Over recent years, having performed as many varicose operations under local-regional anaesthesia as under general anaesthesia, I wondered whether local anaesthesia might not improve surgical results. This ambitious question stems from the existence of technical details on operations under local-regional anaesthesia and which lead one to believe that it is less aggressive. First of all, I would like to talk about the limited intraoperative bleeding, and therefore of the lower risk of postoperative hematoma, staining and inflammatory varicosis. I also want to discuss the lesser risk of accidental long saphenous sticking during the operation, and thus of the lower risk of postoperative dysaesthetic accident. In order to do so, I have compared two identical groups of patients (approximately one hundred in each), selected in a homogenous manner.

Material

The patients all had essential uncomplicated varices, with neither ulcer nor venous trophic problems; the patients were not obese, were of different sex and age, but all having undergone the same operation (crossectomy), downward invaginated stripping, and additional superficial phlebectomies such as the Muller hook, with, during the operation, twenty or so scars (on average, the two extremes being 6 and 70); the scars were never longer than 3 mm. All these operations were performed either under classic general anaesthesia, with the patient spending several days in hospital, or under local-regional anaesthesia by crural bloc with 2% mepivacaine, 10 ml along with local injections of 1% mepivacaine, or diluted, the total never reaching 60 ml. The choice of type of anaesthesia was made by the patients, and not on any anatomical basis. All patients were examined after 10 days, two months, and, for the oldest, often between 6 and 12 months.

Given the inaccuracy and incompleteness of certain result data, it was necessary to look again at 250 operations under local anaesthesia and at 230 operations under general anaesthesia, completed by 300 questionnaires.

Résults

The main desire among patients undergoing an operation for essential varices is to see their varices and discomfort disappear, with as few local consequences on the limb as possible, and with a maximum of operative and postoperative comfort.

Of the three groups of results analysed after the operation (effectiveness, comfort and minimum of consequences) only those for which we could envisage an improvement via the planned type of anaesthesia were studied. We did not study the problem of varicose recidivation, or, more simply the persistence of postoperative varices, because this problem is one of the accuracy of preoperative varix recognition and of operative precision; it does not depend on the type of anaesthesia.
The length of hospitalisation

This minimum duration of hospitalisation is a very important criterion for patients who choose local anaesthesia. Indeed, out of 185 cases of varix operation under local anaesthesia, 80% of patients leave hospital 6 hours after the operation, 18% leave the next day, and 2% stay for three or more days. Whereas out of 108 cases under general anaesthesia, 80% of patients leave after 48 hours, 10% stay three days, and 10% remain for more than 3 days. The figure of 80% of patients operated on under local anaesthesia and leaving 6 hours after the operation is almost certainly undervalued, in as much as some patients who live far from the hospital prefer to remain 24 hours in the hospital.

Duration of sick leave

All patients undergoing an operation were systematically given a prescription for one month of sick leave. Looked at from this point of view, it should be noted that out of the 185 cases of local anaesthetic and the 108 cases of general anaesthetic, many patients went back to work well before the end of one month of leave.

**TABLE I : Duration of sick leave**

<table>
<thead>
<tr>
<th></th>
<th>Less than 8 days (%)</th>
<th>15 to 21 days (%)</th>
<th>1 month (%)</th>
<th>OVER 1 month (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRA</td>
<td>18</td>
<td>20</td>
<td>45</td>
<td>17</td>
</tr>
<tr>
<td>GA</td>
<td>15</td>
<td>20</td>
<td>40</td>
<td>25</td>
</tr>
</tbody>
</table>

**TABLE II : Duration of postoperative stay**

<table>
<thead>
<tr>
<th></th>
<th>6 h (%)</th>
<th>24 h (%)</th>
<th>48 h (%)</th>
<th>3 days (%)</th>
<th>more (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRA</td>
<td>80</td>
<td>18</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GA</td>
<td>0</td>
<td>10</td>
<td>70</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Of the patients undergoing an operation under local anaesthetic:

