Mesh Reinforced Diastasis Repair of Midline Incisional Hernias

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Surgical anatomy of the aponeurotic expansions of the anterior abdominal wall

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Summary

Dissection of the anterior abdominal wall in 40 fresh cadavers, with confirmation of the anatomical findings at operation in 25 patients, has enabled the patterns of distribution of the aponeurotic expansions of the abdominal muscles to be traced and the relation of structure to function to be determined. It is pointed out that the linea alba should no longer be regarded as the line of insertion of the abdominal muscles but as the area of decussation of the tendinous aponeurotic fibres of the muscular strata passing from one side to the other, for which the name 'midline aponeurotic area' is proposed. Two separate functional areas are described, a 'parachute respiratory mechanism' in the upper abdomen and a belly support in the lower abdomen. Attention is drawn to the functional derange-

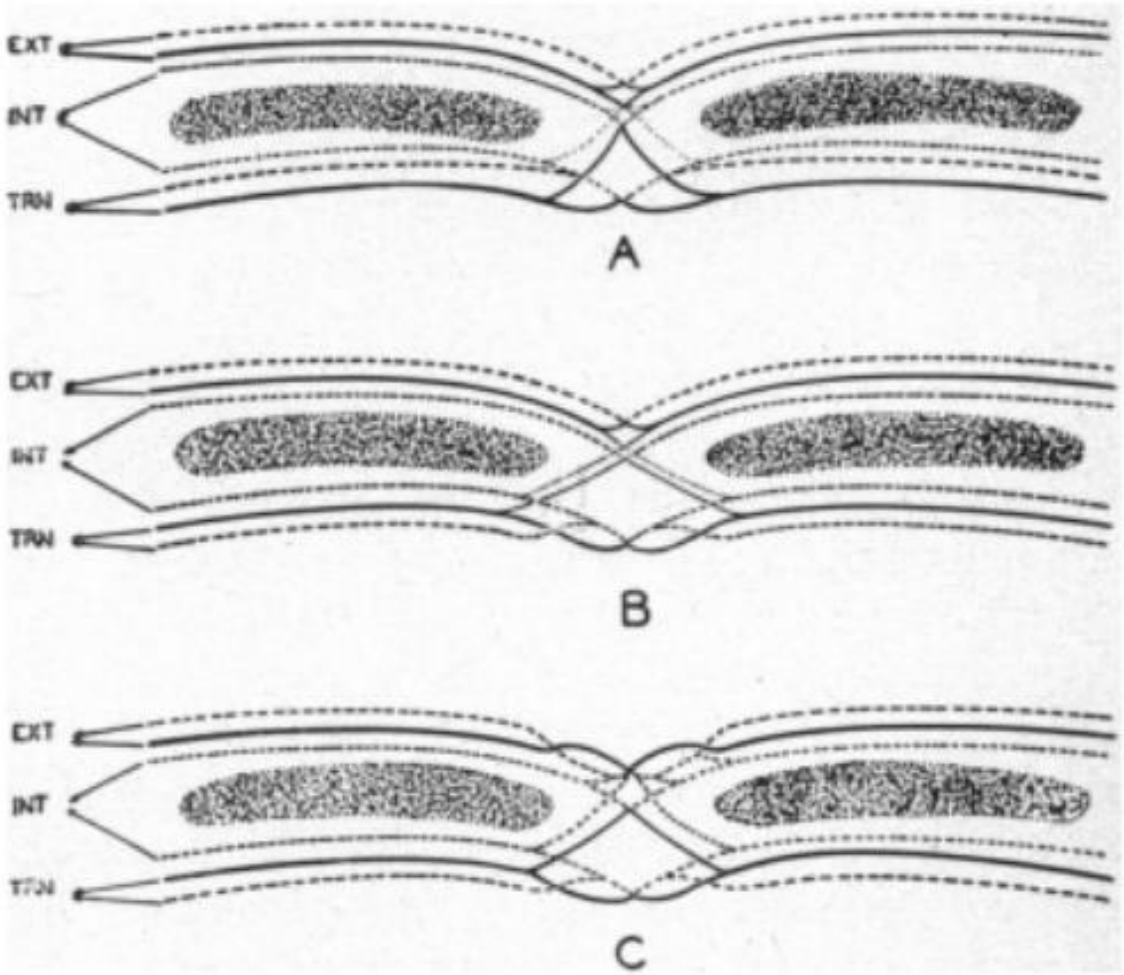
In the present article only the anatomical data of surgical importance are given, with special reference to the structural–functional relationship of the abdominal wall aponeuroses.

