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Original Article

Band Ligation Versus Glue Injection for Bleeding Gastric Varices

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Abstract

Background : To compare endoscopic variceal sclerotherapy with N-butyl-2-cyanoacrylate-Histoacryl (EVS) and endoscopic variceal band ligation (EBL) for treatment of bleeding gastric varices (GV).

Methods: In this randomized control trial 140 patients with bleeding gastric varices were included.Bleeding GV patients diagnosed endoscoically were treated with EVS or EBL in two equal groups after randomization. Bleeding control or otherwise was confirmed during the procedure. Patients were followed for 1 month for re-bleeding. Comparison of the patients undergoing EVS or EBL was done in terms of bleeding control and re-bleeding during follow up period. Chi² test was used to seek statistically significant association in this regard.

Results: Endoscopic bleeding control was confirmed in all except 1 of EBL patients who expired. 4 (5.7%) of EVS 10 (14.28%) EBL patients had re-bleeding (P >0.05).

Conclusion: EVS and EBL are comparative procedures for treatment ofbleeding GV for control of active bleeding and re-bleeding over one month follow up.

Key Words: Gastric varices, Band ligation, Sclerotherapy, Rebleeding

Introduction

Gastro-esophageal varices are one of the complications of portal hypertension. These include esophageal varices (EV) and gastric varices (GV). Gastric varices account for 10% to 30% of variceal bleeding.[1-4] Bleeding from gastric varices is more severe and has higher mortality compared to esophageal varices bleeding.[5,6] Management of bleeding gastric varices after resuscitation, is done endoscopically. In this regard endoscopic varicealsclerotherapy (glue injection- EVS) or endoscopic band ligation (EBL) can be used.[9] As compared to esophageal varices endoscopic treatment, it is somewhat difficult to control gastric variceal hemorrhage, because of its location, size and high blood flow.[10,11] Gastric varices have higher re bleeding rate than esophageal varices.

Limited data is available regarding most suitable treatment modality for the endoscopic treatment of gastric varices.[12,13]Initial hemostasis and short term survival are same with EVS and EBL. Re-bleeding has however been more common in patients undergoing EBL.[2] Internationally, a few randomized controlled studies focusing comparison of EBL with EVS have been done.[14]

Patients and Methods

This randomized controlled trial was conducted at Department of Medicine, Rawalpindi Medical College, Rawalpindi from July to December 2013. Approval was taken from Ethical Review Committee of Rawalpindi Medical College and Allied Hospitals. Sample size of 140 (70 in each Group) was calculated with 5% level of significance and 80%.power keeping in mind previous studies/trials in this context. Adult patients presenting with upper gastrointestinal (GI) bleeding due to GV varices were included. Patients were chosen from cohort of hepatitis C related chronic liver disease patients with upper GI bleeding. Selection was based on standard upper GI endoscopy findings suggestive GV bleeding within 24 hours after onset of symptoms.[14] Exclusion criteria were patients with non GV bleeding based on upper GI endoscopic findings, patients suffering from heart failure, renal failure, chronic obstructive pulmonary disease, or malignancy, and patients who previously underwent endoscopic or surgical treatment for gastric varices. Using a random number list generated through SPSS, each patient was included in to Group I(EVS) or Group II (EBL) .EVS group patients were treated with

N-butyl-2-cyanoacrylate (Histoacryl blue) injecton of gastric varices employing 23- gauge disposable injection needle. EBL group patients were treated with endoscopic band ligation employing Sumitomo pneumo-active ligator in standard way.[12, 14-17]Cessation of active bleeding visualized endoscopically was noted as bleeding control and vice versa as treatment failure. OPD based follow up was done for assessment of re-bleeding in the next month. If re-bleeding (haematemesis, melena, and or hematochezia) occurred, it was confirmed by upper GI endoscopy.[13]It was considered significant if patient required blood transfusion along with standard upper GI bleeding treatment. Chi^2 test and t test were used to note statistically significant association between categorical and continuous variables respectively. P value <0.05 was considered significant.

Results

Out of 140 patients, 51.43% were male. Mean patient age was 48±11.49 years. Of the 70 EVS Group patients 37 (51.38%) were male, similarly 35(50%) of EBL Group patients were male (Table 1).

Table 1: Gender, age and re-bleeding wise comparison of groups

		GroupI* (n=70)	Group II** (n=70)	P value
Gender	Male	37	35	0.36
	Female	33	35	
Mean Age		50.78± 10.31	45.21± 12.00	0.003
Re-bleeding		4	10	0.1***

*Group I (EVS), **Group II (EBL), ***Yates corrected

Endoscopic bleeding control was confirmed in all except 1 of EVL Group patients (p value 1). Except for the same patient who expired everyone else became stable and was discharged. Four (5.7%) of EVS group and 10 (14.28%) EBL Group patients developed re-bleeding in post discharge one month period (Table 2).

