Application of radiofrequency ablation in duodenal mucosal resurfacing: an open-label, pilot study

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Application of radiofrequency ablation in duodenal mucosal reconstruction

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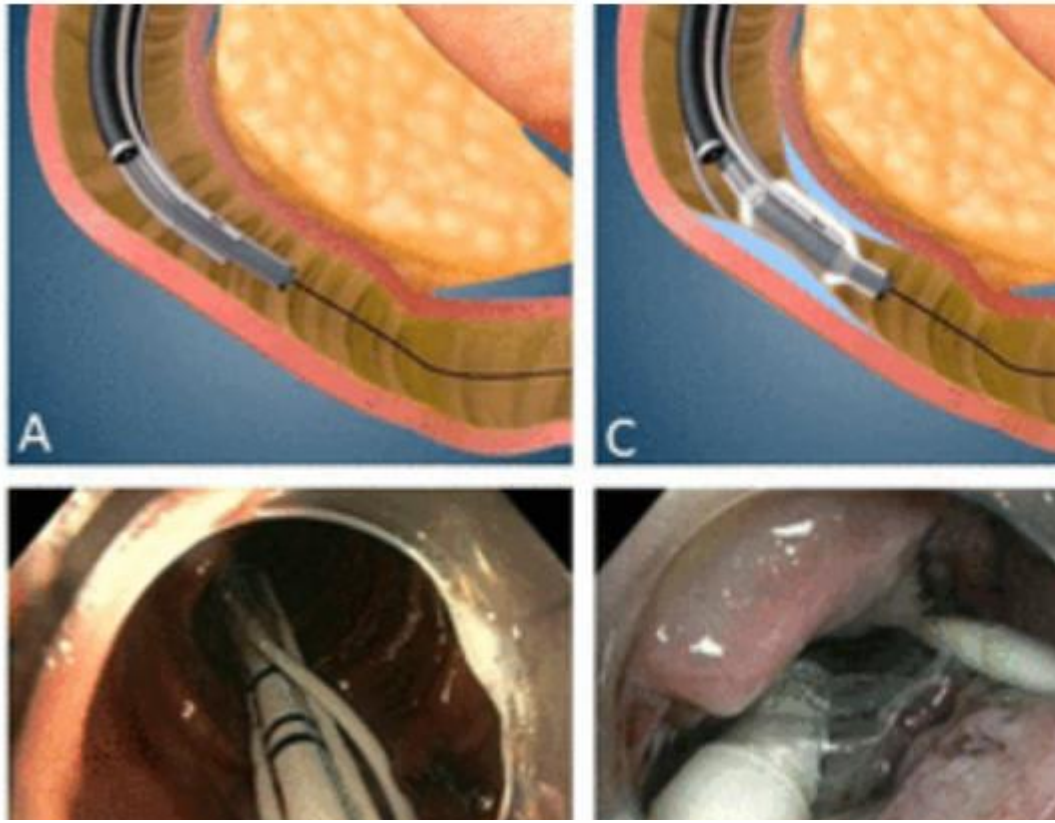
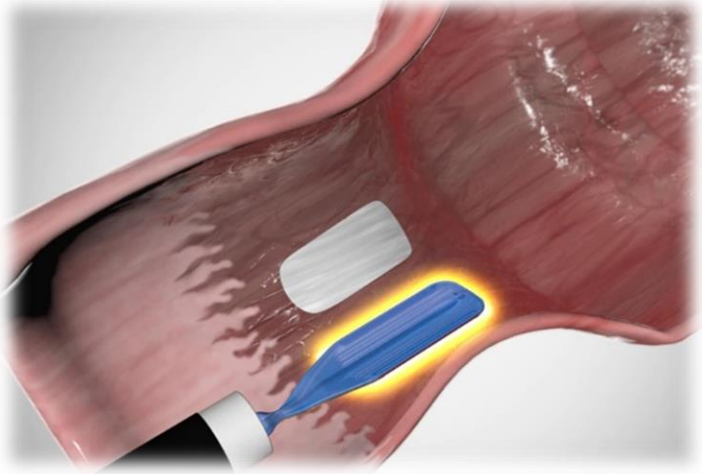
Abstract