Materials and methods

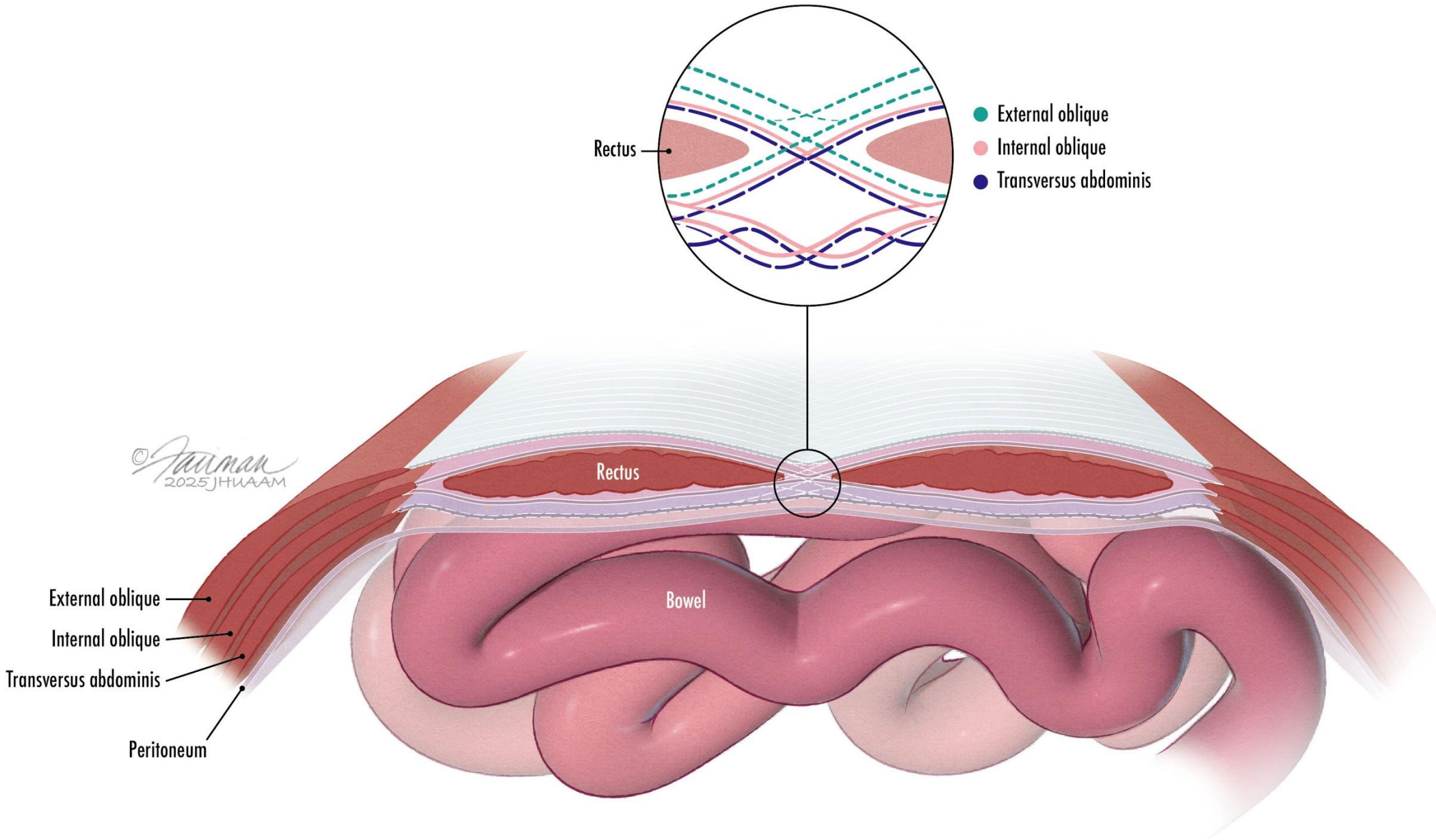
The material for this work consisted of 40 cadaveric specimens of the abdominal wall. They were mounted on wooden frames, dissected, and examined in as fresh a state as possible, since prolonged preservation was found to blur the aponeurotic texture. The detailed structure of the aponeuroses was studied by tracing the aponeurotic fibres through a scaled grid. Drawings were made on a similarly scaled chart.

The anatomical findings were verified in vivo in 25 patients aged 30–65 years under-

- New Anatomical Description of the Abdominal wall
- Digastric muscles
- Rectus sheath composed of tendons of lateral muscles
- Linea Alba not a discreet structure



The “Linea Alba” is where the digastric muscles’ tendons cross to the opposite side


