

# EFFECTIVENESS OF SINGLE SESSION OF BAND LIGATION IN ACHIEVING HEMOSTASIS IN PATIENTS PRESENTED WITH ACUTE UPPER GASTROINTESTINAL BLEEDING SECONDARY TO ESOPHAGEAL VARICES

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Date Received:  
September 11, 2018

Date Revised:  
March 24, 2019

Date Accepted:  
March 31, 2019

## ABSTRACT

**Objective:** To determine the effectiveness of single session of band ligation in patients who had esophageal variceal bleeding.

**Methodology:** It was a retrospective analysis of the data in which we reviewed medical records of 823 cirrhotic patients who presented with active esophageal variceal bleeding between 01/09/2015 and 31/08/2016 in Lady Reading Hospital Peshawar and assessed them for eventual outcomes i.e. initial hemostasis, rebleeding and mortality rate.

**Results:** The mean age was 51 ±11.9 years and 523 (63.5%) were males in our study. Majority (n=603, 80.6%) belonged to Child class "C". A single session of band ligation was successful in securing hemostasis in 804 (97.67%) patients.

**Conclusion:** Single session of band ligation was successful in achieving and maintaining hemostasis in most of the patients admitted with esophageal variceal bleed.

**Key Words:** Upper gastrointestinal bleeding, Esophageal varices, Band ligation

This article may be cited as: Hassan MK, Khan FU, Masood A, Sohail M. Effectiveness of single session of band ligation in achieving hemostasis in patients presented with acute upper gastrointestinal bleeding secondary to esophageal varices. *J Postgrad Med Inst* 2019; 33(2): 109-12.

## INTRODUCTION

Acute upper gastrointestinal bleed is one of the main causes of presentation to hospitals throughout the world. Its incidence is reported as 50–150 episodes per 100,000 individuals per year. Mortality rate associated with acute upper gastrointestinal bleeding is 10–14%<sup>1</sup>. Variceal bleed is among the most serious complications of portal hypertension resulting in one-third of mortality in all cirrhotic patients<sup>2</sup>. The results of an international study reported that the most common causes of upper gastrointestinal bleed included esophageal varices 57.7%, peptic ulcer disease 18.2%, portal hypertensive gastropathy 9.5%, gastric varices 5.1%, Mallory-Weiss tear 2.9%, reflux esophagitis 2.9% and erosive gastropathy 1.5%<sup>3,4</sup>.

Esophageal variceal bleeding (EVB) can present as a life threatening condition associated with a six-week mortality rate of 20% following the initial bleeding episode<sup>5,6</sup>. Re-bleeding can be prevented by using non-selective  $\beta$ -blockers (NSBBs), endoscopic band ligation (EBL), a combination of NSBBs and EBL, as well as trans

jugular intrahepatic porto systemic stent shunt (TIPSS). Despite appropriate pharmacological and endoscopic treatment, in 10-20 percent of instances, constant or recurrent bleeding; called uncontrolled bleeding, results<sup>7</sup>.

In terms of rebleeding rate and mortality rate, esophageal variceal band ligation (EBL) is superior compared to injection sclerotherapy (SCL). In order to accomplish variceal obliteration, band ligation requires fewer endoscopic sessions and is often related to fewer adverse outcomes such as sepsis, esophageal ulceration and formation of strictures. Band ligation is, therefore, the therapy of choice for managing oesophageal variceal bleeding for these reasons<sup>8-12</sup>. The primary goal of our research was to share our knowledge in the effectiveness of band ligation in esophageal variceal bleed regarding achievement of hemostasis in patients presenting to the Department of Gastroenterology LRH, Peshawar. Recognizing the effectiveness of endoscopic band ligation in the local population will enable us to administer this life-threatening emergency with the best available treatment method of treatment.

## METHODOLOGY

This was a retrospective analysis of the data of patients who presented to Lady Reading Hospital Peshawar with acute variceal bleed secondary to portal hypertension and cirrhosis of liver. We evaluated and enrolled a total of 823 patients' documents in our research. Patients for study were admitted to the Lady Reading Hospital from 01/09/2015 to 31/08/2016 who presented with upper variceal bleed. An informed consent was taken from every patient included in this study as per our standard protocol before any procedure. Upper GI bleeding in patients from causes other than esophageal varices e.g. peptic ulcer disease, gastric fundal varices, Mallory-Weiss tear and erosive gastropathy were excluded from the study.

Successful homeostasis was defined using BAVENO V guidelines as an absence of upper GI bleed for 1<sup>st</sup> 120 hours (5 days) after band ligation of esophageal varices<sup>13</sup>. Any bleeding after 120 hours (5 days) of Band ligation is defined as re-bleeding. Similarly unsuccessful hemostasis was also defined using BAVENO V guidelines as death; or the need to change treatment due

to hematemesis of equal to or more than 100 ml fresh blood 2 hours after the therapy; or aspiration (if NG tube is in situ); or development of shock (hypovolemic); or a drop in hemoglobin by 3 g within any 24 hours period in the absence of transfusions. Senior consultant gastroenterologists with experience of at least 500 esophagogastroduodenoscopies, performed the procedures on all patients using standard forward viewing video scope (Pentax EG 2910); using either of the two band ligation devices i.e. Saeed six shooter or Boston scientific device.

