

# ACHIEVING PURE TISSUE REPAIR: A NEW VARIANT OF THE GUARNIERI'S TECHNIQUE IN PRIMARY INGUINAL HERNIA



**Francesco Guarnieri MD**  
**Guarnieri Hernia Center – via del nuoto 1 – 00194 Rome Italy**  
[guarnieri.hernia.center@gmail.com](mailto:guarnieri.hernia.center@gmail.com) [www.guarnieriherniacenter.com](http://www.guarnieriherniacenter.com)

The Guarnieri's technique for primary inguinal hernia repair can be performed either with or without mesh reaching the 0.5 % of recurrence rate. It was first developed by Antonio Guarnieri on December 1988. In our institution, since December 1988 we have performed more than 5.000 primary hernia operations since December 1988 with this method. Mesh is now used in about 15 % of patients. In some patients we use a relaxing incision over the rectus muscle fascia to reduce suture tension and expand laterally the musculature. We are now proposing a new variant of this technique that can be applied to further reduce the use of the prosthesis: The rectus muscle fascia is used to cover and reinforce the weak portion of the inguinal triangle. The technical considerations and the indications are here discussed.

## THE AUTHOR

**Francesco Guarnieri MD**



## THE METHOD

The treatment of the internal ring, of the transversalis fascia and the possible use of the mesh do not vary respect the **original Guarnieri's technique described on the American Journal of Surgery** (Am J Surg. 1992 Jul;164(1):70-3. ), *Chirurgie (Chirurgie. 1997;122(10):534-8. )*, *Hernia (Hernia. Vol. 1 N.3 117-121)*, **Nyhus and Condon's hernia** Robert J. Fitzgibbons, A. Gerson Greenburg, Lloyd Milton Nyhus (p. 120-123).

In some patients, when the inguinal triangle is large or when the transversalis fascia is weak we use this new variant:

-Relaxing incision on the rectus muscle fascia

-Reversal of the side band of the incised fascia over the lateral flap of the external oblique aponeurosis

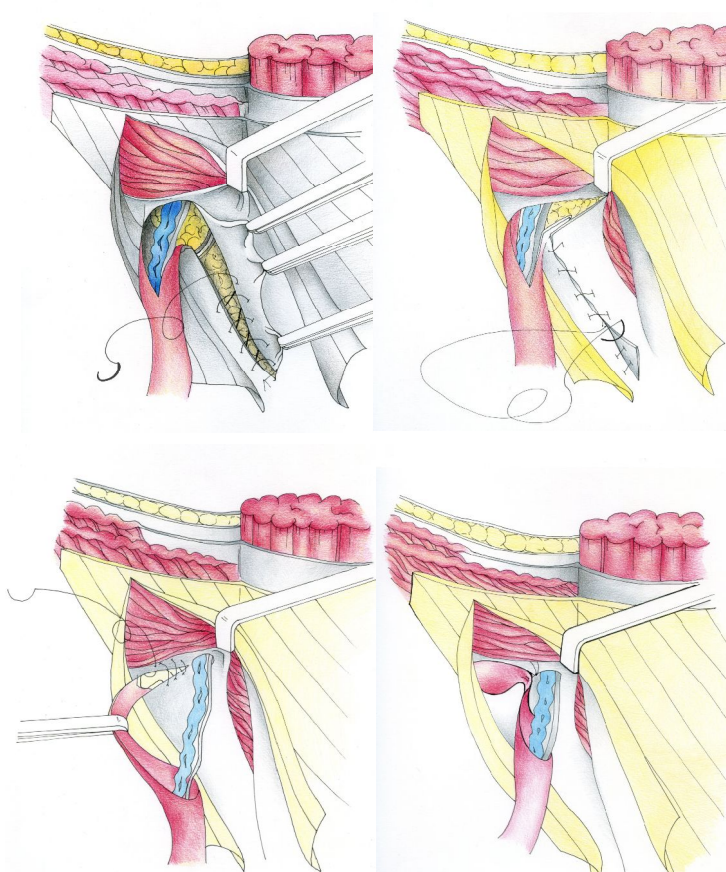
-Overlapping and suture of the medial flap of the external oblique aponeurosis

## THE INDICATIONS

Large inguinal triangle not covered by musculature  
 Weak transversalis fascia  
 Surgeon's choice to obtain a further lateral reinforcement