Rectus
External oblique
Internal oblique
Transversus abdominis
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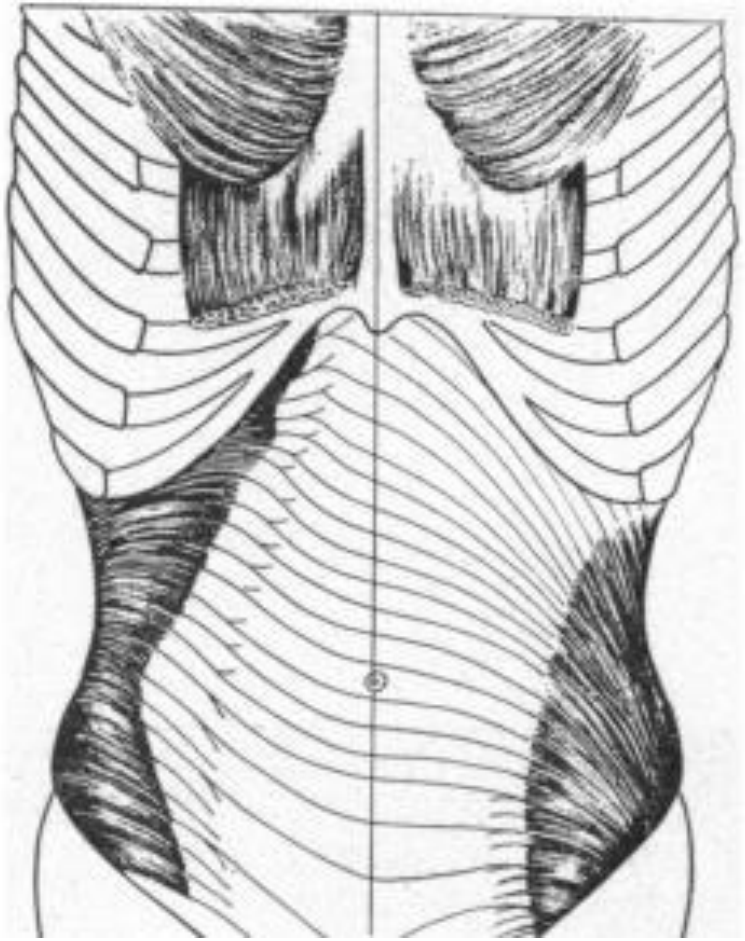
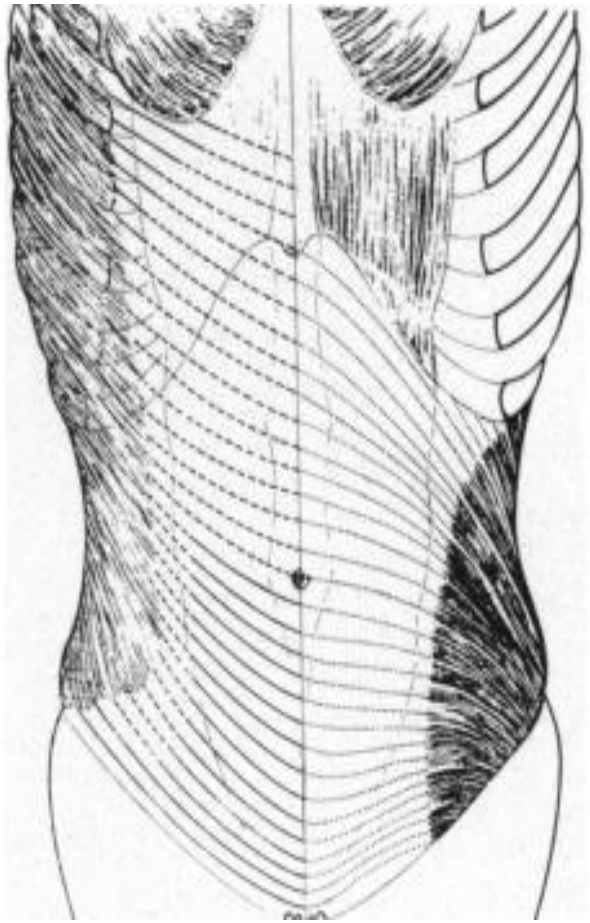
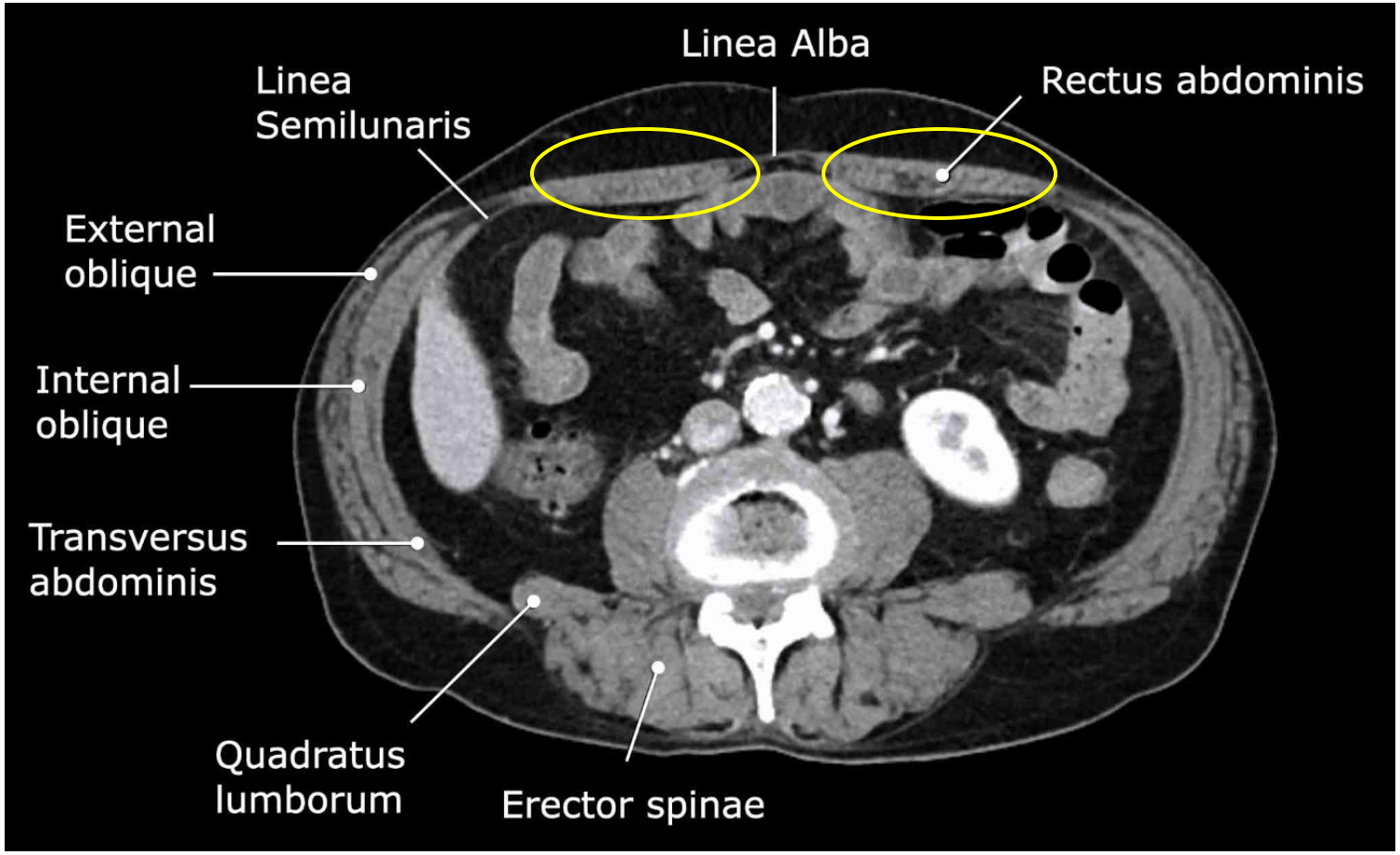
Rectus
Bowel
External oblique
Internal oblique
Transversus abdominis
Peritoneum

Abdominal Muscles are digastric with central tendons





Abdominal wall, no diastasis



Abdominal Tendon Repairs Fail due to...