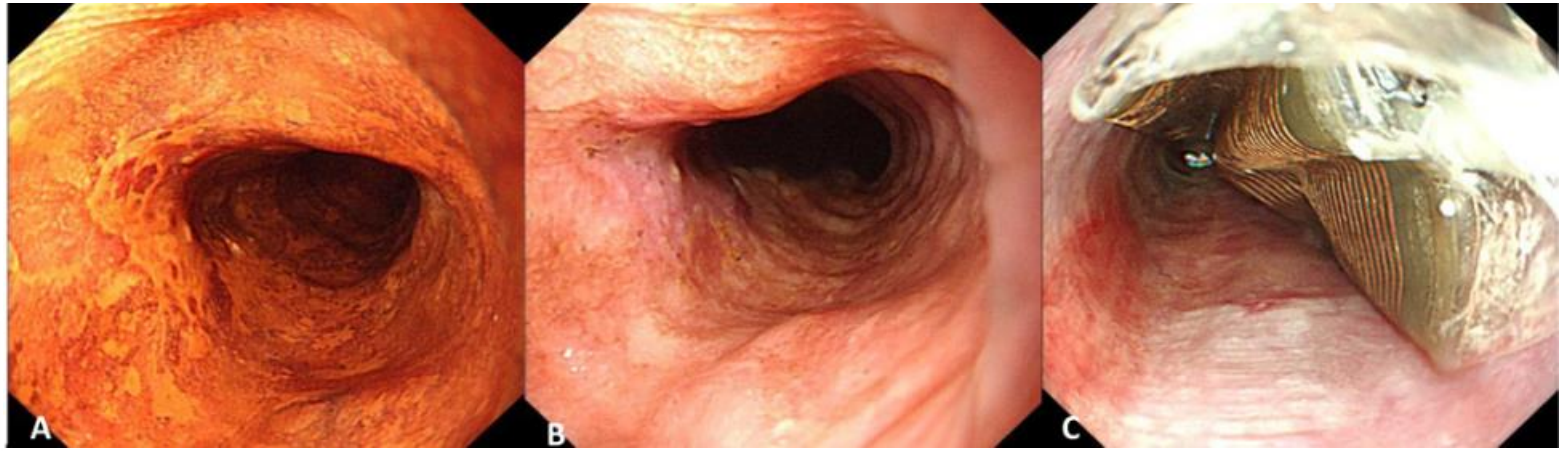
Background: Endoscopic duodenal mucosal resurfacing (DMR) is currently a hot research topic. In recent years, Amsterdam Medical College (AMC) had regarded the relatively non-invasive endoscopic treatment as another treatment besides lifestyle change or drug treatment. Duodenal mucosal reconstruction (DMR) is an endoscopic surgery based on catheter, which aims to reduce blood sugar by changing the surface of duodenal mucosa.

However, there are also some problems with this technology, such as submucosal injection is required for each operation, and the consumables for operation are still lack of clinical evidence of widespread application.



Medtronic Barrx^{TM} radiofrequency ablation system is a new technology applied to flat intraepithelial neoplasia of the digestive tract, squamous cell intraepithelial neoplasia of the esophagus and Barrett's esophagus. Through uniform and controllable ablation treatment, the same tissue resection depth is controlled. **The characteristics of Barrx^{TM} radiofrequency ablation system are: (1) Accurate ablation - controlled lesion tissue ablation treatment effectively reduces the risk of complications. (2)Predictable the treatment effect and reduce the damage to normal tissues.**





Objective: To explore the effect of DMR by using radiofrequency ablation system in the treatment of type 2 diabetes.

