

REPORTE

# Superficial epigastric vein sparing in the Endo-Vein Laser of the Great Saphena or in saphenous-femoral crosssectomy.

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Recibido: julio 2010  
Aceptado: agosto 2010

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## Abstract

The same observations reported in the Anatomy Chapter of my book “Chirurgia delle vene e dei linfatici” (Surgery of the veins and the lymphatics, Masson Editors, Milan-Italy, March 2003), about the collaterals of the sapheno-femoral junction have prompted our School to spare the superior collateral vein: the superficial epigastric vein. This is descending draining vessel, assisted by gravity (unlike the inferior collaterals). In case of portal hypertension, the spared superficial epigastric vein could drain it into the common femoral vein, this saving its anatomical and haemodynamic function. This notion has led us, although not unconditionally only in the presence and the competence of the femoral valve, to a “selective-haemodynamic sapheno-femoral junction ligation”, that saves from ligation and division the termination of the superficial epigastric vein into the common femoral vein. The resulting anterograde flow will provide some flow through the residual saphenous stump preventing its thrombosis.

**Key words:** Epigastric vein. Haemodynamic. Selective crosssectomy.

## Resumen

**Vena epigástrica superficial conservadora en el láser endo-vascular de la safena mayor o en la crosectomía safeno-femoral**

*Las mismas observaciones que se informaron en el Capítulo de Anatomía de mi libro “Chirurgia delle vene e dei linfatici” (Cirugía de venas y linfas, Masson, Editors, Milán, Italia, Marzo 2003), con respecto a las garantías de la unión safeno-femoral, han llevado a nuestra escuela a preservar la vena colateral superior: la vena epigástrica superficial. Ésto está descendiendo el vaso de drenaje, asistido por la gravedad (poco probable en los colaterales inferiores). En el caso de la hipertensión portal, la vena superficial conservada podría drenarla dentro de la vena femoral común, ésto salvando*

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*su función tanto anatómica como hemodinámica. Esta idea nos ha guiado, aunque no en forma incondicional solamente por la presencia sino también por la competencia de la válvula femoral, a una ligación de la unión safeno femoral hemodinámicamente selectiva, que salva de la ligación y de la división de la terminación de la vena epigástrica superficial en la vena femoral común. El flujo anterógrado resultante proveerá de flujo a través del muñón safeno femoral evitando de esta forma su trombosis.*

**Palabras claves:** Vena epigástrica. Hemodinámica. Crosectomía selectiva.

This presentation is a preliminary study on sapheno-femoral junction which has begun in 1987.

The radical crosectomy, planned by Tavel and Facobson in 1904 and revised by Babcock, has proposed the greate saphenous vein and its collateral ligature and cut close to the femoral vein.

The great number of recurrent varicose veins, neo-cross and cavernomas reported by european scientific literature has induced us to an in-depth study about histology, topographic anatomy and, above all, about haemodynamic of the confluent veins of the sapheno-femoral junction.

These results have led our school to modify traditional crosectomy into a more selective procedure taking into account the haemodynamic aspects involved.

Therefore, we considered the sapheno-femoral

junction as an independent structure of the perforating vein, useful to the out flow of two distinct anatomical district: the lower limb and theinguino-abdominal one.

The method proposes to spare the superior collateral superficial epigastric vein, draining the inguino-abdominal district, performing the ligature and dissection of the great saphenous vein and its inferior collaterals (draining the lower limbs district), so obtaining a physiological out flow of the superior collateral veins. The same happens for the endo venous laser of the great saphena.

From an histological point of view, we remember that the deep veins are of the propulsive kind just like the perforator veins, the saphenous veins and superior collateral veins of great saphenous vein.