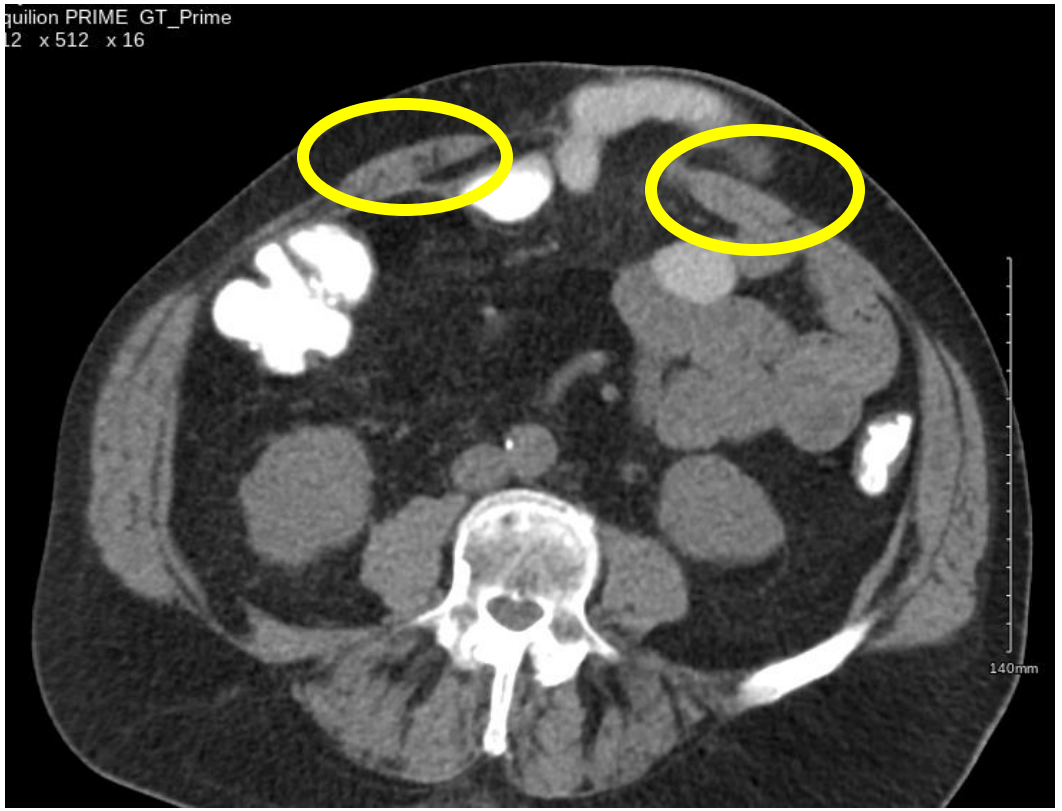
- Tendon repair under tension postop (cough, ileus, vomiting)
- Wound infection
- Ischemia of tendon repair
- Nutritional status
- Comorbidities
- Age
- Technique

Result: Rectus separation + Hernia

Identical Rectus Separation

"Natural"=
Diastasis

Iatrogenic=
Hernia



Big hernia = Larger Rectus separation

Ivo Pitanguy, MD

1922-2016

"Father of Modern Plastic Surgery"

Abdominal Lipectomy: An Approach to It throug Analysis of 300 Consecutive Cases

VO PITANGUY, M.D.* / *Rio de Janeiro, Brazil, South America*

The accumulation of adipose tissue in the abdominal region, associated with progressive distention of the skin frequently found in obese and, principally, middle-aged multiparous individuals, produces discomfort and deformity of the abdominal wall. It is often associated with abdominal striae and diastasis of the rectus muscles, conditions which progress due to the constant stimulus of intraabdominal pressure and occasionally result in hernias of the abdominal wall.

The etiology of this deformity was variable, as can be seen in table 1 which refers to 300 consecutive cases. Besides the etiology mentioned in the table, abdominoplasty is also indicated for cases in which there is a necessity to use the skin of this region for treatment of other deformities.

Technique

Initially, the median line of the abdomen is drawn, and a stay suture is placed on the line at a level corresponding to the superior border of the pubis. From this sutured point, the incision is marked. It extends horizontally, first following the limit of the pubic hair growth, then crossing the inguinal fold and continuing horizontally until it reaches a point corresponding to a vertical projection of the iliac spine, at which point it begins to curve downward (fig. 1). It should be noted during the demarcation that, occasionally, due to the accumulation of fat, the inguinal fold can be displaced. Therefore, the demarcation is done carefully to avoid distortion of the line of suture. Thus, a horizontal scar, curved at its ends, is obtained which can be easily disguised.

The undermining is ample, extending in

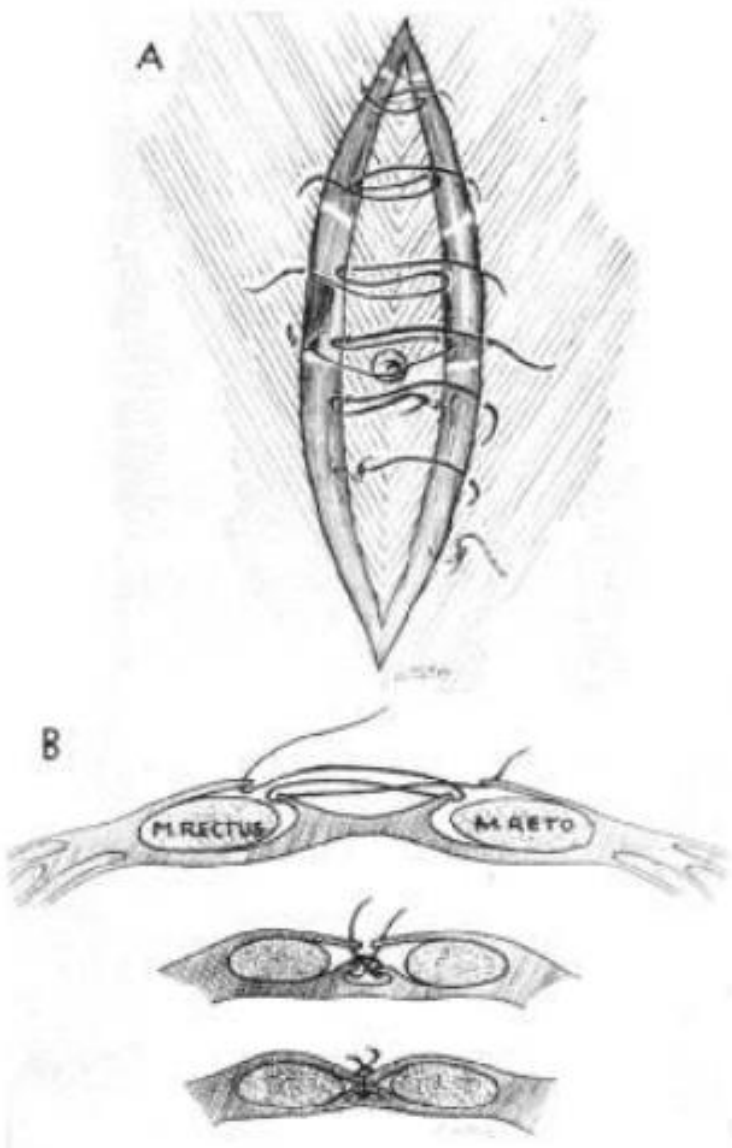
incision is made around it, leavi
tached to the aponeurosis only by
pedicle; the inferior portion of th
divided in two by an incision of the
which facilitates the rest of the und
(fig. 2).