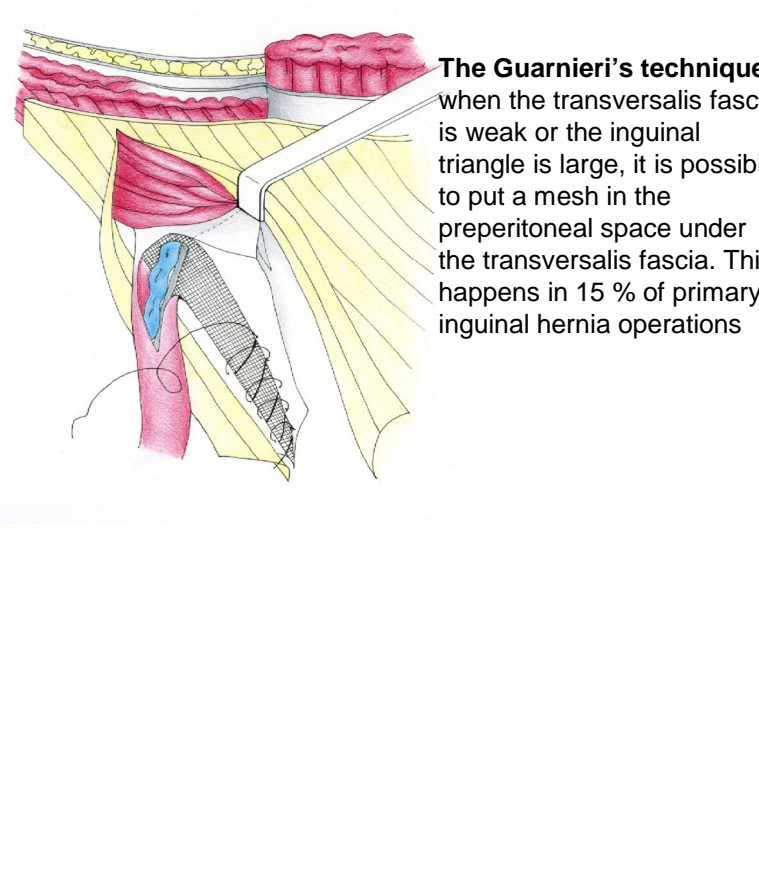
## THE ORIGINAL GUARNIERI'S TECHNIQUE (OGT)

### DEEP LAYER



The Guarnieri's technique: in case of direct hernia, the transversalis fascia is overlapped. The lateral flap is sutured toward the lateral border of the rectus muscle fascia and the medial flap is overlapped on the lateral one

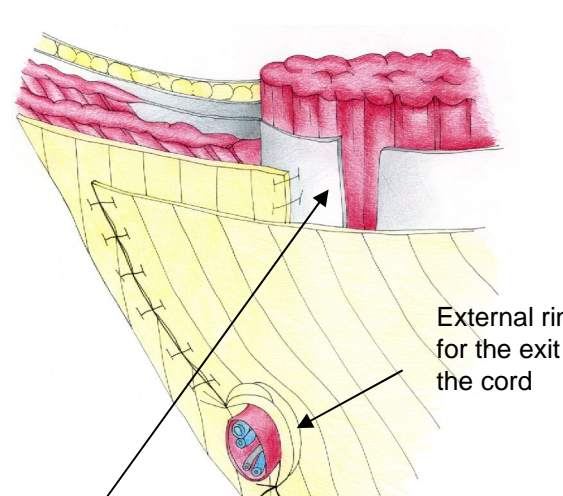
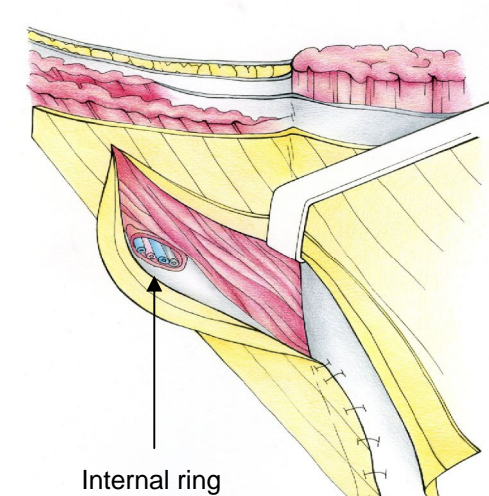
The Guarnieri's technique: in case of indirect hernia, or to complete a direct hernia operation a new internal ring is created more medially and cranially under the internal oblique muscle. At this site the transversalis fascia is stronger. The cord elements are transposed inside this new ring. The old ring is closed and the cremaster sutured over it to reinforce.



