

Annieke van Baar¹, Max Nieuwdorp², Laurent Crenier³, Ann Mertens⁴, Rachel Batterham⁵, Frits Holleman⁶, Paulina Vignolo⁷, Guido Costamagna⁸, Jacques Deviere⁹, Rehan Haidry¹⁰, Leonardo Rodriguez⁷, Manoel Galvao Neto¹¹, Jacques Bergman¹, Geltrude Mingrone¹²

¹Department of Gastroenterology and Hepatology, Academic Medical Center, Amsterdam, the Netherlands, ²Department of Internal and Vascular Medicine, Academic Medical Center, Amsterdam, the Netherlands, ³Department of Endocrinology, Erasme University Hospital, Brussels, Belgium, ⁴Department of Endocrinology, University Hospitals Leuven, Leuven, Belgium, ⁵Centre for Obesity Research, University College London, London, United Kingdom, ⁶Department of Internal Medicine, Academic Medical Center, Amsterdam, the Netherlands, ⁷CCO Clinical Center for Diabetes, Obesity and Reflux, Santiago, Chile, ⁸Department of Digestive Endoscopy, Policlinico Gemelli, Catholic University of Rome, Rome, Italy, ⁹Department of Gastroenterology, Erasme University Hospital, Brussels, Belgium, ¹⁰Department of Gastroenterology, University College Hospital, London, United Kingdom, ¹¹Bariatric Endoscopy Service, Gastro Obeso Center, São Paulo, Brasil & Florida International University, Miami, FL, United States of America, ¹²Department of Internal Medicine, Catholic University, Rome, Italy

Background

Duodenal exclusion via bariatric surgery has been shown to confer an insulin sensitizing metabolic benefit that is, in part, weight-independent. Duodenal Mucosal Resurfacing (DMR) is an endoscopic procedure that resurfaces the duodenal mucosa through hydrothermal ablation and may confer similar metabolic benefits using a less invasive procedure in subjects with type 2 diabetes (T2D).

Objective

To assess 12 months glycaemia following a single DMR procedure in patients with uncontrolled T2D.

