarian a.

Uterine artery

Vaginal arteries

Hypogastric artery





# Vaginal Switch

# Vaginal Replacement - 130 cases

- With rectum - 50 cases
- With colon - 44 cases
- With small bowel - 36 cases



# VAGINAL REPLACEMENT WITH RECTUM



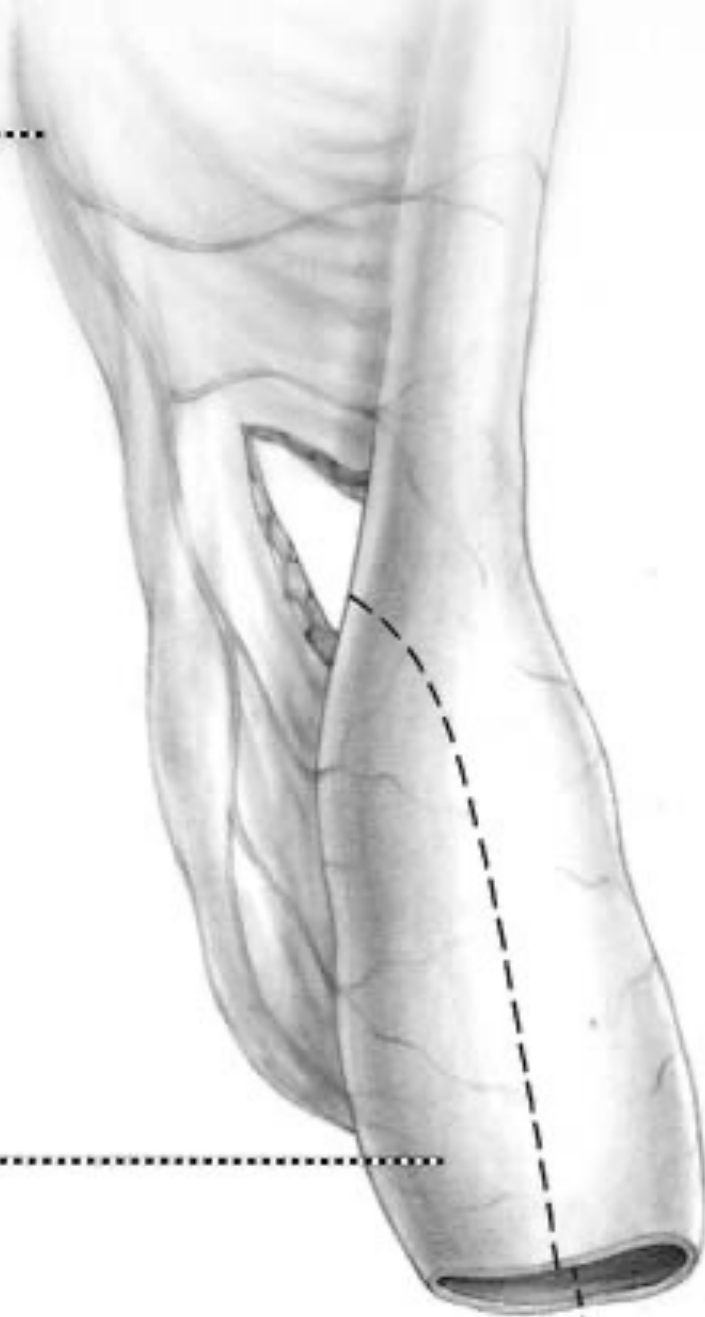
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INFERIOR  
MESENTERIC  
VESSELS .....

FUTURE VAGINA .....

LINE OF DIVISION



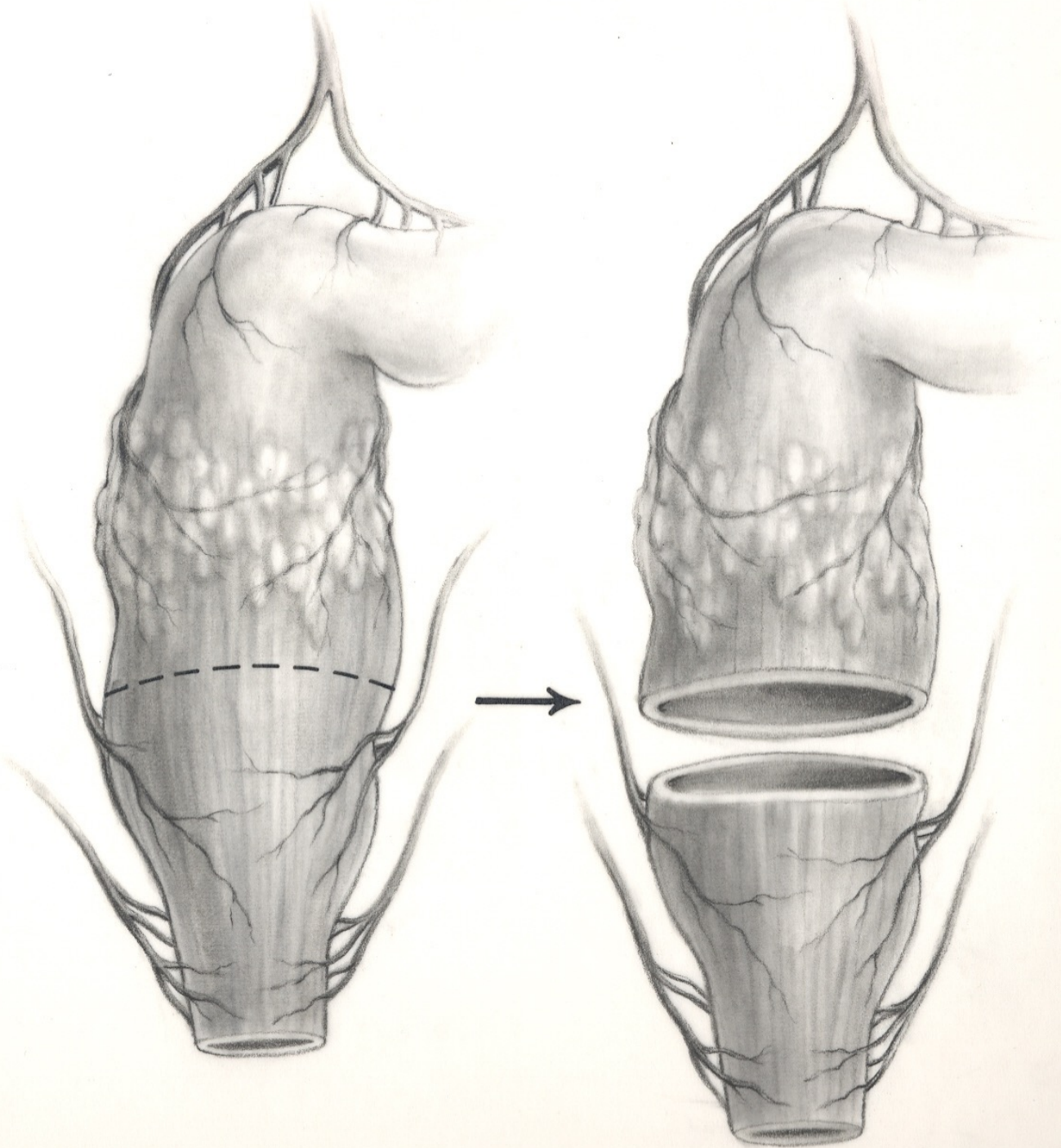
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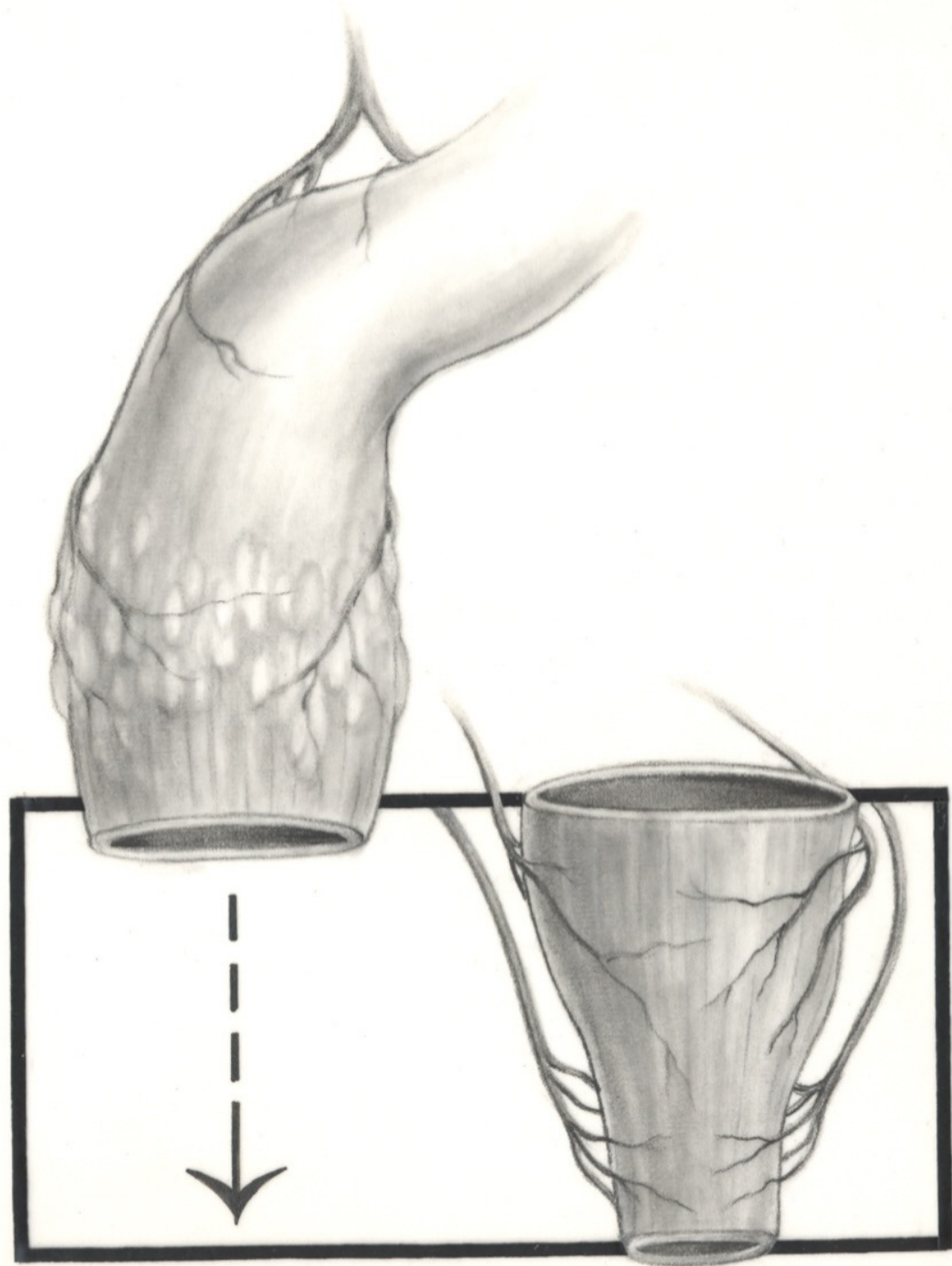
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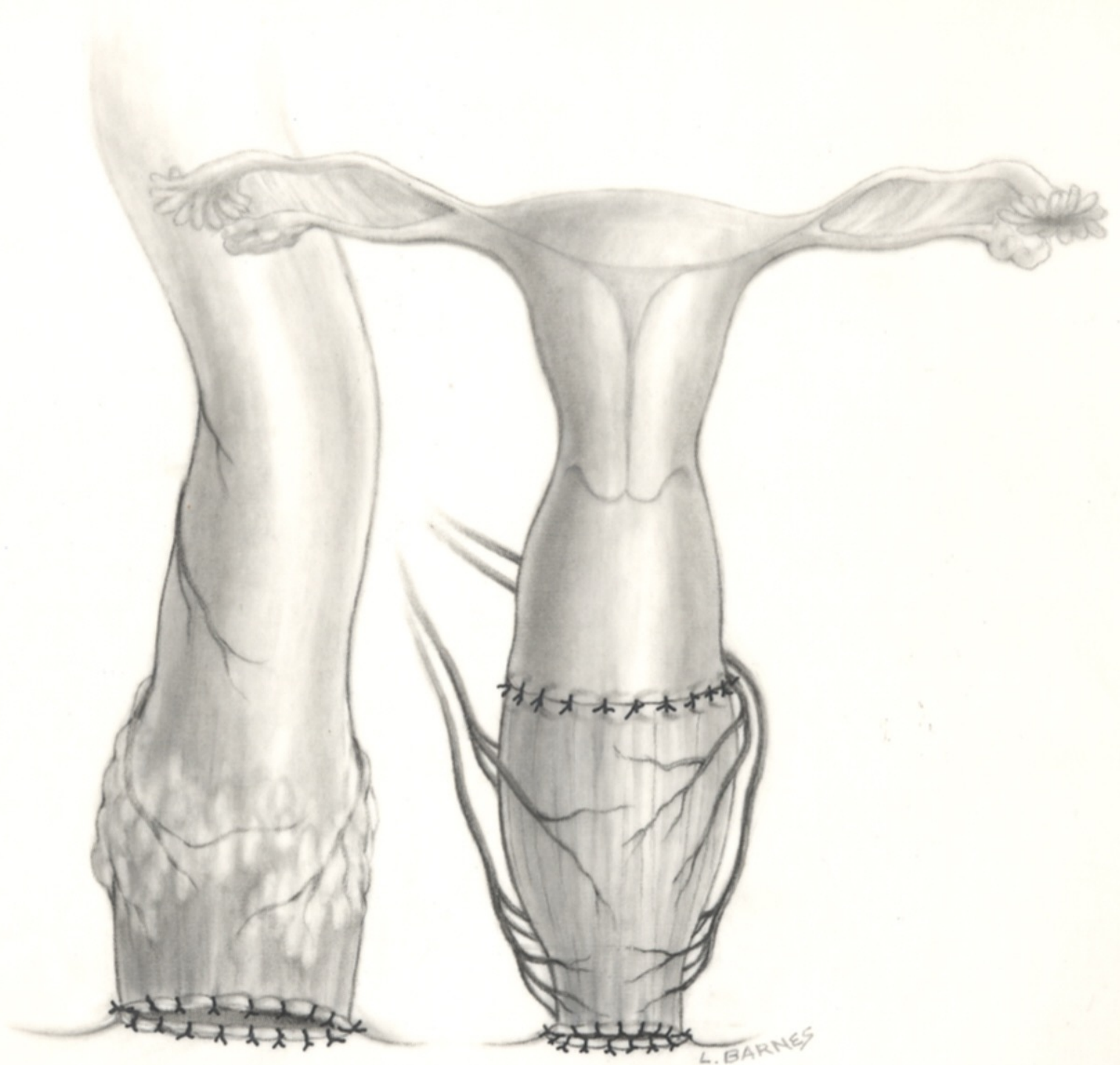
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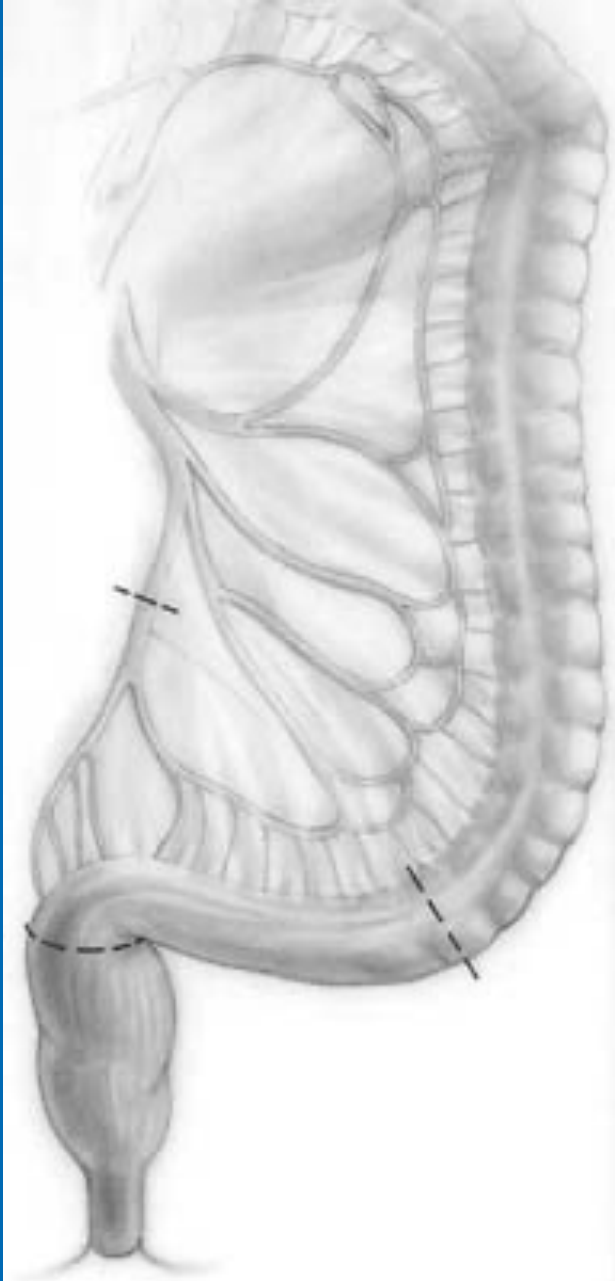
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# Vaginal Replacement with Colon

