Endoscopic band ligation for peptic ulcer bleed

Ashwin Rammohan, S. Jeswanth, P. Ravichandran

Institute of Surgical Gastroenterology & Liver Transplantation, Centre for GI Bleed, Division of HPB diseases, Stanley Medical College Hospital, Old Jail Road, Chennai, India

Submission Date: 14-8-2012; Review Completed: 27-9-2012; Accepted Date: 26-11-2012

INTRODUCTION

Endoscopic therapy has been shown to be effective in controlling active bleed, preventing rebleed and in reducing the transfusion requirement. It has also been shown to decrease hospitalization, limit the need for surgery and angiography, and also decrease the mortality rate in patients with peptic ulcers who have active bleeding, non-bleeding vessels, or adherent clot. Despite significant advances, rebleeding does occur in up to 20% of patients who undergo endoscopic therapy. A potential drawback of thermal methods and injection of sclerosing agents is the risk of tissue necrosis and perforation. In contrast, mechanical endoscopic hemostatic techniques are not associated with significant tissue injury and thus make an attractive treatment modality. Experience with endoscopic band ligation of peptic ulcer is extremely limited. We describe our experience with the use of EBL in effectively controlling peptic ulcer bleed. This to our best knowledge is only the fourth such report in English medical literature.

Case 1

A 47-year-old Management executive was brought to the emergency department with one episode of massive hematemesis. He also gave a history of tarry stools for the past 10 days. He denied use of alcohol but smoked 20 cigarettes a day. On initial examination, he was tachycardic and tachypneic; his blood pressure was 100/60 mmHg. He was resuscitated and nasogastric tube drained 300 ml of blood. He had a low hemoglobin of 6.5 gm/dl. He was stabilized and rushed to the Endoscopy suite. Esophagogastroduodenoscopy demonstrated 1 cm × 1 cm duodenal ulcer along the posterior wall of the first part of duodenum with diffuse bleed (Forrest 1b). An Endoscopic band ligation of the bleeding vessel was done with application of bands using an endoscopic multiband ligation device. The procedure itself involved keeping the band and the target close to the endoscope, thereby allowing a controlled deployment of the band. To enable more tissue to be captured a tangential approach to the ulcer was achieved permitting maximal capture of tissue surrounding the vessel.
was subjected to an esophagogastroduodenoscopy, which revealed altered blood, and an unhealthy 0.5 cm*0.5 cm ulcer with an adherent clot (Forrest IIb) in the first part of duodenum. (Figure 4) Initially there was no bleed from the ulcer but on dislodging the clot, there was slow diffuse ooze noted from the ulcer base. She underwent endoscopic band ligation with application of two bands to the ulcer crater using an endoscopic multiband ligating device. (Figure 5) The procedure was followed as detailed earlier; but in this case a tangential approach could not be achieved even after repositioning the endoscope. To overcome this

Figure 1. Peptic ulcer with bleed.

Figure 2. Band ligation in process-trans multi-band ligator view.

Patient was stable post procedure, with his hemoglobin remaining steady at 9 gm/dl. He passed normal coloured stools on the eighth post-procedure day. A repeat endoscopy revealed the band in place in the region of the ulcer. Patient was started on H.pylori eradication therapy and PPI. He is asymptomatic on follow-up.

Case 2

A 34-year-old female presented to the outpatient department with intermittent episodes of malena for the past two months. Her past medical history was significant for intake of painkillers for low backache. Laboratory data demonstrated mild anemia (hemoglobin 10.1 gm/dL) and her other investigations were within normal limits. She

Figure 3. Ulcer banded.

Figure 4. Ulcer with bleed.

Figure 5. Ulcer banding.
hurdle, the first band was applied which caused the banded tissue to tent up. The second band was then placed tangentially under the first band. She was started on PPI and was advised to refrain from taking painkillers. Her tests for H.pylori were negative. She is asymptomatic on follow up with a repeat Endoscopy done at four weeks showing a healed area in the region of the previous ulcer.

**DISCUSSION**

Van Stiegmann et al developed the band ligation technology for esophageal varices management. With subsequent developments, the transparent Endoscopic elastic band ligating device, pneumatic release of bands, and multiple band applications, band ligation has become the standard of care for variceal bleeding. Peptic ulcer bleeding stops spontaneously in most patients (approximately 70–80%). In the subset of ulcers that do not stop bleeding, there is a significant mortality of 12–18%. Ulcers at risk for continued or recurrent bleeding are identified by the presence of active spurting or oozing blood, or the appearance of a non-bleeding visible vessel at the time of endoscopy. The number of bands required for hemostasis depends on the bleeding activity, endoscopic accessibility of the bleeding site, and the characteristics of the vessel. Spurring lesions generally require more clips to achieve hemostasis than do oozing lesions.

Park et al demonstrated lower peptic ulcer rebleed after combination therapy with a clip or band ligation plus epinephrine injection compared with epinephrine injection alone. His group subsequently showed the safe and effective use of band ligation in the treatment of bleeding from small-sized nonfibrotic acute peptic ulcer of the stomach, duodenum, and Billroth II anastomosis. Few other case series have reported the benefit of Endoscopic band ligation in controlling peptic ulcer bleeding, especially in settings where prior attempts to control bleeding with standard techniques had failed. Banding allows clamping of bleeding vessels and achieves mechanical sealing without affecting the ulcer's depth or size. These bands dislodge spontaneously and pass through the gastrointestinal tract safely within 3 weeks. The damage to surrounding tissue is also reported to be limited. The main difficulty is deploying the band is obtaining the ideal tangential or an end-on view of the bleeding vessel/ulcer crater, especially in the duodenal bulb. In the present series, a follow-up endoscopy showed no obvious band related tissue injury or impairment of ulcer healing. There have been studies looking at other mechanical hemostatic devices like the hemoclip for bleeding peptic ulcer as an effective and safe modality. The main outcomes evaluated have been initial hemostasis (at the time of first endoscopy), re-bleeding rate (any bleeding after first endoscopy), permanent hemostasis (no further bleeding for a defined followup period), need for surgery (the failure of endoscopic therapy) and mortality. These Hemostatic devices have a high initial hemostatic rate (95%) and a low rebleeding rate (8%). With the development of band application devices, the endoscopic band application has become easier and much more efficient. Endoscopic band ligation deserves further comparative studies with other hemostatic methods. Randomized trials like the PROTECCT UGI trial have shown the hemoclip to be as effective in controlling non variceal upper GI bleed as combination therapy. The band uses the same principle of mechanical hemostasis. It is far more economical and ubiquitous in its availability than other modes of endoscopic hemostasis like the hemoclip, especially since no extra equipment is required for this procedure. This applies particularly to the developing world, where H.pylori is endemic and peptic ulcer bleed still carries a very high mortality. The use of band ligation for peptic ulcer bleed simplifies the successful management of peptic ulcer bleed.

**CONCLUSION**

We have presented an initial report of the successful and safe use of bands in peptic ulcer bleed. Further studies are needed to determine which bleeding situations may best be managed with clips or bands, and there is also a need for randomized trials comparing the band ligation versus other hemostasis approaches in peptic ulcer bleed before this technique can be incorporated into the standardized evidence based protocol of endoscopic bleed control.
REFERENCES