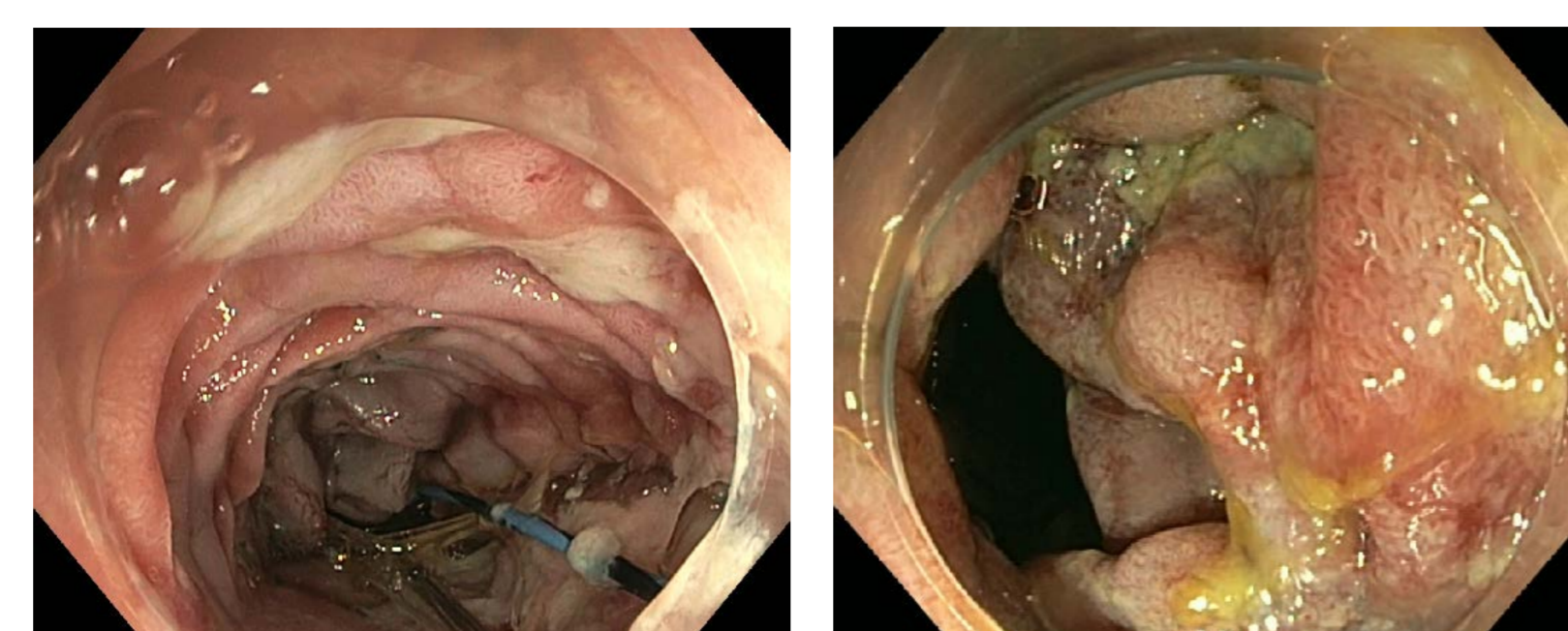
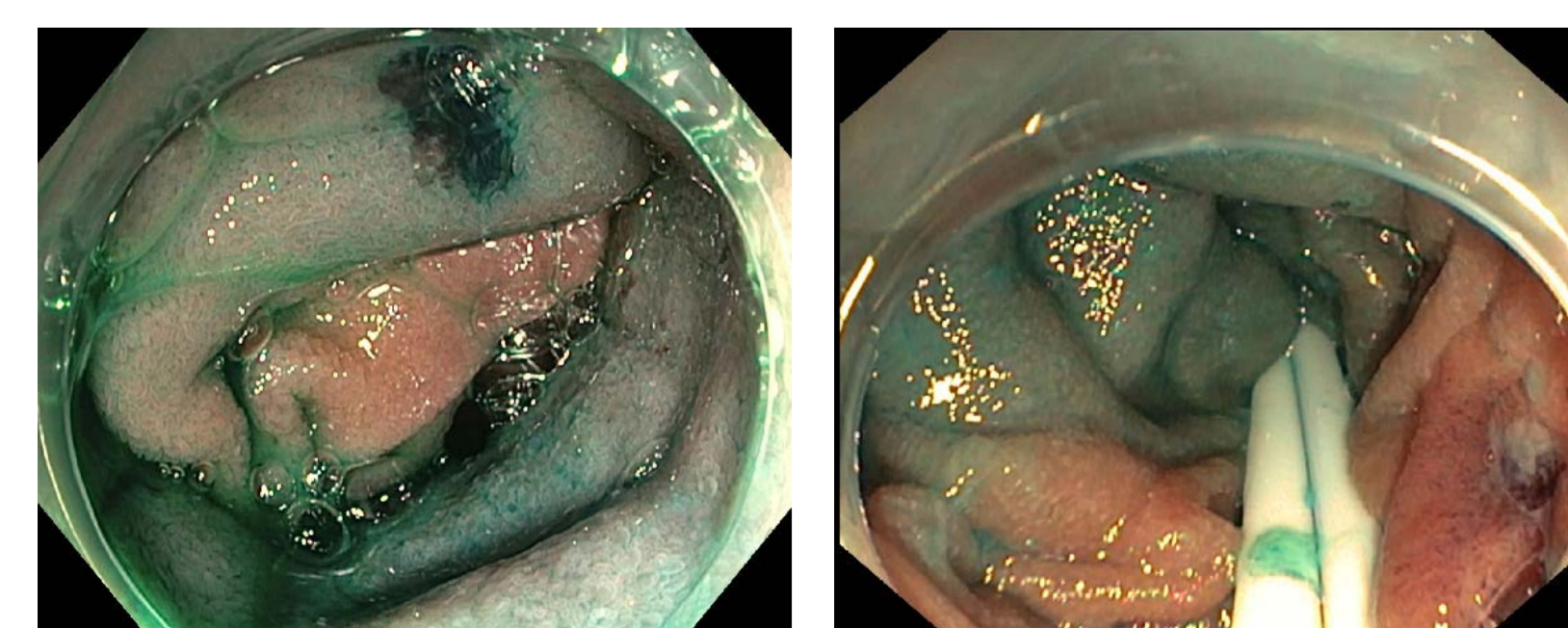
Methods

Study Single arm, open label, multicentre study.

Subjects Patients aged 25-75 years with T2D, HbA1c 7.5-10.0%, and on oral glucose-lowering medication.