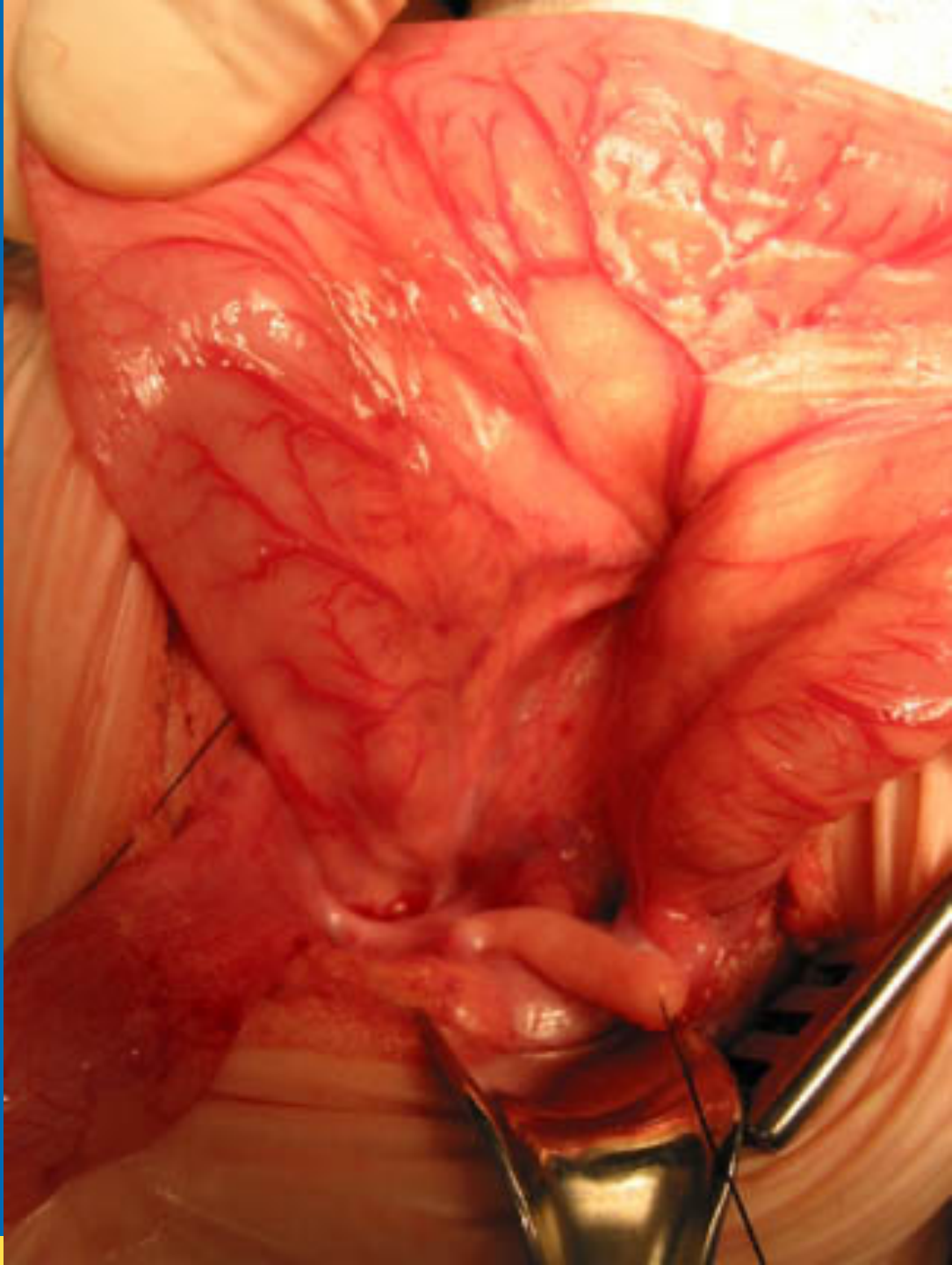


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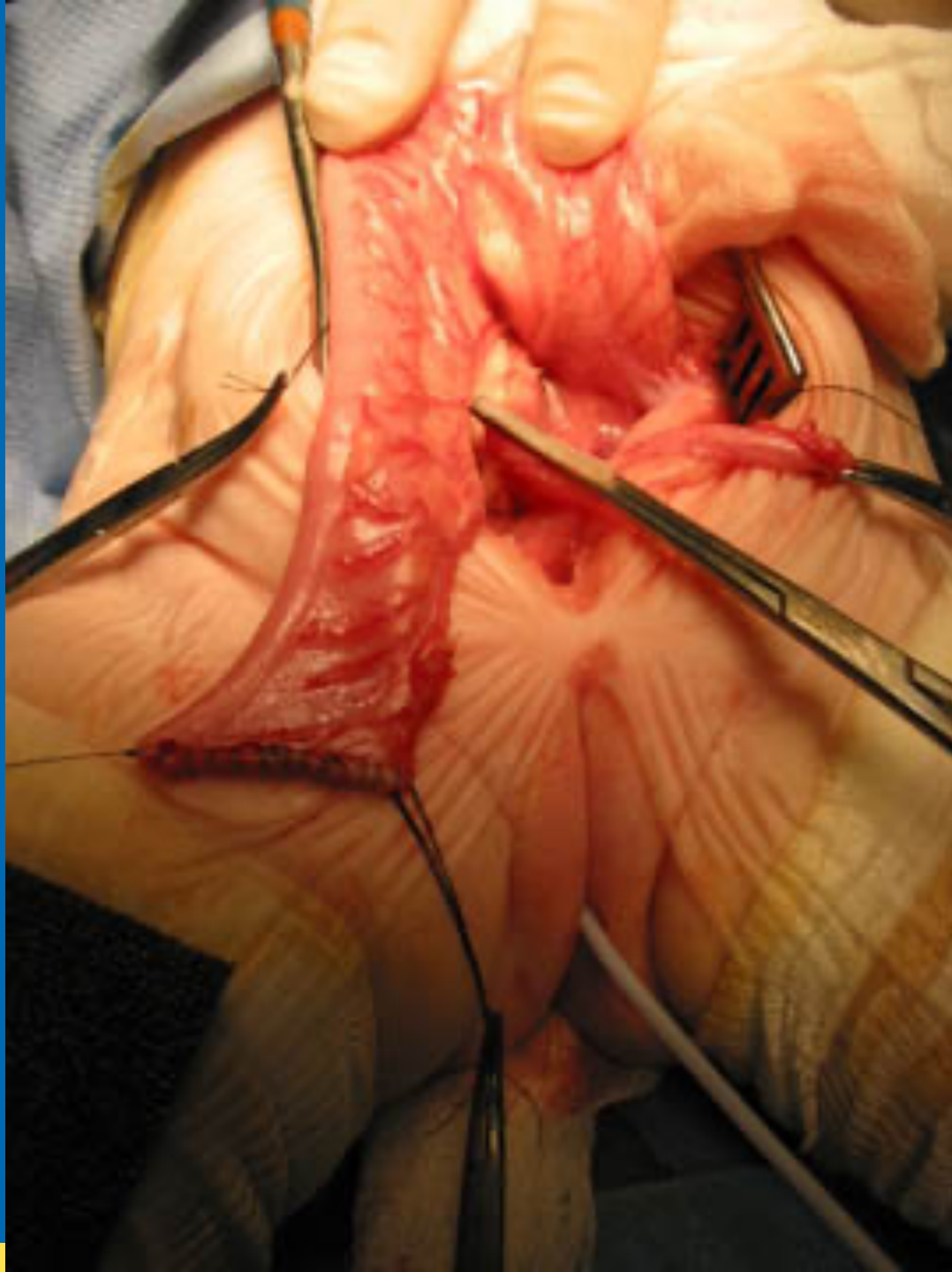
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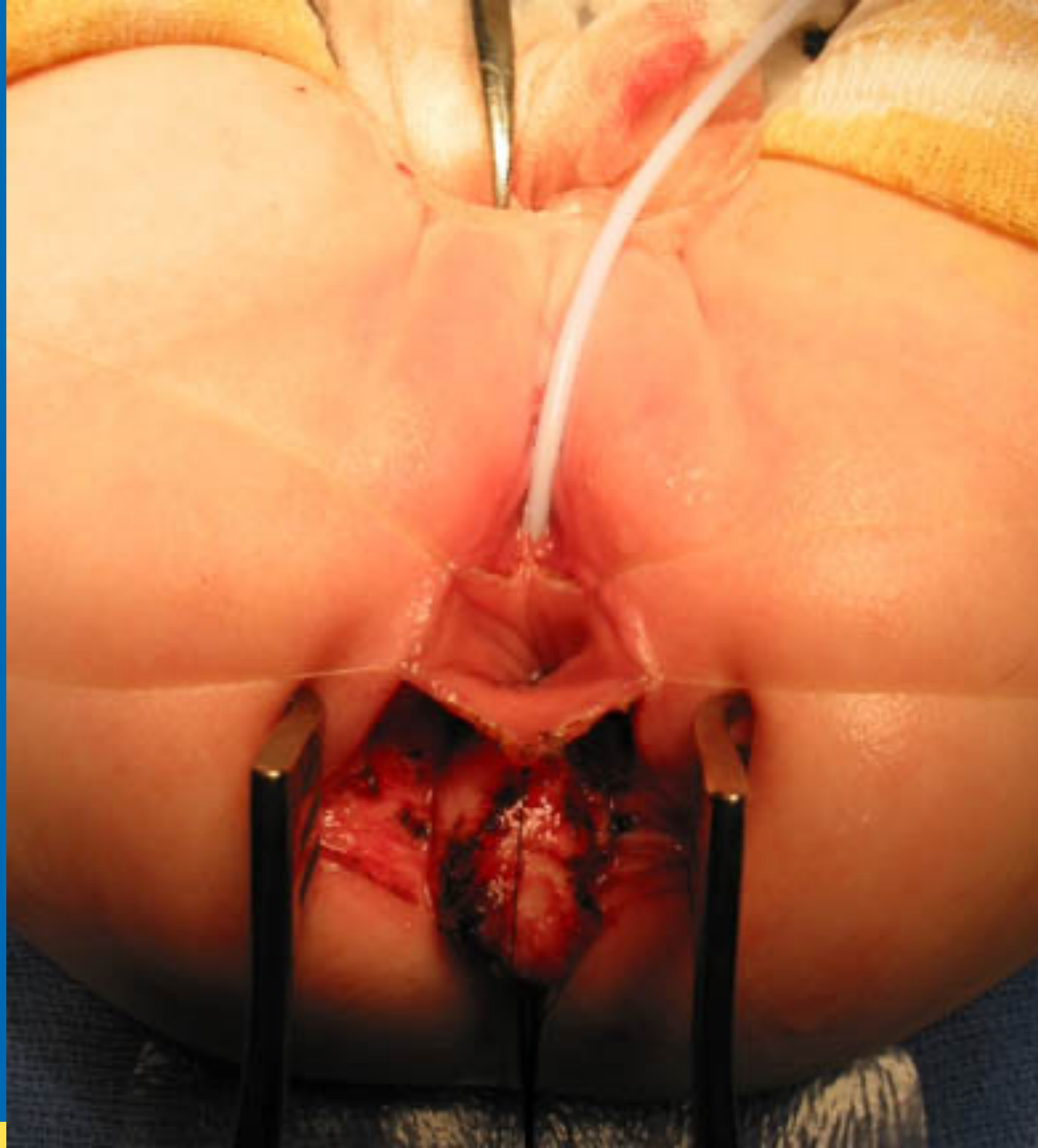
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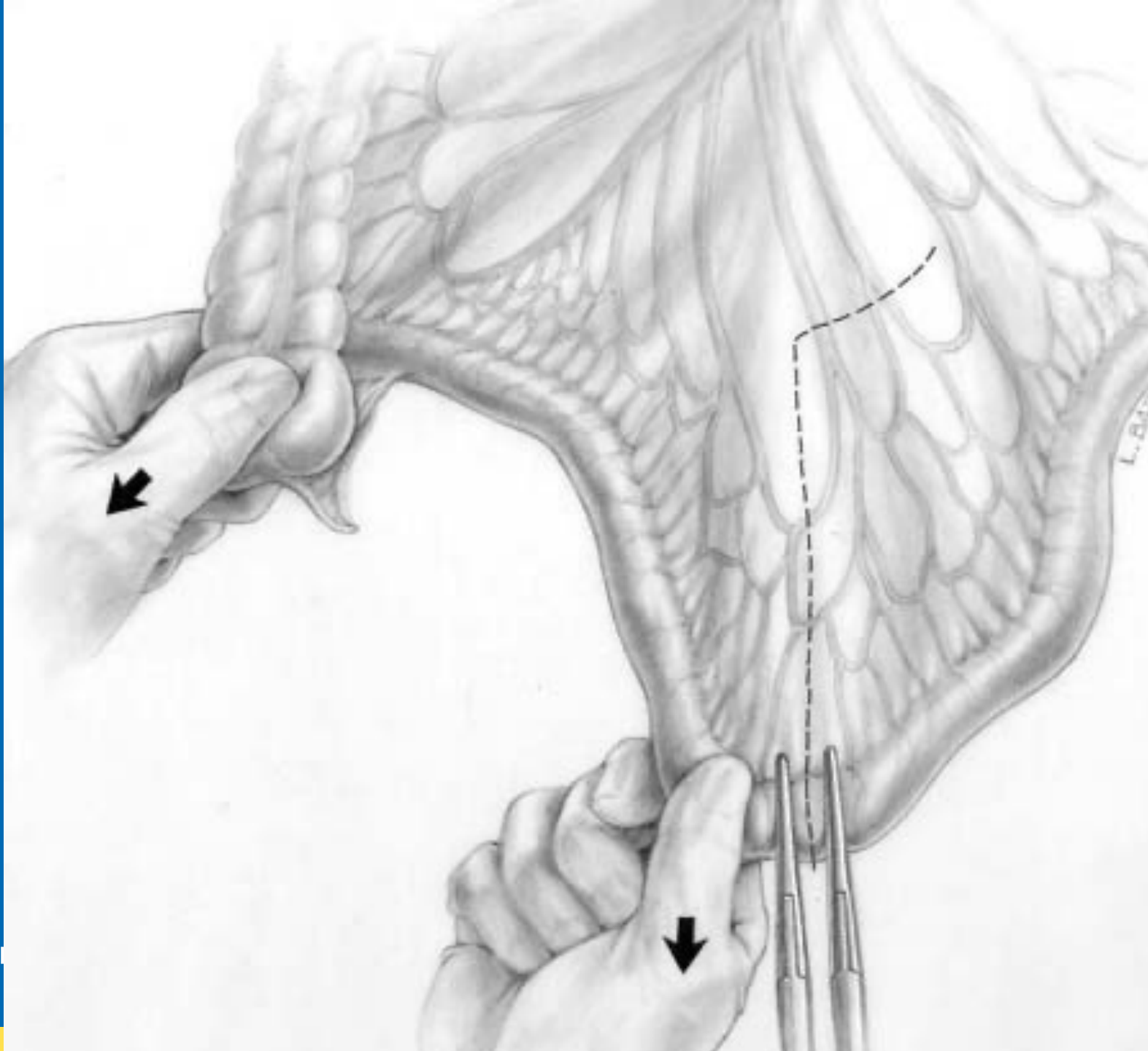
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# VAGINAL REPLACEMENT WITH SMALL BOWEL