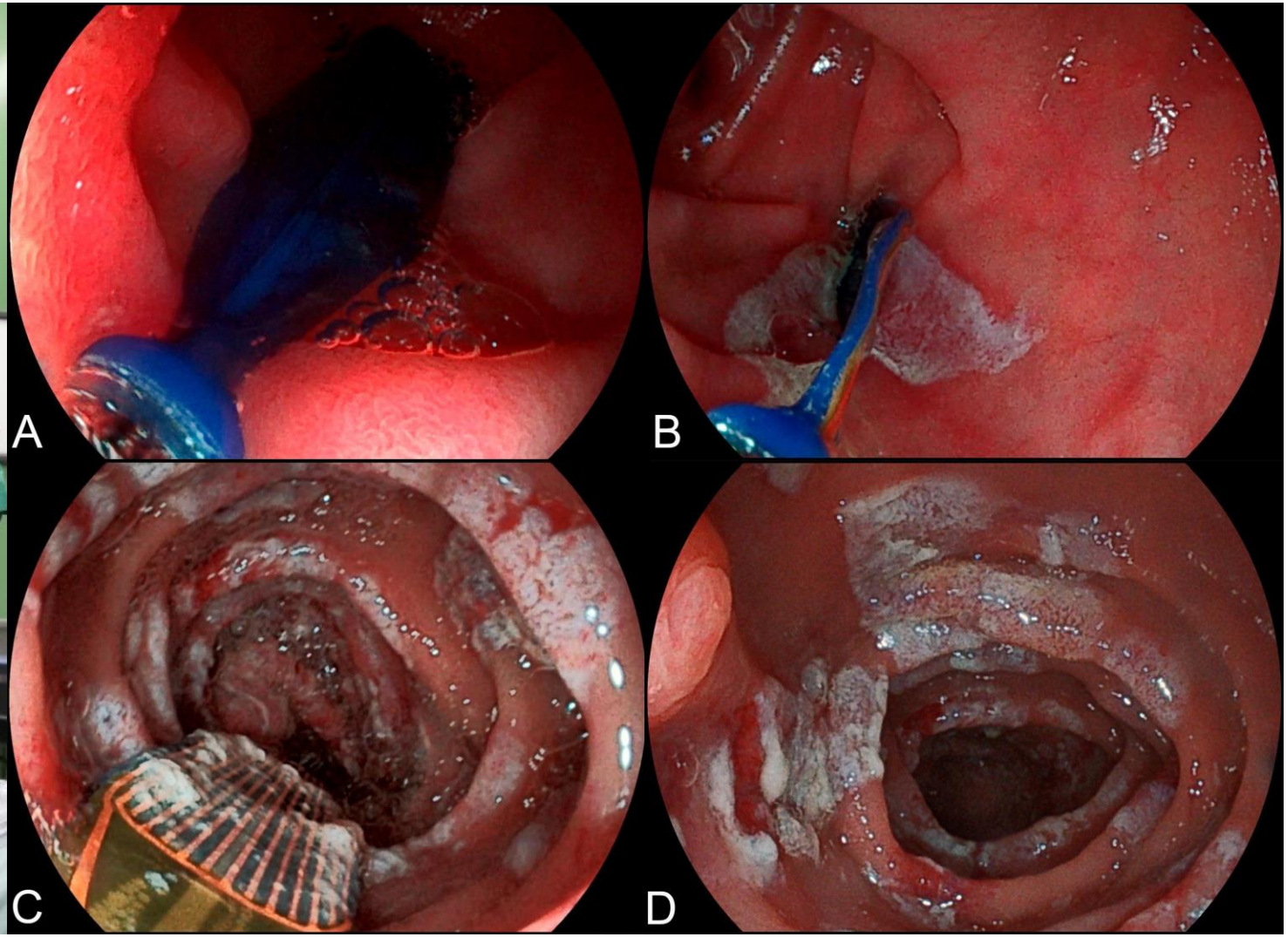
Method: The endoscopic catheter (Barrx Channel; Medtronic, Minneapolis, USA) was inserted into the biopsy channel of the endoscope(HD-550; SonoScape, Shenzhen, China) to complete this surgery (the power used was 12 J/cm2, 48W).

Results: We have completed a total of 14 surgeries (8 males and 6 females), all of which were successfully completed without any intraoperative bleeding or perforation. The average surgical time is **83.5 minutes**. The patient was discharged on the second day after surgery without any discomfort such as abdominal pain, bloating, or fever.

11 patients (5 males and 6 females) completed a 3-month follow-up after surgery.After 3 months of surgery, the patient lost an average weight of **2.4 kg,** had an average decrease in fasting blood glucose of **1.27mmol/L**, an average decrease in 2-hour **postprandial** blood glucose of 4.40mol/L, and an average decrease in **glycated hemoglobin of 0.45%**.

