

Original Article

Incidence of Re-Bleeding After Injection Cyanoacrylate for Gastric Varices

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for Gastric
Varices

ABSTRACT

Objective: To assess the efficacy of cyanoacrylate injection for gastric varices.

Study Design: Descriptive case series

Place and Duration of Study: This study was conducted at the, conducted at Department of Gastroenterology, Sheikh Zaid Hospital, Lahore from 28-11-2019 to 27-05-2020.

Methods: Through non-probability consecutive sampling, 139 patients aged 18-70 years, both gender, diagnosed with gastric varices were included in the present study.

Results: The frequency of efficacy of cyanoacrylate injection for gastric varices in terms of achieving hemostasis and rebleeding was recorded as 94.96%(n=132) and only 5.04%(n=7) had finding of re-bleed.

Conclusion: We concluded that the efficacy of cyanoacrylate injection is higher for gastric varices in terms of achieving hemostasis and rebleeding

Key Words: Gastric varices, cyanoacrylate injection, efficacy

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INTRODUCTION

Gastric varices (GV) are submucosal venous channels in the stomach to which blood flow is re-routed by portal hypertension and these are potential sources of severe upper gastrointestinal haemorrhage(1). While not as frequent as bleeding from EV, bleeding from GV is generally more severe, and has a higher morbidity and mortality. Endoscopic injection of N-butyl-2-cyanoacrylate (NBCA) which is a stable tissue adhesive is widely used for management of acute bleeding from GV. This technique provides hemorrhagic control since the agent quickly sets on contact with blood, thereby closing the lumen of varices (2).

Several studies have demonstrated the efficacy of NBCA in achieving initial hemostasis with success rates being between 95% and 100%. For example, there was a study on 260 patients that showed that the overall first pass hemostasis rate was 100% after administering of NBCA injection (3). But the extent of rebleeding still poses a high risk in the overall management of such patients. Rebleeding was confirmed in the same study at an 8% in the first seven days post-treatment(4).

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The Meta-analysis of 43 studies of 3484 patents revealed 30-Day rebleeding rate following NBCA injection for variceal bleeding as 24.2 percent. A second pooled analysis reported the rebleeding rates of 15% when gastric varices were treated with cyanoacrylate alone. These discrepancies of rebleeding rates may have been caused by the sample, management and method of follow-up (5) (14).

A number of comparative investigations refer to the use of NBCA with other therapeutic techniques to minimize rebleeding percentages. For instance, NBCA with EUS-coil whether in combination with or without other techniques, had been described with rebleeding risk of 7%. However, the best therapeutic approach in managing GV bleeding has still continued to be a focus and matter of the study (6) (15). Consequently, though NBCA injection has a very high success rate in initial management of bleeding from gastric varices, it is closely followed by rebleeding rates that range from 8-24% in the first month after treatment. Further studies into combination therapies and more strictly defined clinical practices could improve the patient's conditions and the rates of rebleeding (7) (16). The objective of the present study is to assess the efficacy of cyanoacrylate injection for gastric varices in terms of achieving haemostasis and rebleeding

METHODS

This descriptive case series was conducted in the Department of Gastroenterology at Sheikh Zaid Hospital, Lahore, from November 28, 2019, to May 27, 2020, following ethical approval from the institutional review board. Using non-probability consecutive

sampling, 139 patients aged 18 to 70 years, of both genders, diagnosed with gastric varices were included in the study. Patients who were already undergoing treatment for varices, had a known malignancy, or had a bleeding cause other than gastric varices were excluded.

All patients were informed about the study's purpose and protocol, and written consent was obtained before enrollment. Data on disease history, etiology of liver cirrhosis, disease status, treatment options for gastric variceal bleeding, medications used before the onset of gastric variceal bleeding, and blood test results were recorded using a predesigned proforma.

As part of the standard treatment, all patients received an intravenous dose of prophylactic antibiotics. Study outcomes, including hemostasis and rebleeding within 90 days of treatment, were documented. Mortality within this period was also recorded. Patients and their guardians were instructed to report any complications, such as rebleeding or mortality, within three months.

Data analysis was performed using SPSS version 25. Mean and standard deviation (SD) were calculated for quantitative variables such as age and disease duration. Frequency and percentages were computed for categorical variables, including gender, comorbidities, Child-Pugh classification, efficacy, hemostasis, and rebleeding within 90 days. Effect modifiers, such as age, gender, and Child-Pugh classification, were controlled using stratification. A post-stratification chi-square test was applied to assess the effect on study outcomes, with a p-value of <0.05 considered statistically significant.

RESULTS

A total of 139 patients meeting the inclusion criteria were enrolled to assess the efficacy of cyanoacrylate injection for gastric varices in achieving hemostasis and preventing rebleeding. Age distribution analysis revealed that 62.59% (n=87) of patients were between 18 and 50 years old, while 37.41% (n=52) were between 51 and 70 years old. The mean age was 46.63 ± 12.42 years. Gender distribution showed that 51.80% (n=72) were male and 48.20% (n=67) were female. The mean duration of cirrhosis was 12.17 ± 4.42 months. Child-Pugh classification results indicated that 64.03% (n=89) were classified as Class A, 26.62% (n=37) as Class B, and 9.35% (n=13) as Class C. Regarding treatment efficacy, 94.96% (n=132) of patients achieved hemostasis, while 5.04% (n=7) experienced rebleeding within 90 days. Effect modifiers, including age, gender, and Child-Pugh classification, were controlled through stratification. A post-stratification chi-square test was applied to determine their impact on study outcomes, as summarized in Table 2. The efficacy of the treatment was analyzed across different variables, including age, gender, and Child-Pugh class. Among individuals aged 18-50 years, 82 showed

