

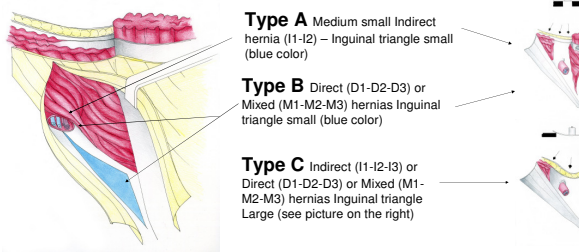
The Guarneri's method for inguinal hernia repair, towards a customized surgery: different diagnosis, different technique and avoid mesh.



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ABSTRACT The basic principle of the Guarneri's technique is to modify the anatomy preserving the physiology. The anatomy is modified reducing and reinforcing those areas not well represented by the musculature. The physiology is preserved performing sutures without fixing the muscles towards rigid structures like the inguinal ligament. The sutures are always performed between fascia and fascia without blocking the red muscular fibers. A mesh in preperitoneum can be used to reinforce the posterior wall. This happens now in less than 5%. The preperitoneal mesh does not alter the physiology of the inguinal canal. The operation changes if a different anatomy is encountered; it is basically a tailored surgery. We are considering three different inguinal hernia types: Small or medium indirect hernia, inguinal triangle small (type A). Big indirect or direct or mixed hernia, inguinal triangle small (type B) Any kind of hernia, inguinal triangle large (Type C). The treatment of the deep floor changes for every type: For type A we perform a new internal ring in a stronger area of the transversalis fascia well protected by the internal oblique muscle. The old ring is completely closed and covered by the cremasteric muscle (1). For type B and C we perform the same procedure as described for type A but first we overlap the transversalis fascia to make it flatter and thicker (2). The treatment of the superficial floor changes for type C respect type A or B: For type A and B the External oblique aponeurosis is overlapped in a double breast fashion under the cord after the exit of the spermatic cord and over the cord in the same manner where the inguinal canal is well represented by the internal oblique muscle (see picture). In this way a new external ring is created. For type C the procedure is the same as type A and B, but a relaxing incision is performed on the rectus muscle fascia to lateralize the muscle and redistribute its red fibers laterally. The lateral flap of the rectus muscle fascia can be overturned on the external oblique aponeurosis reinforcing it (3). From December 1988 till August 2011 we have performed 5257 primary hernias with a 0.5% recurrence.



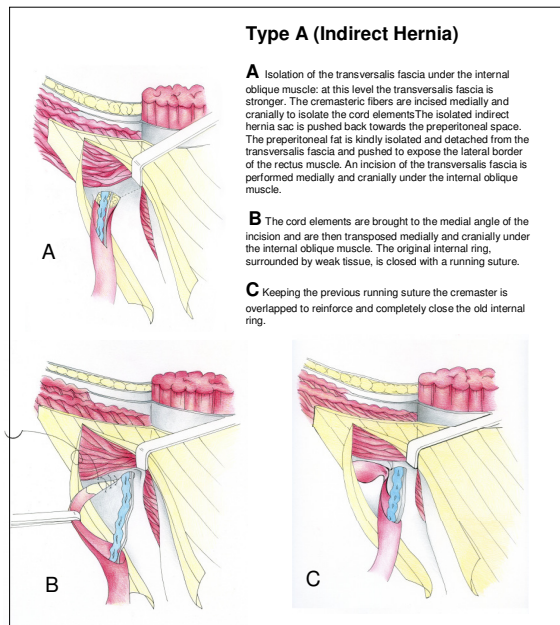
INGUINAL HERNIA CLASSIFICATION		HAI LEVEL		
TYPE	SUBTYPE	DESCRIPTION	AI	II
INDIRECT	SMALL	SMALL INDIRECT HERNIA	0	0
	LARGE	LARGE INDIRECT HERNIA	1	1
DIRECT	SMALL	SMALL DIRECT HERNIA	0	1
	LARGE	LARGE DIRECT HERNIA	1	1
RECURRENT		RECURRENT	0	0

Guarneri Hernia Center Classification Table to convert the European Hernia Society Classification

Principles of this technique

- Modify the anatomy respecting the physiology
- Never fix the muscles to rigid structures
- Sutures between fascia and fascia
- Sutures avoid to take the muscle red fibers
- Tension free sutures, if not use relaxing incision
- The superficial and deep sutures are staggered
- Reduce the area not covered by musculature
- Reinforce the area not covered by musculature
- Calibrate the internal ring with the transversalis fascia

Deep floor treatment – Transversalis Fascia (1)



