A systematic review and meta-analysis of two novel techniques of nonthermal endovenous ablation of the great saphenous vein

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ABSTRACT

Background: Endovenous treatment of the great saphenous vein (GSV) has become the first-line treatment for superficial vein reflux. Various ablation devices have shown benefits for a period and decreased clinical failure rate over time. However, recurrence rates remain high, with up to 20% at 5 years post treatment. RCTs comparing similar ablation approaches, with similar follow-up, allow for more accurate analysis and comprehensive, comprehensive results. The aim of this study was to systematically review RCTs of novel ablation techniques for the great saphenous vein (GSV) and to perform a meta-analysis to determine if any of the techniques were superior.

Methods: PubMed, Embase, Cumulative Index to Nursing and Allied Health Literature, and Cinahl databases were searched for papers published between January 1998 and December 2018. Eligibility criteria were prospective studies that included patients undergoing endovenous treatment and described the primary outcome, the inclusion criteria were for inclusion. Data were extracted from each study. Studies were pooled into two groups: the first included standard ablation techniques, and the second was novel ablation techniques. A meta-analysis was performed on the two groups to determine whether any differences were present.

Results: Of the included articles, the inclusion criteria were met for 9 RCTs. Four studies showed a significantly improved intervention compared with either Control or Comparison. The results of these studies were pooled into two groups: the first included standard ablation techniques, and the second was novel ablation techniques. A meta-analysis was performed on the two groups to determine whether any differences were present.

CONCLUSIONS: The results of this study indicate that great saphenous vein endovenous ablation techniques have improved over time. Additional research is needed to determine the optimal technique for each individual patient.
What about new data with Turkish glue

<table>
<thead>
<tr>
<th>Author</th>
<th>Operative time (min.)</th>
<th>Pain</th>
<th>Ecchymosis</th>
<th>Paresthesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozkurt (Phlebology, 2016)</td>
<td>14.2 vs. 31.6 (&lt;0.001)</td>
<td>&lt; for CAA</td>
<td>&lt; for CAA</td>
<td>&lt; for CAA</td>
</tr>
<tr>
<td>Koramaz (JVS V*L, 2017)</td>
<td>7 vs. 18 (P &lt; .01)</td>
<td>4.7% vs. 7%</td>
<td>0 vs. 2.6%</td>
<td>0 vs. 1.59%</td>
</tr>
<tr>
<td>Eroglu – Laser (EJVES, 2018)</td>
<td>15.3 vs. 35 (p &lt; .001)</td>
<td>Periprocedural (p &lt; .001)</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Eroglu – RF (EJVES, 2018)</td>
<td>15.3 vs. 27.3 (p &lt; .001)</td>
<td>Periprocedural (p &lt; .001)</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Ovalı (JVS V*L, 2019)</td>
<td>19.60 vs. 44.80</td>
<td>4.3% vs. 12.5% (P = .042)</td>
<td>12% vs 20.3% (P = .044),  12.1% vs 21.9% (P = .038)</td>
<td></td>
</tr>
<tr>
<td>Çalık (Vasa, 2019)</td>
<td>13 vs. 31.7 (&lt; 0.001)</td>
<td>first week 2.8 vs. 5.4 (&lt; 0.001)</td>
<td>&lt; 0.001 (&lt; 0.001)</td>
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</tr>
</tbody>
</table>

**Closure (6 months)**

<table>
<thead>
<tr>
<th>Author</th>
<th>CAA (%)</th>
<th>Laser (%)</th>
<th>No difference</th>
<th>97.4 vs. 94.1</th>
<th>96.3 vs. 94.4</th>
<th>93.2 vs. 91.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozkurt</td>
<td>4.5</td>
<td>CAA vs. 7.7 laser (NS)</td>
<td>96.6 vs. 91.7</td>
<td>95.8 vs. 92.2</td>
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<tr>
<td>Koramaz</td>
<td>2.1</td>
<td>CAA vs. 7.9 laser (p &lt; .01)</td>
<td>98.6 vs. 97.2</td>
<td>97.6 vs. 95.2</td>
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</tr>
<tr>
<td>Eroglu – Laser</td>
<td>6.5</td>
<td>CAA vs. 9.3 Laser (NS)</td>
<td>96.3 vs. 93.3</td>
<td>98.4 vs. 96.3</td>
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<tr>
<td>Eroglu – RF</td>
<td>6.5</td>
<td>CAA vs. 12.8 RF (NS)</td>
<td>96.3 vs. 93.1</td>
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</tr>
<tr>
<td>Ovalı</td>
<td>1.7</td>
<td>CAA vs. 3.1 RF (NS)</td>
<td>99.5 vs. 96.6</td>
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<td></td>
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<tr>
<td>Çalık</td>
<td>3.5</td>
<td>CAA vs. 7 (NS)</td>
<td>97.1 vs. 95.6</td>
<td>96.6 vs. 94.1</td>
<td></td>
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</tr>
</tbody>
</table>

**Closure (12 months)**

| Author          | CAA (%) | Laser (%) | No difference | 96.6 vs. 91.7 | 95.8 vs. 92.2 |
|-----------------|---------|-----------|---------------|--------------|--------------|--------------|
| Bozkurt         | 4.5     | CAA vs. 7.7 laser (NS) | 96.6 vs. 91.7 | 95.8 vs. 92.2 |
| Koramaz         | 2.1     | CAA vs. 7.9 laser (p < .01) | 98.6 vs. 97.2 | 97.6 vs. 95.2 |
| Eroglu – Laser  | 6.5     | CAA vs. 9.3 Laser (NS) | 96.3 vs. 93.3 | 98.4 vs. 96.3 |
| Eroglu – RF     | 6.5     | CAA vs. 12.8 RF (NS) | 96.3 vs. 93.1 | 98.4 vs. 96.3 |
| Ovalı           | 1.7     | CAA vs. 3.1 RF (NS) | 99.5 vs. 96.6 | |
| Çalık           | 3.5     | CAA vs. 7 (NS) | 97.1 vs. 95.6 | 96.6 vs. 94.1 |
Phlebitis is less in Turkish Glue Series
How can we explain this?
• Definition of phlebitis?
• The composition of NBCA?
• Continuous delivery method and fast polymerization enables to give cyanoacrylate to each cm of the vein
  • No empty space filled without glue and no residual blood inside the vessel

• We have full reimbursement of glue for over 5 years as the other endovenous ablation techniques
• Overall experience in Turkey and in other countries (>27) is around >100 000 cases
• No reported granuloma
• Long term data is necessary
11/21/2019

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Thanks