All patients showed no increase in the type or dosage of **hypoglycemic** drugs compared to preoperative use after surgery. One patient achieved **cessation** of hypoglycemic drugs, three patients achieved reduction in hypoglycemic drugs, and the other patients had the same hypoglycemic drugs used before surgery.**No cases of postoperative delayed bleeding, delayed perforation, or postoperative stenosis occurred.**

Conclusion: The radiofrequency ablation system can be used to complete the treatment of DMR. During the follow-up period of 3 months after the operation, it can reduce the fasting blood glucose, 2-hour postprandial blood glucose, and glycosylated hemoglobin in patients with type 2 diabetes. **Compared to Revita research, this method has a longer surgical operation time but fewer postoperative complications.**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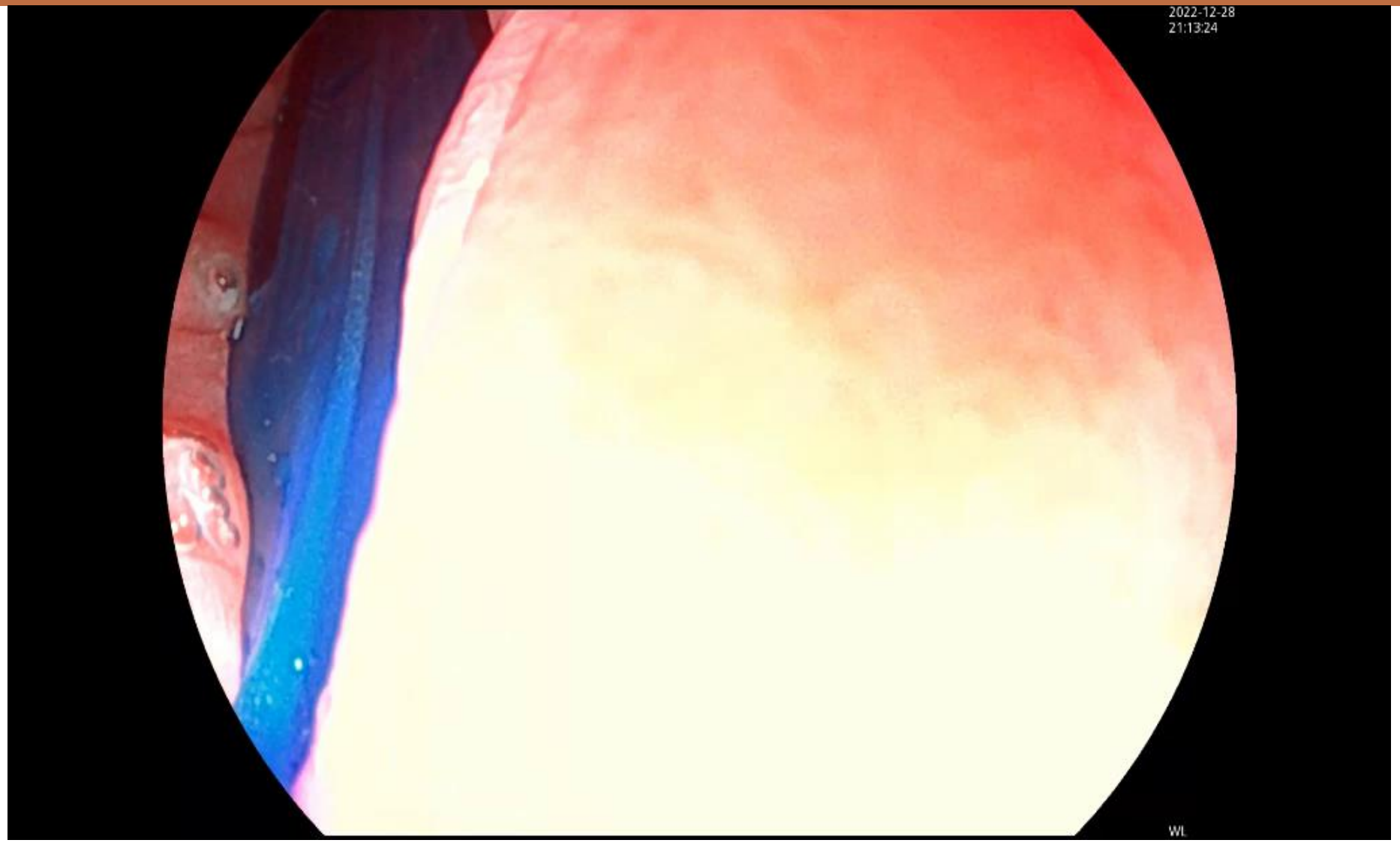
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