The Guarnieri's technique: when the transversalis fascia is weak or the inguinal triangle is large, it is possible to put a mesh in the preperitoneal space under the transversalis fascia. This happens in 15 % of primary inguinal hernia operations

### SUPERFICIAL LAYER

In the original Guarnieri's technique the superficial layer is reconstructed with a double breast suture of the external oblique aponeurosis, a relaxing incision can be performed on the rectus muscle to expand the rectus laterally



Relaxing Incision on the rectus muscle

### THE INGUINAL TRIANGLE

In direct hernia is important to consider the inguinal triangle. This triangle is a passive area not protected and not covered by musculature

$T = (P \cdot R) / M$

The technical variant expands the rectus muscle, reinforces the inguinal triangle, reduce suture tension, reduce the extension of the inguinal triangle

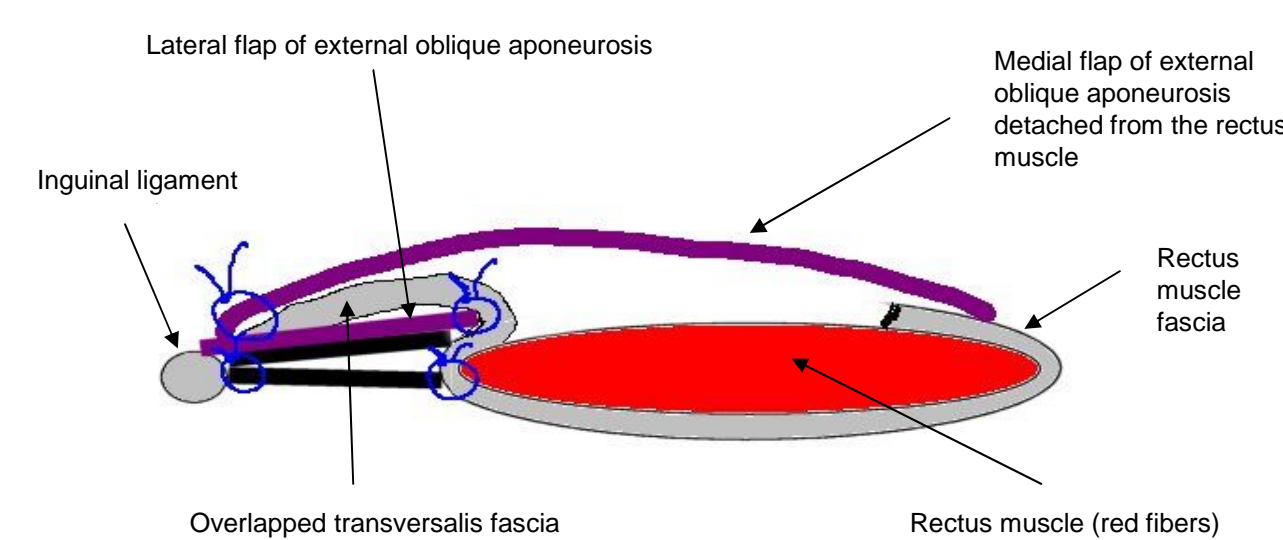
We use this technical variant: according to the Laplace law of physics we have to reduce and reinforce the inguinal triangle. With this variant we avoid to use the mesh for treating inguinal primary hernia. We have now a recurrence rate of 0.5 %.

## THE VARIANT (VGT)

The treatment of the deep layer, the creation of the new internal ring are the same in both operations.

The only difference is in the treatment of the superficial layer.

The procedure is performed as follows: the medial border of the external oblique aponeurosis is sutured to the lateral border of the rectus muscle fascia. At this point a relaxing incision on the rectus fascia is performed rather medially. The lateral flap of the rectus fascia is reversed (overturned and sutured on the medial flap of external oblique aponeurosis). The medial flap of external oblique aponeurosis is the sutured over as shown in the picture below.