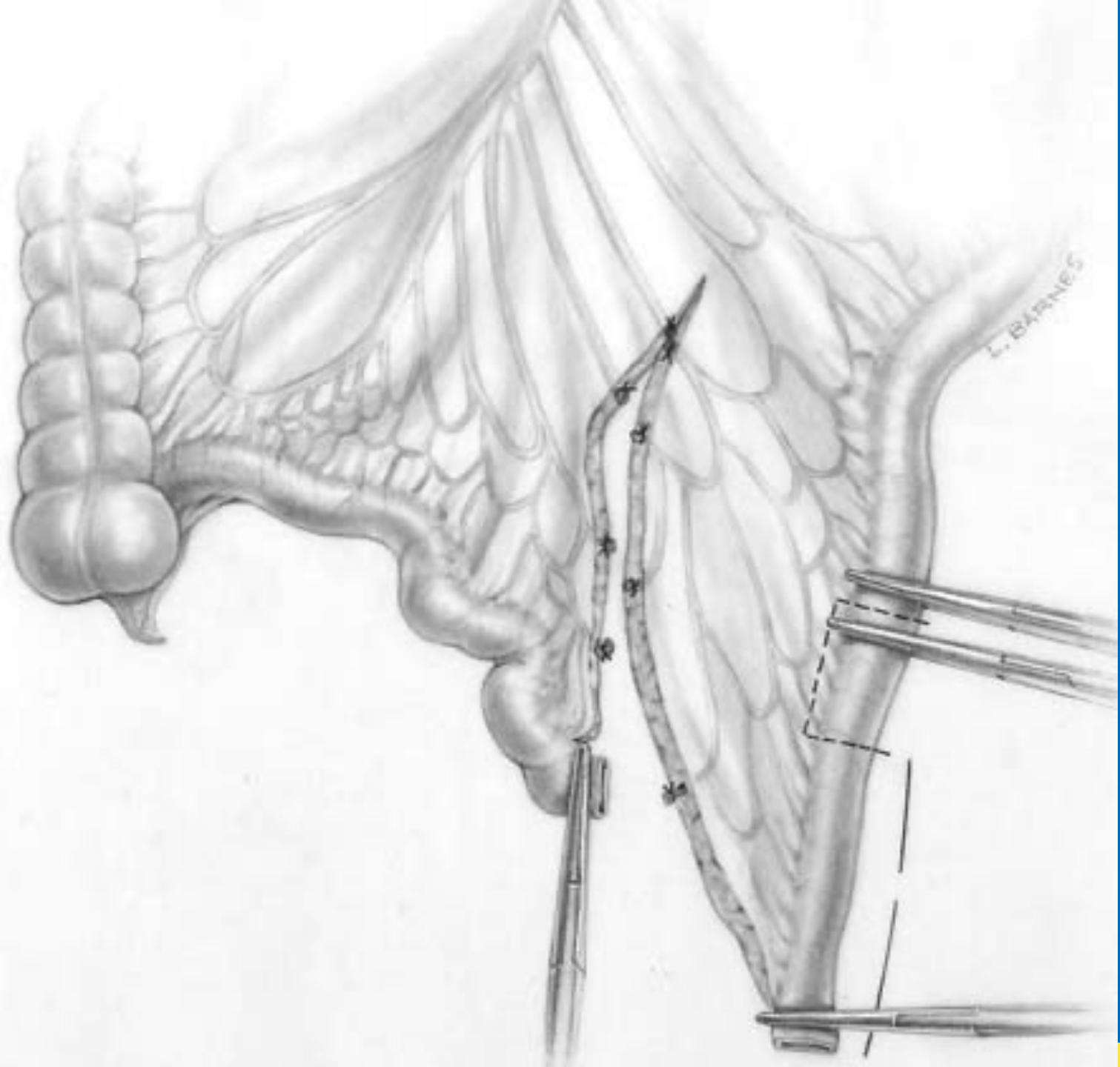


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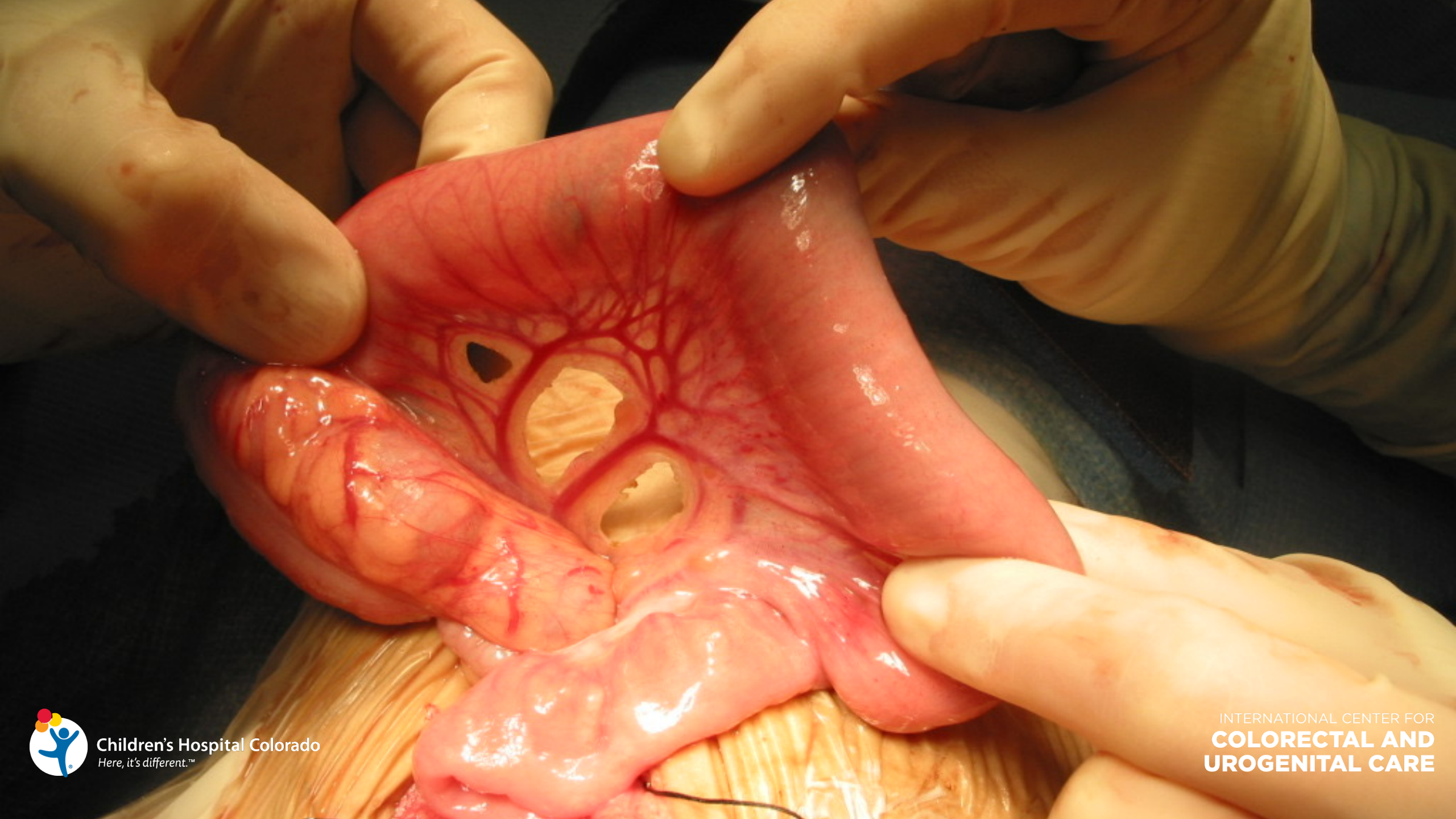
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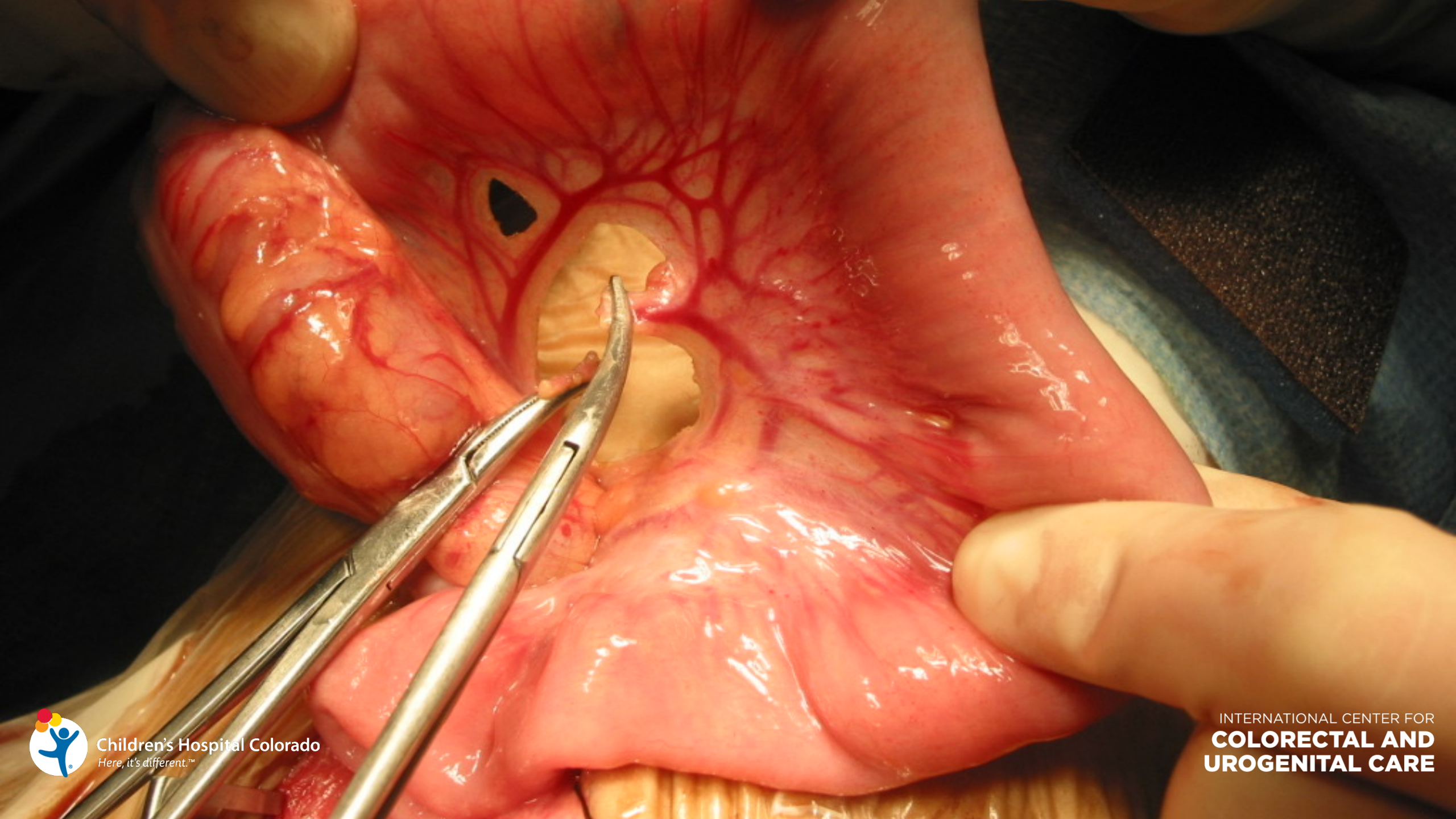
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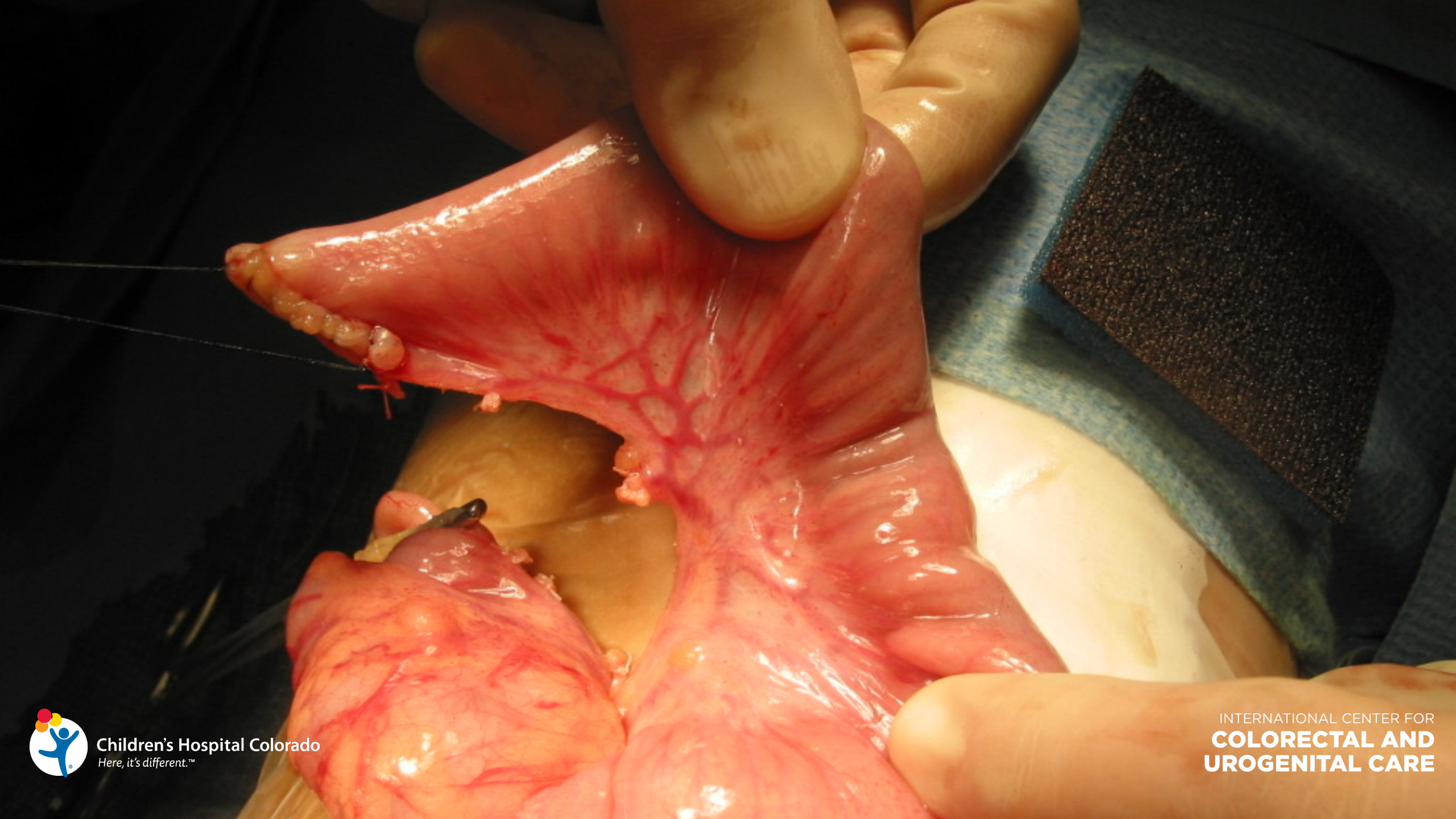
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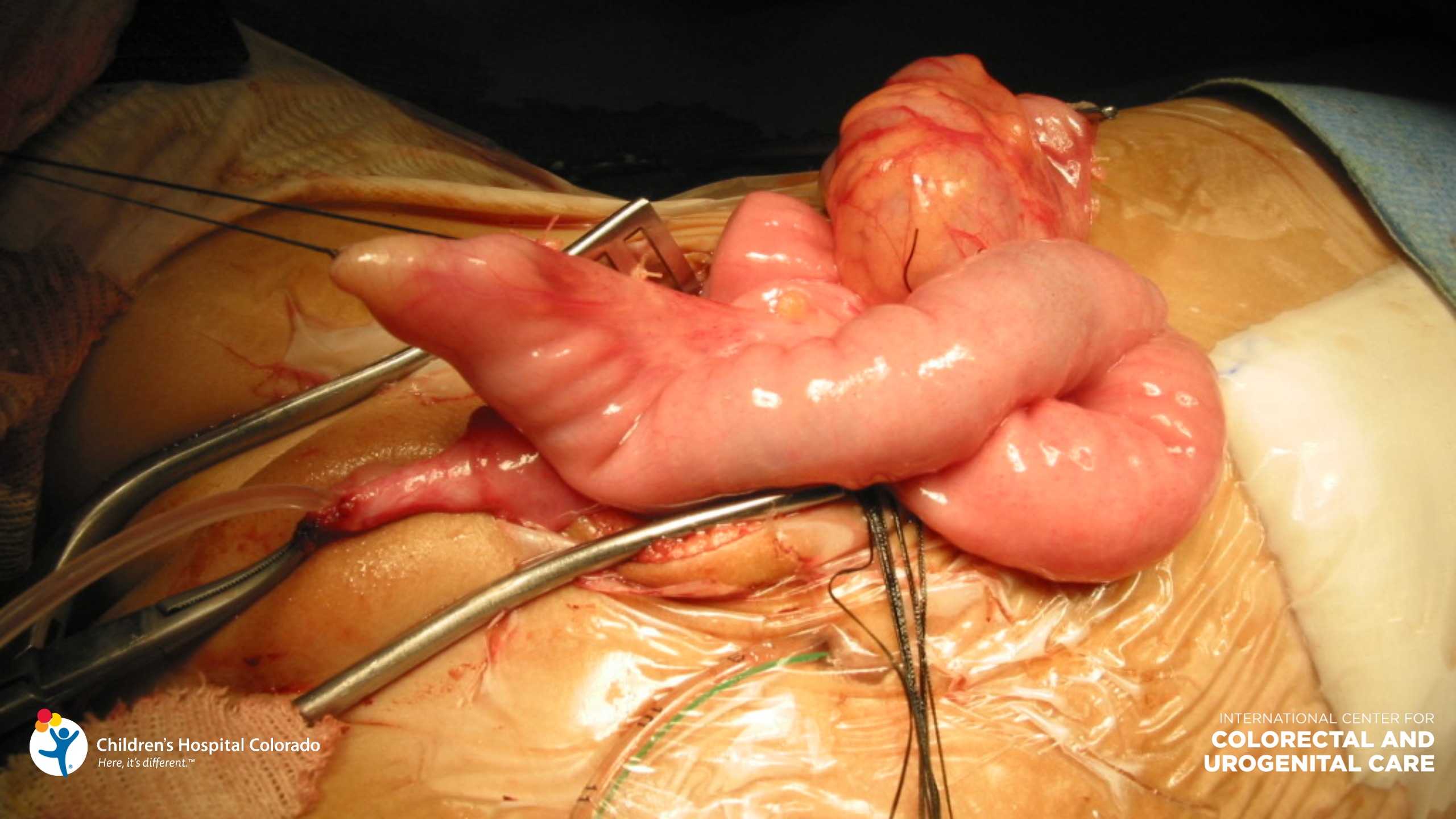
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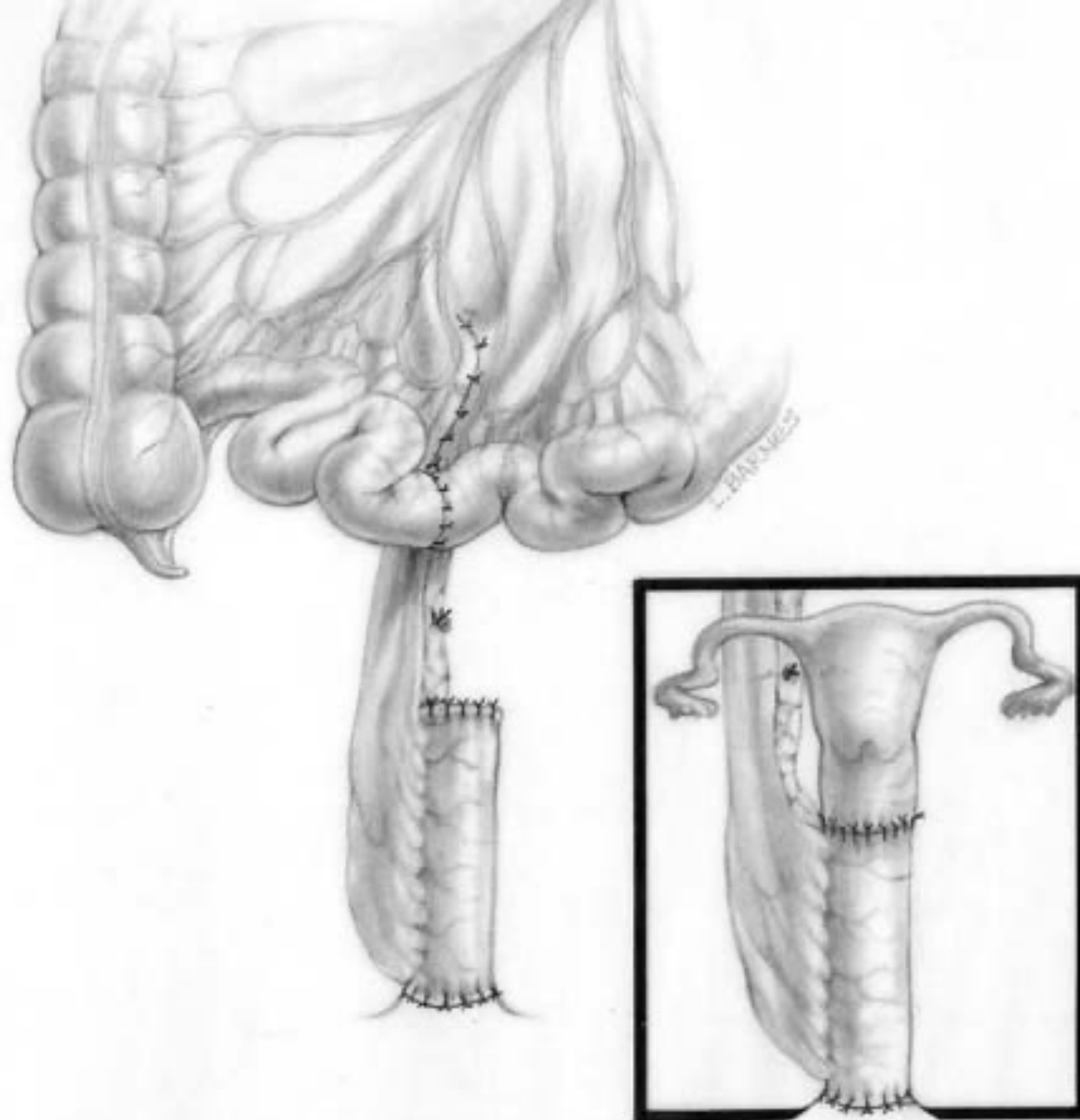
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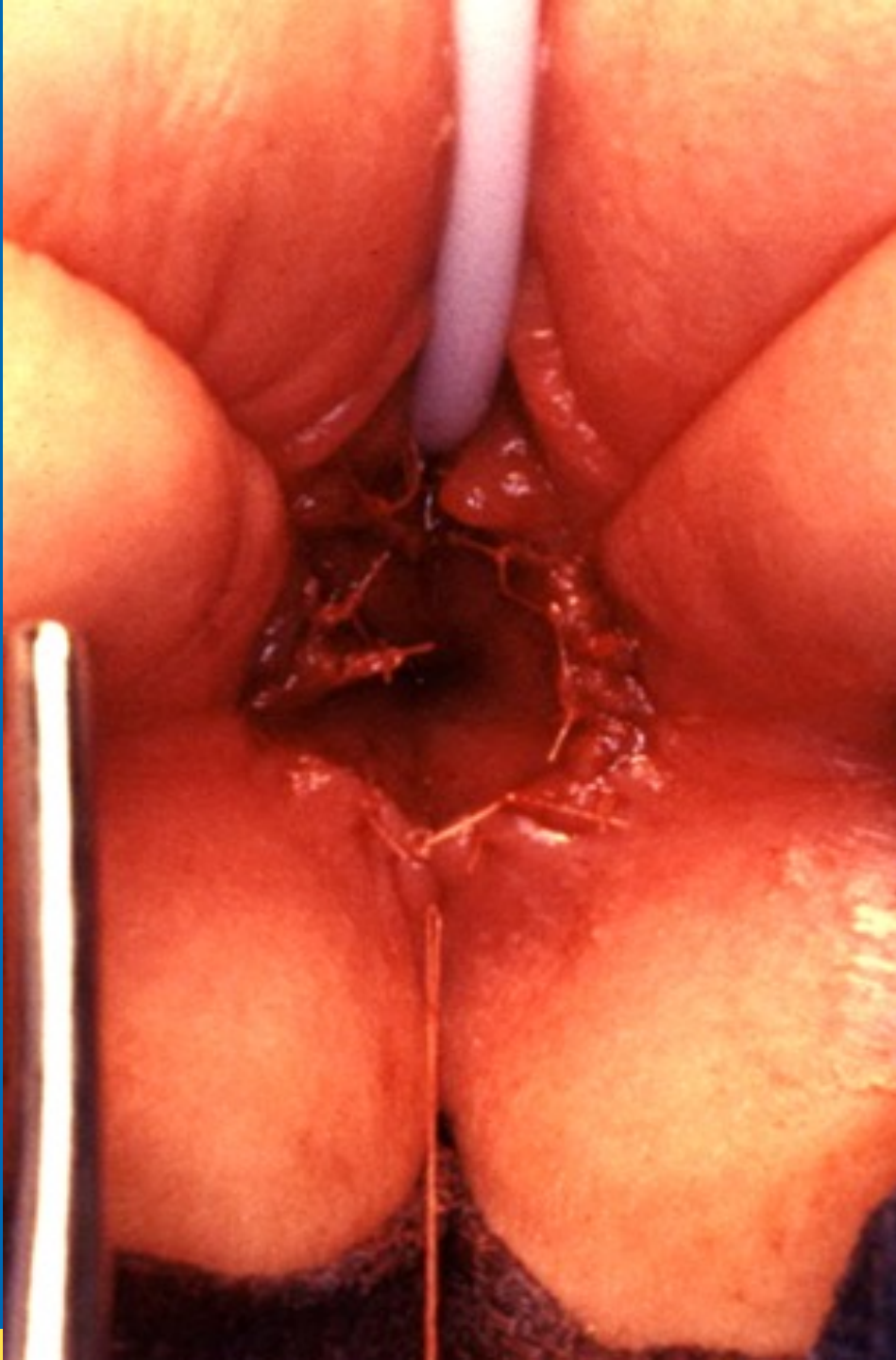
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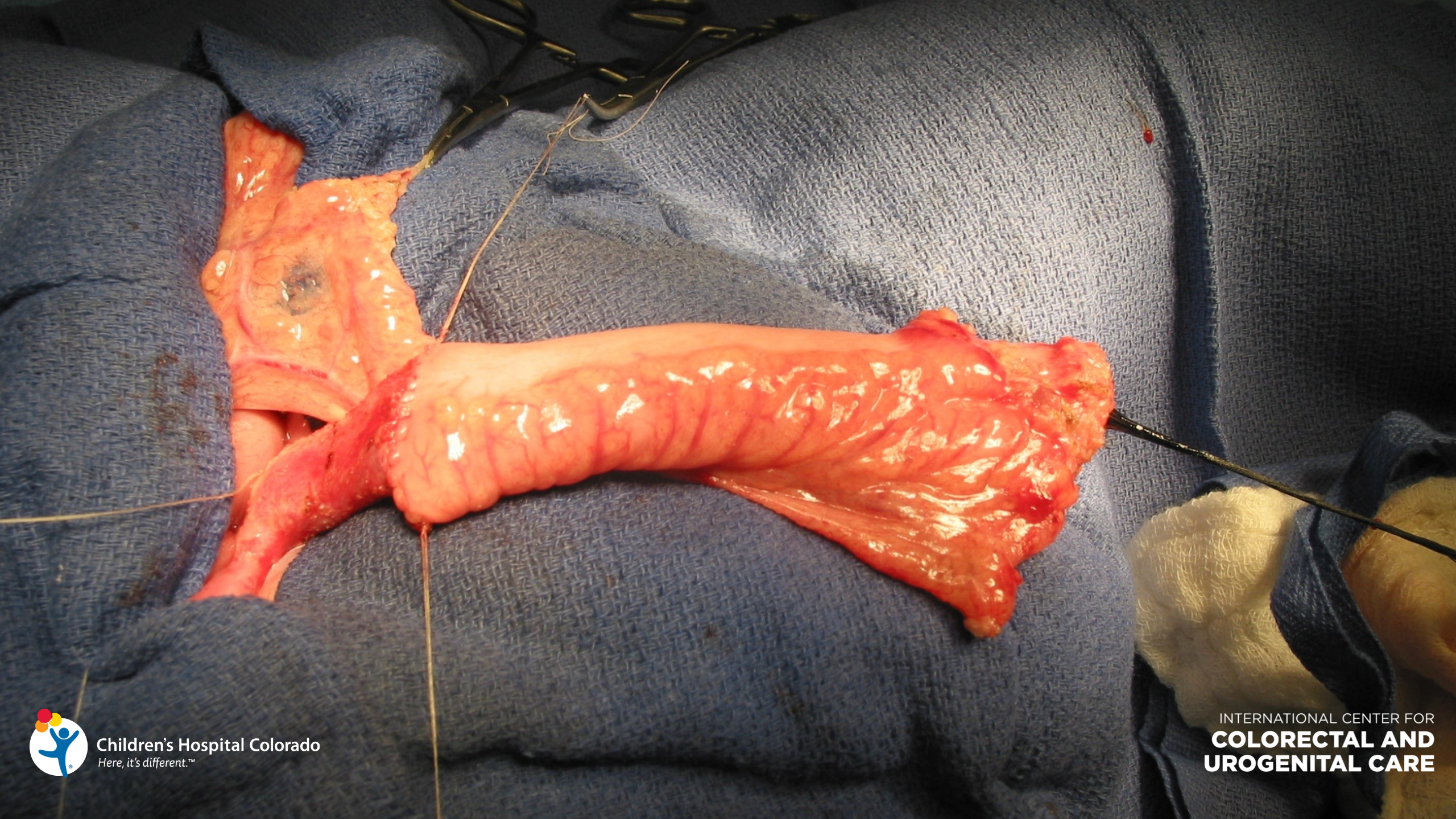
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# PARTIAL VAGINAL REPLACEMENT



