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*Research Article*

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# Endoscopic Bariatric Band Ligation for Obesity Management: Initial Report from Bangladesh

**Sheikh Mohammad Noor E Alam[1], Rokshana Begum[2], Ahmed Lutful Moben[3], Md. Abdur Rahim[4], Omar Faruque Sadman[5], Md. Abdur Rahman[6], Nasif Shahriar[7], Nadia Binte Nasir[7], Nirupoma Das[7], Taslima Akter Lima[7], Musarrat Mahtab[8], Sheikh Mohammad Fazle Akbar[9] and Mamun Al Mahtab[10*]**

[1]*Department of Hepatology, Bangladesh Medical University, Dhaka, Bangladesh*

[2]*Department of Hepatology, Shaheed Suhrawardy Medical College, Dhaka, Bangladesh*

[3]*Kurmitola General Hospital, Dhaka, Bangladesh*

[4]*Department of Hepatology, International Medical College, Gazipur, Bangladesh*

[5]*Department of Anesthesia, Evercare Hospital Limited, Dhaka, Bangladesh*

[6]*Department of Anesthesia, Analgesia & Intensive Care Medicine, Holy Family Red Crescent Medical College, Dhaka, Bangladesh*

[7]*Farabi General Hospital, Dhaka, Bangladesh*

[8]*Department of Biochemistry, North South University, Dhaka, Bangladesh*

[9]*Ehime University, Ehime, Japan, Oita University, Oita, Japan and Miyakawa Memorial Research Foundation, Tokyo, Japan*

[10]*Interventional Hepatology Division, Bangladesh Medical University, Dhaka, Bangladesh*

**[*]Corresponding author**

Mamun Al Mahtab, Interventional Hepatology Division, Bangladesh Medical University, Dhaka, Bangladesh.

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## ABSTRACT

**Introduction:** Obesity is a global pandemic and a concern for all ages and genders, belonging to all socio-economic status across the globe. Since obesity contributes to several life-threatening comorbidities, obesity management remains a major concern in our daily specialist medical practice.

**Materials & Methods:** Endoscopic bariatric band ligation was performed in 3 patients, all of whom were obese. The procedure was performed on out-patient basis. Results: All 3 patients had reduction of body weight. The procedure was safe, with no significant adverse event in any patient immediately post-procedure and at 1-month post-EBBL.

**Conclusion:** Endoscopic bariatric band ligation appears to be a safe and effective endoscopic intervention for obesity management according to our initial experience. However, further data in this regard needs to be generated in the coming days to establish EBBL as a standard of endoscopic care for obese individuals.

**Keywords:** Obesity, Endoscopic Intervention, Endoscopic Bariatric Band Ligation

## Introduction

Obesity is a global non-communicable pandemic, which is responsible for serious health ailments, namely, fatty liver disease, hypertension, ischemic heart disease, cerebrovascular accident, diabetes mellitus, chronic kidney disease, malignancies and so on to name a few. It affects individuals across all ages and genders and of all socio-economic status in all parts of the globe. It is anticipated that by 2030, at least 1 billion of the world's population will turn obese [1,2].

While lifestyle modification remains the cornerstone for obesity management, pharmacologic, surgical and endoscopic interventions are frequently adopted measures to manage obesity.

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Endoscopic interventions are gaining popularity over bariatric surgery in recent times due to several advantages, likely less invasiveness, adverse events encountered following bariatric surgery including but not limited to ulcers, anastomotic stenosis, gastro-intestinal fistula, surgical leaks and intestinal obstruction [3]. The American and European Society of Gastrointestinal Endoscopies have both recommended endoscopic bariatric interventions for obesity management [4].

Endoscopic band ligation (EBL) is a well-established endoscopic intervention for management of esophageal varices in patients with liver cirrhosis with portal hypertension to prevent or stop variceal bleeding [5]. The same technique was introduced recently for obesity management [6]. Here we share our initial experience of endoscopic bariatric band ligation (EBBL), also referred to as EBL for management of obesity for the first time from Bangladesh.

## Materials & Methods

There were 3 obese patients whom we followed up prospectively. All of them underwent EBBL and were followed up at 1-month post-EBBL. Body Mass Index (BMI) of the patients were calculated at baseline and at follow-up. Gastroparesis Cardinal Symptom Index (GCSI) scoring was done at baseline and at 1-month follow up to assess EBBL-related adverse event(s). This scoring system has a 0-5 scale and ranks the adverse events as none, mild, mild moderate, moderate, severe and very severe utilizing presence of nausea/vomiting, postprandial fullness/ early satiety and bloating. All 3 EBBLs were performed by a single experienced endoscopist at a single center having the experience of performing over 24,000 diagnostic and therapeutic endoscopies in last 17 years [7].

