



RESEARCH ARTICLE

ENDOSCOPIC MANAGEMENT OF BLEEDING PORTAL HYPERTENSIVE CONGESTIVE GASTROATHY. A PROSPECTIVE CONTROLLED RANDOMIZED TRIAL

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ABSTRACT

Back ground: Argon Plasma Coagulation (APC) is the standard treatment of Portal Hypertensive Gastropathy (PHG). Endoscopic Band Ligation (EBL) is emerging as a new modality for treatment of PHG.

Objective: Compare the effect of APC to EBL for the treatment of bleeding PHG in cirrhotic patients.

Patients and methods: The study was conducted on 236 patients over a period of 30 months. The patients were divided into two groups as follows:

- **Group A** (control group): 124 patients who underwent primarily APC irrespective of the severity of PHG and
- **Group B** (study group) : 112 patients were managed by EBL of the gastric mucosal lesions also irrespective of their severity. Sessions were applied every 3 weeks till adequate endoscopic ablation was achieved. Regular follow-up and endoscopic assessment within 6 months

Results: The efficacy to eradicate PHG (response to treatment) was 95.1% in APC group and 98.2% in EBL group. The number of endoscopic sessions needed to eradicate PHG was significantly less in EBL group (2.02 ± 0.75) than in APC group (4.01 ± 0.34). During the follow-up period, patients in APC group had significantly high rate of re-bleeding from recurrent PHG compared to EBL group mainly in patients with initially severe PHG

Conclusion: Both treatment by APC and EBL are effective methods in treatment of bleeding from PHG ,however, EBL seems to be a significantly more effective modality on the long term follow up and prevention of recurrence.

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INTRODUCTION

Portal hypertensive gastropathy (PHG) occurs as a complication of cirrhotic or non-cirrhotic portal hypertension. PHG is clinically important because it may cause acute, massive, or insidious, blood loss. It is characterized by an endoscopic abnormality of the gastric mucosa that is classically described as a mosaic-like pattern that resembles the skin of a snake, with or without red spots (Thuluvath *et al.*, 2002). The bleeding may be frank in the form of haematemesis & Melena or may be overt with the repeated blood loss necessitating blood transfusion.

Up till now the literature supports the use of Argon Plasma Coagulation (APC) as the first line of treatment. Endoscopic hemostasis with APC is simple, safe and effective treatment modality for PHG related bleeding and anemia that can improve the quality of life by reducing the number of hospital admissions and blood transfusion requirement (Sohair *et al.*, 2014 and Herrera *et al.*, 2008). Most centers use APC due to the high failure rate of medical treatment (Spahr, 1999), and the technical difficulties of TIPS and poor outcome of surgery (Kamath *et al.*, 2000). Despite that APC has been mentioned in the literatures being easy and rather safe, it may be less effective in severe cases of PHG where the lesions tends to be more diffuse (Ripoll *et al.*, 2007). Few reports used endoscopic band ligation (EBL) of gastric mucosa for the treatment of PHG (Zulli *et al.*, 2015).

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Patients and methods

This was a prospective randomized controlled trial. That included 236 patients over a period of 30 months all with bleeding attributed to PHG. Age of the studied group ranged from 26 years to 84 years. Females were 112 patients and males were 124 patients. All patients were assessed and haemodynamically stabilized. Routine labs and child's classification were done. Patients in our study were classified into mild or severe portal congestive gastropathy according to Baveno scoring system. Patients were categorized randomly as:

Group A (control group): 124 (52.5%) patients who underwent primarily APC irrespective of the severity of PHG. Standard APC equipment with electrical power of 40 to 60 W and argon gas flow was 2 L/min. APC was applied to the lesion beginning at the pylorus and proceeding proximally.