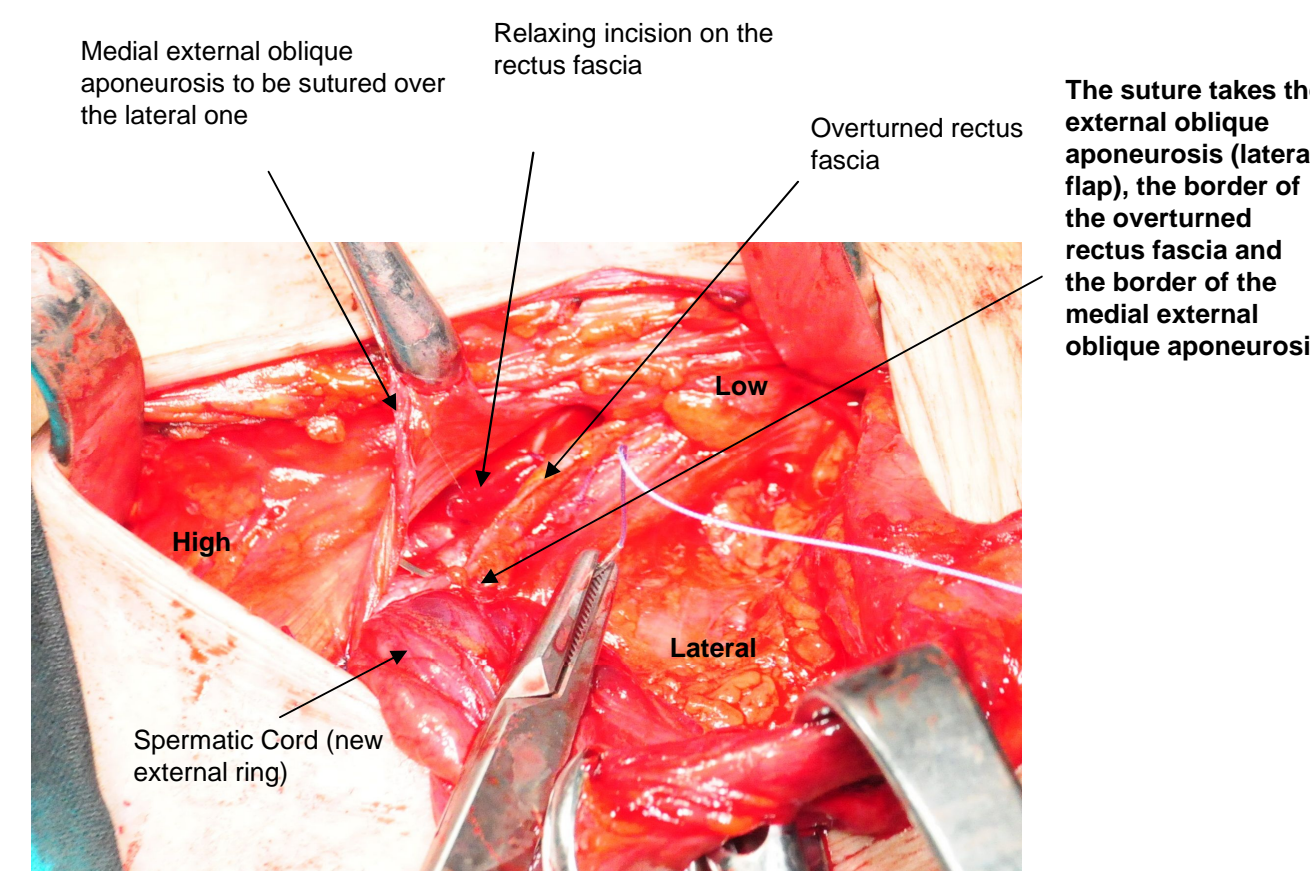
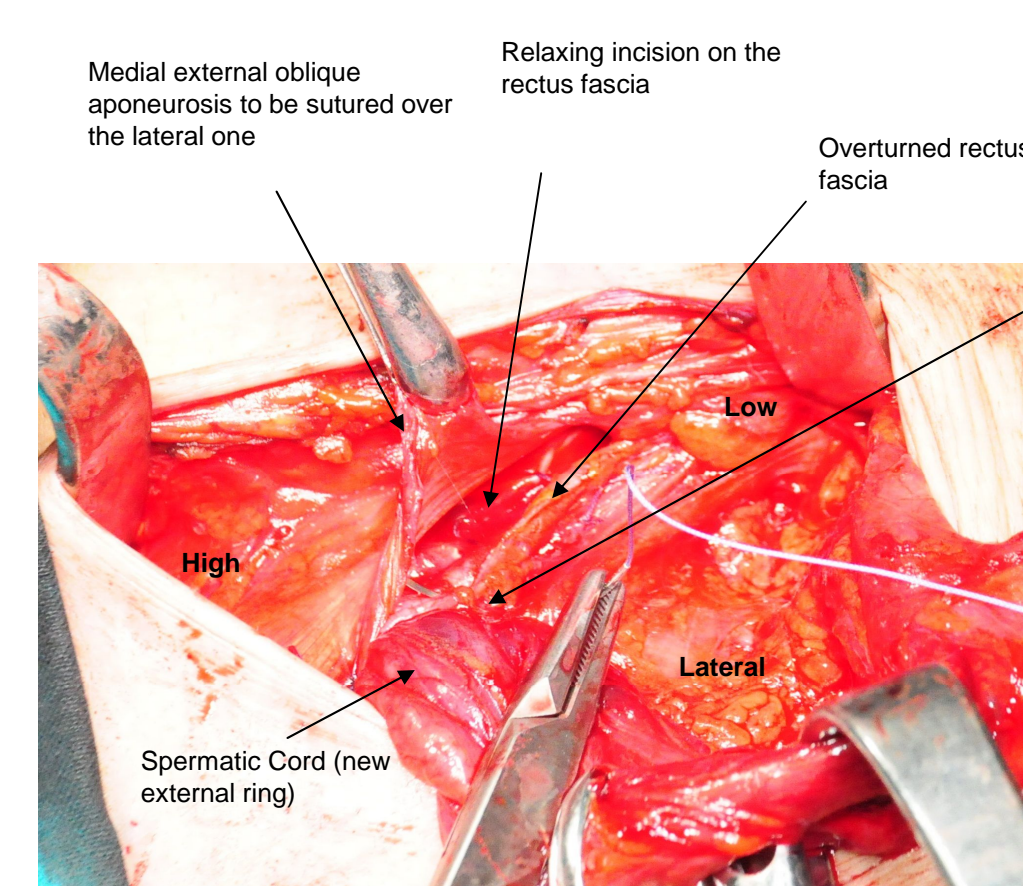