There is little justification for neo
plasty, not even in large hernias, for,
the umbilicus no longer exists in its
form, it is easier to take advantag
part which remains than to create
umbilicus. This procedure is follo
nearly all cases, neomphaloplasty b
served for very special cases.

In making use of the umbilicus,
quantity of adipose tissue is kept. In
pedicle is very long, it can be shorte
its fixation to the aponeurosis, altho
ful, is not exaggerated in patients wi

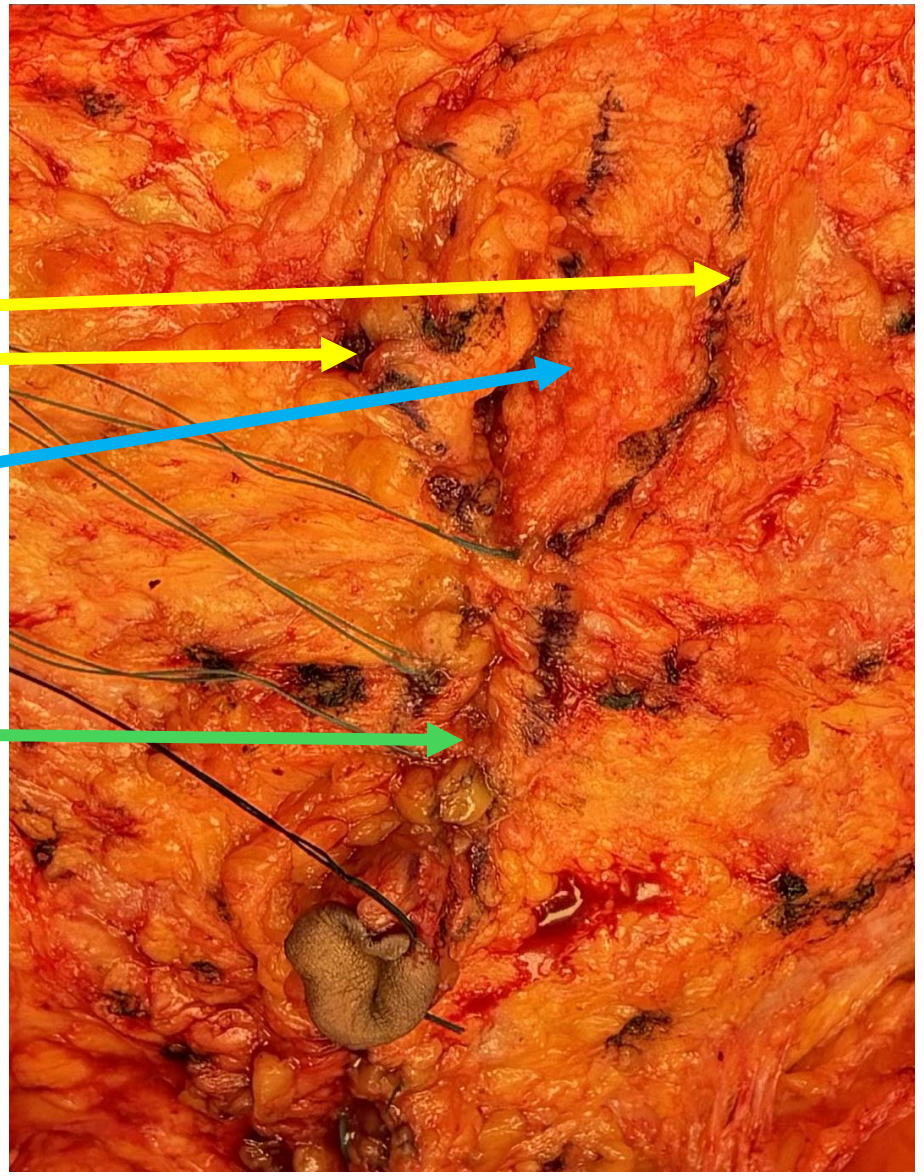
TABLE 1

Etiology	N
Obesity or great loss of weight following obesity	
Repeated abdominal surgery or abdominal surgery complications	
Postcesarian section (vertical scar)	
Postcesarian section (horizontal scar)	
Other surgery	
Infection	
Frequent childbirths associated with an exaggerated weight gain	
Muscular diastasis followed by weight gain in pregnancy	
Hernia	



Pitanguy's diastasis repair

1. Identification of rectus edges
2. Inversion of attenuated midline fascia
3. Plication of rectus muscles to midline
4. Post-op compression binder



Pitanguy + Mesh = Success

Hernia patients have less laxity than plastic surgery patients.

Zero risk of bowel involvement/adhesions with onlay

Onlay reinforces the tendons that are being repaired

Lateral fixation takes tension off midline tendon repair immediately

Mesh integration into tendons occurs in ~ 2 weeks

Binder gives additional support at tendon repair.