EBBL was performed under total intravenous anesthesia (TIVA) (injection propofol 1.5 to 2 mg/kg body weight) by an experienced Anesthesiologist maintaining all standard procedures, monitoring and precautions. Three sets of rubber bands (total 18 numbers) were applied in 3 parallel rows starting from the distal part of the gastric body along the greater curvature, gradually progressing towards the proximal part (Figure-1). Patients were allowed to have liquid diet at 6 hours post-EBBL and eventually switched over to semi-solid and then normal diet over the next 24 hours. EBBL was done on out-patient basis and patients were discharged 6 hours post-EBBL.

## Results

No significant adverse event was encountered in any of our 3 patients. All of them tolerated the procedure well. All complained of epigastric pain post-EBBL, which was managed conservatively. At follow up at 1-month post-EBBL, 2 patients had GCSI score 0, while in 1 patient the score was 1, which was quite indifferent from the baseline observations. All 3 patients experienced reduction of their respective body weights and resultant decline in BMI (Table 1).

## Discussion

The rationale for EBBL is that post-EBBL scarring would lead to marginal narrowing to gastric lumen and subsequent less food intake contributing to loss of body weight [8]. This procedure is a rather new one. There are several other endoscopic procedures for obesity management namely, intra-gastric ballon introduction, endoscopic sleeve gastrostomy etc. Besides, bariatric surgery and laparoscopic sleeve gastrectomy are also well-established surgical interventions often employed for the same purpose. These procedures can lead to 2.4%-8% weight reduction at 1-month post-procedure. However, all these procedures have some common disadvantages. All these require skilled professionals who are often not available in different centers. Besides these are all very expensive and therefore not easily accessible, not to mention that most of these are also associated with significant adverse events [9-14].

Compared to the above procedures, EBBL is much cheaper. Endoscopists are well acquainted with EBL and therefore EBBL can be easily introduced at any endoscopy setup. It is a safe procedure, with comparable efficacy as other endoscopic bariatric interventions. The procedure was reported by an Egyptian group, who have recently published their experience in a series of 13 patients. Their experience is comparable to ours. They did not experience any significant adverse event or significant deterioration of GCSI score in their cohort. They recorded 7.8% reduction in body weight in their series [8].

## Conclusion

EBBL is a rather new endoscopic therapeutic intervention for obesity management, which adds to the growing list of such interventions. However, it is likely to become standard of endoscopic care for obese individuals as it appears to be safe, effective and cheap. More studies from within the country and beyond will be needed to attain that stage. Our efforts in this direction are currently ongoing.

**Table 1: EBBL in 3 patients at a glance**

| Sex | Age (yrs.) | Baseline | | | | | Follow-up | | | | Time of Follow-up (month) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weight (Kg) | Height (cm) | BMI (kg/m$^2$) | GCSI Score | AE | Weight (kg) | Height (cm) | BMI (kg/m$^2$) | GCSI Score | |
| F | 56 | 110 | 160.0 | 43.0 | 0 | Epigastric pain (2 hrs.) | 104 | 160 | 40.6 | 0 | 1 |
| F | 55 | 83 | 154.94 | 34.6 | 0 | Epigastric pain (4 hrs.) | 80 | 154.94 | 33.3 | 1 | 1 |
| M | 30 | 84 | 170.69 | 28.8 | 0 | Epigastric pain (2 hrs.) | 82 | 170.69 | 28.1 | 0 | 1 |

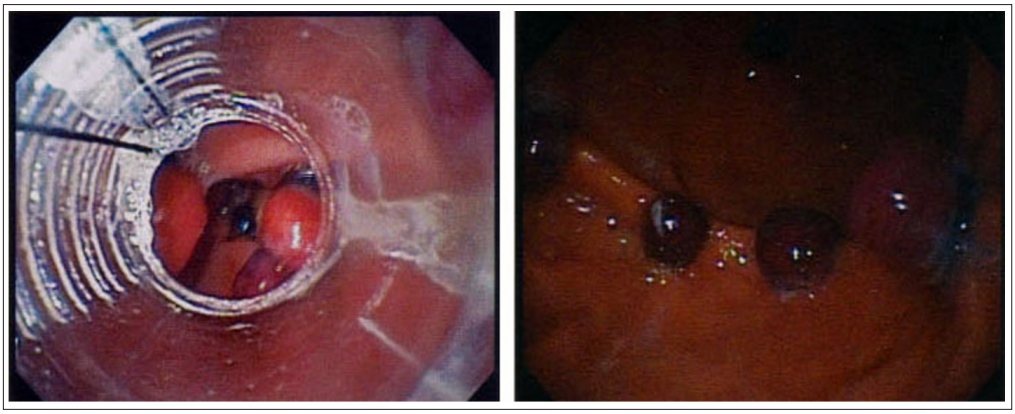

**Figure 1:** Rubber bands applied to gastric body at EBBL

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