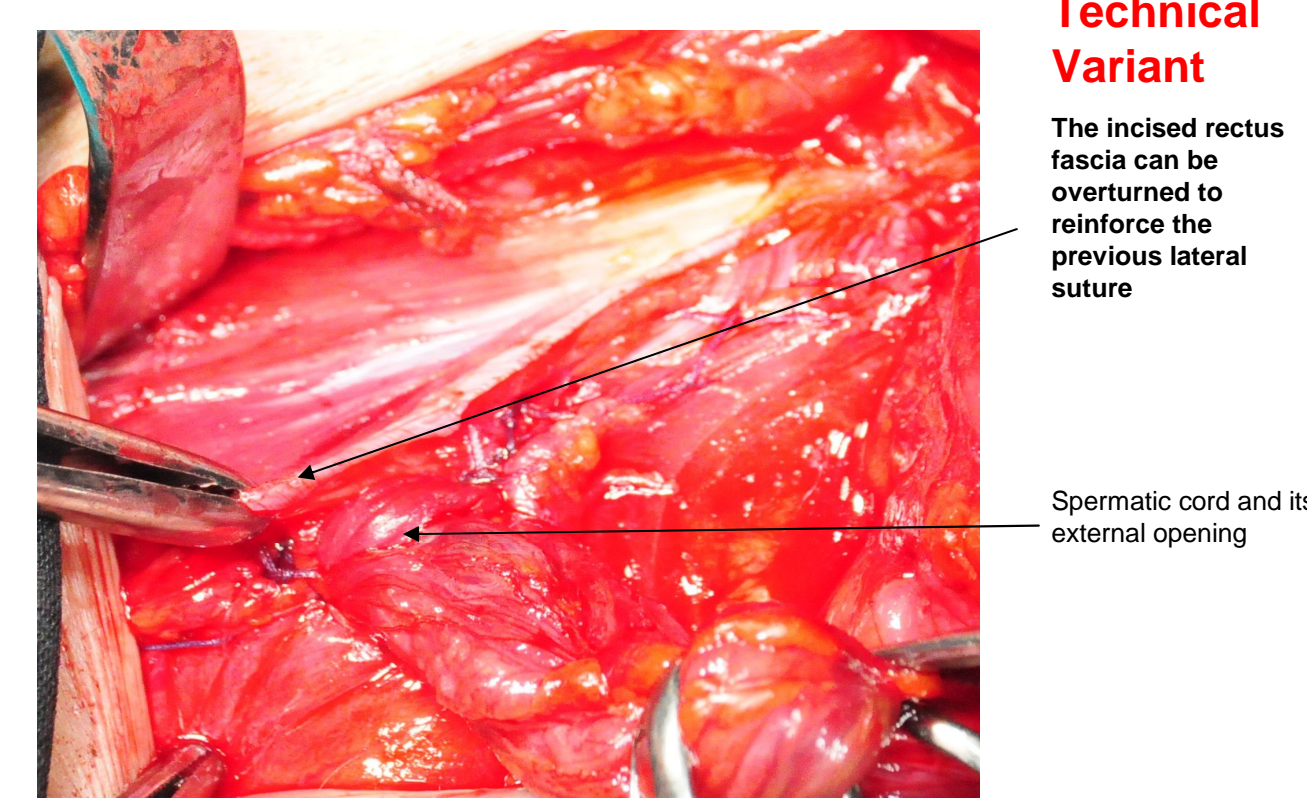