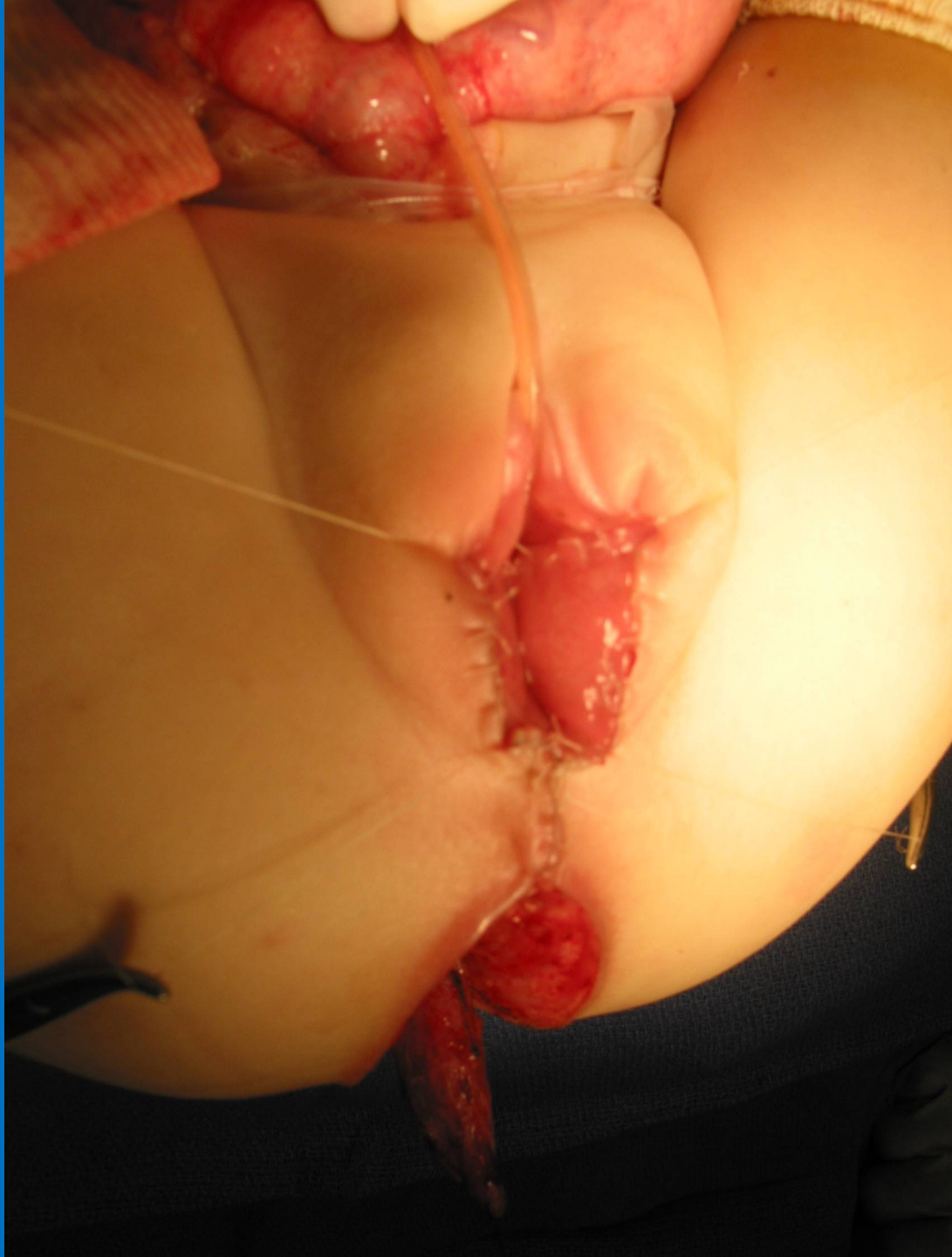
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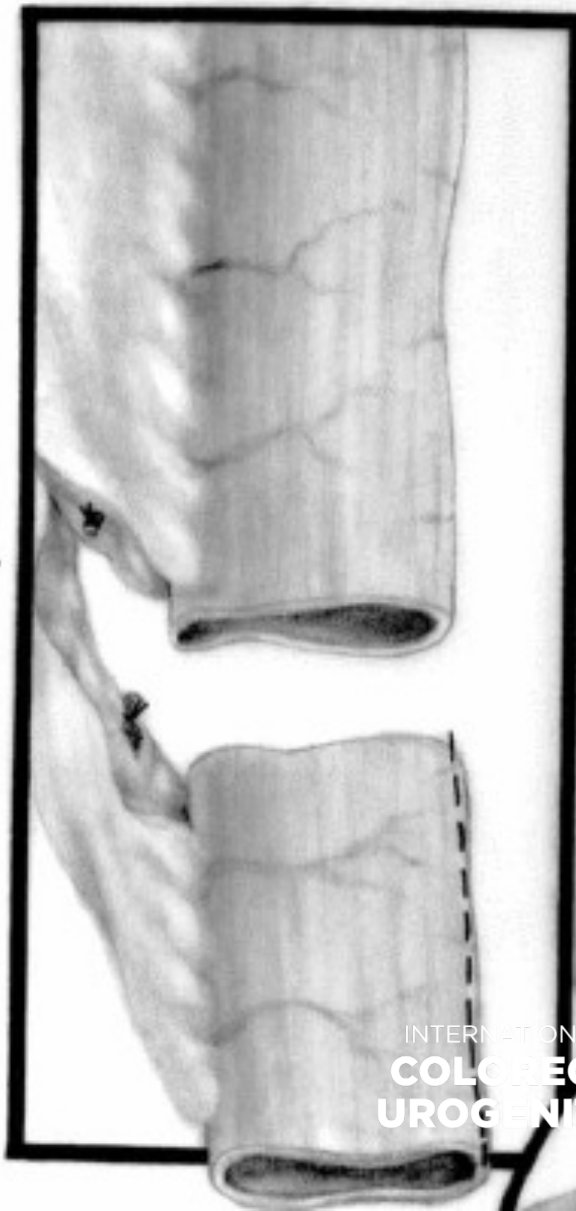
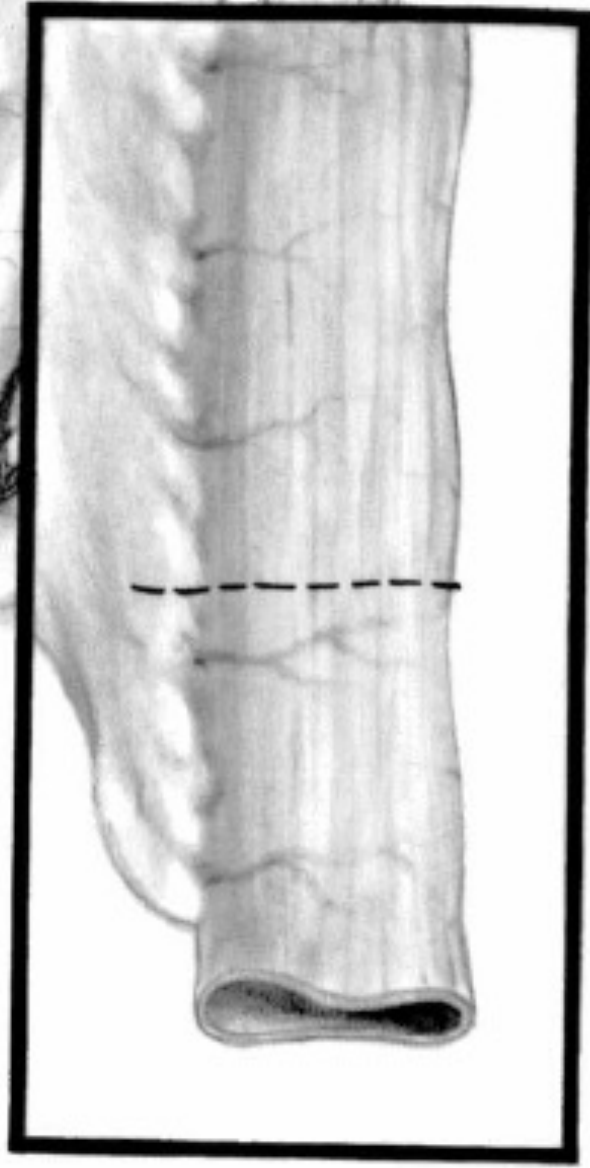
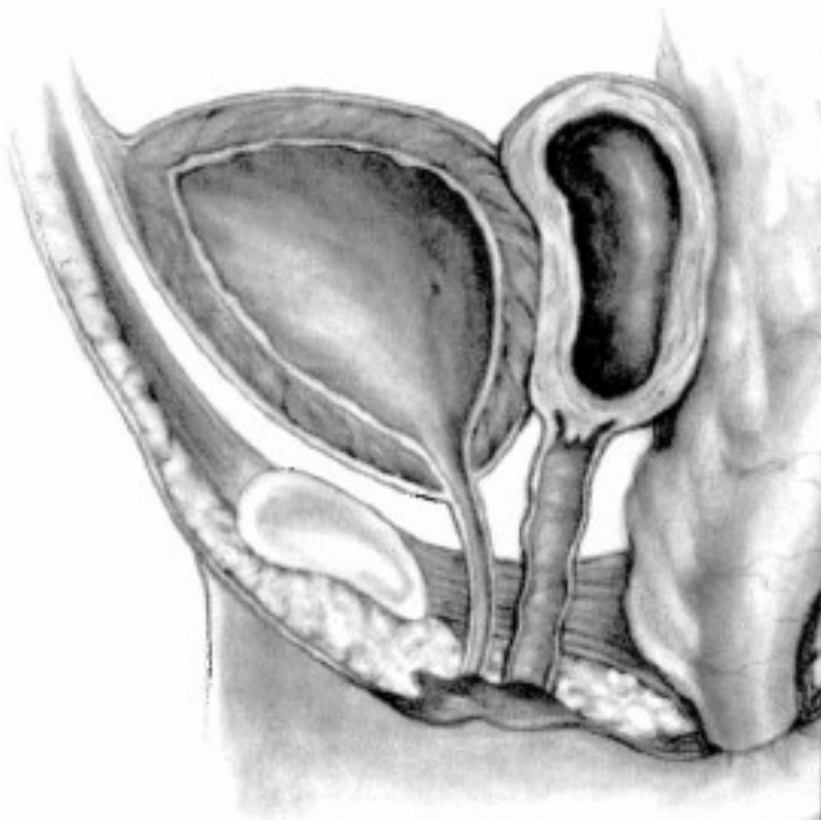
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# Rectal Patch to Replace Posterior Vaginal Wall

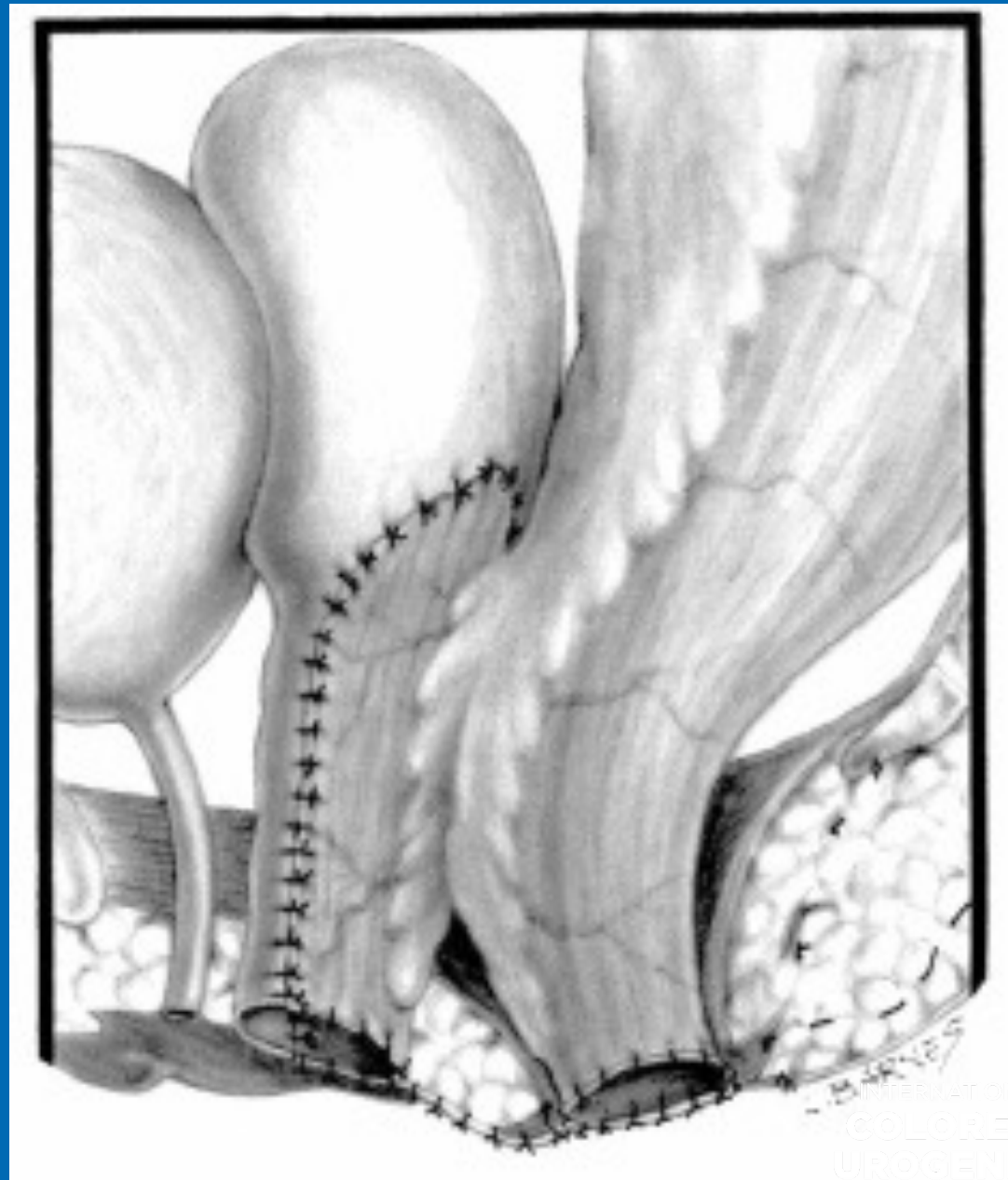
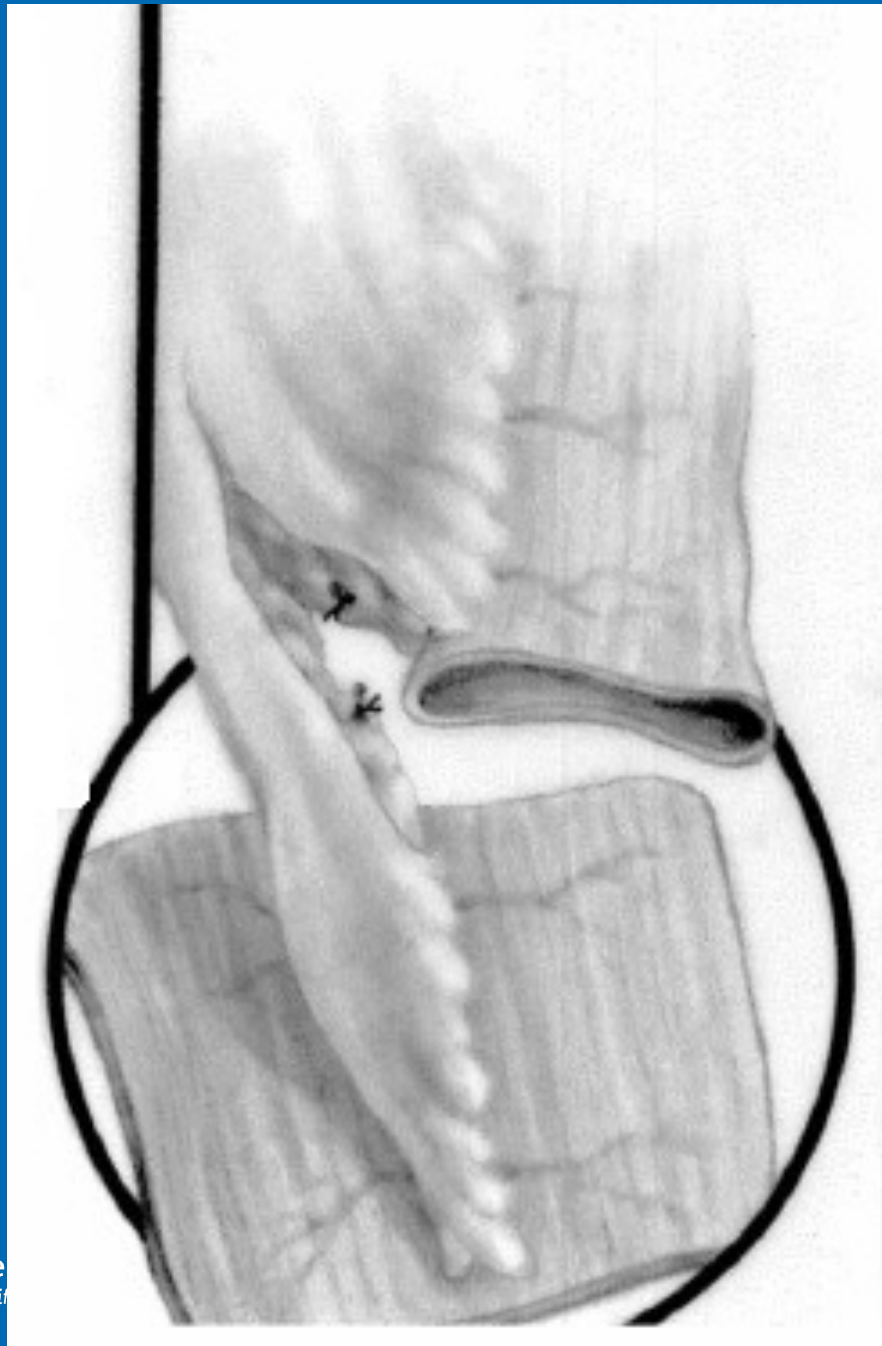


