A single endoscopic duodenal mucosal resurfacing procedure exerts a sustained improvement in hepatic transaminase levels in a cohort of type 2 diabetes patients


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Background

Duodenal mucosal resurfacing (DMR) is an endoscopic intervention that elicits metabolic improvement in type 2 diabetes (T2D), likely through an insulin sensitizing mechanism. A first-in-human single center study has reported robust improvements in glycemic control after DMR. A lowering of hepatic transaminase levels has also been observed after DMR.

Objective

To report the hepatic transaminase levels in T2D patients 6 months post-DMR.

Methods

Patients

Composite of 2 clinical studies in subjects with T2D with a minimum follow-up of 6 months: a single-site first-in-human (FIH) study and the subsequent multicenter Revita-1 (R1) study.

Duodenal Mucosal Resurfacing

Step 1. Duodenal lumen sizing and lifting.

Step 2. Mucosal thermal ablation (length 9 cm).

Medication & diet

Sulfonylurea (SU): Stopped 4 weeks before DMR to mitigate hypoglycemia risk.

Proton pump inhibitor: 1 week before until 4 weeks after DMR.

Diet: Graduated diet for 2 weeks post DMR.

Results

• Baseline characteristics from FIH and R1 subjects are shown in Table 1.

• In 23 FIH subjects who showed pre-procedural ultrasound (US) findings compatible with steatosis, hepatic transaminase levels decreased significantly (Figure 1, below).

• Hepatic transaminase levels decreased or remained low after DMR across all baseline levels (Figure 2, middle).

• Metabolic indices improved after DMR (Figure 3, right).

Table 1. Baseline characteristics

<table>
<thead>
<tr>
<th>FIH (n=30)</th>
<th>R1 (n=22)</th>
<th>Significance</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>52±1.4</td>
<td>56±1.8</td>
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<tr>
<td>Duration of T2D (years)</td>
<td>5.6±0.5</td>
<td>6.4±0.5</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>32±0.9</td>
<td>32±0.7</td>
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<tr>
<td>HbA1c (%)</td>
<td>9.7±0.3</td>
<td>8.4±0.2</td>
</tr>
<tr>
<td>HOMA-IR</td>
<td>5.9±0.8</td>
<td>8.0±1.4</td>
</tr>
</tbody>
</table>

Figure 1. Hepatic transaminase levels in patients with US proved steatosis

Figure 2. Hepatic transaminase levels

Figure 3. Metabolic indices

DMR is a minimally invasive procedure that improves both glycemic markers and markers of fatty liver disease in subjects with T2D. A single duodenal mucosal resurfacing procedure resulted in a decrease of liver transaminases. This unique endoscopic intervention deserves further study to ascertain its potential efficacy as a treatment for fatty liver disease.

2 Rajagopalan, Cherrington et al. Diabetes Care 2016

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