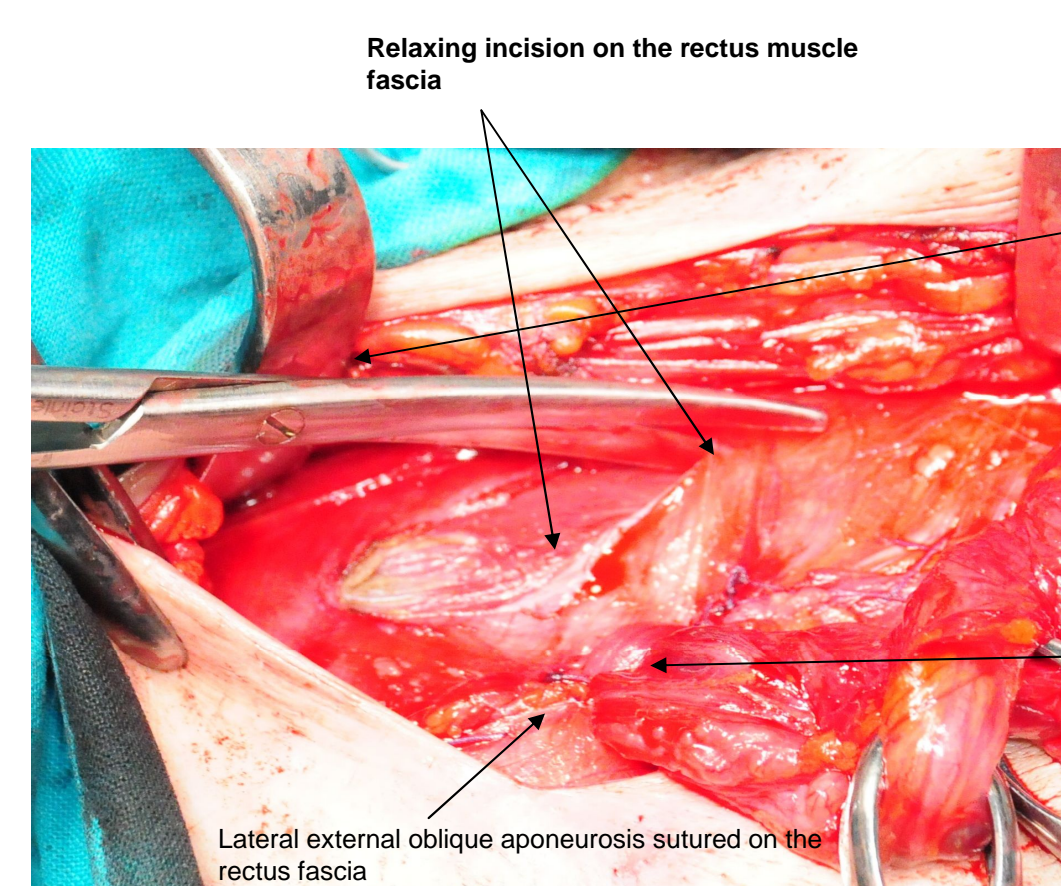
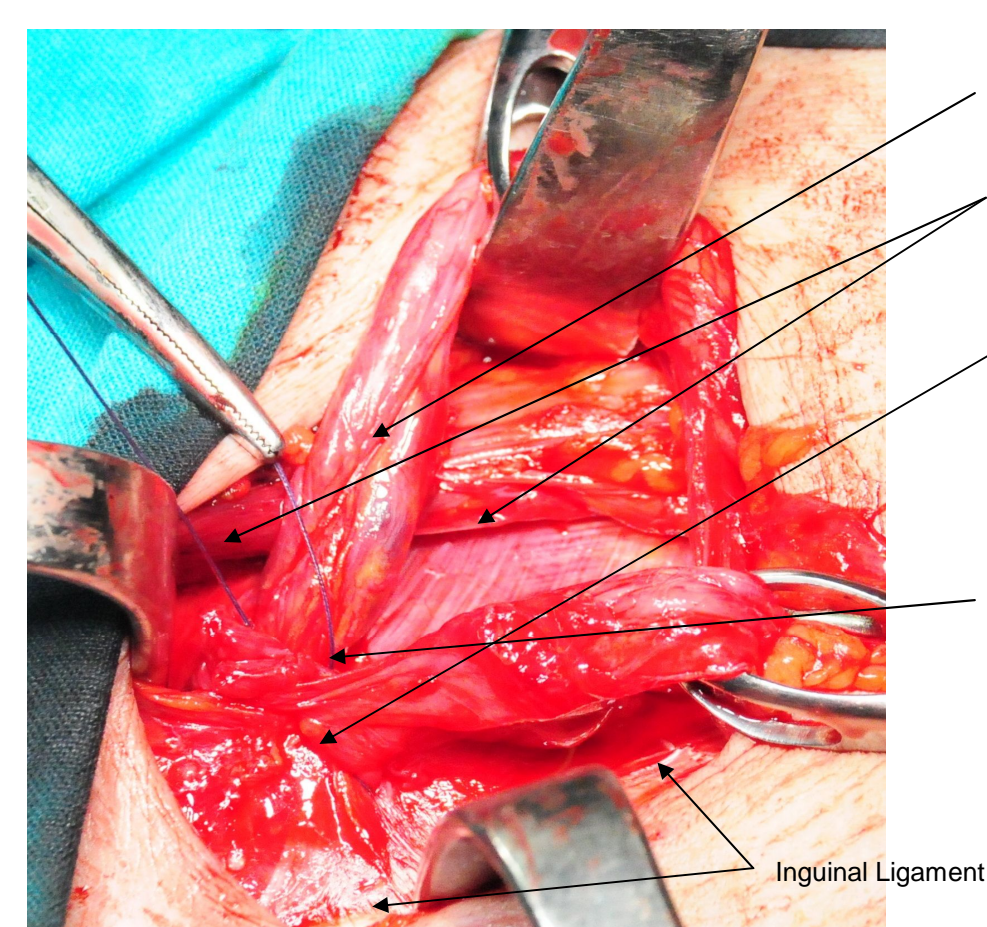