Group B (study group): 112 (47.5%) patients were managed by EBL of the gastric mucosal lesions also irrespective of their severity. EBL was applied to abnormal-appearing mucosa in the antrum. The most distal antrum, adjacent to the pylorus, was treated first by applying the band in circular manner around pylorus, distance between each band about 2-3 cm. Subsequent ligation bands were applied more proximally until as much as possible of the abnormal-appearing mucosa was treated.

The number of sessions was determined based on the response to the modality use to control the bleeding.

Response to the treatment modality was determined based on rebleeding, packed red cell transfusion, cessation of bleeding, follow up endoscopy regarding recurrence of PHG in the 2 groups.

Cessation of bleeding (end point of treatment) was defined as the absence of overt or occult bleeding or requirement for transfusions (Sato, 2012).

All cases had at least a 6 month follow up. Recurrence of PHG during follow up period was defined as advanced anemia (hemoglobin drop > 2.0 g/dl per month), tarry stools or endoscopic evidence of bleeding from PHG⁽⁹⁾. Cases which didn't respond to APC were managed by Band Ligation of the lesions.

Aim of the work

To compare the efficacy and safety of endoscopic band ligation (EBL) Vs APC in the treatment of symptomatic Portal hypertensive congestive gastropathy (PHG) with overt or occult bleeding. Provided that the patient had eradicated or no varices at the time of the study, nor any other gastrointestinal varices at that time.

RESULTS

Table 1. Results of intervention used for each group and success rate of each technique

	Number (%)	Mild (%)	Severe (%)	Average Number of sessions (mean± SD)	Successful eradication (%)	Re-bleeding in mild PHG during follow up period	Re-bleeding in severe PHG during follow up period
Group A (APC)	124 (52.5%)	43 (34.7%)	81 (65.4%)	4.01±0.34	118 (95.1%)	8 (6.7%)	76 (64.4%)
Group B (EBL)	112 (47.5%)	49 (43.7%)	63 (56.3%)	2.02 ±0.75	110 (98.2%)	2 (1.8%)	6 (5.4%)

Table 2. Benefit of band ligation compared to APC in cases failed by APC alone (recurrent PHG)

	Number (%)	Modality of treatment	Number of sessions	Response (%)	Poor or no response
Re-bleeding in mild PHG under APC	8 (6.7%)	Band Ligation	1-2	No bleeding	-
Re-bleeding in mild PHG under EBL	2 (1.8%)	Band ligation	1	No bleeding (0%)	-
Re-bleeding in Severe PHG under APC	76 (64.4%)	Band ligation	2-3	No bleeding in 71 (93%)	5 (7%) needed further TTT
Re-bleeding in Severe PHG under EBL	6 (5.4%)	Band ligation	1-2	No bleeding in 5 (83%)	1 (17%) needed further TTT

Table 3. Sub analysis of the control group Vs the study group

	Number of PTS	Initial efficiency of the modality to eradicate PHG after multiple sessions	Failure of the modality to maintain eradication in follow up period (recurrence/re-bleeding)
Control group (A) APC	124	118 (95.1%)	84 (71.1%)
Study group (B) BL	112	110 (98.2%)	8 (7.2%)
Control group with Mild PHG under APC	43	39 (90.6%)	8 (20.5%)
Control group with severe PHG under APC	81	79 (97.5%)	76 (96.2%)
Study group with Mild PHG under EBL	49	48 (97.9%)	2 (4.1%)
Study group with Severe PHG under EBL	63	62 (98.4%)	6 (9.6%)

DISCUSSION

Portal hypertensive congestive gastropathy (PHG) is not an uncommon disorder causing gastro-intestinal haemorrhage. PHG is mostly observed in patients with liver cirrhosis but may also occur in patients with autoimmune connective tissue disorders, bone marrow transplantation or chronic renal failure. It is more frequently associated with chronic occult blood loss and may lead to acute, overt gastrointestinal haemorrhage (Chung, 2014). A 2-step classification was suggested by Baveno III consensus workshop where a portal hypertensive gastropathy scoring system was proposed. It subdivides the mosaic-like pattern into two aspects: mild, corresponding to a pink mosaic-like pattern, and severe, which corresponds to a red mosaic-like pattern as seen in Table 4 (Franchis, 2003).