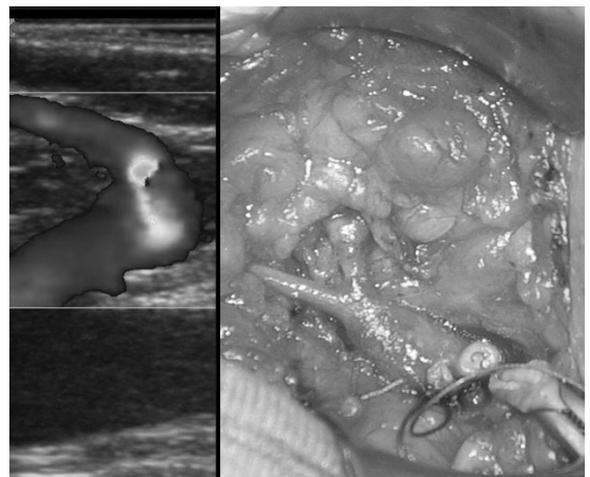
These, in pathological conditions, show an increase in calibre and wall thickness due to compensatory hypertrophy of smooth muscle fibrocells which usually characterizes the propulsive veins.

By the contrary, the superficial veins (apart from the saphenous veins, the epigastric superficial vein) show an almost total absence of muscular and elastic cells.

Therefore, when they become varicoses, they have



**FIGURE 1:** Physiological out flow of the superficial epigastric vein spared.



**FIGURE 2:** Sapheno-femoral junction and its collateral veins.

the typical characteristics of meioipragia.

I had the opportunity to perform a lot of anatomic dissections on lower limbs of corpses at University Anatomy Laboratory in order to study the venous circulation of lower limbs and, above all, the sapheno-femoral junction and its collateral veins (Figure 2).

The first anatomical studies on these veins were done by Leonardo Da Vinci. In these drawings, we can observe the importance, according to Leonardo, of the superior collateral vein of the sapheno-femoral junction: the superficial epigastric vein. This vein originates from the anastomosis between the paraumbilical veins net and the descending branches of the inferior epigastric vein, that is connected to the subcutaneous net of abdominal veins (Figure 3).

Therefore this vein is a real descending out flow channel which communicates with portal vein system: in case of obesity or portal hypertension (whatever the cause) the venous circulation may invert its direction and allow part of hepatic blood to flow in to superficial vein net.

In this way the hepatic blood may reach the inferior vena cava at first crossing the superficial epigastric vein and, then, to the femoral and iliac vein: this is the dramatically key role of the superficial epigastric vein.

From an histological point of view, this "superior collateral" of the sapheno-femoral junction has the typical characteristics of the propulsive veins: in their histological and anatomical destiny they have the possibility to make their circumference expand gradually, increasing up to 30 times in pathological conditions.

By the contrary, the inferior collaterals of the sapheno-femoral junction do not have smooth-muscle fibrocells and they show an antigravitational flow: also

for this reason they may become varicoses.

Thanks to the Duplex we can observe that the superficial epigastric vein is often independent of the great saphenous vein in its femoral junction and it precedes the saphenic out flow.

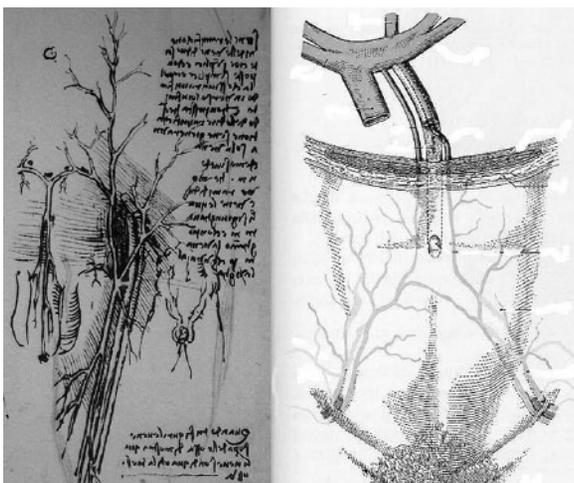
Over twenty years of these observations have led us to carry out 1536 selective crossectomies, sparing the superficial epigastric vein with its femoral junction.

This allows a wash out of the residual stump, preventing its thrombosis.

This procedure has reduced the development of recurrent varicose veins.

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**FIGURE 3:** Descending out-flow canal from portal vein system.