- 18% returned to work within 8 days
- 20% returned to work within between 15 and 21 days
- 45% returned to work at the end of one month
- 17% prolonged their leave beyond one month

Of the patients undergoing an operation under general anaesthetic:

- 15% returned to work within 8 days
- 20% returned to work within between 15 and 21 days
- 40% returned to work at the end of one month
- 25% prolonged their leave beyond one month

This would suggest that operations under local anaesthetic allow the patient to recover his/her autonomy more rapidly. However, it should be said that this result is certainly somewhat biased.
in as much as patients who choose local anaesthetic are more motivated with regard to getting out of bed as soon as possible, walking again, leaving the hospital, returning to social and familial autonomy, and thus to restarting work.

**Anatomical sequels**

It is very difficult to assess postoperative hematomy, because it is highly subjective. These hematomies vary considerably with the size of the varices, whether the operation is under local or general anaesthetic. Furthermore, operations under local anaesthetic, and which appear to cause less haemorrhage, are also operations which allow more precocious ambulation, which is therefore more likely to lead to postoperative bleeding. It is therefore virtually impossible to properly assess the evolution of these hematomies during postoperative months.

**Teliangiectasia**

The study was carried out on 182 patients, 98 of which had received local anaesthetic, and 95 general anaesthetic, all of whom were seen over 2 months later.

The appearance of teliangiectasia in postoperative treatment is a crucial aesthetical problem in varicose surgery. Indeed, whilst some patients see their varices diminish after the operation, or even totally disappear, others see them appear (often quite major ones) after two or more months, and often in areas outside the zones operated on (exterior side of the thigh, or interior side of the knee; these varices sometimes depend on the drainage veins, but are sometimes violet and extended, and increase during the first postoperative menstrual cycle. Generally speaking, 70% of patients see no increase or decrease in teliangiectasia, 20% see it increase, and 10% see it decrease.

If we compare local anaesthesia and general anaesthesia, we can see slightly improved results in patients who underwent operations under local anaesthesia, although the difference is too small for us to be able to draw any formal conclusions. 11%, as against 9%, have lesser teliangiectasia; 20%, as against 23%, have increased teliangiectasia; and 71%, as against 64%, see no change.

Given the sometimes major variations in the varicose network at the end of women's hormonal cycle, we wondered whether operations performed at the end of the cycle, in other words during the oestroprogestative phase, might not increase the chances of postoperative teliangiectasia.

Indeed, patients whose varicosity had diminished were almost all either men, post-menopausal women, or women who underwent the operation at the beginning or middle of their cycles. On the other hand, one out of two women who underwent the operation at the end of their cycles saw a clear increase in their postoperative teliangiectasia; only one woman in four who had the operation at the beginning of her cycle saw any increase in her teliangiectasia. This is further proof that the problem in varix treatment is not just a mechanical valvular one, but a much more general one that is certainly affected by metabolic and hormonal phenomena.

**TABLE III :**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
</table>

Postoperative neurological problems

The study of these postoperative problems covered 218 cases: 112 under local anaesthesia, and 106 under general anaesthesia.

We observed 4 types of accident, each different in its frequency and gravity.

- Accidents due to the accidental pulling out of a sensitive superficial nerve ending with a Muller hook, during superficial phlebectomy. This is a small zone of anaesthesia, generally an average of 10 cm by 3 cm, spread over the thigh, over the leg, or more frequently on the foot which has many sub-cutaneous nerves: 6 local and 6 general anaesthesia. This small zone of anaesthesia, as recognized by patients, is perfectly anodyne. It tends to become less visible after a few months. This type of accident (5\%) can rarely be avoided, because by the time it is felt by the patient under local anaesthesia it is generally too late to avoid a lesion.

- Accidents through injury to the terminal branch of the saphenous nerve at malleolar level on the pre or sub-malleolar cicatrix: 5 local anaesthesia, 8 general anaesthesia. This type of incident may be avoided by a meticulous dissection of the long saphenous vein at this level. When it occurs, it creates a small area of anaesthesia (3 cm) under the malleolar. Statistically, this occurs in 5\% of cases.

