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During 1994, from 607 consecutive preoperative Doppler scans, which are systematically performed for all our varicose exeresis operations (except recurrence ), we defined several anatomical types of varix which corresponded to various hemodynamic types of dysfunction.

The varices involve only the long saphena, and were divided as follows (471) :

- 277 refluxes involving the entire great saphenous vein (45%)
- 87 refluxes involving the great saphenous vein from the sapheno-femoral junction to the upper bifurcation of the leg (14%)
- 29 partial short saphenous refluxes involving the proximal section up to mid-thigh and running into a tributary of the great saphenous vein(4.7%)
- 21 partial saphenous refluxes involving the distal saphenous vein up to mid-thigh level, fed by pudental veins or by a thigh perforator (3.4%)
- 13 partial saphenous refluxes involving a medium semi-saphenous vein, fed by pudental veins or by a thigh perforator, and respecting the proximal and distal zones (2.1%)
- 23 isolated refluxes of a great saphenous tributary with normal saphenous trunk function (3.7%)
- 21 isolated refluxes of the first juxta-ostial saphenous tributary, respecting the continence of the saphenous trunk (3.4%)

The varices in other areas were divided as follows (136) :

- 20 truncular ostial refluxes, great and short saphenous vein (3.3%)
- 47 short saphenous vein refluxes (7.7%)
- 5 refluxes of a popliteal fossa perforator (0.8%)
- 64 isolated varices independent of the saphenous trunk (10.5%)

Although the age of the patients at the date of the operation does not correspond to the dates the varices appeared, we nevertheless felt that it would be useful to compare the ages of the patients at the date of the operation for each type of varix, in order to study the age at which the different categories of varix appear.

## COMMENTS

The frequency of varices in each category corresponds approximately to the frequency found in a previous study [1]. Echo mapping is directly related to the concept of saphenous preservation. In 26% of cases the great saphenous vein is normal at the moment of the operation, and in 25% of cases it only partly flows back. This means that a preservation-orientated operation is possible in almost 50% of cases.

With regard to the great saphenous vein, in order to be able to understand the appearance of varices, we compared cumulative percentage curves for each type of varix in terms of the age of

the patient at the time of the operation (Table I). The results clearly show that the varices which are operated on at an early date are those which do not directly concern the trunk of the great saphenous vein (isolated varicose branch, incontinent collateral of the trunk, incontinent 1st juxta-ostial saphenous tributary ). The reflux in the collateral saphenous tributaries seem to appear, on average, ten years before reflux of the saphenous trunk. In the same way, on the long saphenous trunk, the reflux initially appears to be partial (over the last 20 centimetres, or respecting the last 20 centimetres, or in tiers, respecting the last 20 centimetres and the leg saphenous vein ), and then the reflux would appear to be located between the groin and the Boyd perforator; finally the reflux is complete, from the ostium to the malleolar region.

**Table I**

50% of isolated vein refluxes are operated on at the age of : 33
50% of saphenous tributary refluxes are operated on at the age of : 36
50% of partial reflux of the sapheno-femoral junction are operated on at the age : 40.5
50% of partial reflux of the great saphenous vein are operated on at the age : 42
50% of short reflux of the great saphenous vein are operated on at the age of : 42.5
50% of complete saphenous refluxes are operated on at the age of : 44

The idea that the precocious ablation of these incontinent saphenous collaterals may protect normal saphenous function for a longer time, is based on several hemodynamic observations with regard to reflux competition at the level of the bifurcations. Indeed, the elimination of the incontinent saphenous collateral often renders the diameter of the lower portion normal, and makes the reflux that is often linked to this saphenous trunk disappear [2]. The idea that a reflux in a tributary can deteriorate the continence of the corresponding main trunk has been demonstrated at the popliteal saphenous junction [3], and at the femoral saphenous junction [4]. In these two studies, the ablation of the saphenous vein has allowed the reflux of the associated trunk to be eliminated.

## CONCLUSION

This study allows us to believe that varicose illness affects saphenous collaterals before affecting the saphenous trunk. Furthermore, other studies show that the elimination of an incontinent collateral improves the continence of the corresponding main trunk. Consequently, more precocious selective exeresis of varices should allow normal continence of the saphenous vein to be preserved for longer.

## REFERENCES

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