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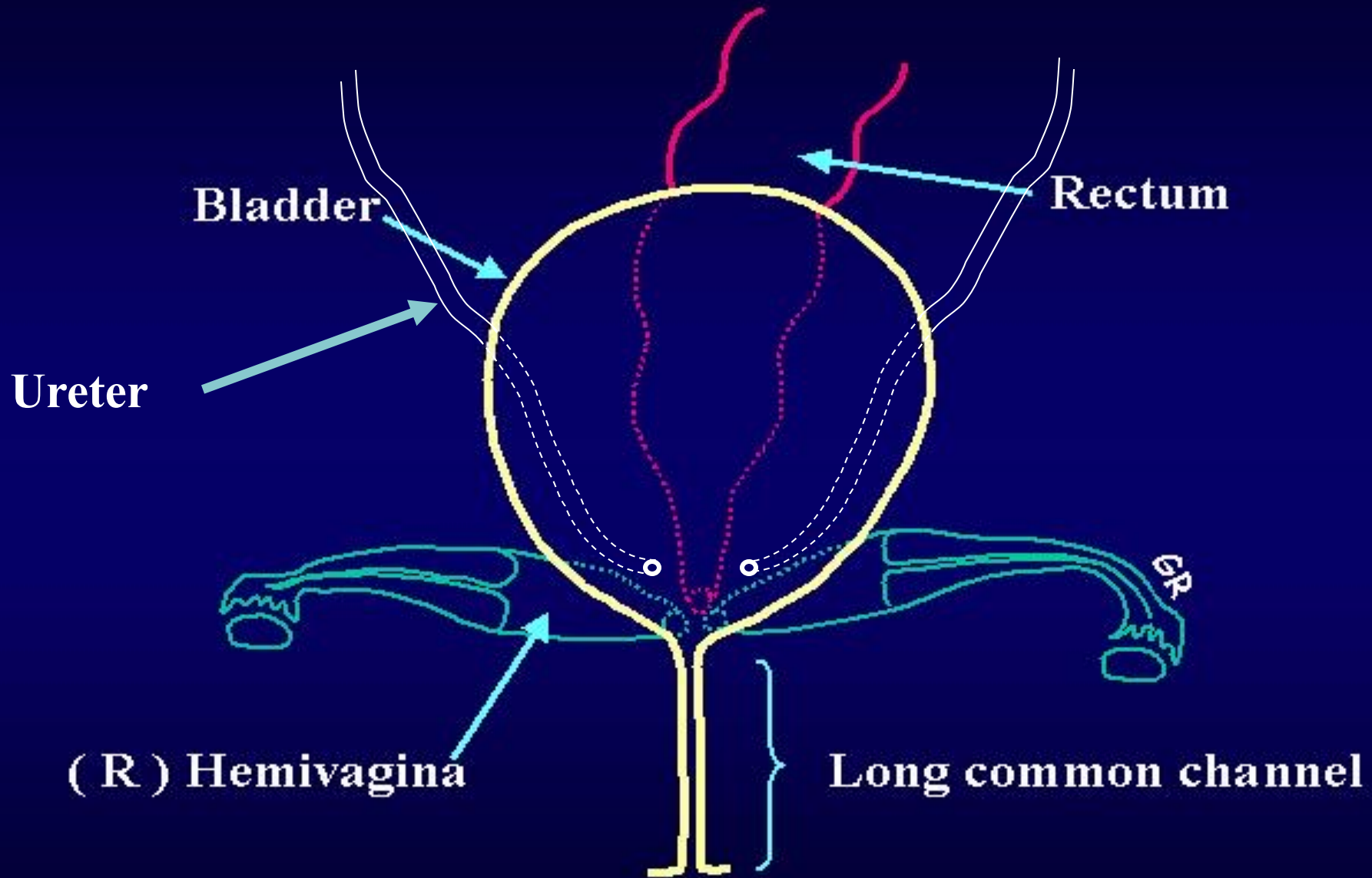
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# EXTREMELY LONG COMMON CHANNEL



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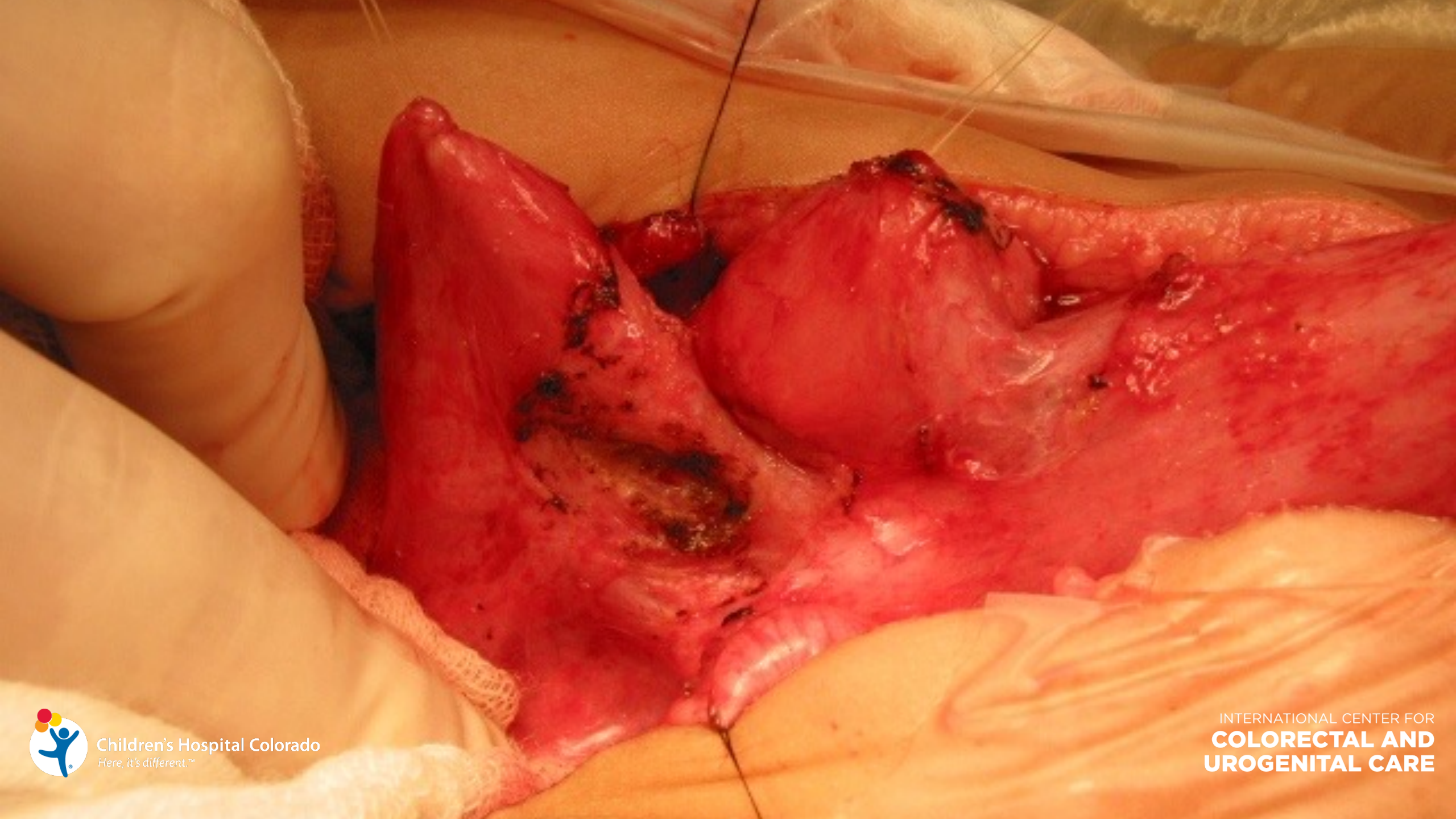
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# LAPAROTOMY FIRST



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# PSARVUP for the Repair of Cloaca with Long Common Channel



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# What about laparoscopy for cloacas?

- Literature review:
  - 12 cases reported
  - Only the rectum was repaired laparoscopically!





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# Recto-vaginal fistula – Diagnostic error

Original diagnosis

Real diagnosis

41 pts.  
‘Recto-vaginal  
fistula’



34 Cloaca

7 Vestibular fistula

# Recto-vaginal fistula

*Retrospective review*

**1,415 female patients with ARM**

**ONLY 11 documented recto-vaginal  
fistulae**



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# CLOACA REOPERATIONS



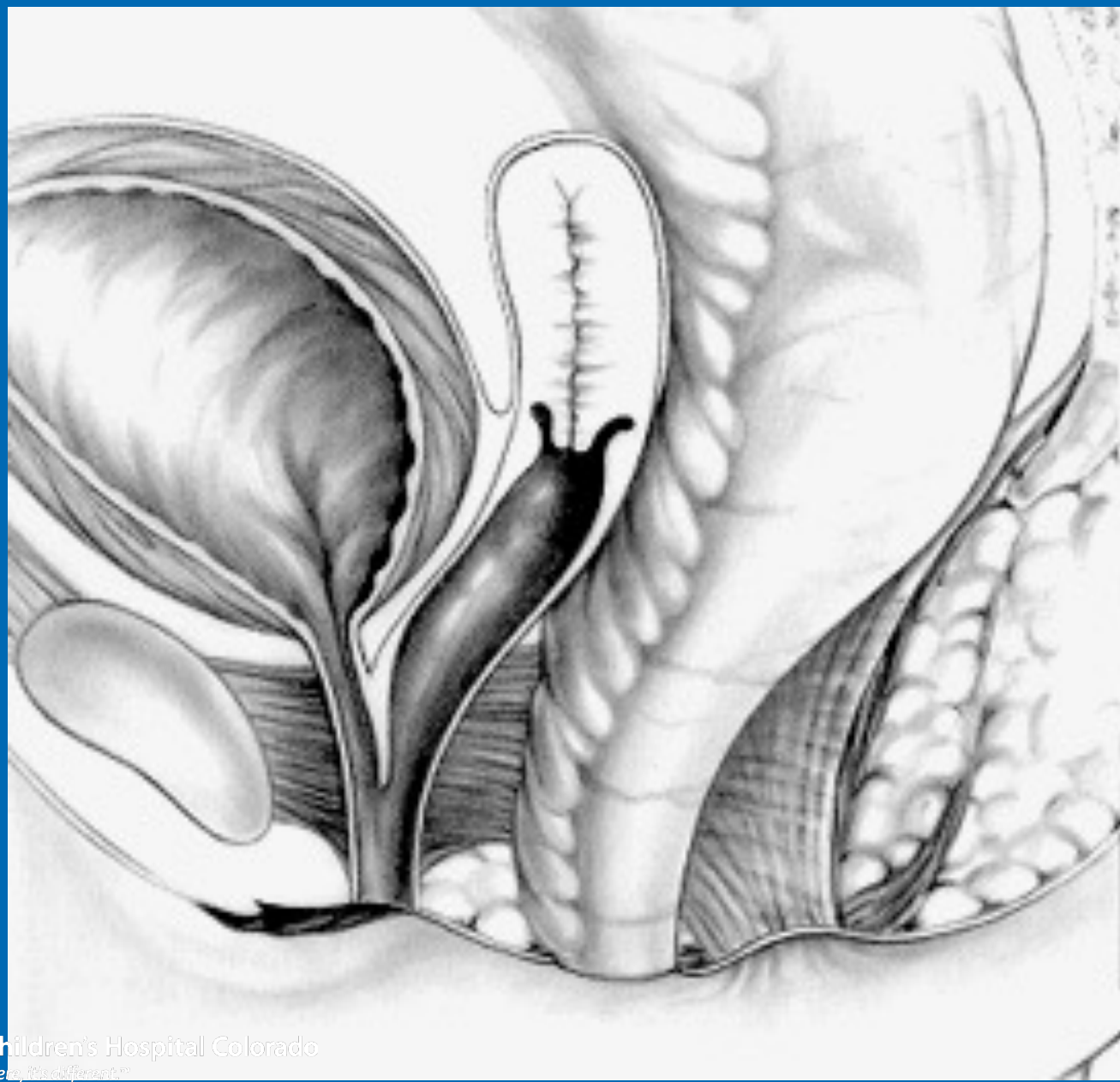
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# The most common reoperation in patients with cloaca is:

1. Vaginal stricture
2. Rectal stricture
3. Persistent urogenital sinus
4. Acquired vaginal atresia
5. Acquired urethral atresia







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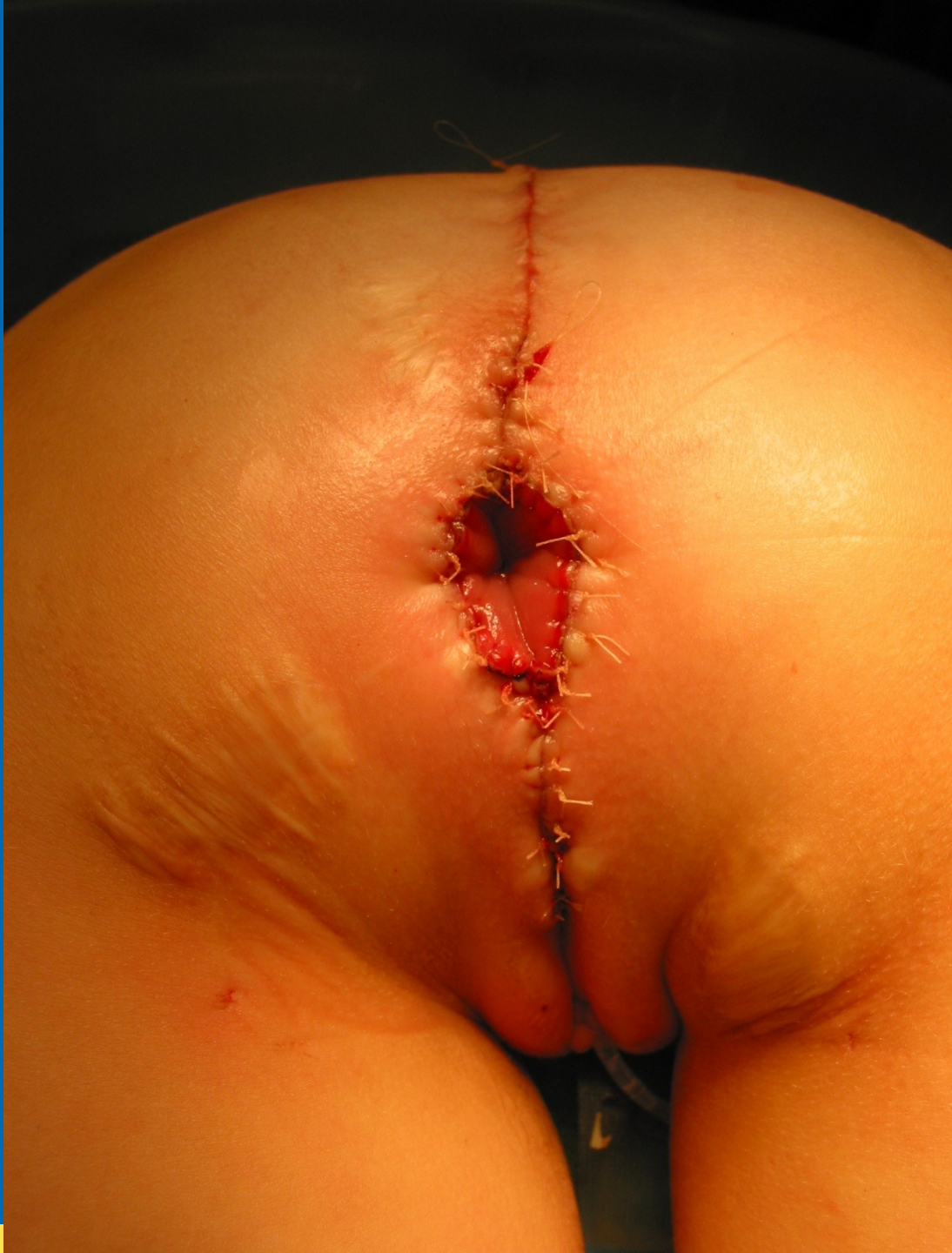
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# 1753, Paris

- M. Louis described a girl with a “cloacal anus.” Menstrual discharge was eliminated through the anus.
- The presentation of this case led to legal prosecution and it was judged in the court of Paris.



