Haemodynamic saphenous-femoral disconnection: TSFL technique

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The refluxing sapheno-femoral junction (SFJ) disconnection represents the key point of most open superficial venous surgery [1,2,3,4,5] . Unfortunately, most varicose recurrence are due to SFJ recanalization. We present the follow up of 3 disconnection techniques at the GSV end , i.e between the GSV very end and the first arch tributary, according to the CHIVA method (ref). The first one consisted of a division (crossotomy). The 2 others consisted in triple superposed ligation with non-absorbable thread without division labeled TSL (Triple Safeno-Femoral Ligation). 2 TSL techniques were performed where one used N°0 propyl propylene ligation and the other one thick N°2 non-absorbable braided coated ligation. The 3 SFJ disconnection spared at the same time the arch tributaries and the GSV trunk, while the refluxing tributaries were divided at their trunk connection, according to CHIVA method. The follow up consisted in checking the SFJ occlusion with Duplex Color Ultra Sound. The results show satisfying results with both crossotomy and thick TSFL , better than thickless TSFL. So thick TSFL could represent a reliable, safe and low cost varicose mini-invasive surgery in outpatients. These techniques were tested because considered worthy in terms of “mini invasive open surgery”, safe and feasible in outpatients thanks to a light local anesthesia, and implementable to the CHIVA method to-day validated by 4 RCT (Ref).

Methods

Three SFJ disconnections were performed according three different techniques in patients affected of SFJ reflux responsible for clinical disorders. .

All the varicose patients were assessed by Duplex US, where the SFJ reflux was checked with the Valsalva, squeezing and Paranà maneuvers and a sites to be disconnected were skin marked under Duplex US Scan probe, according to CHIVA strategy. The follow up consisted in the same Duplex US scan assessment.

The techniques were performed in outpatients, under local anesthesia and by the same surgeon.

The sapheno-phemoral femoral disconnection was performed in accordance with the CHIVA method [6,7,8,9] i.e between the SFJ and the first arch tributary and spared at the same time the arch tributaries and the GSV trunk, while the refluxing tributaries were divided at their trunk connection. A clip was in all cases placed flush with the femoral vein in order to suppress the residual saphenous stump. Particularly for the triple ligation, the siphon and the sapheno-femoral junction are exposed thanks to a previous suspension on silicone loops of the superficial epigastric vein, the pudendal vein and the great saphenous vein. The first ligation if performed in the layer adjacent to the cross collaterals, the second one as close as possible to the femoral vein, and the third one in an intermediate position.

Three groups of patients

Group A : Crossotomy consisted in division sutured with non-absorbable thread in 51 patients (47 females, 4 males) and were followed up from January 2008 to December 2010. 42 had unilateral crossotomy and 9 bilateral, i.e 60 procedures. The average age was 57.82 years and the average follow up period was 28.34 months (10-64 months’ interval)

Group B: PROLENE TSFL. 56 patients (39 female, 17 male, (average age 63 years) had triple prolene ligature procedures in 2004 and 2005. 49 out of 56 patients had a follow up check one year after the operation.

Group C: From January to May 2011, 82 patients underwent thick TSFL. The follow up at 6 months and longer was possible in 72 patients (87,8%) (53 females, 18 males) because 10 didn’t want accept any control, saying they were satisfied .Out of 72 patients , 61 underwent an unilateral procedure and 11 bilateral ( 83 procedures) . The average age was 58.53 and average follow up period was 17.5 months (9 to 64 months’ interval).

Groups homogeneity ?

Results

Group A: In 2 ( 3,33%) procedures out of 60, reflux at Valsalva test was identified due to neoangiogenesis , flowing down to the upper third of the thigh despite the patients remaining asymptomatic and varices keeping collapsed.

.Group B. 49 (87,5%) out of 56 patients had a follow up check one year after the operation. 21 (42%) showed recanalized saphenous end. 11 (24.4%) were asymptomatic with moderate Valsalva reflux at the upper third of the thigh. 7 (14,4%) were symptomatic with Valsalva reflux down to the lower leg. All recurrences occurred at the 3rd and 6th. Re-operation was performed in 3 cases where the GSV end surrounding the polypropylene thread were elicited and planned in 4 other cases.

Group C: Among the 83 thick TSFL procedures, 5 (6%) reflux recurrences through the residual lumen of the ligated saphenous end were found, i.e bilateral in 2 patients and unilateral in 1. 1 recurrent Valsalva reflux didn’t flow down beyond the arch and the patients accept further control after the 14th month because satisfied of the result. 2 refluxes stop at the upper third of the thigh and 2 others at mid-thigh level occurred at the 8th month and kept unchanged at the 35th month in the male and 31th month in the female and both were still asymptomatic and satisfied with the operation outcomes.

So, 4 cases (4.8%) of Valsalva reflux extended beyond and 1 case (1,2%) sopped before the pre-terminal valve, i.e the arch valve underlying the SFJ valve (terminal valve).

Table 1 CONTROLLARE I NUMERI SECONDO QUELLO CHE E SCRITTO PRIMA

No. Follow up

months S-F reflux recurrences Symptomatic

recurrences Re-do

surgery

TSFL 83 17.5 6% 0 0

CROSSOTOMY 60 28.3 3.3% 0 0

TRIPLE LIGATION 47 12 42% 14.4% 3

. SURVIVAL CURVE

Discussion

The clinical outcomes are not detailed because the end point of this trial was to assess the SF closure durability.

TSFL is not compared with crossectomy so far widely documented in literature nor with endovenous procedures that don’t block the SFJ and where the success criteria relies on the GSV trunk flow ablation.

This trial is not RCT but groups are homogeneous , the surgeon single and Duplex scan operators were 2.

Surprisingly, no thick TSFL has shown a suspected neoangiogenesis-like recurrence, which can assume the dependent technique occurrence.

The short recurrent Valsalva reflux after thick TSFL is explained by the narrow and long residual reflux lumen ( 3 superposed ligations along 5 to 10 mm) at the procedure site, which represents a resistance that hampers a massive consequent flow. So, if we don’t consider few hemodynamically consistent the cases of recanalization , thick THSL could be considered equivalent to crossotomy.

The difference between N°0 prolene and thick N°2 non-absorbable braided coated TSFL, shows that thin thread ligation incorporates the venous wall its lumen and reopens the SFJ while a thicker TSFL ligation prevents this phenomenon.

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Conclusion

The practical impact of thick TSFL is to provide a safe, reliable and durable mini-invasive open surgery for sapheno-femoral disconnection in outpatients. Thin ligation is not reliable.

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