



Endoscopic ligation for benign and malignant lesions of upper digestive tract

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INTRODUCTION

Endoscopic techniques have been used to treat variceal hemorrhage for > 50 years, and are now accepted as first line treatment for this type of esophageal bleeding. While injective sclerotherapy can control hemorrhage in 90% of cases, bleeding reoccurs and complications occur in up to 55%^[1] and 40%^[2] of cases, respectively. As a result of these problems, better methods for endoscopic treatment of variceal hemorrhage have been continuously studied. Banding ligation was first reported in humans in 1990^[3], and has since become an important method used in endoscopic therapy. Moreover, this method has shown reliable effects when used to manage esophageal varices. Based on such reports, we used banding ligation to resect polyps and early stage cancers of the upper digestive tract, and achieved satisfactory results.

MATERIALS AND METHODS

Patients

A total of 174 patients underwent endoscopic ligation. Among these

patients, 78 were treated for a variceal hemorrhage (these included 4 patients with a primary hepatic cancer, 10 patients who experienced re-bleeding after spleen resection, and 2 patients who experienced re-bleeding after a TIPS operation). Prior to undergoing ligation, these patients had bleeding frequencies that ranged from 1 to 8 times/year (mean = 2.35 times/year). Twenty-one of the patients had a polyp in the upper digestive tract (14 cases in the gastric antrum, 4 in the gastric body, 2 in the lower esophagus, and 1 in the duodenum). The polyps could be morphologically characterized as one of three types: (1) long pedunculated, (2) sub-pedunculated, and (3) thick, and had diameters ranging from 0.3 cm to 0.9 cm. Five of the polyps proved to be early stage cancers (2 cases of early esophageal cancer, and 3 cases of gastric antral cancer *in situ*).

Methods

All ligations were performed using an Olympus XQ10 XQ20 endoscope (Olympus Corporation; Tokyo, Japan), and either a plastic or stainless steel ligation device. Other equipment included a silicon rubber band (used in ligation), trip wire, inner cylinder, and an outer cylinder. A ligation device fixed at the end of the endoscope was plunged into the digestive tract, and placed in close proximity to the lesion. The lesion was then sucked into the ligation device, and a prestressed rubber band was released over the entrapped lesion by pulling the trip wire; after which, the lesion was ligated. All patients underwent endoscopic re-examinations for > 1 year. The therapeutic effectiveness of the ligation procedure was evaluated by both endoscopic observations and histopathological examinations.

RESULTS

While a majority of the 78 esophageal variceal patients who underwent ligation were cured, four patients died because the treatment did not stop the progress of their disease. The overall effectiveness of ligation was 94.8% (74/78 cases, Table 1), and the mean bleeding frequency decreased from 2.35 times/year before treatment to 0.15 times/year after treatment. While four patients reported slight dysphagia, no other complications occurred.

Table 2 shows the sloughing off times for the polyps and early stage cancers following treatment with endoscopic ligation; these times ranged from 4 to 10 d, and nearly 100% of the lesions disappeared. Furthermore, biopsy results showed no malignant cells in the resected specimens obtained from cancer patients treated with ligation. A small ulcer remained after lesion sloughing in 18 cases; however, these lesions usually healed 10 d later, and there was no subsequent bleeding or lesion recurrence. Histopathological examinations showed some infiltration of inflammatory cells at the site of the wound, but no necrosis was observed.

DISCUSSION

Banding ligation was the most important development in endoscopic

Table 1 Ligation compared with sclerotherapy for the variceal bleeding

<i>n</i>	Effective rate (<i>n</i>)	Bleeding times (yr)		Rebleeding (%)	Complication (<i>n</i>)	
		B-T	A-T		Dysphagia	Others
LT 78	94.8% (74/78)	2.35	0.15	3.80%	4	0
ST 32	90.6% (29/32)	2.4	1.1	30%	3	9

B-T: Before treatment; A-T: After treatment; LT: Ligation treatment; ST: Sclerotherapy

Table 2 The sloughing off time for the ligated polyp and early cancers

Lesion type	<i>n</i>	Cases with different sloughing off time		
		4-5 (d)	6-8 (d)	9-10 (d)
Polyp				
TP	8	5	3	0
SP	7	4	3	0
LP	6	1	4	1
Early cancer ¹				
Gastric CA	3	1	2	0
Esophageal Ca	2	0	2	0

¹No cancerous cells were found in the resected specimen of 5 early stage cancers. TP: Thick polyp; SP: Sub pedunculated polyp; LP: Long pedunculated polyp.

