Endoscopic alcohol injection therapy of giant gastric leiomyomas: An alternative method to surgery

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Leiomyomas are the most common benign mesenchymal tumours of the upper gastrointestinal tract. They rarely cause symptoms when they are smaller than 5 cm in diameter. Observation with repeated endoscopies is recommended in asymptomatic patients with small lesions. Surgical resection remains the main therapy option for symptomatic and complicated patients. The treatment of esophageal leiomyoma has been enhanced by improvements in diagnostic and therapeutically endoscopic techniques; however, the same cannot be said for gastric leiomyoma management. The present article describes the management of two cases involving giant gastric leiomyomas that were successfully treated using endoscopic injection of alcohol. To the authors' knowledge, the present study is the first report of the treatment of such hemorrhagic gastric tumours using this alternative and low-cost technique. Endoscopic local ethanol injection may be the treatment of choice in carefully selected patients with hemorrhagic leiomyomas of the upper gastrointestinal tract.

Key Words: Alternative therapy; Endoscopic therapy; Gastric leiomyomas; Surgical therapy

CASE PRESENTATIONS

The patients, a 45-year-old man and a 56-year-old woman, were hospitalized due to upper GI bleeding. Endoscopic examination of the male patient revealed a 6 cm × 9 cm submucosal mass and a smooth superficial mucosa, with several ulcers 5 mm to 10 mm in diameter at the gastric cardia. The female patient underwent endoscopy, which detected a 10 cm × 10 cm mass at the small curvatura that essentially filled the stomach lumen, extending from the antrum to the corpus-cardia border, with ulcer and a clot above with a diameter of 7 mm to 8 mm (Figure 1A). There was no bleeding in either patient at the time of the alcohol injection interventions. Abdominal CT scans were performed on both patients, which revealed masses extending to the stomach lumen and having intact serosa. No bleeding was observed in the patients while they were on weekly proton pump inhibitor and antacid treatment. Endoscopy was repeated. Endoscopic biopsies of both masses indicated leiomyoma. Both patients gave their informed consent to undergo endoscopic alcohol injection therapy. In both cases, the injection treatments of 98% alcohol were administered in a single session. A total of 20 mL alcohol was administered in the male patient, and 30 mL alcohol was administered through the centre and

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four quadrants of the tumour in the female patient. A standard 5 mm endoscopic sclerotherapy needle was used for injection. A control endoscopy was performed two weeks later. Deep ulcers, which developed at the alcohol injection sites, were observed in both patients (Figures 1B and 1C). However, the tumoral tissues in the vicinity of the injection sites were macroscopically normal. The same amount of alcohol was injected a second time. The patients were discharged after one week of monitoring. Three months later, endoscopic examination revealed no evidence of tumours. The ulcers were treated and the stomach mucosa had regained its normal anatomical structure (Figure 1D).

DISCUSSION
Leiomyoma is the most common upper GI submucosal tumour (1-5). Although malignant transformation is rare, and lesions less than 3 cm in diameter have been treated conservatively, some leiomyomas gradually increase in size and produce clinical symptoms such as hemorrhage, pain and obstruction (6,7). In many patients, upper GI leiomyomas are usually asymptomatic; however, the presence of the lesion can be a psychological burden. For extremely large leiomyomas, endoscopic treatment is difficult. In symptomatic patients with larger tumours, conventional surgery is usually recommended (8).

Leiomyomas are traditionally treated via surgical intervention, with many recent reports (8-13) describing laparoscopic resection of these submucosal tumours. Although laparoscopy is considered to be minimally invasive, the endoscopic approach is even less invasive. Endoscopic snare resection of gastric submucosal lesions has been considered in a few reports, suggesting that endoscopic resection may be a favourable and advisable alternative to surgery. However, leiomyomas frequently arise in the muscularis propria, and endoscopic mucosal resection of submucosal lesions that are localized near the serosa or the adventitia is associated with particularly high risks. Therefore, meticulous patient selection is mandatory to avoid adverse major complications such as perforation and hemorrhage (14-19).
Endoscopic procedures such as polypectomy and band ligation are difficult to use for lesions that are greater than 15 mm in diameter (20). The conventional endoscopic methods may require longer duration depending on the technique used as well as their associated risk. The localization, dimension and form of the tumour are important considerations for a successful intervention (21,22). In our patients, endoscopic snare resection appeared to be unsuitable due to the size of the tumours. No method for the treatment of these large tumours has been reported in the literature. Therefore, we suggest endoscopic alcohol injection as an alternative treatment modality for the treatment of gastric leiomyomas. Tumours smaller in size would be amenable to snare resection. Because tumour size was decreased much more than expected after the first injection, a second injection was given. Complete treatment of the tumours was observed at the time of follow-up endoscopy.

Although endoscopic snarectomy is a frequently used method, alcohol injection treatment appears to be safer because it is not associated with a risk of acute perforation nor does it need to be applied to the entire tumour. The use of alcohol injection decreases tumoral mass by necrosing. We suggest that tumoral necrosis develops because the administered alcohol triggers an immunological reaction. To avoid the possibility of alcohol-induced necrosis and perforation of a whole layer of the the stomach in both patients, deep injection of alcohol was not performed. It was observed at the time of follow-up endoscopy that while there was necrosis at the injection sites in the four quadrants of the tumour, no significant necrosis was observed in neighbouring regions. An intensive polymorphonuclear cellular infiltrate was observed in the biopsy samples obtained from healthy-appearing tissue (result of second biopsy) during the control endoscopy. Observations of follow-up biopsy samples taken three months later showed that the mucosa had healed completely, the masses had disappeared and the stomach mucosa had regained its normal anatomical structure.

In our opinion, another advantage of this method is the development of coagulation in vascular structures during the process as a result of the administered injection, which prevented bleeding. Thus, no bleeding was observed during or following the process in both cases. A patient with oesophageal leiomyoma was treated successfully using endoscopic alcohol injection (23); however, the lesions in this case were smaller than 3 cm in size.

Alcohol injection may be a safe alternative to surgery for the treatment of large gastric leiomyomas. This method appears to be more applicable, much more effective, less invasive and more cost effective than surgery.

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