Endoscopic membranectomy for congenital duodenal stenosis in an adult

A 17-year-old girl with Down syndrome (body mass index 15 kg/m²) was admitted to our department because of recurrent bilious vomiting since birth. Double-bubble sign on ultrasound and upper gastrointestinal imaging (▶Fig. 1) indicated obvious dilation of the duodenum and stomach. Congenital stricture of the duodenum is mainly classified into four types (▶Fig. 2) [1]. Gastroscopy confirmed a membranous duodenal stenosis (Type Ib), with an opening of approximately 1 mm in diameter, and the duodenal papilla was located directly above the diaphragm. We performed membrane radial incision (▶Video 1).

Membranous stenosis of the descending duodenum was confirmed by gastroscopy (▶Fig. 3a, ▶Fig. 4a). A guidewire was used to probe the enteric cavity (▶Fig. 3b, ▶Fig. 4b), and the dilated balloon was then pulled back to measure the stenosis thickness, which was <1 cm (▶Fig. 3c, ▶Fig. 4c, d). Guided by the guidewire, an insulation-tipped knife was used to make a radial incision, avoiding the duodenal papilla (▶Fig. 3d, ▶Fig. 4e). An endoscope with an outer diameter of ≤12 mm could then pass through the stenosis (▶Fig. 3e, ▶Fig. 4f). After the...
Fig. 3 Endoscopic images. a Congenital duodenal stenosis. b A guidewire probes the enteric cavity. c The dilated balloon is pulled back to measure the stenosis thickness. d The insulation-tipped knife is used to make a radial incision. e An endoscope with outer diameter up to 12 mm is able to pass through the stenosis. f The jejunal feeding tube and decompression gastric tube are placed.

Fig. 4 a Gastroscopy confirms membranous stenosis. b A guidewire probes the intestinal cavity. c The balloon follows the guidewire through the stenosis. d The dilated balloon is pulled back to measure the stenosis thickness. e The insulation-tipped knife is used to make a radial incision, avoiding the duodenal papilla. f The 12-mm-diameter endoscope passes through the stenosis.
The wound was treated with thermocoagulation forceps to stop the bleeding, and a nasojejunal tube was inserted through the opening (▶ Fig. 3f). The duodenal incidence of congenital stenosis in newborns is approximately 1.2/10 000 [2]. 30%–50% of which are associated with Down syndrome [3]. Endoscopic treatments are still at an exploratory stage. At present, the main treatment methods are radicotomy and balloon dilation [4]. Given that the duodenal papilla of this patient was located directly above the diaphragm, and considering that the radial force exerted by endoscopic balloon dilation on the stenosis is uncontrollable during the expansion process, the muscle layer is likely to be damaged, and there may be a high risk of perforation and duodenal papilla injury. In contrast, duodenal diaphragmatic incision [5] has a controllable and targeted direction for treating stenosis, which can reduce the risk of perforation.

**Conflict of Interest**

The authors declare that they have no conflict of interest.

**The authors**

Ran Chen1, Shiya Hong1, Zhi Ni1, Qingyong Zhang1, Xiaqing Huang1, Lan Lin1, Rongchun Zhang1

1 Department of Gastroenterology, Xiamen Humanity Hospital, Fujian Medical University, Xiamen, China

**Corresponding author**

Rongchun Zhang, MD
Department of Gastroenterology, Xiamen Humanity Hospital, Fujian Medical University, 3777 Xianyue Road, Xiamen, 361000, Fujian, China
zrc.700502@163.com

**References**