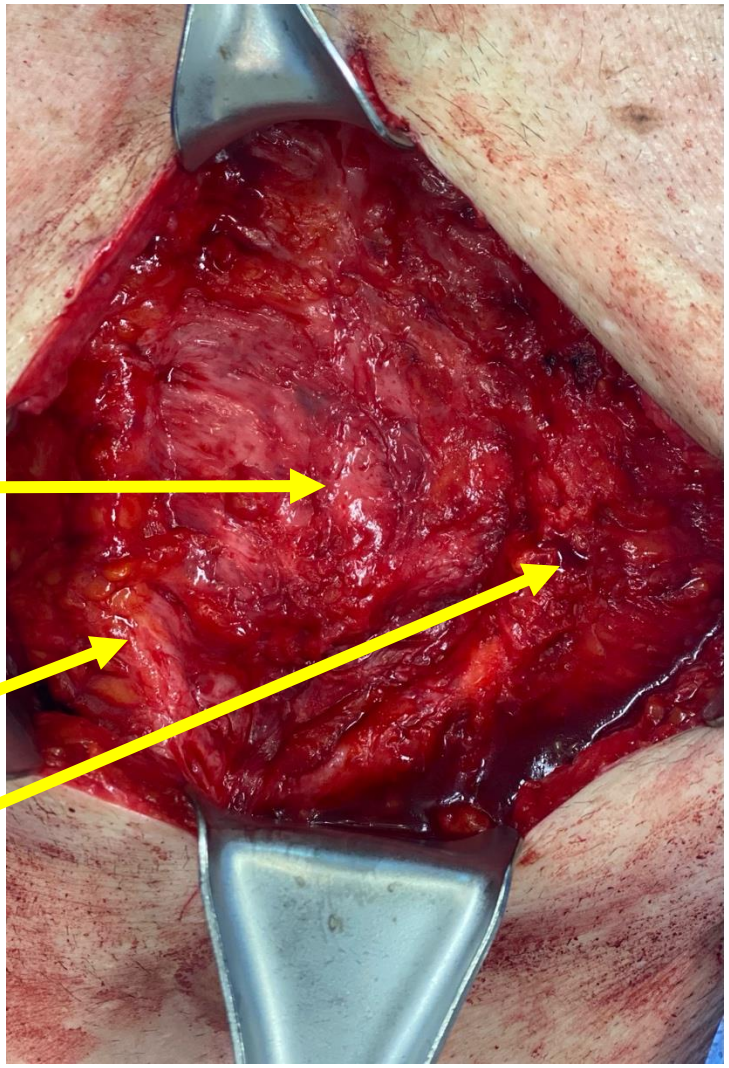
Operative Strategy

- Dissection of Hernia Sac
- Avoid peritoneal entry
- Identify edges of Rectus muscles
- Inversion of hernia sac
- Suture anterior tendon sheaths to recreate midline
- Clean off 2-3 cm of anterior rectus tendon sheath
- Fix overlay mesh circumferentially over midline repair
- Infiltration with bupivacaine
- Optional: revise prior scar and excise redundant skin/fat
- Subcuticular closure
- BINDER!