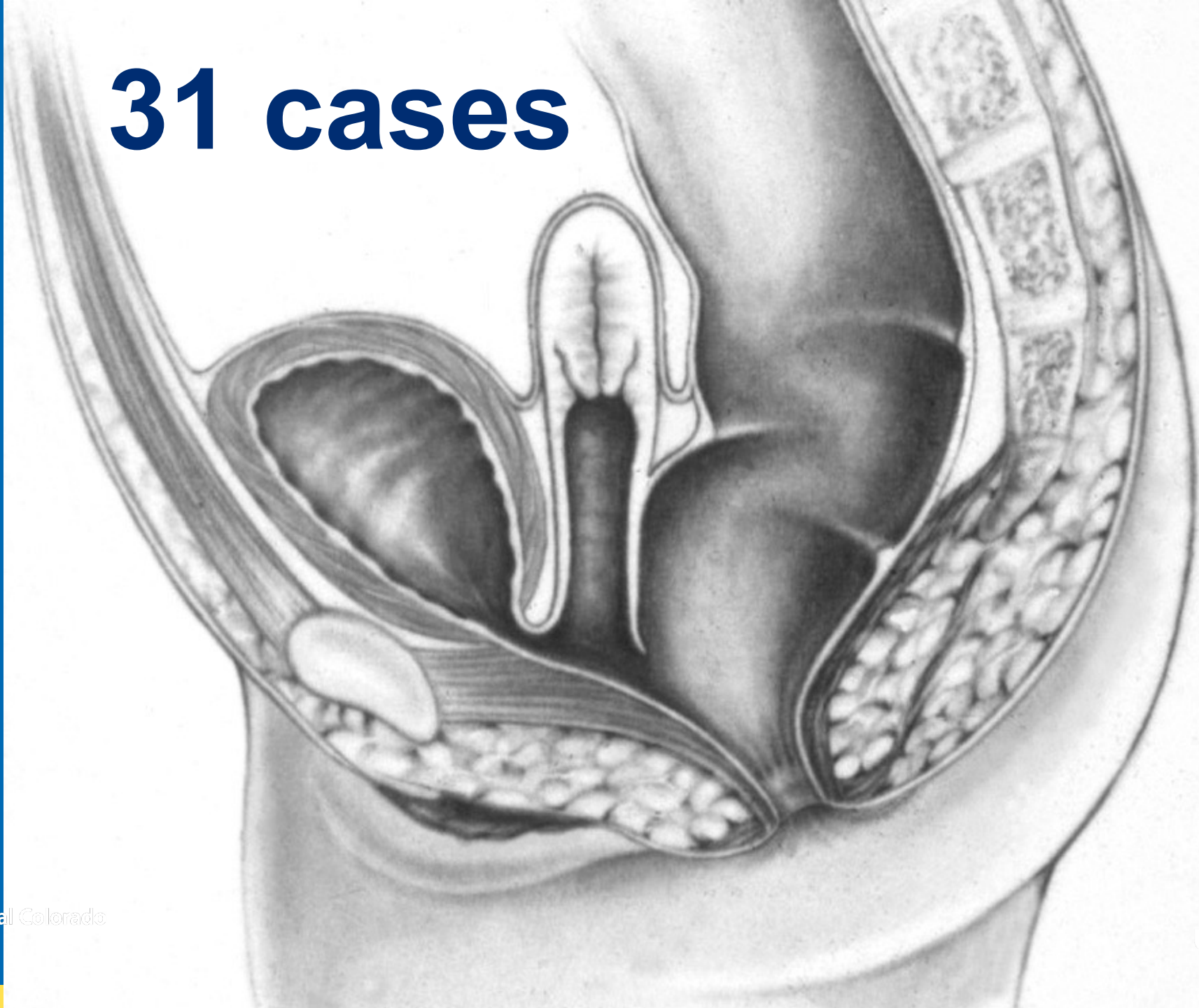
# Brisbane, Australia

## November 29th, 1986



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# 31 cases

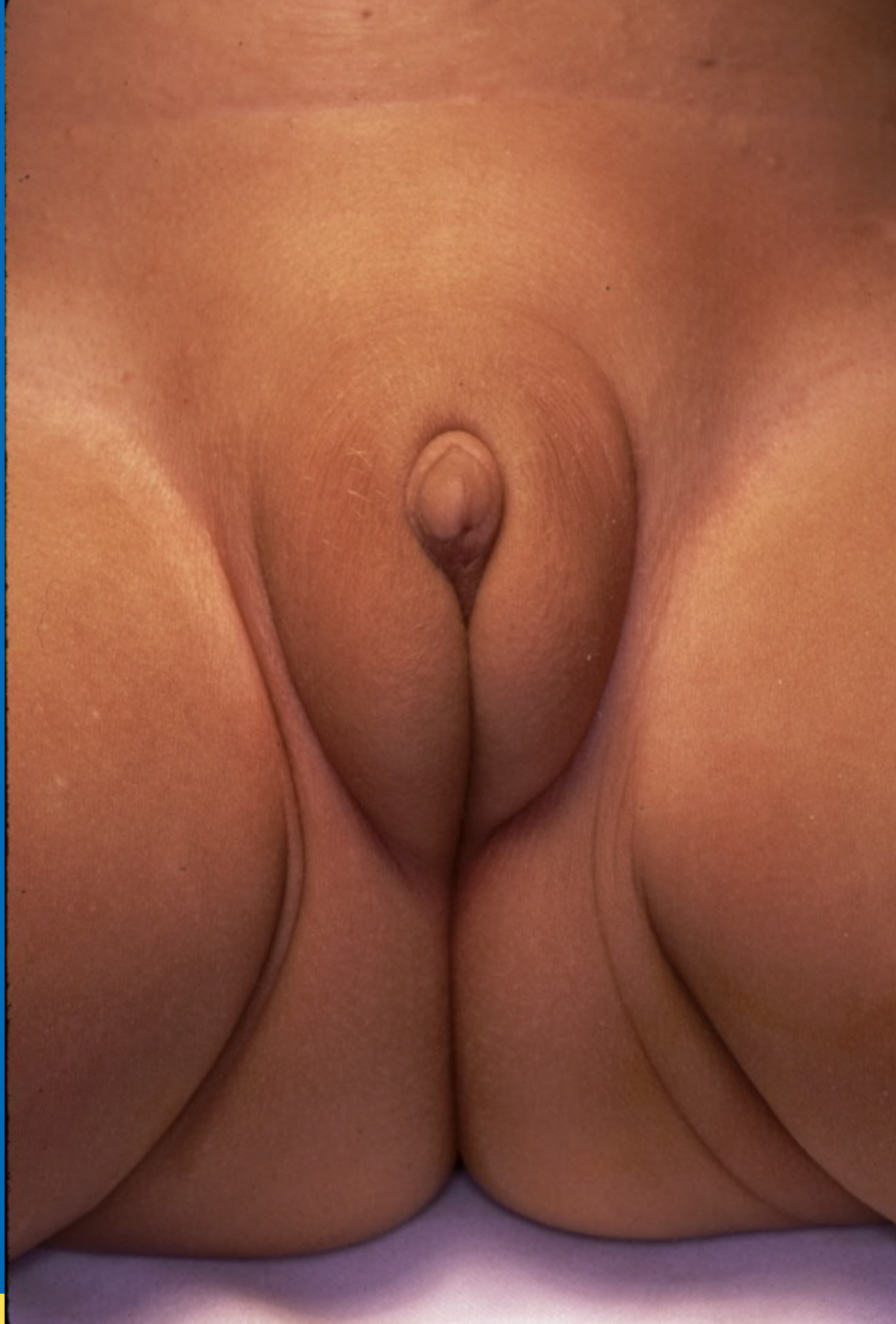


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# POSTERIOR CLOACA





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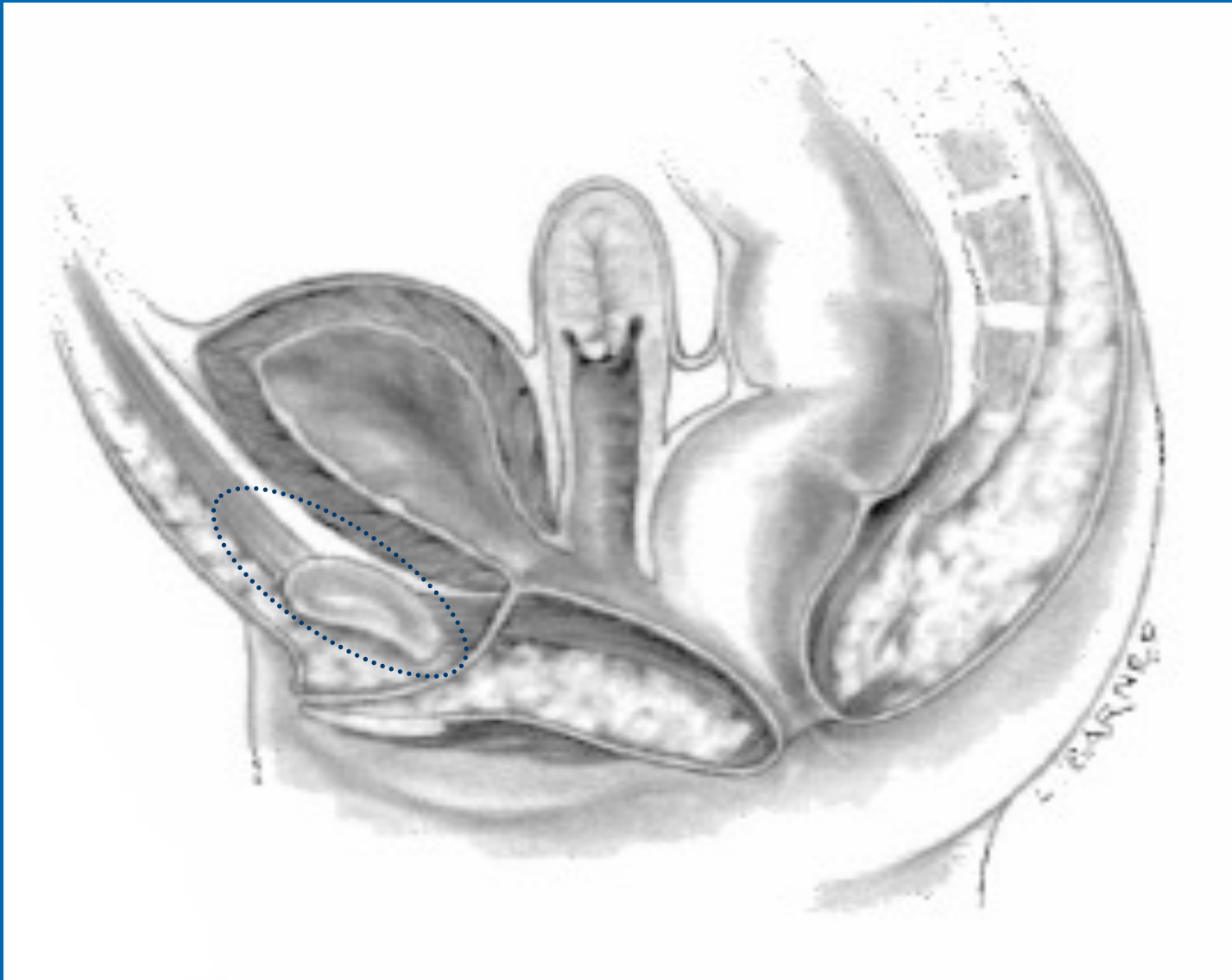
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12 patients with an  
accessory urethra



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19 patients (65%)  
with hydrocolpos