Discussion

Comparison of gastric varices obliteration with sclerotherapy or band ligation has remained an important issue. At a particular health care facility, availability of resources along with choice and expertise of endoscopist influence preference for one of the procedure.[18]It is generally considered that both EVS and EBL can control bleeding from gastric varices, however chances of re-bleeding with EBL are more than with EVS.[13]

Interestingly three studies/trials are available that compared EVS with EBL. In a prospective study, Tantau M et al compared band ligation with cyanoacrylate glue injection in patients with upper GI bleeding due to gastric varices.[8]In this study of 37 patients better results were noted in terms of bleeding control, re-bleeding, session number, variceal eradication, and eradication with EVS. In another trial by Lo et al that included 60 patients, EVS was noted to be more effective and safe compared to EBL.[13]Tan et al conducted related trial that included 49 patients with EVS and 48 with EBL.[19] In this trial, EBL and EVS were equally effective in controlling bleeding however re-bleeding was more frequently noted in EBL group compared with the previously conducted trials (Table 2). We compared two groups of upper GI bleeding due to gastric varices, each comprising about 70 patients with reference to treatment with either sclerotherapy (Group I, EVS) or banding (Group II, EBL) with endpoint of re-bleeding at one month. Bleeding was efficiently controlled in all patients except one who was treated with EBL. No statistically significant difference was noted between the two Groups as far as re-bleeding was concerned. In up to 95% of patients with GV haemorrhage bleeding control can be achieved

Table 2. EVS vs EBL: comparison of present study with related studies

		Tantau. et al(37)			Tan. et al(n=97)			Lo. et al(n=60)			Present study (n=140)		
		Group 1	Group 2	P value	Group 1	Group 2	P value	Group 1	Group 2	P value	Group 1	Group 2	P value
Gender	Male	10	11	0.85	35	34	0.94	24	22	0.89	37	35	0.36
	Female	9	7		14	14		7	7		32	35	
Mean Age		62.3±1 1.27	59.7±8. 38	0.40	61.35± 14.36	61.77± 12.35	0.23	58± 17	55±13	0.15	50.78±10 .31	45.21±12	0.003
Acute bleeding control		100%	88.88%	0.43	14	14	1.000	87%	45%	0.03	N=69	N=69	0.5
Rebleeding		6	13	0.03	11	21	0.044	9	14	0.005	4	10	0.15

Group 1= Endoscopic variceal glue injection sclerotherapy (EVS);Group 2= Endoscopic variceal band ligation(EBL)

by endoscopic procedures.[13]Generally it is considered that acute bleeding control can be more efficiently achieved in patients undergoing EVS compared to EBL.[9,14]Better technique and applying more bands may however improve acute bleeding control in patients undergoing EBL.[14,19]Acute bleeding control was not achieved in one of our patients undergoing EBL while in all other patients of the two groups bleeding cessation occurred.

Re-bleeding in settings of endoscopic management of bleeding patients is diagnosed if patient develop clinical features suggestive of upper GI bleeding (haematemeseis, and melaena etc) and hemodynamic instability (tachycardia and hypotension) after remaining stable for 24 or more hours following the procedure.[19]Up to 42% of bleeding GV patients treated with EVS develop rebleeding.[19,20]It has been noted earlier that re-bleeding is statistically more frequently noted in patients undergoing EBL compared to patients treated with EVS patients. It is considered that lesser chances of re-bleeding with EVS are due to obliterative effect on deeper collateral veins compared to superficial in EBL. Moreover EBL may produce ulceration that may heal with difficulty due to acidic gastric milieu.[13]Re-bleeding was more frequently noted in our EBL group compared to EVS group.3-69% mortality among GV haemorrhage patients has been noted in various studies, depending on patient characteristics and duration of follow up. [13,19]Mortality in our patients was comparatively less.

We conducted this trial with the consideration in mind that arrangement of glue injection or banding at our public sector hospital are either done by patient or on charity/Zakat. In financially constrained scenario like ours, glue is more difficult to get. Results of this trial are important and have interesting implications. As far as preferring EBL over EVS in settings of acute GB hemorrhage following need to be kept in mind; 1) our trial is much larger compared to other available studies/trials, 2) one endoscopist performed all the procedures, 3) our patients suffered from HCV related liver disease, 4) we did not assess liver disease severity, 5) except for one patient repeat endoscopy was not performed on any patient during study period, 6) there was statistically significant difference between EBL vs EVS group with reference to mean age,and 7) patient follow up was of short term. Change in these may lead to variation in results i.e., if procedure was performed by more than one endoscopist with different technical expertise, and mean age of the patient groups were same etc. The issue should thus be solved by considering EBL and EVS as comparative procedures for endoscopic management of acute GV related upper GI bleeding.