- Accidents through lesion of the long saphenous nerve during stripping. This accident, which occurred twice under general anaesthesia, was not recognised, and left a wide sensitive band of anaesthesia on the medial face of the leg and on the back of the foot. It also occurred twice, at the start of our experiment, under local anaesthetics. Indeed, despite femoral truncular anaesthesia, any accidental stretching of the saphenous nerve at this level is very sharply felt by the patient. Prudence should allow such accidental lesions to be totally avoided in operations under local/regional anaesthetic; these cases represented 2\% of the total at the start of our experiment.

- Accidents through lesion of the short saphenous nerve at the popliteal fossa level during exploration of the short saphena via a horizontal cicatrix (1 cm maximum). This is an extremely rare occurrence. Indeed, out of 180 short saphenous explorations, for either ligation of the arch, or for stripping, there was only one dysaesthetic accident at popliteal
fossa level during an operation under general anaesthesia (0.5%).

It is important to note that at this level, as well as in the lower third of the leg, under local anaesthetic it is virtually impossible to touch the short saphenous nerve without immediately causing pain.

### TABLE V : Neurological complications

<table>
<thead>
<tr>
<th>Neurological complications</th>
<th>113 LRA</th>
<th>106 GA</th>
<th>LRA %</th>
<th>GA %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended LA</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Sub-malleolar LA</td>
<td>5</td>
<td>8</td>
<td>4.5</td>
<td>8</td>
</tr>
<tr>
<td>Lesion of the saphenous nerve</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Lesion of the short saphenous nerve</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### Conclusion

The combination of the Jean Van Der Stricht and Robert Muller techniques performed in a single operation under local anaesthetic is certainly advantageous with regard to autonomy and intraoperative comfort. The duration of hospitalisation is far shorter, allowing one to perform ambulatory varicose surgery in 80% of cases, and allowing the patient to return to work a little earlier than those who have operations under general anaesthesia. This obviously leads to reduced medical costs. Although this economic aspect of the problem is outside the framework of the questions this study is trying to answer, it is too obvious and too topical not to be mentioned here.

As far as the anatomical results of varicose surgery are concerned, local anaesthesia would only appear to play a role in the prevention of traumatic nervous accidents during stripping. Out of the 100 cases of local anaesthesia studied, we cannot take the 2 injuries to the long saphenous nerve into account (recognised during operations, during stripping); these injuries occurred at the beginning of our experiment, and are now always avoided due to the fact that they are recognised during stripping. We observed that there are only 10% of very small superficial zones of anaesthesia which are never larger than 10 cm², and which evolve satisfactorily over time. On the other hand, out of one hundred operations under general anaesthesia, there are still these 10% of small zones of anaesthesia that could be avoided, and there is still the satisfactory progression over time; but there are also 3% of far more serious lesions, which relate to trauma to the saphenous nerve during stripping, or to the short saphenous nerve during exploration of the popliteal fossa. It would appear that local anaesthesia allows us to avoid this unpleasant complication, with painful anaesthesia on the inside face of the leg, and which is so common after classic Babcock short stripping under general anaesthesia.

### Summary
A study showing the improved results of operations on varices performed under local anaesthetic was based on 100 complete files of operations on varicose veins, including crossectomy, long invaginated stripping and superficial phlebectomies (Muller type), performed in a single operation under local anaesthetic, and 100 identical cases of operations performed under general anaesthetic. The improved comfort mainly relates to duration of hospitalisation, with day surgery being possible in 80% of cases, and to the length of sick leave, which, statistically, is shorter after operations under local anaesthetic. Finally, the study of anatomical sequelae (postoperative telangiectasia and neurological problems) above all shows that the development of telangiectasia probably relates to oestroprogestative impregnation during the operative period, and clearly illustrates that local anaesthetics make it easier to avoid lesion in the short saphenous nerve during stripping, thanks to the pain signal that is triggered.