

## A novel through-the-scope twin endoclip for a large mucosal closure in a live pig model

A novel through-the-scope twin endoclip (TTS-TC) has been developed by our team. The TTS-TC can be delivered directly through an endoscope working channel of 3.2 mm in diameter and contributes to the closure of large mucosal wounds.

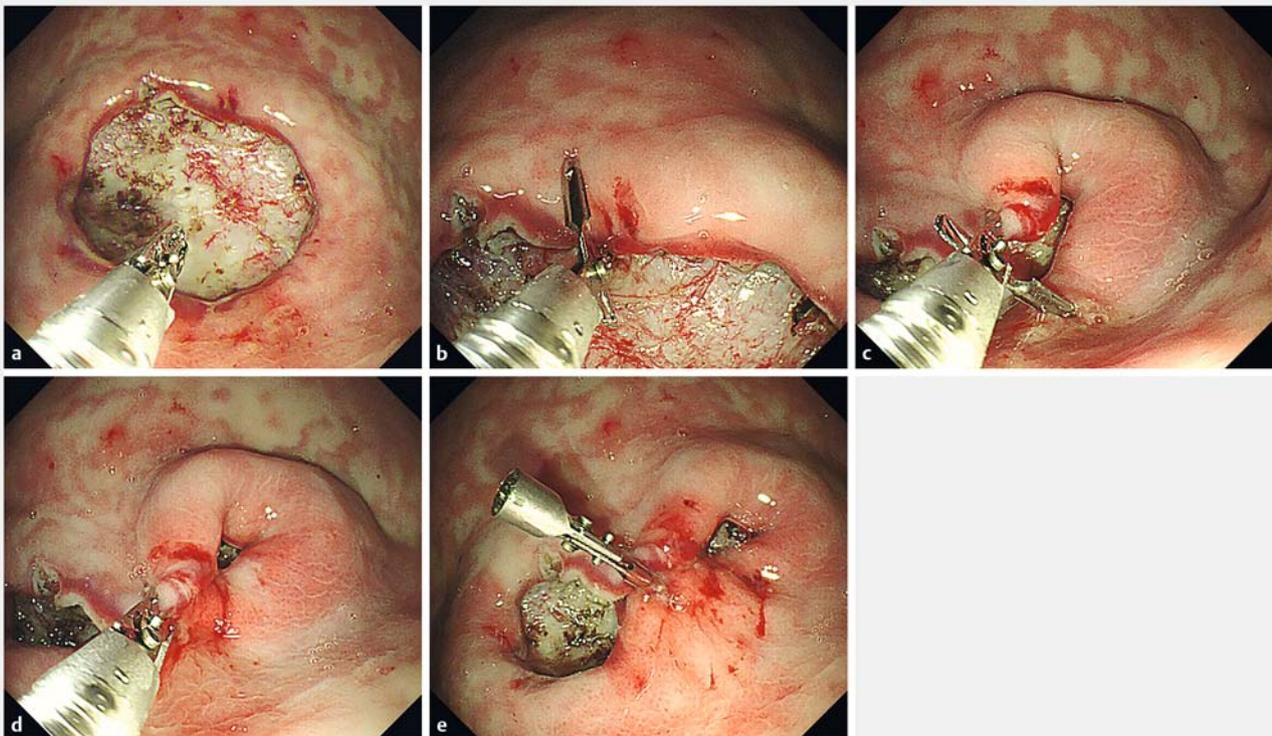
A living pig (Feed Research Institute, Guangzhou City, China) weighing 30.5 kg was used to conduct the experiment *in vivo*. A QF-260J gastroscope (Olympus, Tokyo, Japan) was used. TTS-TC was used to reduce the size of the mucosal wound after endoscopic submucosal dissection (ESD) (▶ **Video 1**).

The operation steps were as follows. First, the TTS-TC was delivered to the

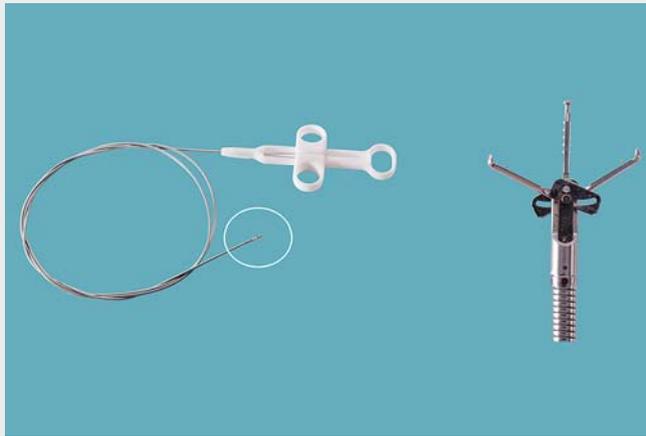
site of the ESD wound through the endoscope working channel (▶ **Fig. 1 a**). The clip on one side of TTS-TC was opened by operating the handle of the TTS-TC system, followed by tight clamping of mucosal tissue on one side of the wound (▶ **Fig. 1 b**). Then, the clamped tissue was pulled toward the opposite side of the wound (▶ **Fig. 1 c**), and the second clip on the TTS-TC was opened to clamp the mucosal tissue on this side of wound (▶ **Fig. 1 d**). After the two sides of the wound had been clamped together, the TTS-TC was released and the wound was closed (▶ **Fig. 1 e**). Using this TTS-TC technique, the large wound on the anterior wall of the greater curvature of the

stomach was successfully turned into two smaller wounds. After using a TTS-TC, the wound size decreased, and TTS-TC or traditional through-the-scope clips (TTSC) could subsequently be used to close the wound conveniently.

The size of the wound in the current case was 3.4 × 3.3 cm. The currently available through-the-scope clips can only close a wound of <2 cm [1], and the over-the-scope-clip requires installation on the outside of the endoscope tip and sometimes the endoscope may need to be reinserted [2, 3]. The TTS-TC device seems to be simple and rapid in operation, and can be used to close a large mucosal wound.



▶ **Fig. 1** A large wound after endoscopic submucosal dissection was successfully turned into two smaller wounds by the use of the through-the-scope twin endoclip (TTS-TC). **a** The TTS-TC was delivered to the site of the wound through the endoscope working channel. **b** The mucosal tissue on one side of the wound was clamped using the TTS-TC. **c** The clamped tissue was then pulled across to the opposite side of the wound, and the second TTS-TC was used to clamp the tissue on this side. **d, e** The mucosae on both sides of the wound were clamped together; the head-end part of the TTS-TC was then released.



**Video 1** A novel through-the-scope twin endoclip for closure of a large mucosal wound in a live pig model.

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### Competing interests

None

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### Bibliography

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