Early experience of Duodenal Mucosal Resurfacing treatment for Type 2 Diabetes when expanding from single to multiple sites

Annieke van Baar¹, Jacques Deviere², Guido Costamagna³, Manoel Galva Neto⁴, Leonardo Rodriguez⁵, Rehan Haidry⁶, Jacques Bergman¹

¹Gastroenterology & Hepatology, Academic Medical Center, Amsterdam, Netherlands.
²Gastroenterology, Erasme University Hospital, Brussels, Belgium.
³Digestive Endoscopy, Policlinico Gemelli, Catholic University of Rome, Rome, Italy.
⁴Surgery, Gastro Obeso Center, São Paulo, Brazil.
⁵Surgery, Centro Clinico de Obesidad, Santiago, Chile.
⁶Gastroenterology, University College Hospital, London, United Kingdom.
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<tr>
<th>Name</th>
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<td>Annieke van Baar</td>
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<td>Manoel Galva Neto</td>
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- Bariatric surgery improves glycemia in type 2 diabetes (T2D) independent of weight loss
- Bypass of duodenum assumed key factor
- Bariatric surgery too invasive for managing T2D
Duodenal Mucosal Resurfacing for T2D
DMR appears to improve glycemia in First-in-Human (FIH) study in Chile*

*Unpublished data
Potential use of DMR for T2D

- Patients with insufficient glucose regulation on oral medication
- May prevent the need for insulin therapy
Many “unknowns” still remain

- What is the underlying mechanism of the improved glycemic control?
- How long does this effect remain?
- How safe is the procedure?
Duodenal stenosis (n=3) in Chile FIH study

- All developed < 6 weeks post-DMR
- Resolved by endoscopic dilatation

Underlying causes

- Overlapping ablation zones
- Ablation of non-lifted mucosa
European multicentre study initiated

- Adjusted DMR procedure
  - Ablation proximal → distal
  - More extensive mucosal lifting
  - Modified procedure tested in animal lab

- Aim
  - Assess safety and feasibility
Patients

- Age 28-75 years
- T2D ≤ 10 years
- HbA1c 7.5-11.0%
- On oral glucose lowering medication
- BMI 24-40 kg/m²
Step 1: Mucosal lifting

Step 2: Mucosal thermal ablation
After DMR procedure

- Discharge same day or after overnight stay
- Proton Pump Inhibitor from -1 to +4 weeks
- Step-up diet for 2 weeks
Centres and endoscopists

- Single centre study
  - First-in-Human in Chile
  - 39 patients
  - Single endoscopist

- Multi-centre study
  - Amsterdam, Chile, Rome, Brussels, London
  - 27 patients
  - In each centre single endoscopist
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<tr>
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<th>Multi-centre study</th>
<th>Single centre study</th>
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<tr>
<td><strong>Patients (n)</strong></td>
<td>27</td>
<td>39</td>
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<tr>
<td><strong>Age (years) mean &amp; 95% ci</strong></td>
<td>55±9</td>
<td>54±7</td>
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<tr>
<td><strong>HbA1c (%) mean &amp; 95% ci</strong></td>
<td>8.7±1.0</td>
<td>9.5±1.3</td>
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<td><strong>Minimal follow-up (months)</strong></td>
<td>5</td>
<td>10</td>
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<td><strong>Adverse Events (patients)</strong></td>
<td>52%</td>
<td>82%</td>
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<tr>
<td><strong>Adverse Events (episodes)</strong></td>
<td>36</td>
<td>85</td>
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<tr>
<td><strong>Mild / Moderate / Severe (n)</strong></td>
<td>29 / 7 / 0</td>
<td>65 / 17 / 3</td>
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<td>Severe: Duodenal stenosis</td>
<td></td>
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<td><strong>Procedure related / unrelated</strong></td>
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<tr>
<td>Related: Mild abdominal pain, nausea, diarrhea, throat pain</td>
<td>36% / 64%</td>
<td>39% / 61%</td>
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<td><strong>Procedure time (min) median &amp; IQR</strong></td>
<td>86 (69–118)</td>
<td>91 (78.5–110)</td>
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The DMR procedure proved feasible in a multi-centre setting

Adverse events were generally mild and as expected

The modified DMR procedure was not associated with duodenal stenosis in 27 patients

No serious adverse events observed after the DMR procedure
- Procedure time leaves room for improvement
- Complexity of the procedure needs to be reduced
New single-step catheter on its way
Future plans

- Safety and feasibility study new catheter
- RCT comparing DMR procedure with sham
- Establishment durability of effect
- Elucidation of mechanism