Data was entered and analyzed using SPSS version 25. Frequencies and percentages were calculated for qualitative data while mean  $\pm$ SD were calculated for quantitative data.

## RESULTS

The research included 823 cirrhotic patients and all patients had haemostatic variceal band ligations. Table 1 presents clinical and endoscopic details of patients. Patients included in the study had an average age of 51  $\pm$ 11.9 years. Male and female patients were 523 (63.54%) and 300 (36.45%) respectively.

**Table 1: Clinical and endoscopic characteristics of patients included in the study**

Characteristics		Frequency (%)
Age	Age $\pm$ SD (Years)	51.68 $\pm$ 11 (11 – 87 years)
Gender	Sex Ratio (Male/Female)	1.7:1
Etiology of Cirrhosis	Viral Hepatitis C	603 (73.3%)
	Viral Hepatitis B	223 (27.1%)
Child-Pugh's Score	A (%)	1 (.1%)
	B (%)	159(19.3%)
	C (%)	663 (80.6%)
Varices	Esophageal Varices	758 (92.1%)
	Medium	129 (15.7%)
	Large	694 (84.3%)
	Gastroesophageal Varices	65 (7.9%)
Columns	1	36 (4.4%)
	2	102 (12.4%)
	3	649 (78.9%)
	4	35 (4.3%)
	5	1 (.1%)

In our data 73.3% of patients had hepatitis C. Majority (n=603, 80.6%) belonged to Child class "C". Frequency of esophageal varices was 758 (92.1%) and 649 (78.9%) had 3 columns of esophageal varices.

Amongst the 823 patients included in the study, 804 (97.67%) patients had successful achievement of homeostasis with single session of band ligation. Remaining 19 (2.33%) patients had re-bleeding within 1<sup>st</sup> 5 days. Out of these 19 patients, one patient died after rebleeding (primary failure). Rest of them were controlled with second session of band ligation along with supportive therapy.

## DISCUSSION

For endoscopists, active bleeding variceal veins are a serious challenge. In a research, the main achievement level (bleeding stopped for 72 hours) was 97% for the ligation group and 76% for the sclerotherapy group (P= .009)<sup>14</sup>. In another survey, the efficacy of ligation in managing oozing varices was equal to sclerotherapy (100% vs. 89%, P= .23), whereas for the control of spurting varices, ligation was superior to sclerotherapy (94% vs. 62%, P= .012)<sup>15</sup>.

Combined ligation and sclerotherapy does not decrease the amount of endoscopic treatment sessions needed for varice eradication and does not offer any advantage over ligation alone. For arresting active bleeding, no significant differences can be established whether to go for combine approach or ligation alone [9 of 9 (100%) vs. 6 of 7 (86%)], amount of blood transfusion ( $3 \pm 0.8$  vs.  $2 \pm 0.6$ ), number of sessions needed to eradicate varices ( $3.8 \pm 0.5$  vs.  $3.6 \pm 0.4$ ). Among groups for control of bleeding, rates of early re-bleeding, complications or mortality, no significant differences could be established [SCL 36 (80%) and EBL 33 (77%)] patients were found to be bleeding free and alive after 6 weeks<sup>16</sup>. However, Triantos et al<sup>16</sup> argue that patients with large varices might be unsuitable for band ligation and they may be intolerant or having contraindications to beta-blockers. Their argument is based primarily on the outcomes of a research in which patients with variceal veins of any size, with contraindications or intolerance to betablockers, have been randomized to band ligation or without treatment. The research ended, after 52 of the planned 214 patients registered in the ligation group had sever bleeding. Unfortunately, Triantos et al<sup>16</sup> argument is seriously weakened by irregularities in their study design and selection including about 60% of patients had tiny varicose veins.

Baron et al<sup>17</sup> in Okayama, Japan demonstrated 95% hemostasis achievement with 1st session of esophageal band ligation. The results of this study are comparable to our results. Similarly another study conducted by Park et al<sup>18</sup> in Seoul, Korea attained successful achieve-

ment of hemostasis in 82.6% patients with single EVBL session. A meta-analysis published in 2006 involving 12 studies including 1309 patients showed effective hemostasis achieved in 97% of patients<sup>19</sup>. In comparison, in our study the hemostasis achievement was 97.67%, showing similar results to the previous studies.

## CONCLUSION

A single session of band ligation is regarded to be an effective therapy to achieve hemostasis in variceal bleed in the esophagus.

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#### CONTRIBUTORS

MKH conceived the idea, planned the study and drafted the manuscript. FUK, AM and MS helped acquisition of data, did statistical analysis and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.