

# Comparative Evaluation of Endoscopic Band Ligation versus Sclerotherapy in the Management of Esophageal Varices

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**Abstract:** ***Objective:** To compare the efficacy and safety of endoscopic band ligation and endoscopic sclerotherapy in controlling bleeding due to esophageal varices in patients with portal hypertension. **Methods:** This prospective randomized study was conducted on 50 patients with Grade III and IV esophageal varices. Patients were allocated into two groups: Group I underwent endoscopic band ligation and Group II received sclerotherapy using 3% sodium tetradecyl sulphate. Clinical outcomes including control of bleeding, number of sessions required for variceal obliteration, complications, and recurrence were evaluated. **Results:** Patients treated with band ligation experienced fewer complications such as retrosternal pain, fever, odynophagia, and esophageal ulceration compared to the sclerotherapy group. Failure rate was significantly lower in the band ligation group (0%) than in the sclerotherapy group (24%). **Conclusion:** Endoscopic band ligation is a more effective and safer option compared to sclerotherapy for the treatment of esophageal varices. It is associated with fewer complications and a lower failure rate.*

**Keywords:** Esophageal varices, Endoscopic band ligation, Sclerotherapy, Portal hypertension, Variceal bleeding

## 1. Introduction

Esophageal varices, a major consequence of portal hypertension, are a common cause of gastrointestinal hemorrhage in patients with liver cirrhosis. Endoscopic management, including band ligation and sclerotherapy, has become the cornerstone for treatment and secondary prophylaxis. While sclerotherapy was one of the earliest endoscopic techniques, band ligation has gained popularity due to its simplicity and lower incidence of adverse effects. This study was undertaken to compare both techniques regarding safety, efficacy, and overall outcomes in managing variceal bleeding.

## 2. Materials and Methods

This randomized prospective study was conducted on 50 patients with active variceal bleeding and Grade III or IV esophageal varices. Patients were randomly allocated into two equal groups:

- Group I: Treated with endoscopic band ligation.
- Group II: Treated with endoscopic sclerotherapy using 3% sodium tetradecyl sulphate.

Three treatment sessions were scheduled at three-week intervals. Patients were evaluated for control of bleeding, number of bands/sclerosant used, and complications such as retrosternal pain, odynophagia, fever, tachycardia, esophageal ulceration, and stricture formation.

## 3. Results

Among 50 patients, 29 were male and 21 were female. The majority belonged to the 31–50 years age group. Active bleeding was observed in 22 patients at the time of endoscopy. Band ligation required an average of 194 bands while sclerotherapy utilized 532 ml of sclerosant.

The incidence of complications was significantly higher in the sclerotherapy group. Fever occurred in 44% of sclerotherapy patients versus 8% in the banding group ( $p=0.0083$ ). Odynophagia and esophageal ulceration were also more frequent in the sclerotherapy group. The failure rate of therapy was 0% in the banding group versus 24% in sclerotherapy ( $p=0.0223$ ).

## 4. Discussion

Endoscopic band ligation showed better clinical outcomes than sclerotherapy in this study. The mechanical strangulation technique used in banding leads to localized ischemia, ulceration, and eventual fibrosis with fewer complications. In contrast, sclerotherapy relies on chemical-induced thrombosis and fibrosis, often causing local tissue irritation and systemic side effects.

Studies by Laine et al., Steigmann, and Sarin corroborate the findings that band ligation results in fewer ulcers, strictures, and systemic infections. Although both modalities are effective, banding is preferable for initial and repeat treatments due to its safety profile and procedural simplicity.

## 5. Conclusion

Endoscopic band ligation is superior to sclerotherapy in terms of efficacy, safety, and patient outcomes in the treatment of esophageal varices. It should be considered the preferred endoscopic technique, especially in cases requiring multiple treatment sessions or where adverse effects need to be minimized.

## References

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