Conclusion

No statistically significant difference was noted when endoscopic variceal sclerotherpy with histoacryl was compared with endoscopic band ligation for achieving active bleeding control and re-bleeding over one month follow up in patients with upper GI bleeding due to gastric varices.

References

1. Lim YS. Practical Approach to Endoscopic Management for Bleeding Gastric Varices. Korean J Radiol 2012; 13(S1): 40–44.
2. Al-OsaimiAM, Caldwell SH. Medical and endoscopic management of Gastric Varices. Semin Intervent Radiol 2011; 28: 273–82.
3. Kang EJ, Jeong SW, Jang JY, Cho JY, Lee SH. Long-term result of endoscopic Histoacryl® (N-butyl-2-cyanoacrylate) injection for treatment of gastric varices. World J Gastroenterol 2011; 17:1494-1500.
4. Sato W, Kamada K, Goto T, Ohshima S, Miura K, Shibuya T, Dohmen T. Efficacy of combined balloon-occluded retrograde transvenous obliteration and simultaneous endoscopic injection sclerotherapy. Intern Med 2015;54:261-65.
5. Wani ZA, Bhat RA, Bhadoria AS, Maiwall R, Choudhury A. Gastric varices: Classification, endoscopic and ultrasonographic management. J Res Med Sci 2015;20: 1200-07.
6. Helmy A, Hayes PC. Review article: current endoscopic therapeutic options in the management of variceal bleeding. Aliment PharmacolTher 2001;15:575-94.
7. Sarin SK, Lahoti D, Saxena SP, Murthy NS. Prevalence, classification and natural history of gastric varices: a long-term follow-up study in 568 portal hypertension patients. Hepatology 1992; 16: 1343-49.
8. Tantau M, Crisan D, Popa D, Vesa S, Tantau A.Band ligation vs. N-Butyl-2-cyanoacrylate injection in acute gastric variceal bleeding: a prospective follow-up study. Ann Hepatol 2014;13:75-83.
9. Garcia-Tsao G, Sanyal AJ, Grace ND, Carey W. Prevention and management of gastroesophageal varices and variceal hemorrhage in cirrhosis. Hepatology. 2007;46:922-38.
10. Watanabe K, Kimura K, Matsutani S, Ohto M, Okuda K. Portal hemodynamics in patients with gastric varices: a study in 230 patients with esophageal and/or gastric varices using portal vein catheterization. Gastroenterology 1988;95:434-40.
11. Arakawa M, Masuzaki T, Okuda K. Pathomorphology of esophageal and gastric varices. Semin Liver Dis 2002;22:73-82.
12. Hsu YC, Chung CS, Wang HP. Application of Endoscopy in Improving Survival of Cirrhotic Patients with Acute VaricealHemorrhage.Int J Hepatol 2011;893973: 1-8.
13. Lo GH, Lai KH, Cheng JS, Chen MH, Chiang HT. A prospective, randomized trial of butyl cyanoacrylate injection versus band ligation in the management of bleeding gastric varices. Hepatology 2001; 33: 1060-64.

14. Ljubicic N, Biscanin A, Nikolic M, Ljubicic N. A randomized-controlled trial of endoscopic treatment of acute esophageal variceal hemorrhage: N-butyl-2-cyanoacrylate injection vs. variceal ligation. Hepatogastroenterology 2011;58:438-43
15. Cordon JP, Torres CF, García AB, Rodriguez FG, Suarez de Parga JM. Endoscopic management of esophageal varices. World J GastrointestEndosc 2012; 4: 312-22.
16. Hashizume M, Akahoshi T, Tomikawa M. Management of gastric varices. Journal of Gastroenterology and Hepatology 2011; 26: 102-08.
17. Mosca I, Ligorría R, Tufare F, Villaverde A, Baldoni F, Martínez H.N-butyl-2-cyanoacrylate for the treatment of gastric varices. Acta Gastroenterol Latinoam 2012;42:27-32.
18. Qiao W, Ren Y, BaiY, Liu S, Zhang Q, and Zhi F. Cyanoacrylate injection versus band ligation in the endoscopic management of acute gastric variceal bleeding, meta-analysis of randomized, controlled studies based on the PRISMA statement. Medicine 2015; 94:e1725.
19. Tan PC, Hou MC, Lin HC, Liu TT, Lee FY. A randomized trial of endoscopic treatment of acute gastric variceal hemorrhage: N-butyl-2-cyanoacrylate injection versus band ligation. Hepatology 2006; 43:690-97.
20. Irani S, Kowdley K, Kozarek R. Gastric varices: an updated review of management. J ClinGastroenterol 2011; 45:133-48.