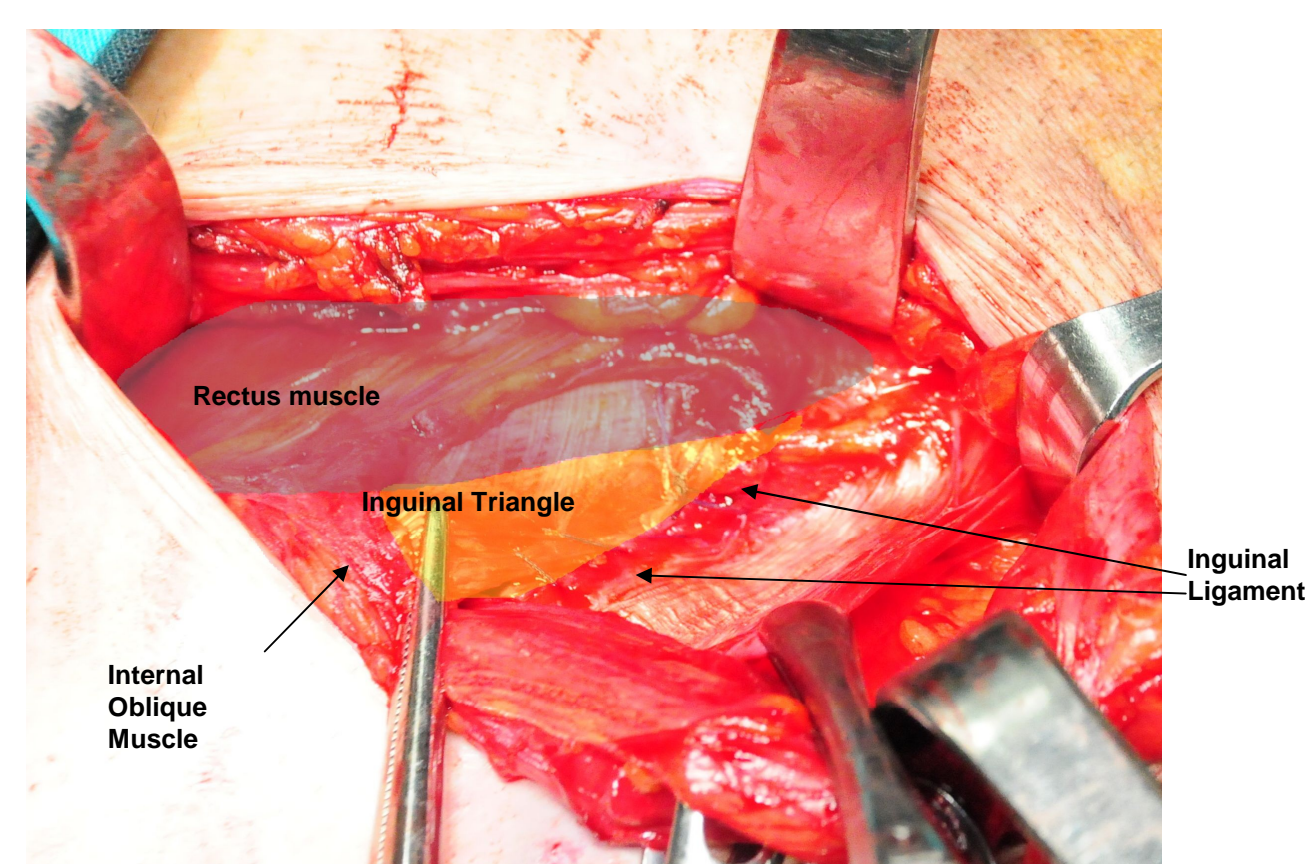