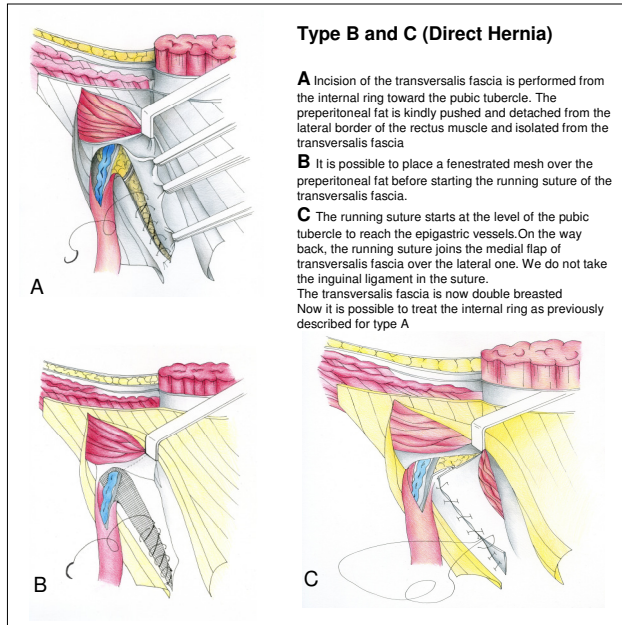
Type A (Indirect Hernia)

A Isolation of the transversalis fascia under the internal oblique muscle: at this level the transversalis fascia is stronger. The cremasteric fibers are incised medially and cranially to isolate the cord elements. The isolated indirect hernia sac is pushed back towards the preperitoneal space. The preperitoneal fat is kindly isolated and detached from the transversalis fascia and pushed to expose the lateral border of the rectus muscle. An incision of the transversalis fascia is performed medially and cranially under the internal oblique muscle.

B The cord elements are brought to the medial angle of the incision and are then transposed medially and cranially under the internal oblique muscle. The original internal ring, surrounded by weak tissue, is closed with a running suture.

C Keeping the previous running suture the cremaster is overlapped to reinforce and completely close the old internal ring.

Deep floor treatment – Transversalis Fascia (2)



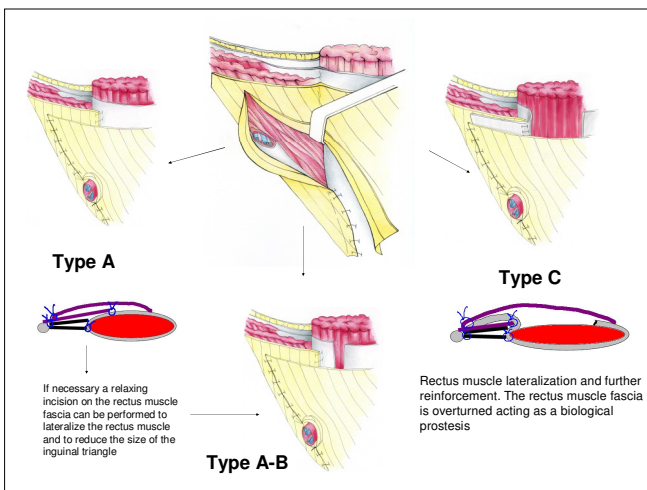
Type B and C (Direct Hernia)

A Incision of the transversalis fascia is performed from the internal ring toward the pubic tubercle. The preperitoneal fat is kindly pushed and detached from the lateral border of the rectus muscle and isolated from the transversalis fascia.

B It is possible to place a fenestrated mesh over the preperitoneal fat before starting the running suture of the transversalis fascia.

C The running suture starts at the level of the pubic tubercle to reach the epigastric vessels. On the way back, the running suture joins the medial flap of transversalis fascia over the lateral one. We do not take the inguinal ligament in the suture. The transversalis fascia is now double breasted. Now it is possible to treat the internal ring as previously described for type A.

Superficial floor treatment – External oblique aponeurosis (3)



Type A

If necessary a relaxing incision on the rectus muscle fascia can be performed to lateralize the rectus muscle and to reduce the size of the inguinal triangle

Type C

Rectus muscle lateralization and further reinforcement. The rectus muscle fascia is overturned acting as a biological prosthesis

Type A-B

When it is better to avoid the rectus muscle relaxing incision

The relaxing incision on the rectus muscle fascia can be performed to lateralize the rectus muscle towards the inguinal ligament. This procedure reduce the extension of the inguinal triangle and releases the suture tension. This procedure should be used when the rectus muscle is strong and the inguinal triangle is wide. The relaxing incision should be avoided when the muscle is weak or fatty.

Treatment of the superficial layer: The new variant

After performing the relaxing incision on the rectus muscle fascia. The fascia can be overturned and used as a biological prosthesis

In the new technical variant (Type C) it is possible to further lateralize the rectus muscle using its muscular fascia to reinforce the hernioplasty.

Year	Number of Operations	Number of Recurrences	Recurrence Rate (%)
1988	100	5	5.0
1989	120	6	5.0
1990	150	8	5.3
1991	180	10	5.6
1992	200	12	6.0
1993	220	14	6.4
1994	250	16	6.4
1995	280	18	6.4
1996	300	20	6.7
1997	320	22	6.9
1998	350	25	7.1
1999	380	28	7.4
2000	400	30	7.5
2001	420	32	7.6
2002	450	35	7.8
2003	480	38	7.9
2004	500	40	8.0
2005	520	42	8.1
2006	540	44	8.1
2007	560	46	8.2
2008	580	48	8.3
2009	600	50	8.3
2010	620	52	8.4
2011	640	54	8.4
Total	5257	263	0.5%

From December 1988 till December 2011