efficacy, while 5 did not, with a P-value of 0.61. In the 51-70 age group, 50 individuals demonstrated efficacy, whereas 2 did not. Regarding gender, 69 males exhibited efficacy compared to 3 who did not, while among females, 64 showed efficacy, and 4 did not, with a P-value of 0.63. In terms of liver function based on Child-Pugh classification, all 89 patients in Class A responded effectively to the treatment. However, in Class B, 33 individuals experienced efficacy, whereas 4 did not, with a P-value of 0.06. In Class C, 10 individuals showed efficacy, while 3 did not, with a statistically significant P-value of 0.001.

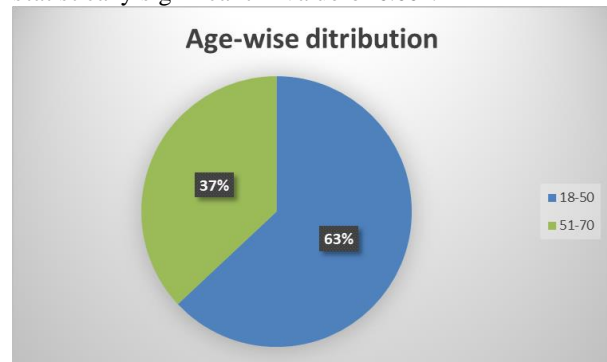


Figure No.1: Age-wise distribution

Table No.1: Demographic and clinical parameters of the study participants

Variables	Mean and Frequency
Age (years)	46.63±12.42
18-50	63%
51-70	37%
Gender	
Male	72 (52%)
Female	67 (48%)
Duration of Cirrhosis (Months)	12.7±4.4
Child Pugh Class	
A	89 (64%)
B	37 (27%)
C	13 (9%)
Efficacy	132 (95%)

Table No.2: Stratification of efficacy based age, gender, and child Pugh class

Variables	Efficacy		P value
	Yes	NO	
Age (years)			
18-50	82	5	0.61
51-70	50	2	
Gender			
Male	69	3	0.63
Female	64	4	
Child Pugh Class			
A	89	0	-
B	33	4	0.06
C	10	3	0.001

DISCUSSION

The demographic data of our cases reveals a mean age of 46.63 ± 12.42 years, with 51.80% (n=72) males and 48.20% (n=67) females. Regarding Child-Pugh classification, 64.03% (n=89) were classified as Class A, 26.62% (n=37) as Class B, and 9.35% (n=13) as Class C. In terms of the efficacy of cyanoacrylate (CYA) injection for gastric varices, 94.96% (n=132) of patients achieved hemostasis, and only 5.04% (n=7) experienced rebleeding. This data aligns with studies conducted in Pakistan, which also report a significantly lower re-bleeding rate in the CYA injection group. For example, a study in Rawalpindi by Faheem M et al., and another in Lahore by Hassan I et al., found lower rebleeding rates of 5.7% vs 14.7% and 3.3% vs 13.3%, respectively, when compared to the endoscopic band ligation group (9-10). Our findings also show a lower rebleeding rate compared to other studies, which report recurrent bleeding rates around 10% (8).

Phadet Noophun and colleagues (13) evaluated the efficacy and safety of gastric varices injection with cyanoacrylate in patients with gastric variceal bleeding. Their study showed that 71% (n=17) of patients achieved definite hemostasis, and 58% (n=14) reached primary success. An additional 12% (n=3) were classified as secondary success after repeat endoscopic injections. The mean number of sessions to achieve definite treatment was 1.4. However, 29% (n=7) of patients failed to achieve hemostasis despite multiple sessions of endoscopic treatment (1 IGV 1, 2 GOV 2). Our study shows significantly higher efficacy than their findings. Although CYA injection is highly effective and generally safe, it has been criticized for the potential to cause rare but severe complications (11). The most common complications include transient chest pain, self-limiting fever, transient difficulty swallowing (similar to other upper endoscopic procedures), and bleeding from the injection site. The most severe, though rare, complication is systemic embolization. Despite these risks, the procedure can be life-saving for patients with poor prognoses.

To increase the safety of the procedure, injections should be strictly intravariceally, and the dilution ratio between cyanoacrylate and lipiodol should be 1:1. Injections should be limited to a few milliliters of the mixture—typically 1 cc per site, with a maximum of 4-5 ml, though ideally between 2-3 ml. If larger volumes are necessary to obliterate the varices, the procedure should be done sequentially. Personnel handling cyanoacrylate should always use gloves and eye protection.

In summary, our study contributes valuable data on the efficacy of cyanoacrylate injection for gastric varices, particularly in achieving hemostasis and preventing rebleeding. However, further multicenter trials are needed to validate our findings.

CONCLUSION

We concluded that the efficacy of cyanoacrylate injection is higher for gastric varices in terms of achieving hemostasis and rebleeding.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Zia ur Rehman, Hina Ebir, Afia Munir
Drafting or Revising Critically:	Jawaryiah Kanwal, Hassaan Yousaf, Zaeem Sibtain
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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