61 yo male with midline hernia s/p emergency splenectomy

Separation: 6 cm

Length: 12 cm

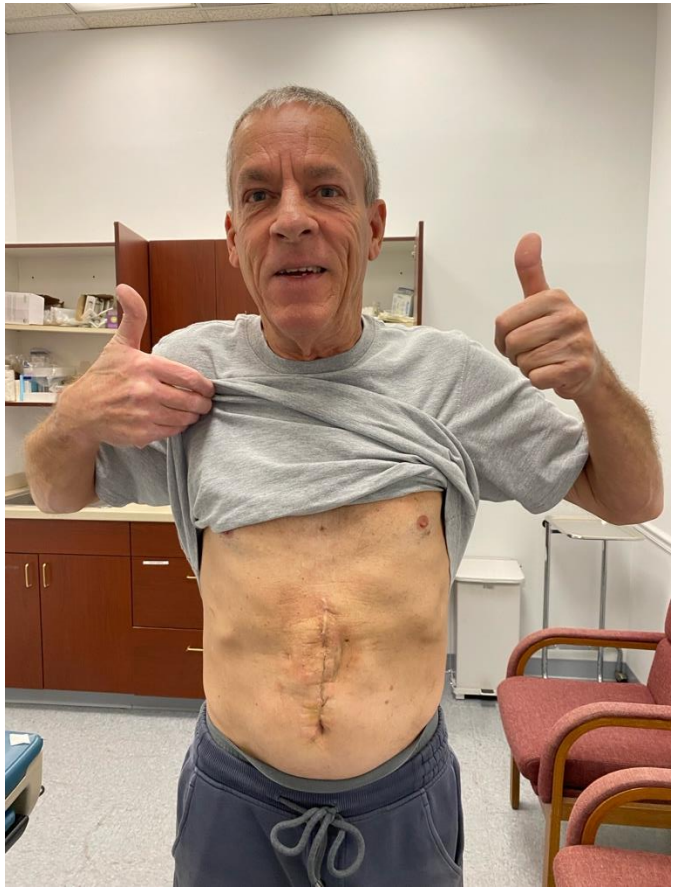


Diastasis repair and mesh onlay

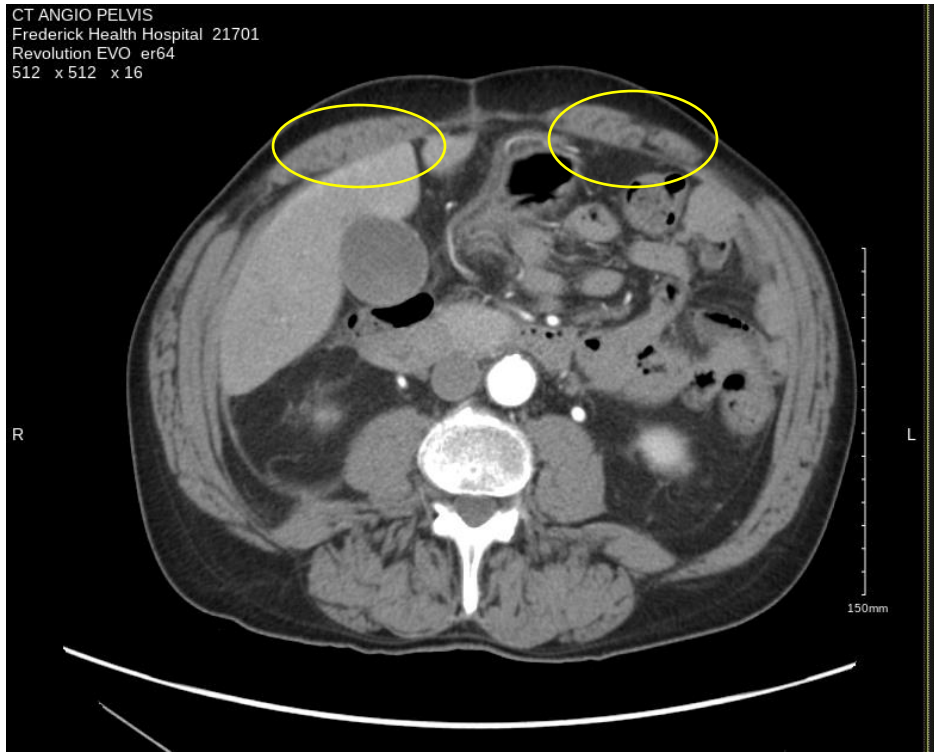
15 Days Post-op

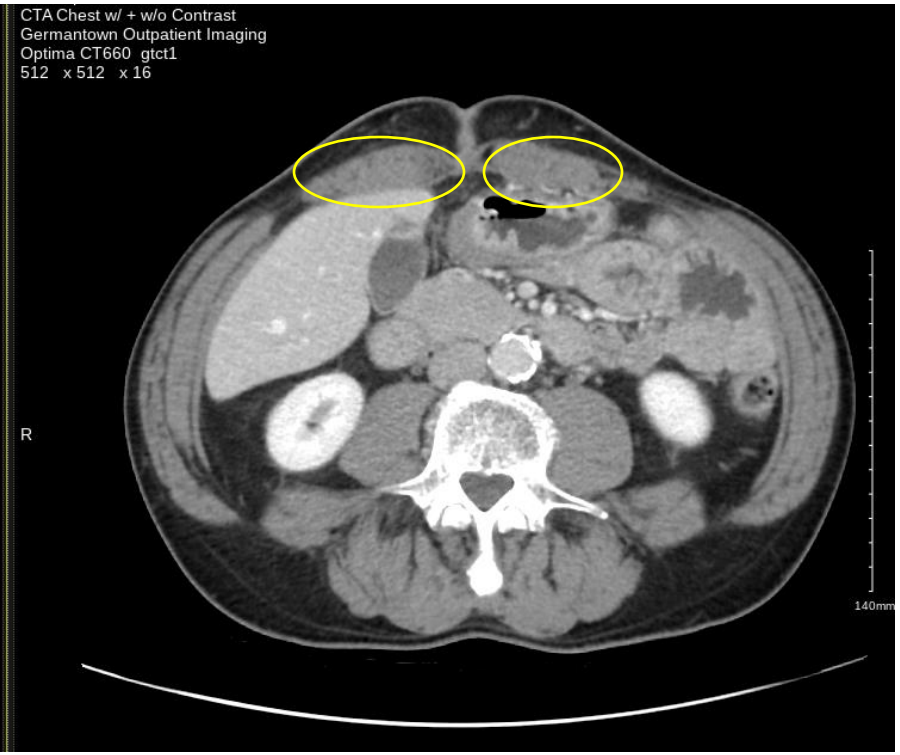
Good Outcome

1. Outpatient surgery
2. No intraperitoneal instrumentation
3. No need for component separation
4. Prior scar revised
5. Ready to return to work as electrician
6. Anatomy restored
7. Non-invasive surgery

