BACKGROUND: Endoluminal endoscopy could be significantly enhanced by adequate approaches to wound closure. Current solutions are basically confined to clip applications. OBJECTIVE: A new approach to sewing in flexible endoscopy is achieved with an endoluminal rivet system. This system allows the application of several ligatures without withdrawing the rivet application device to reload. For this purpose, a pilot experimental study of the device was conducted, which obtained a tissue approximation and avoided the difficult process of knot tying. DESIGN: Pilot experimental study. SETTING: The rivet application was tested through a 1.8-mm working channel of the endoscope in laboratory and postmortem animal tissues. It consists of a flexible anchor at the front and a lockable bracket at the rear. Both edges of a defect of the GI wall can be aligned and compressed, thus leading to wound closure. INTERVENTIONS: Test samples were evaluated in postmortem gastric tissue by using flexible gastroscopes. The feasibility of applying a series of rivets with 1 instrument to close transmural lacerations of the stomach was demonstrated. Further tests were performed to determine the forces to penetrate the gastric wall. MAIN OUTCOME MEASUREMENTS: Tissue closure, rivet degradation. RESULTS: The penetration force can be brought down to less than 0.57 N by using a magnesium tip. The sharp tip of the rivet, which could potentially
lacerate healthy tissue after implantation, is degraded in the stomach within the first few hours because of rapid corrosion. LIMITATIONS: Lack of in vivo feasibility data. CONCLUSIONS: Endoluminal wound closure through common gastrosopes and colonoscopes is possible. Further in vivo data are required for the rivet system.