Duodenal Mucosal Resurfacing
Step 1. Duodenal mucosal lifting

Step 2. Mucosal circumferential ablation 9cm

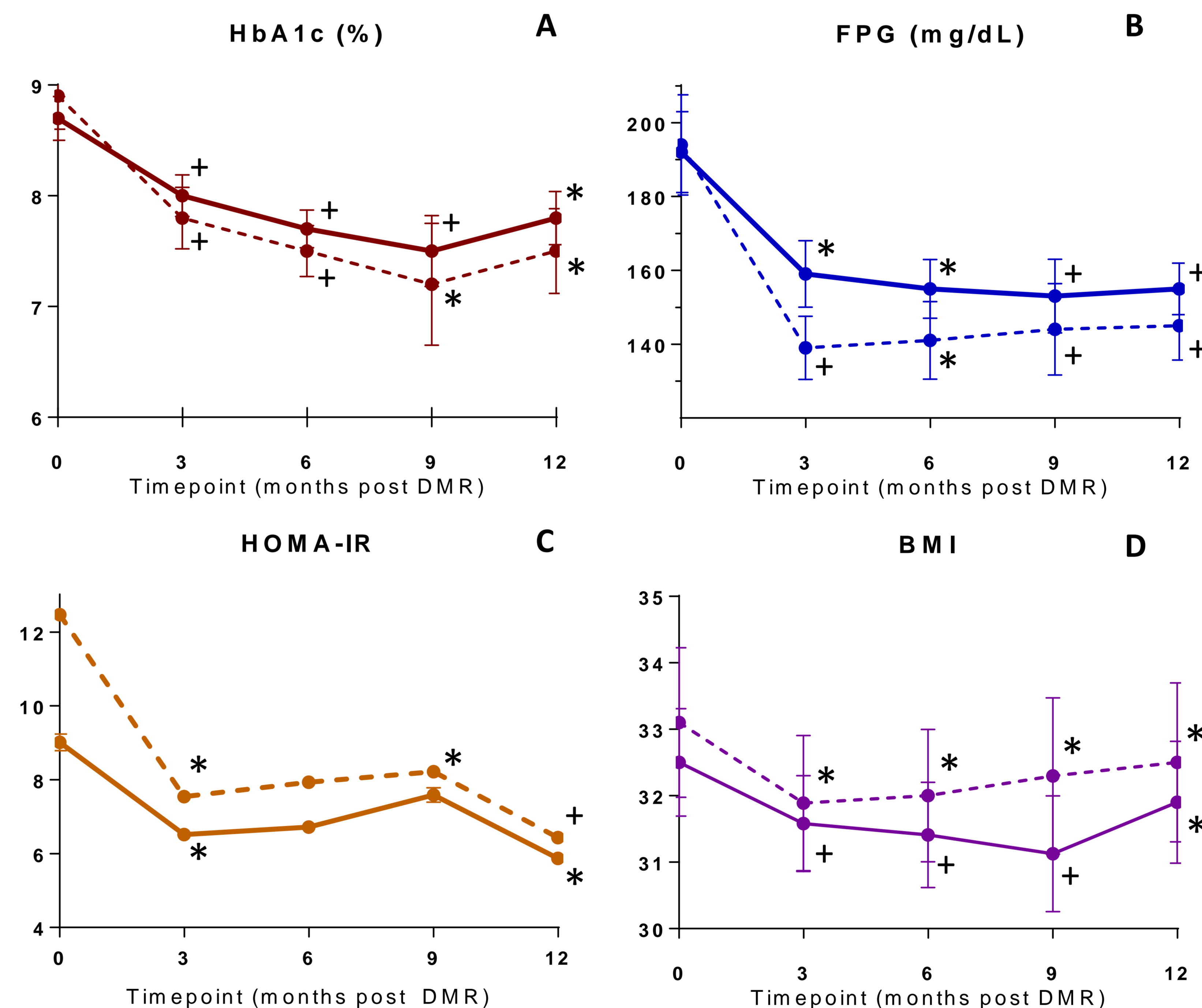


Glucoregulatory medication Sulfonylureas were discontinued 4 weeks before DMR. Other glucose lowering medication was kept stable for ≥ 6 months post DMR with subsequent medication modifications following local/international guidelines.

Postprocedural diet Graduated diet for 2 weeks post DMR.

Efficacy analysis In the ablation cohort (patients receiving ≥ 1 ablation (3cm); n=27) and a subgroup (n=15) with preserved β -cell function (fasting plasma insulin [FPI] >15 uU/ml) we analysed HbA1c, fasting plasma glucose (FPG), homeostasis model assessment index (HOMA-IR), and BMI at 3, 6, 9 and 12 months post DMR.

Results



Ablation cohort (n=27): Age 55.0 \pm 9 years, HbA1c 8.7 \pm 1.0%, BMI 32.5 \pm 4.2 kg/m² (mean \pm SD).

Continuous line

Preserved β -cell function subgroup (n=15): Age 56.1 \pm 6.7 y, BMI 33.1 \pm 4.4 kg/m², HbA1c 8.9 \pm 1.2% (mean \pm SD).

Dotted line

12 months post single DMR procedure, glycaemic improvement was sustained:

➤ **HbA1c 0.9-1.4%; FPG 37-49 mg/dL**

Conclusion

A single DMR procedure produced sustained reductions in HbA1c, FPG, and HOMA-IR out to 12 months, with more pronounced glycaemic effects observed in patients with preserved β -cell function. Larger, randomized controlled studies are planned to further establish the efficacy, safety and durability of the metabolic effects associated with DMR.