therapy. We have used endoscopic ligation (EL) to treat esophageal variceal bleeding since 1992, and achieved satisfactory results. We also conducted a study which compared banding ligation and sclerotherapy in the management of esophageal variceal bleeding. The results indicated that EL was highly effective. Moreover, the treated patients experienced a quick recovery and had a low rebleeding rate. The 78 patients who received ligation for esophageal variceal bleeding required significantly fewer treatments, as well as treatments of shorter duration, when compared to patients treated with conventional sclerotherapy. Additionally, the patients treated with EL experienced fewer complications, as only 4 patients reported slight dysphagia, and other complications associated with sclerotherapy, (e.g. fever, pleura infiltration, and esophageal stricture) were not observed.

Also, when compared with a portacaval shunt operation, EL produced no effect on liver blood flow. In cases where splenic hyperfunction is not sufficiently severe to necessitate performing a splenectomy, EL can serve as an alternative to portal-azygos disconnection. Moreover, EL might be the first choice for patients who experience re-bleeding after a portacaval shunt or portal azygos disconnection, as it has the advantages of safety, convenience, and causing little or no injury. We also used EL to treat 2 patients undergoing Tips operations, and achieved satisfactory results.

Endoscopic ligation has recently been used in treatment of gastroenteric polyps and in cases requiring early cancer resection. Ligation by itself usually blocks blood flow to the polyp or cancer; this induces lesion ischemia or tissue necrosis, which causes the ligated lesion to eventually fall off. We noticed that a very small ulcer

was present after a lesion fell off; however, the ligation procedure was a progressive process in which tissue damage and healing occurred almost simultaneously when the stretched silicon rubber band was recovered.

Similar to performing a microwave resection^[4], different methods should be used to ligate lesions of different morphological types. When ligating sub-pedunculated and thick polyps, as well as early stage cancers, the "O" type of rubber band should be used and released at the base of the polyp, while segmental ligation should be performed when treating long pedunculated polyps. When treating polyps with a longer pedicle, we used the "U" ligation method, which allowed the ligation device to approach the juncture of the polyp base and pedicle. Next, suction was applied through the endoscope, and the rubber band was released over the entrapped polyp ("U" shape).

The authors of this paper suggest that ligation management should be selected for the resection of early stage cancers of the upper digestive tract, and especially situ cancers; because using this method can spare the patient from the risks and pain associated with an operation. In cases where a histopathological examination reveals the presence of malignant cells, ligation should be performed within 24 h after biopsy so as to guarantee the correct site for ligation. If esophageal cancer is confirmed, the tissue can be treated with Lugol's solution, and then ligated at the lightly stained site^[5]. Such patients should receive regular followup examinations with endoscopy and histopathology following their ligation treatment.

The scaling time of a lesion depends on its hardness and the elasticity of the "O" rubber band. The scaling time is shorter when treating soft lesions with an "O" rubber band of better elasticity.

The current commercially available inner cylinders have a diameter of 0.9 cm, and if the polyp is too large, it cannot be sucked into the device. Furthermore, the ligation method has limited usefulness for treating colon polyps, because no currently available colonoscope has a matched ligation device. Therefore, the methods and equipment used for ligation require further development.

REFERENCES

- 1 MacDougall BR, Westaby D, Theodossi A, Dawson JL, Williams R. Increased long-term survival in variceal haemorrhage using injection sclerotherapy. Results of a controlled trial. *Lancet* 1982; **1**: 124-127 [PMID: 6119510 DOI: 10.1016/S0140-6736(82)90378-6]
- 2 Schuman BM, Beckman JW, Tedesco FJ, Griffin JW, Assad RT. Complications of endoscopic injection sclerotherapy: a review. *Am J Gastroenterol* 1987; **82**: 823-830 [PMID: 3307389]
- 3 Van Stiegmann G, Goff JS, Sun JH, Hruza D, Reveille RM. Endoscopic ligation of esophageal varices. *Am J Surg* 1990; **159**: 21-5; discussion 25-6 [PMID: 2294799 DOI: 10.1016/S0002-9610(05)80602-6]
- 4 Chen YL, Li JC and Tian DF. Studies on the endoscopic microwave method for gastroenteric-polyp resection. *Endoscopy* 1990; **7**: 212-213
- 5 Yang CJ, Ren X, Tan CH, Zhu EQ, Zhu CN, Wang CJ. Evaluation of diagnosing esophageal lesions diagnosed with Lugol's solution staining. *Endoscopy* 1995; **12**: 195-197

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