# ABSENT PENIS



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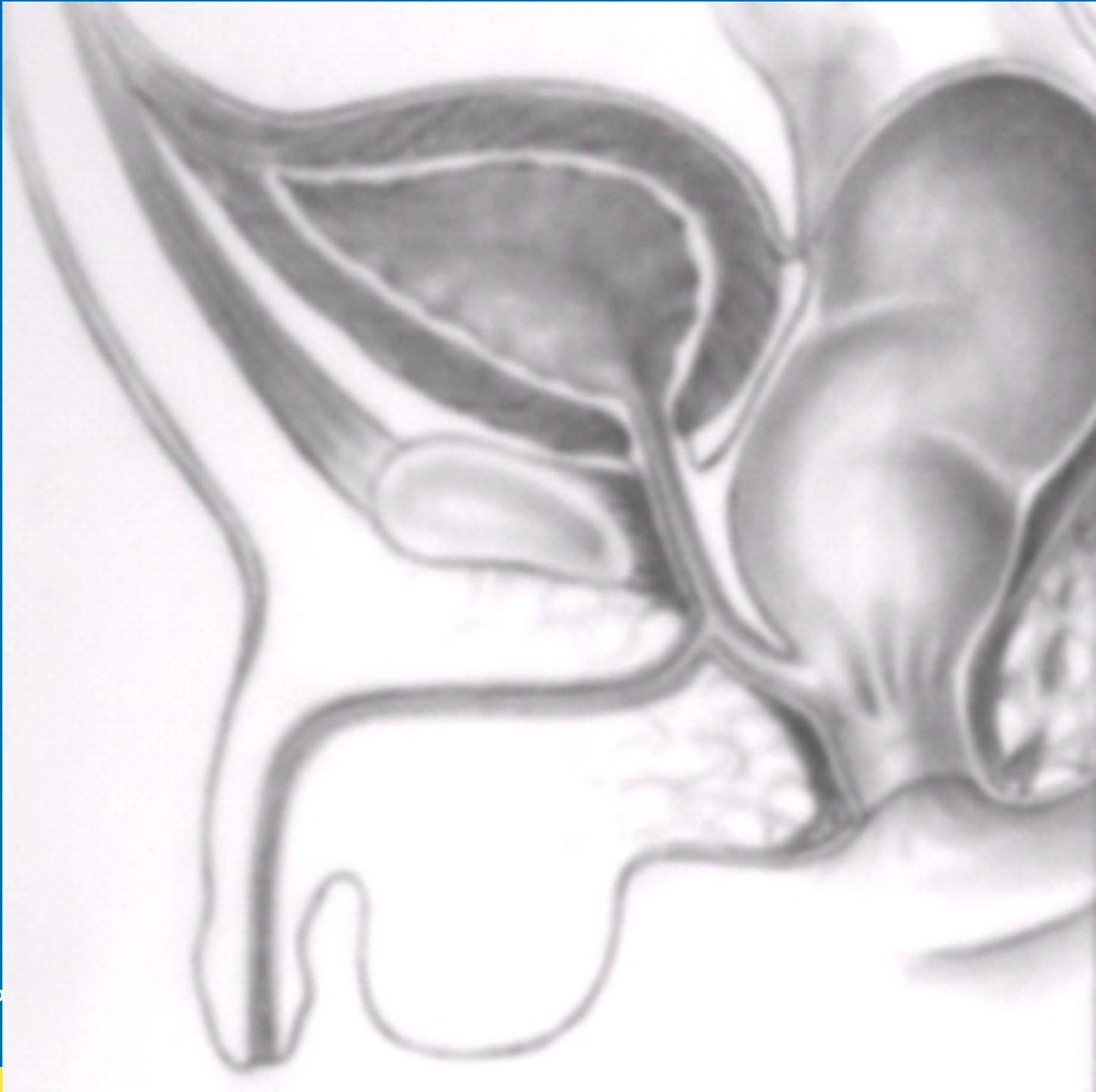
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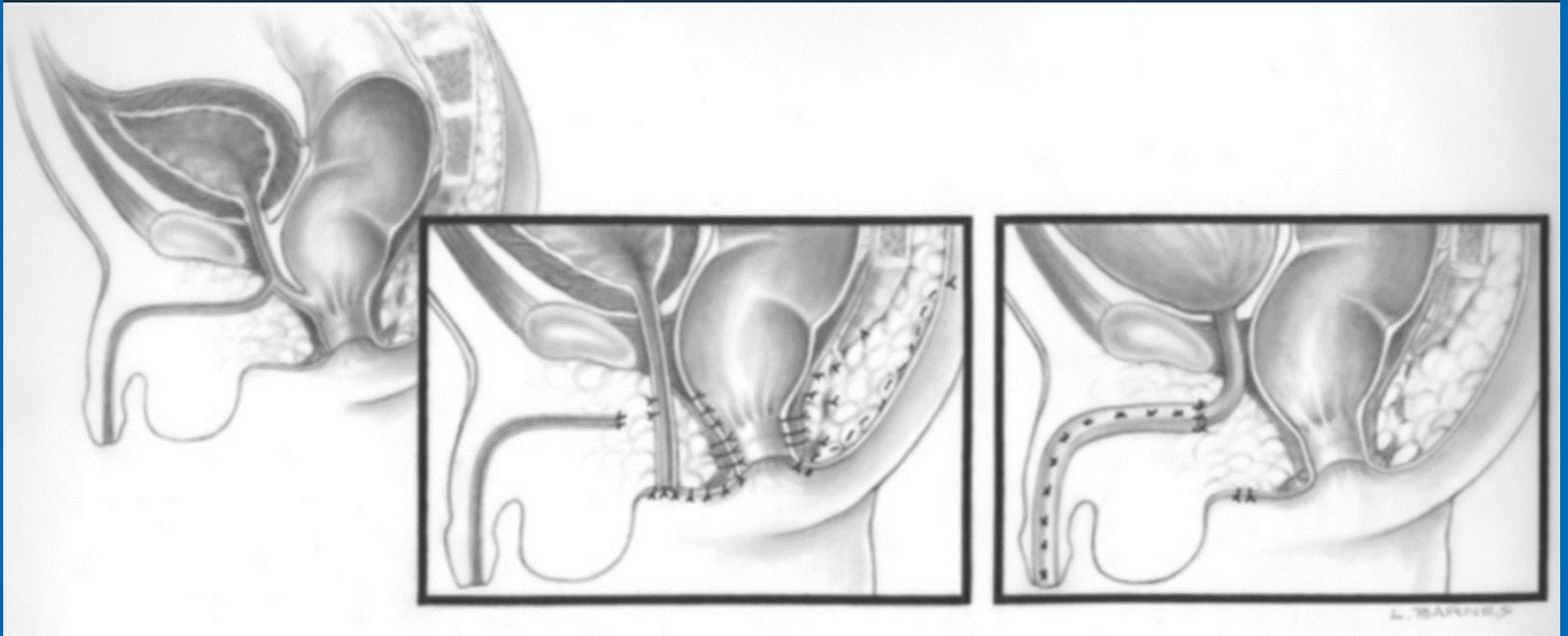
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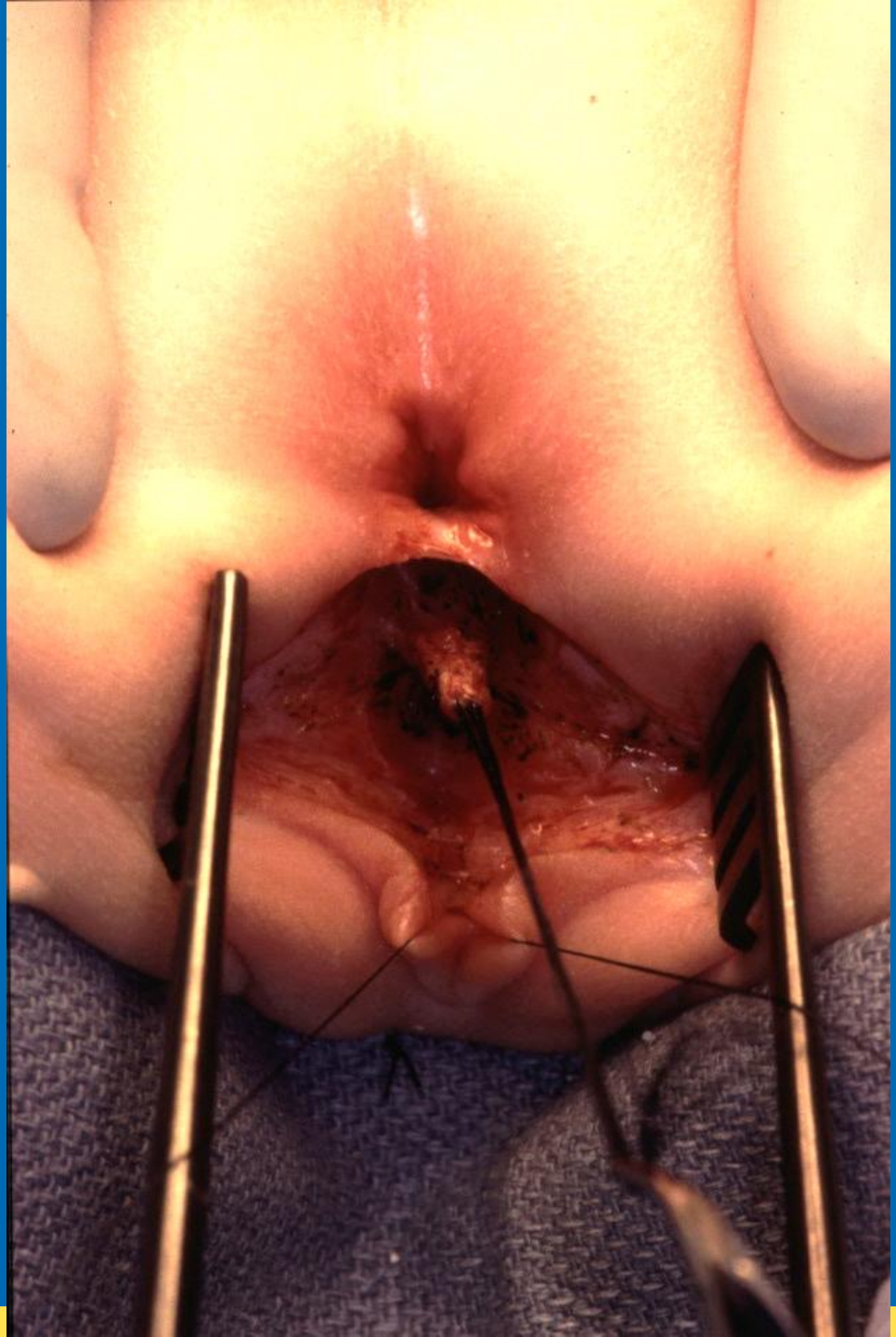
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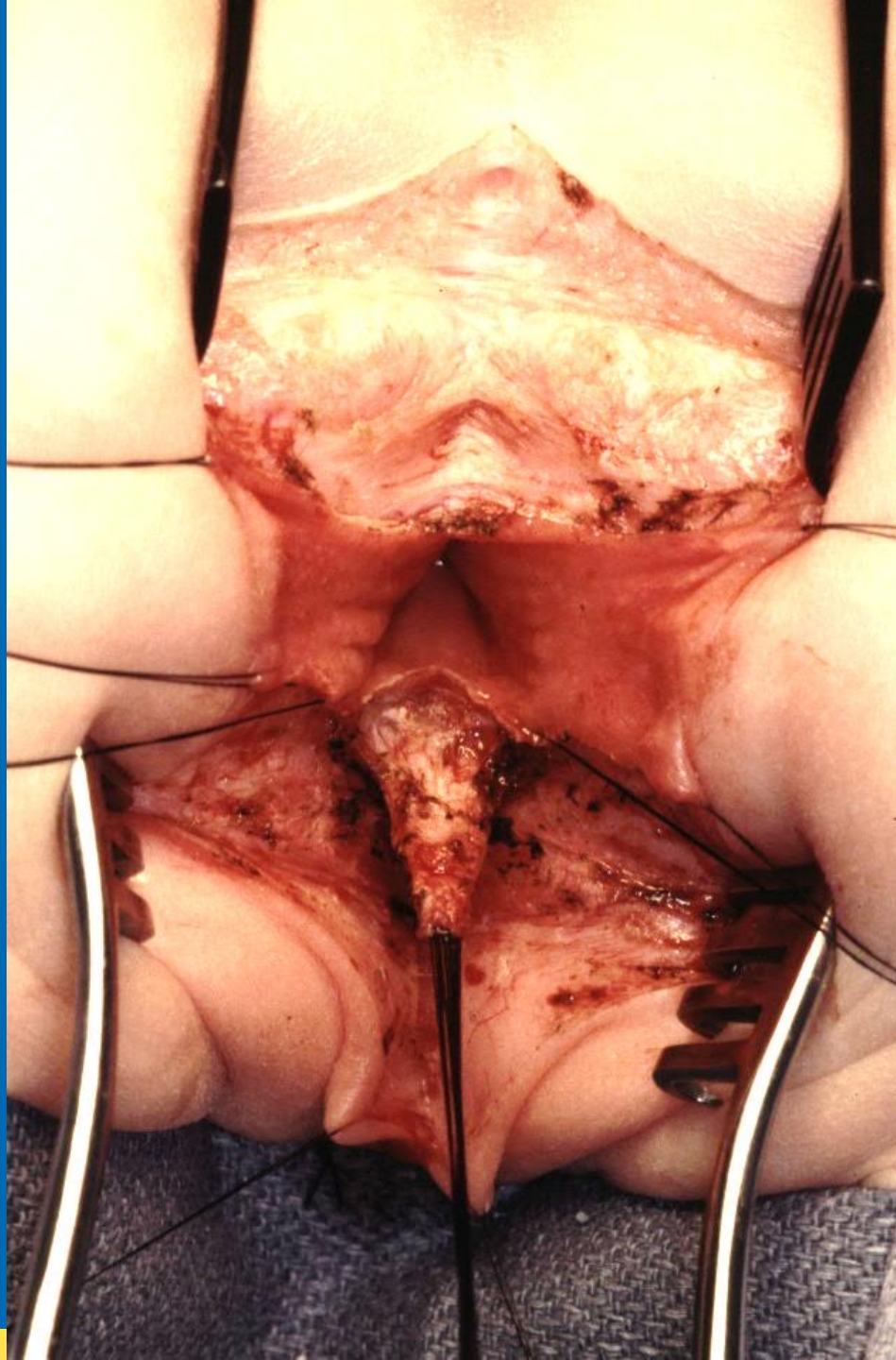
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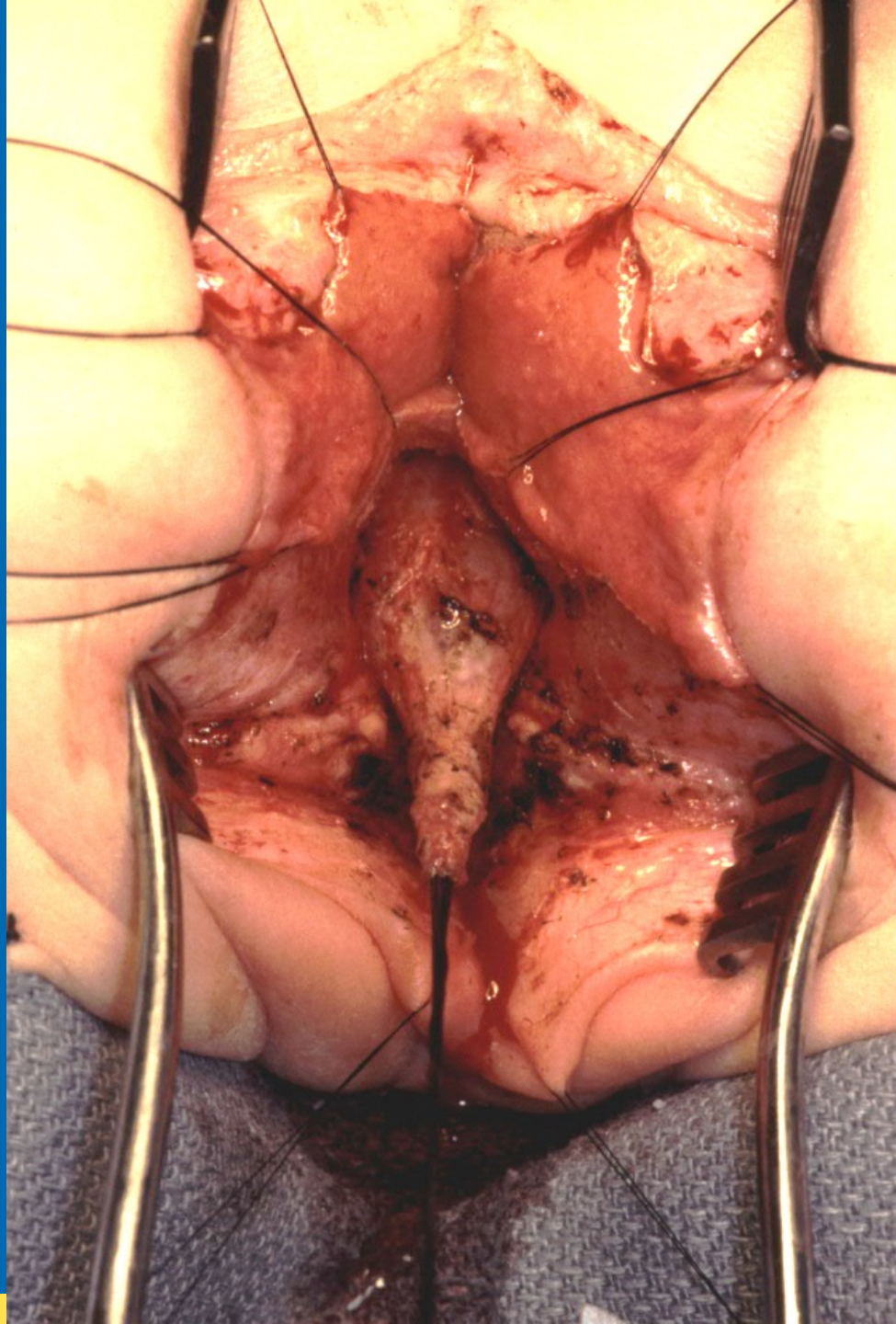
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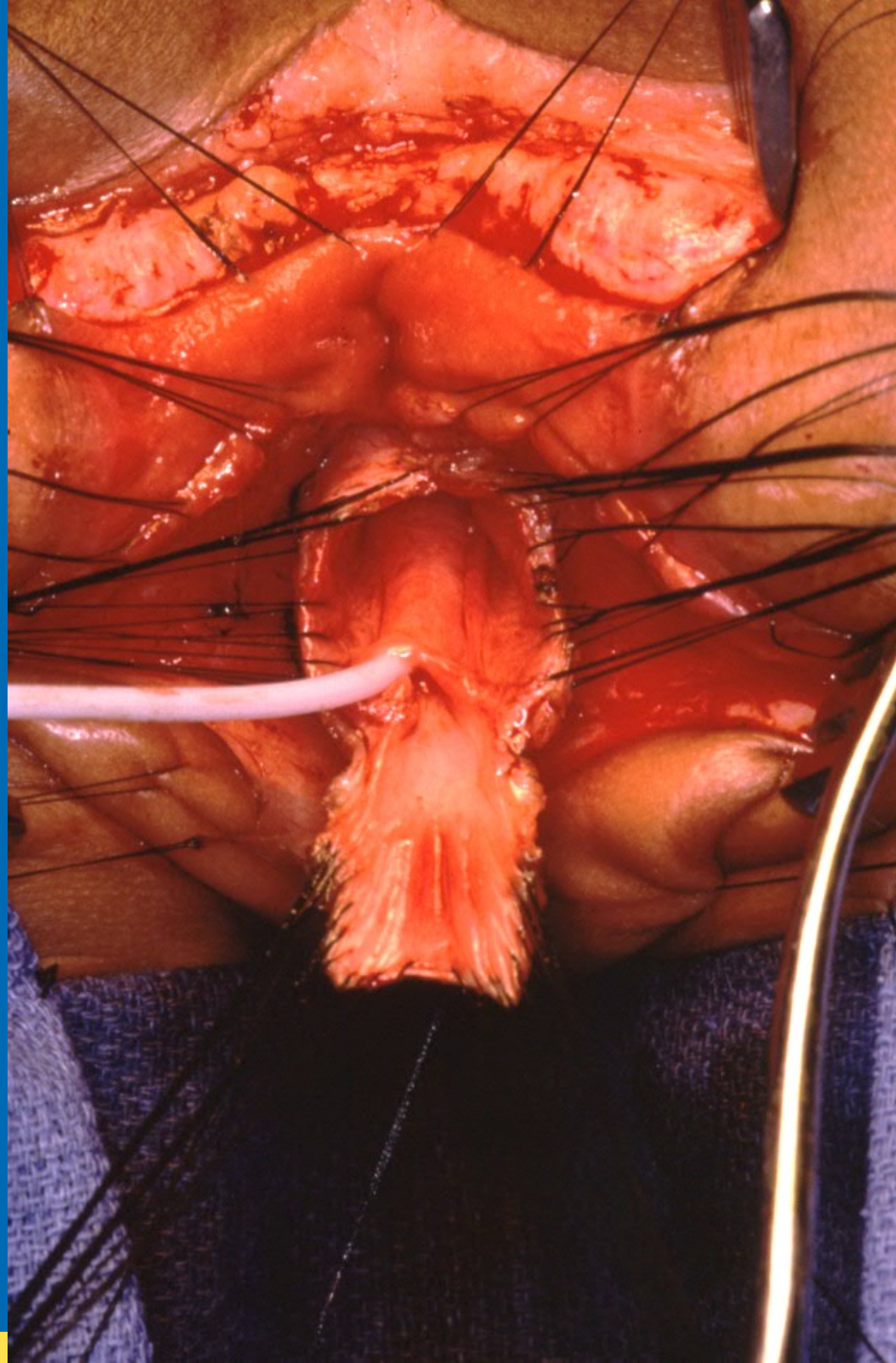
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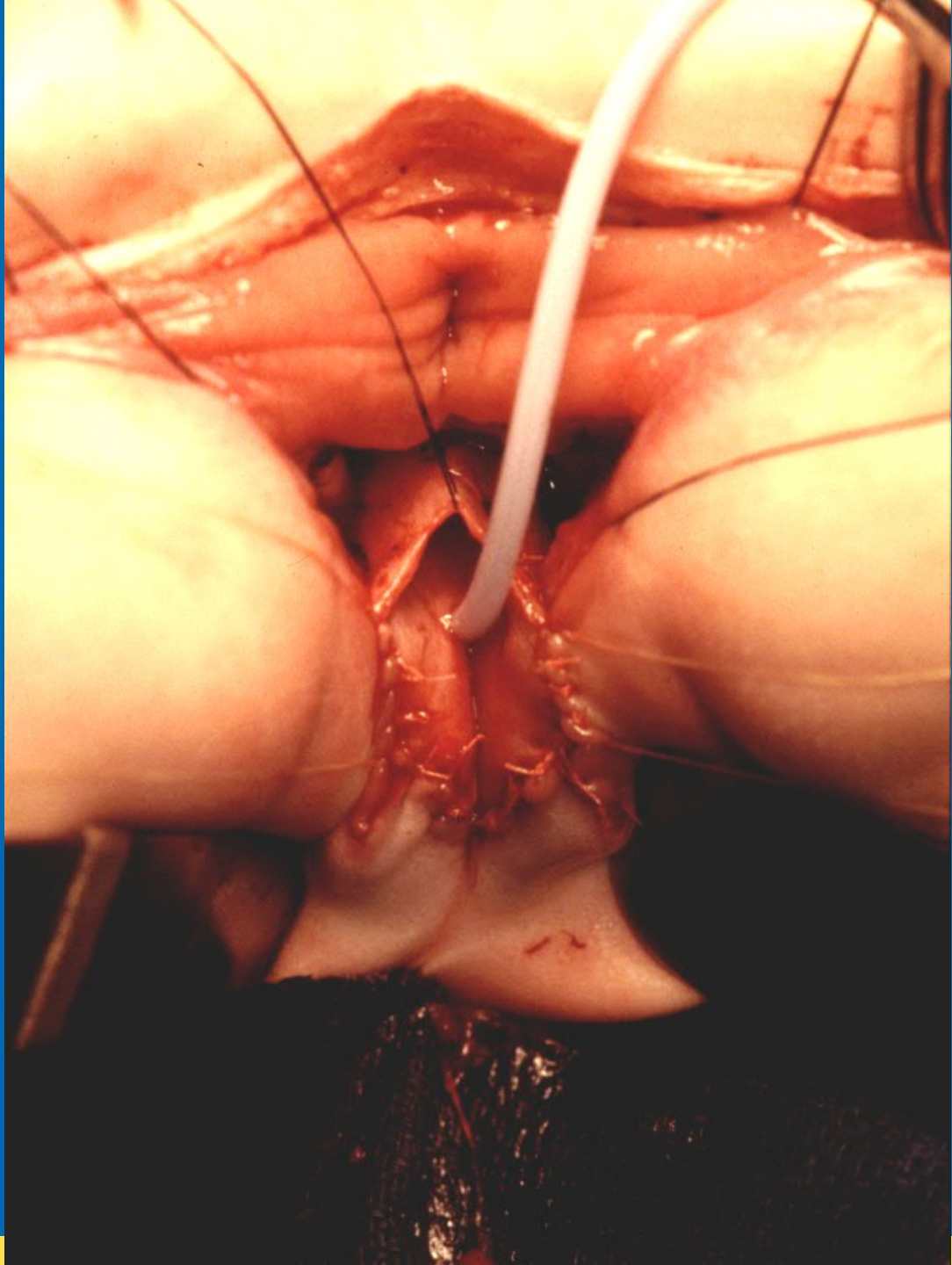
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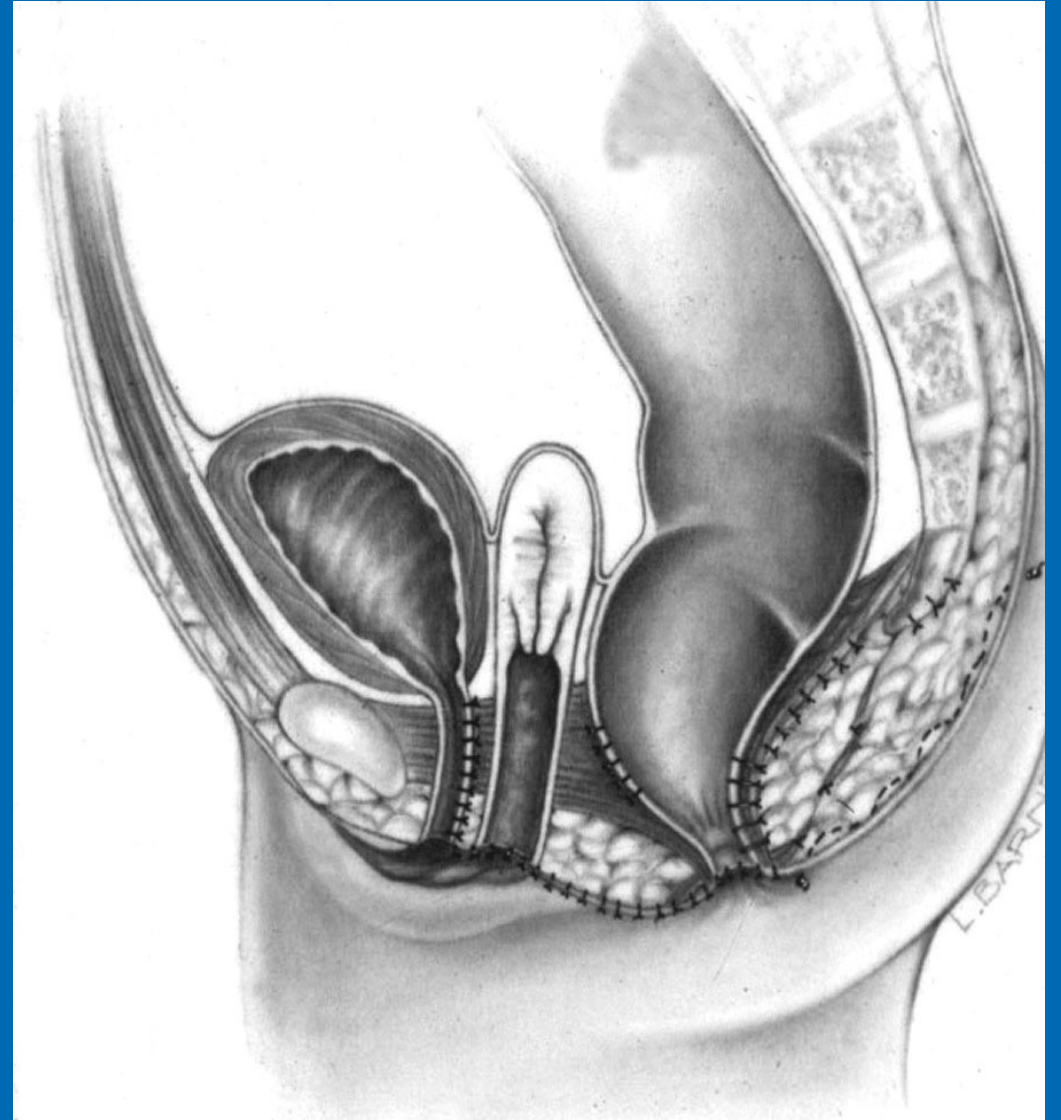
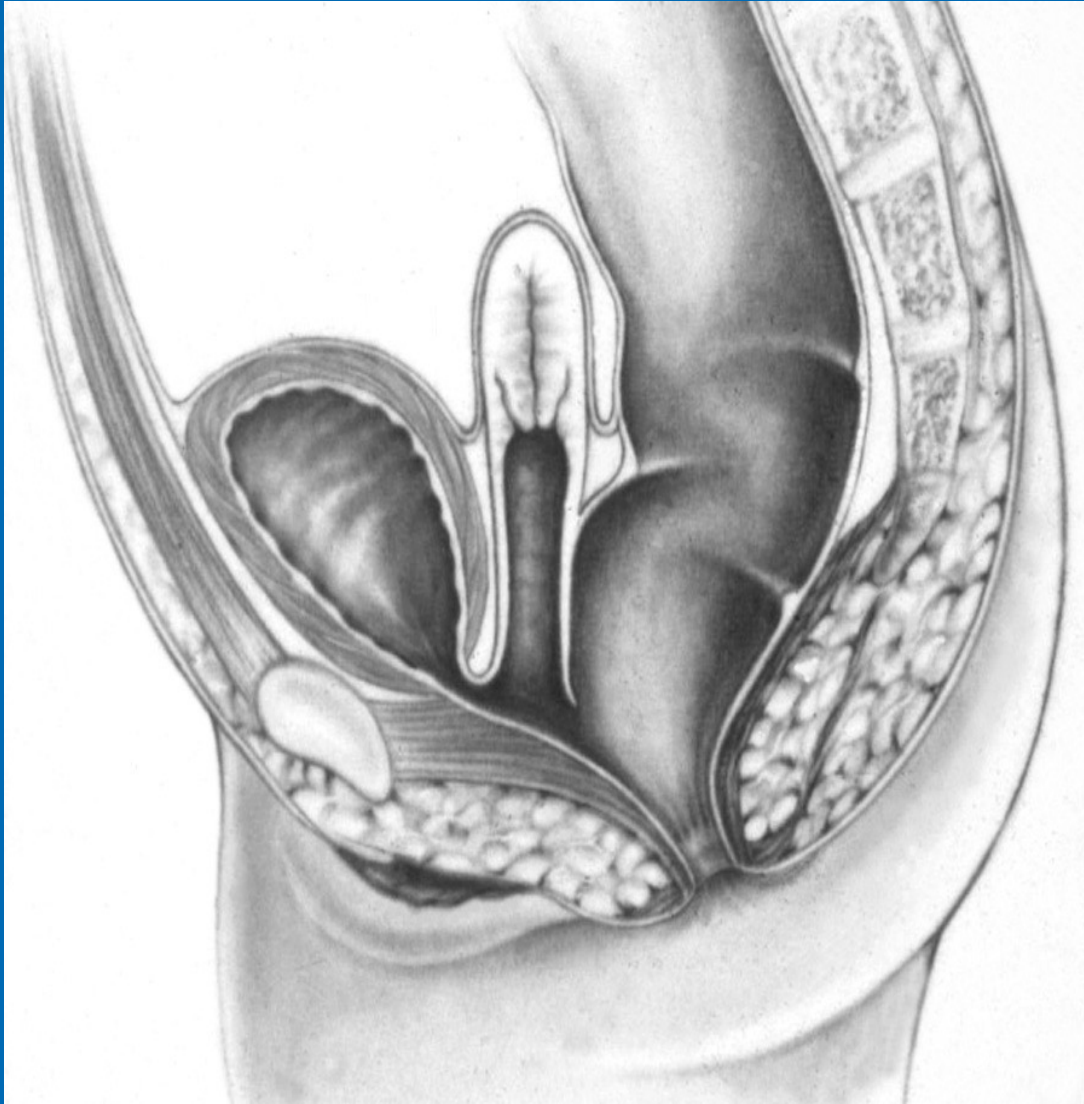
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# CLOACAL EXSTROPHY