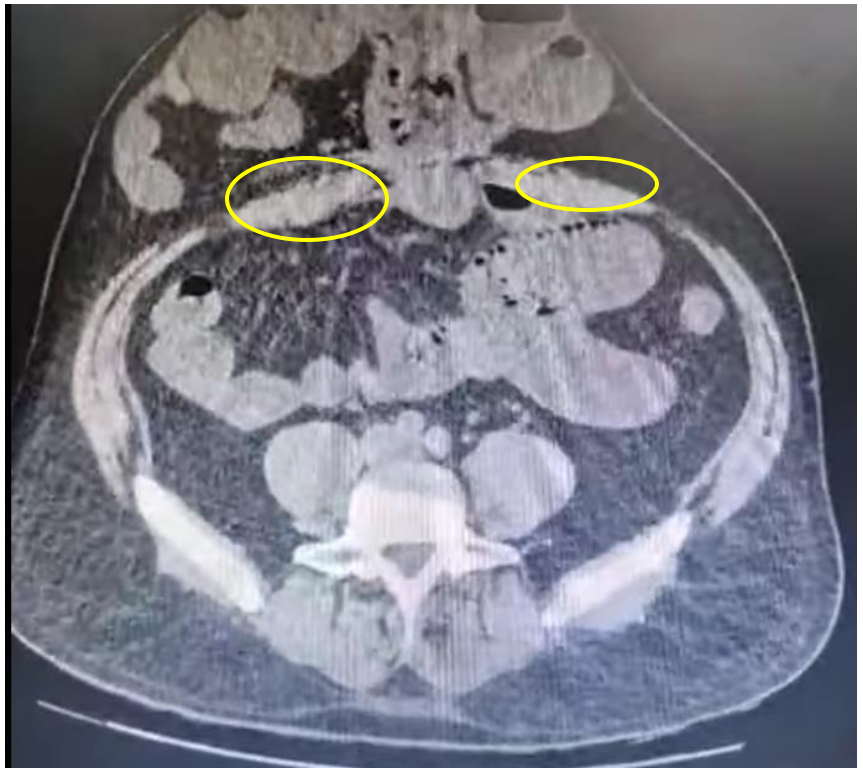


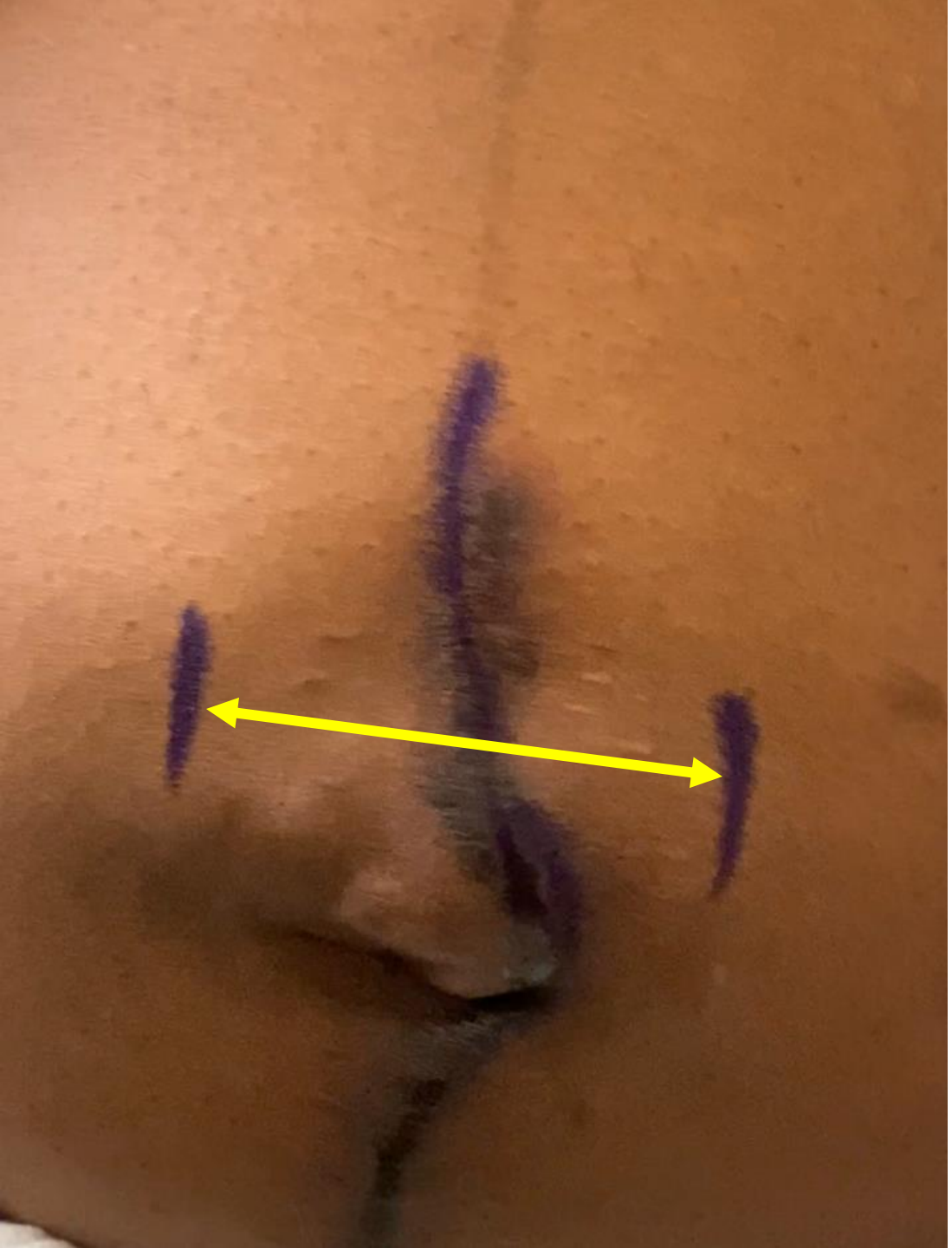
Before/After





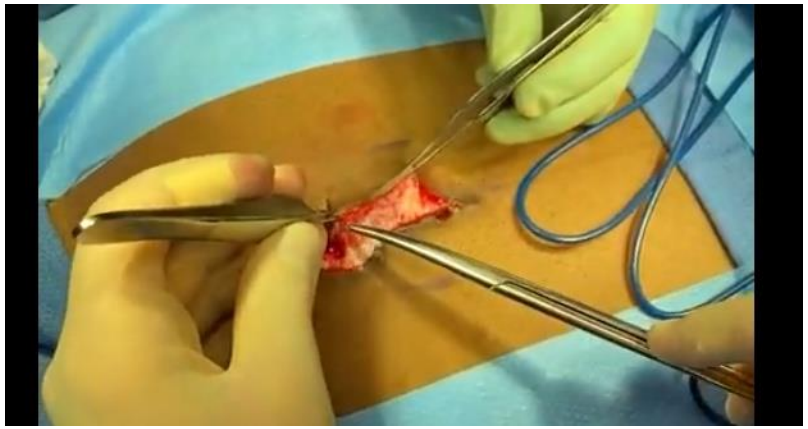
Recurrent midline hernia after failed open and eTEP repairs

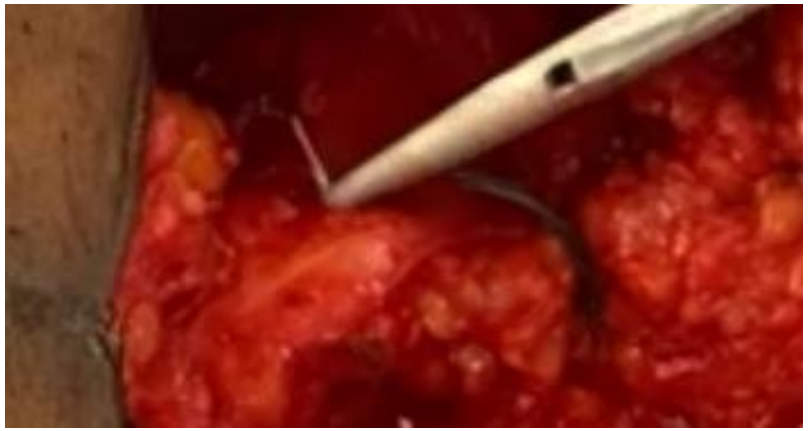




Recurrent hernia 6 months s/p open repair

Rectus separation





Repair Recurrent Ventral Hernia

Sac Dissection, Rectus repair, Mesh overlay

Robotic Recurrence < 1 year

Post-op care

1. Binder 24-7 for two weeks minimum. May temporarily remove for showers on POD 3
2. Acetaminophen + Ibuprofen for pain.
3. Resume regular activities as tolerated
4. Office follow-up in 2 weeks.
5. Heavy lifting, working out in 3-4 weeks.

Results 2023-2024

- 30 patients, 16 F, 14 M
- Age 28-78 (Avg. 57)
- BMI 22-47 (Avg. 32)
- Inpatients: 9, Outpatients: 21
- Repair length 4-21 cm (Avg. 9cm)

Advantages of MRDR

1. Anatomic repair
2. Non-invasive
3. Zero-risk of bowel injury/ileus
4. Component separation rare
5. Suitable for ASC/Outpatient
6. Cosmesis: Scar revision, removal skin
7. Quick return to normal activities
8. Low recurrence rate
9. Easy learning curve

- Hernia International
- Abuja, Nigeria

45 yr old female s/p multiple C-sections and failed hernia repair.

Repaired with IV ketamine and bupivacaine