Table 4. Baveno III consensus workshop scoring system for PHG

Parameter		Score
Mucosal mosaic pattern	Mild	1
	severe	2
Red marking	Isolated	1
	Confluent	2
Gastric antral vascular ectasia	Absent	1
	Present	2

Mild portal hypertensive gastropathy is suggested when the score is ≤ 3 where severe portal hypertensive gastropathy is suggested when the score is ≥ 4 . The role of APC in the management of PHG is well established and it is considered the gold standard therapeutic modality (Herrera *et al.*, 2008, Olmos *et al.*, 2006; Naga *et al.*, 2011; Lecleire *et al.*, 2008; Fuccio *et al.*, 2009 and Malatawy *et al.*, 2012). APC obliterates the ectatic vessels through its thermal effect on the superficial layers of the gastrointestinal wall. However, the main drawback of this technique was its short term effect and the necessity of multiple sessions (Sato *et al.*, 2012 and Nakamura *et al.*, 2006). The EBL is linked to its effect on the submucosal vascular plexus (Stiegmann, 1988). This may explain why EBL may theoretically be more effective at obliterating PHG compared to APC with a more durable response (Abdelhalim *et al.*, 2014). In this study, our aim is to investigate the efficacy of APC as a known therapeutic modalities to treat PHG as compared to the efficacy of a (EBL) which is gaining acceptance as the an evolving method for the treatment of PHG.

In the current study most of the patients presented with acute overt blood loss (hematemesis and/or melena); 105 patients in group A (85%) and 90 patients in group B (90%). This tendency to acute overt bleeding was seen in similar studies. Lecleire *et al.*, stated that acute hemorrhage appears to be more frequent in cirrhotic patients with PHG (Lecleire *et al.*, 2008). We found that patients in both groups had severe anemia, mean hemoglobin value was 7.82 ± 1.25 g/dl in the APC group compared to 7.13 ± 1.56 g/dl in the EBL group and this was due to either acute or chronic blood loss from PHG. In our study, treatment of PHG with EBL had required significantly fewer treatment sessions (mean of 2) as compared to the APC which required more treatment sessions (mean of 4). Many previous studies confirmed the superior efficacy of EBL over APC in

the treatment of PHG that was represented with fewer treatment sessions. This may be explained by the fact that EBL is more effective than APC in obliterating the submucosal plexus of veins and this is reflected on the overall efficacy of the procedure and hence the fewer number of treatment (Nakamura *et al.*, 2006; Stiegmann *et al.*, 1988 and Abdelhalim, 2014).

Many previous studies confirmed the efficacy of APC and EBL in achieving a high rate of cessation of bleeding, significant improvement of hemoglobin level at the end of treatment period and reduction in packed red cell transfusions^(3,9,19). This was also observed in our study where patients in both groups had significantly high rate of cessation of bleeding, significant improvement in hemoglobin level at the end of treatment period as well as significant reduction in the number of packed red cell transfusions. Comparison of the mean post-treatment changes in different parameters between the APC group and the EBL group demonstrated a numeric but not a statistically significant improvement in the mean post-treatment hemoglobin. During the follow-up period, patients in APC group had significantly high rate of re-bleeding of PHG, which was seen in 84 patients out of the 118 eradicated patients (71.1%) compared to only 8 patients out of the 110 eradicated patients (7.2%) in the EBL therapy group. This difference is mainly due to the high rate of re-bleeding in severe PHG compared to mild PHG in the APC groups. Those 84 cases of mild and severe PHG with re-bleeding not responding to APC in group A was offered EBL sessions showing a significant response with cessation of bleeding during their follow up (78 patients (93%)). So in conclusion of our study, we can recommend the use of EBL for the treatment of PHG being a safe and very effective method in comparison to APC especially on the long term follow up.

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