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# Therapeutic Goals

- Urinary control (dryness)
- Bowel control (clean underwear)
- “Sexual function”

# UNIFIED MANAGEMENT



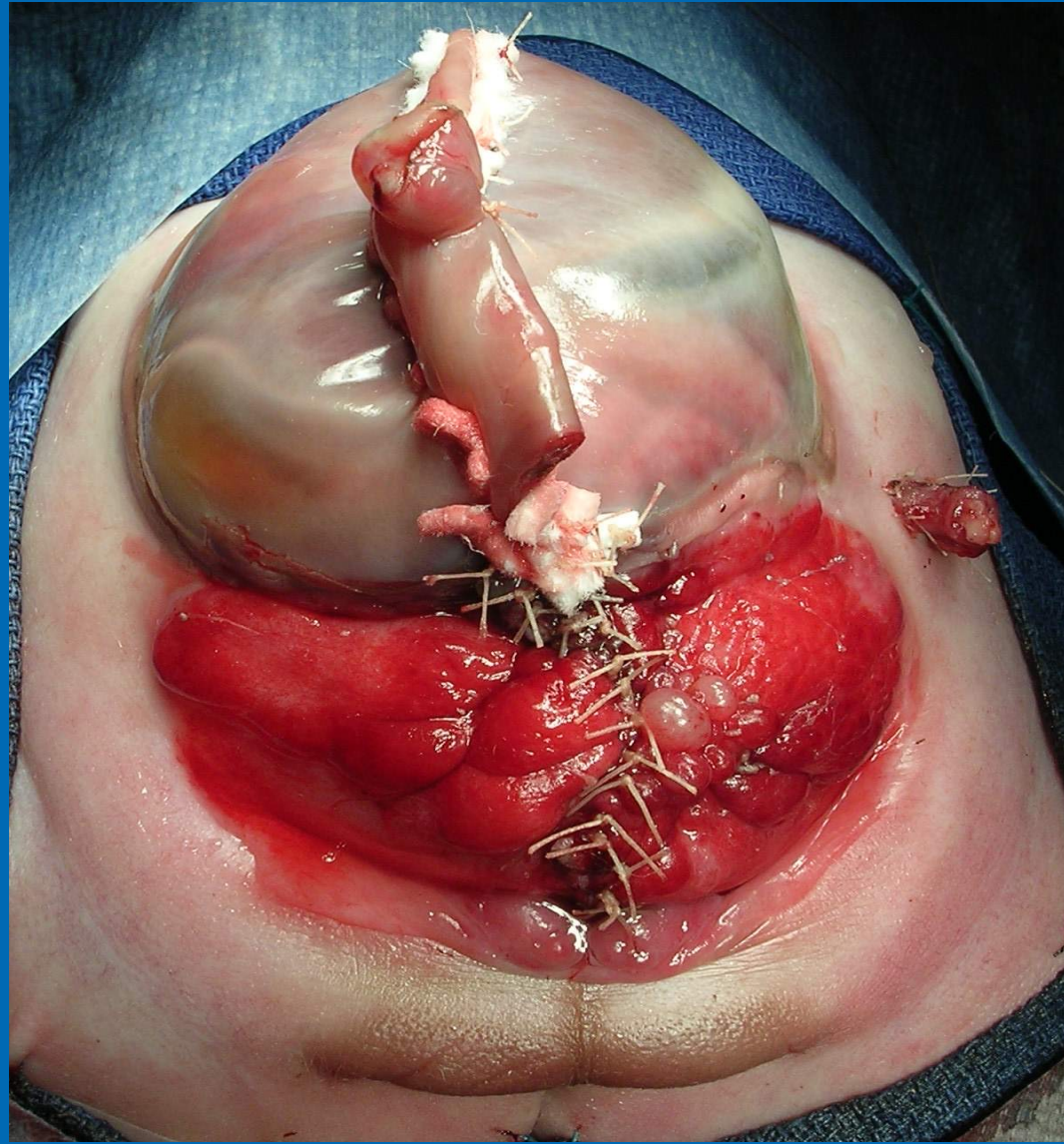
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# Accepted Neonatal Treatment

- Omphalocele repair
- Bladder closure
- Colostomy





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# Cloacal Exstrophy

It is a common belief that these patients have a short and / or useless colon.



# EXSTROPHY OF CLOACA

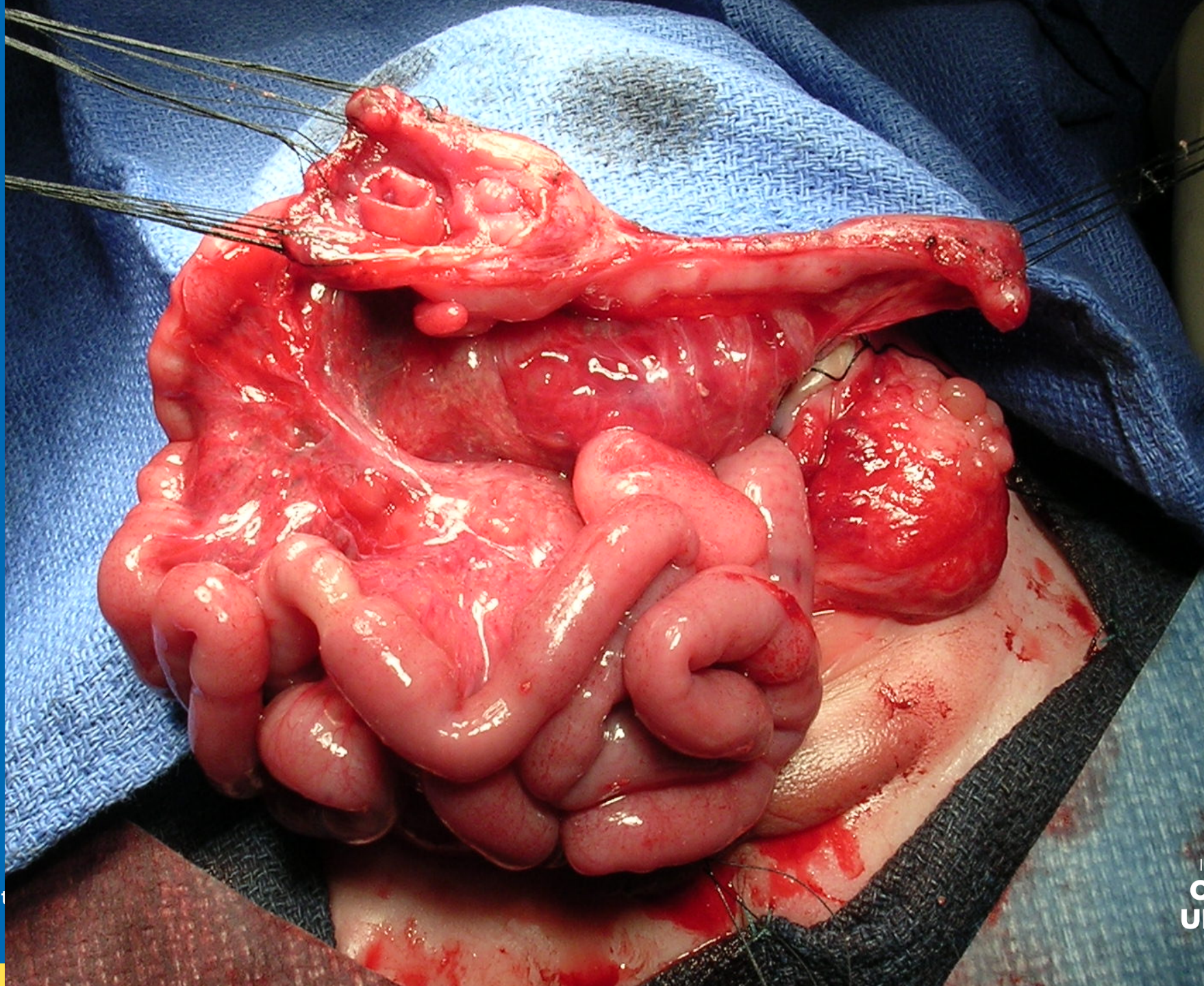
## Spectrum



**Separate all bowel tissue  
from urinary tract**

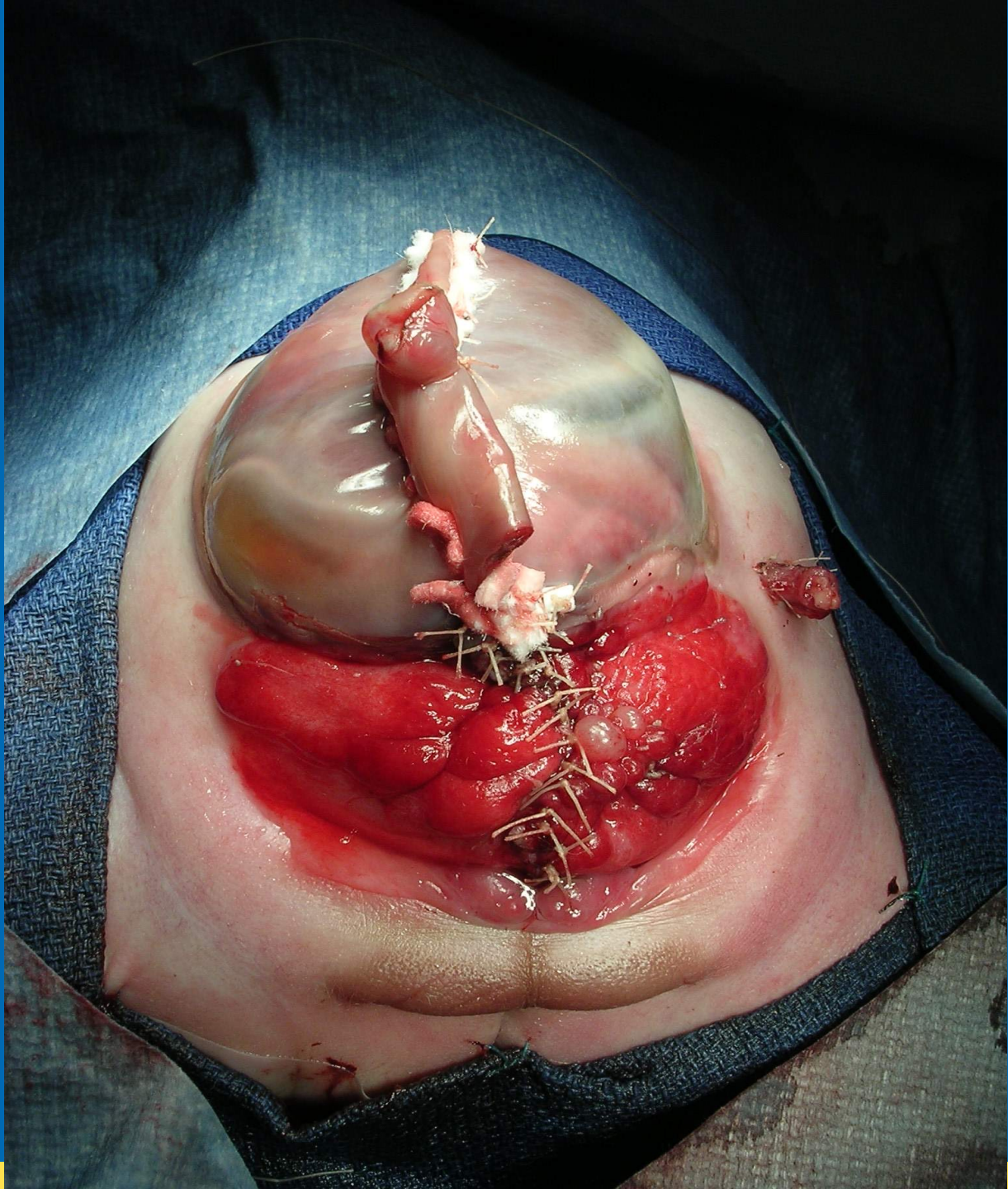


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# Unified Management Plan

- First decide:
  - Pull-through
  - Permanent stoma
- ONLY THEN, address any genitourinary reconstruction



**The only contraindication  
to colonic pull-through is:**

**INCAPACITY TO FORM  
SOLID STOOL**





# BOWEL MANAGEMENT THROUGH COLOSTOMY



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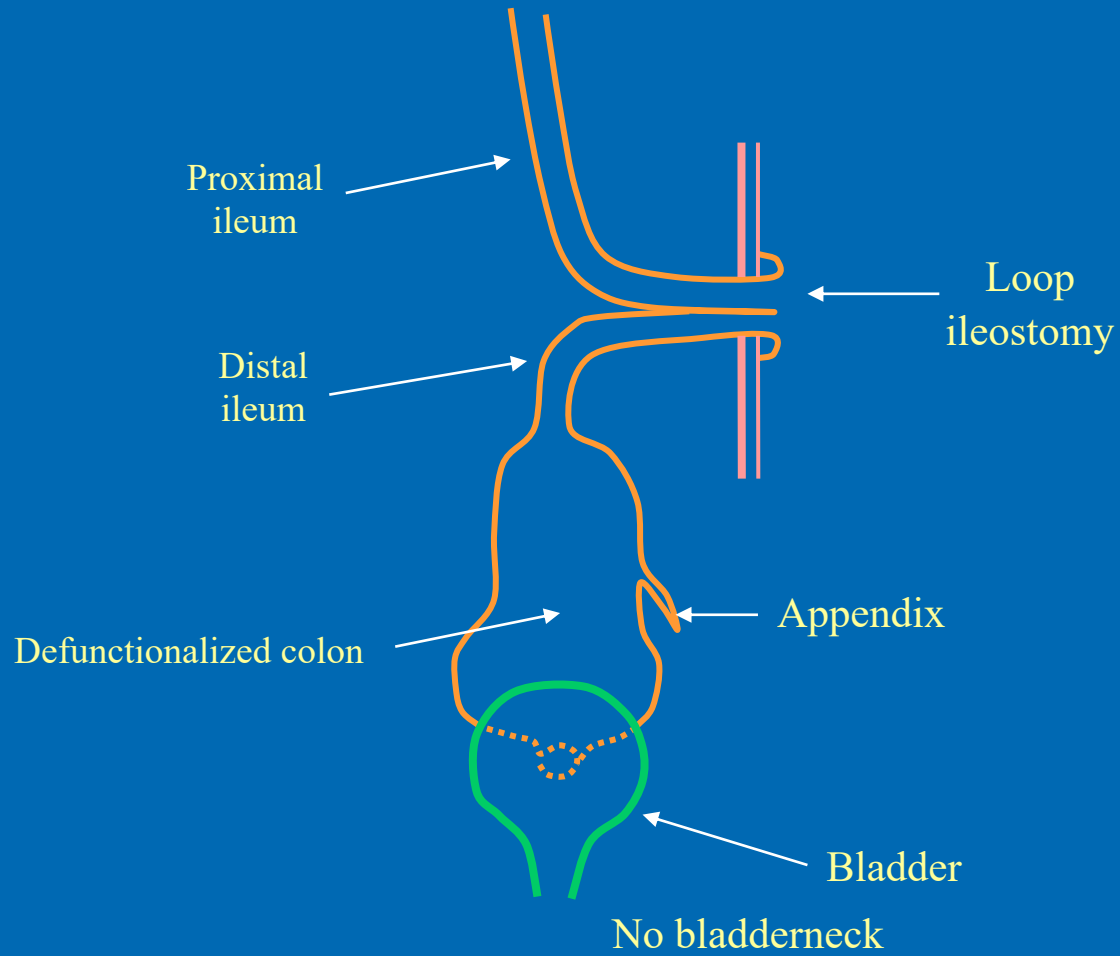
# RESCUE OPERATION



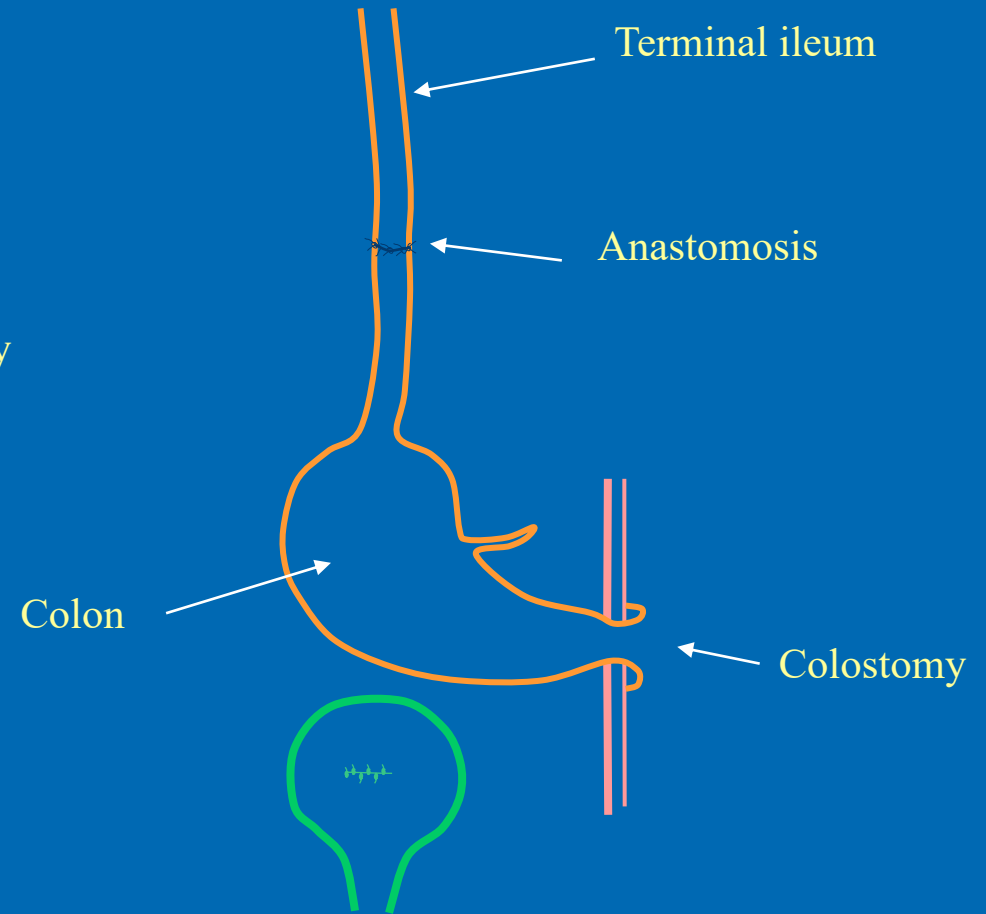
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# Pre-op



# Post-op



# Conclusion

The unified management plan allows some children with cloacal extrophy the opportunity to become a stoma-free adult who is able to remain fecally clean and dry.

Alberto.Pena@cuanschutz.edu

 Doctors Pena Bischoff

 @DrsPenaBischoff

 PENABISCHOFF