## THE PROBLEM

The inguinal triangle is a non-functioning area not covered by musculature. This area predispose to direct inguinal recurrences.

This area must be reinforced, and possibly reduced in size. With the original Guarnieri's technique this problem can be solved using a preperitoneal mesh. The reduction of size responds to the Laplace law of physics, and to the sutures traction.

## Surgical Steps



**Classic Guarnieri's Technique**

**First step of the variant:** Relaxing incision over the rectus muscle fascia

**Second step of the variant:** Reversal of the rectus muscle fascia and reconstruction

Transversalis Fascia (Black)  
 External Oblique Aponeurosis (Violet)  
 Rectus Muscle Fascia (Grey)

- Lateral expansion of the rectus muscle
- Less suture tension
- Reduction of the inguinal triangle size
- Reinforcement of the inguinal triangle
- The use of the mesh is reduced

The treatment of the deep layer follows the same steps of the Guarnieri's original technique

## RESULTS

From December 88 to August 2010 we have performed 5025 primary hernia operation with the Guarnieri's technique. From November 2009 to July 2010 we have performed 37 operations with this new variant (18,5 % of total operations for primary hernia – VGT group). In the same period a total of 183 primary inguinal hernioplasties were performed, so the number of patients operated with the original technique (OGT - group) was 146. The main indications where: 23 mixed inguinal hernias (62 %), 6 large external oblique hernias (16 %), 4 external oblique hernia with a large inguinal triangle (6%), 4 direct hernias (6%). In other words, a large defect and a large inguinal triangle is the main indication for this technical variant. The average age was 64 years for VGT vs 62 for OGT.

The mesh was used on 2/37 patients operated with the variant (5%) and on 22/146 of patients operated with the classical technique (21 %). No recurrence was observed in both groups, but the period of observation was too short.

This technique seems a promising choice to further reduce the use of prosthesis in the Guarnieri's technique.