

# “HOW I DO IT”

## Glue treatment of gastric varices

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### AUTHORSHIP

#### **How I do it: Glue treatment of gastric varices**

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#### **Summary**

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### *How I Do It*

Ibrahim Mostafa

### **Indications**

Gastric varices are classified as:

- type I or II gastroesophageal varices, that are found as extensions of esophageal varices, or
- type I or II isolated gastric varices.

Both are diagnosed endoscopically, either during active bleeding or in patients with a history of haematemesis and/or melaena.

### **Contraindications**

There are no specific contraindications, except for any contraindication to the upper endoscopy procedure itself.

However in patients awaiting liver transplant, the use of glue for gastric varices is contraindicated because of the risk of obliteration of the splenic vein, the portal vein or both.

### **Clinical scenario**

The patient presents at the emergency unit with haematemesis and or melaena.

The resuscitation of the patient and management of co-morbid conditions are the most important steps in dealing with gastric varices.

We carry out the following steps in patients with haematemesis:

1. The vital signs are checked.
2. We insert two wide-bore intravenous cannulae (with a central venous line if needed). Fluid resuscitation is done if necessary



3. A complete blood evaluation is done, with, basic routine laboratory investigations. Blood transfusion is done if needed.
4. Start Intravenous infusion of Splanchnic circulation vasopressors: octreotide, terlipressin
5. Proton pump inhibitors (PPIs) are given by continuous intravenous infusion during the first 24 hours
6. A nasogastric tube is inserted and gastric lavage is done.
7. Endoscopy is done within 6 hours after resuscitation (anytime within 24 hours) as second episodes of haematemesis have a very high mortality rate compared with the first.

### **Informed consent: Including the risks of the procedure**

Risks include aspiration, pulmonary embolism very rarely (once in last 20 years), or obliteration of the splenic vein or the portal vein or both.

### **Sedation used**

Diprivan (propofol) may be used so that the patient is calm while the procedure is performed.

If the patient is in a very critical state, a cuffed endotracheal tube is inserted before the procedure.

I do not use topical anaesthesia.

### **Equipment used**

A prepared endoscope with channel size 2.8 mm or more to allow the passage of the injector needle is needed. Prepared here means sterilized, with the air supply connected and tested, and the suction function connected and tested.

### **Accessories used**

- 21-gauge injection needles. A minimum of five needles must be ready in the endoscopy room, as the needle is usually blocked after the first injection.
- 23-gauge injection needles for esophageal varices
- Band ligation sets for esophageal varices
- All accessories used in the management of nonvariceal bleeding, such as argon plasma coagulation (APC) equipment, hemoclips, epinephrine, thermal coagulation equipment, etc, must be ready for use in the endoscopy room.



## **Injection fluids**

These fluids are required:

- Histoacryl (n-butyl cyanoacrylate) 0.5 ml per ampoule
- Lipiodol solution
- Distilled water.

The mixture of Histoacryl and lipiodol should be prepared before the procedure in patients with suspicion of gastric variceal bleeding, with each dose containing 1 ml of Histoacryl and 1 ml of lipiodol. Multiple doses should be prepared before beginning the procedure.

### **The procedure, step-by-step**

The endoscope is ready for use, with the suction, air, and oxygen functions prepared. All the accessories mentioned above are available inside the room. Facilities for endotracheal intubation are also available.

The patient lies in the left lateral position with oxygen supplied nasally.

The needle is checked and flushed with distilled water.

A complete diagnostic upper endoscopy is done as far as the second part of the duodenum (even the source of the bleeding is identified) The endoscope is retroverted to identify gastroesophageal extensions. A forward view is used to assess the best direction for injection of gastric varices.

To identify the the source of bleeding, if there is blood in the stomach, the patient is turned to the right lateral position and the endoscope is moved to get the best view without kinking the endoscope.

Assessment of all gastric varices should be done without any help from the nurse in holding the endoscope as any fine movement will alter the position of the endoscope during injection.

Gastroesophageal varices might be injected antegradely (at the cardia) or retrogradely. Varices at the lesser curvature are better injected retrogradely.

The gastric varix is probed to distinguish it from the mucosal folds, using the injection needle still within its sheath. One dose of the mixture is then injected, followed by 0.5–0.7 ml of lipiodol to flush out the residue of mixture inside the needle sheath.

The needle is removed from the vein, and then flushed with 2 ml of distilled water. The patency of the needle is checked.

If the needle is not blocked, the varix is probed, again using the injection needle inside its sheath, and if the varix is still soft, the injection procedure is repeated. If the needle is blocked it is changed for a new one.

The bleeding site is rinsed with water to ensure that there is no further bleeding.

If esophageal varices are present, band ligation or injection sclerotherapy is attempted in the same Session but after obliteration of the gastric varices.

### **Notes**

- There is no problem with suction of air while the needle is in the channel.
- There is no damage to the endoscope.



- Up to three or four doses can be administered in the same session.
- The patency of the needle must be checked before each injection.
- If the needle is blocked at any time, it is changed for a new one.
- The suction device must be turned off whilst the needle is changed.
- All gastric varices must be obliterated in the first session.

### **Post-procedure observation, care and follow-up**

The patient is admitted into the gastrointestinal ward, but admission into the intensive care unit (ICU) is better for those who are hemodynamically unstable.

Splanchnic circulation vasopressors are continued for two more days (if already started before the procedure).

Endoscopic follow-up is done after 1 week. The gastric varices are again probed using the injection needle, still inside the sheath. If the varices are still soft, the injection procedure is repeated. The patient is discharged, with endoscopic follow-up after 3 weeks.

Post procedure, there is no need for radiography, or for PPIs or H<sub>2</sub> blockers unless there is another indication.



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### *Comment*

Norman E. Marcon

Our approach to bleeding from gastric varices is similar, with some minor differences.

The injection catheter (21- or 23-gauge) is first flushed with lipiodol. The glue (0.5 ml Histoacryl) plus an equal amount of lipiodol is pushed into the catheter displacing out the lipiodol except for that in the distal 2 or 3 cm. The varix is then punctured and the glue mixture is injected into the vein with distilled water.

We do not reuse the needles unless there is a clear stream of water after the needle is removed. We have no prescribed limit as to the number of ampoules injected, and have used as many as eight in one session. Our hepatic surgeons are not concerned about thrombosis of the portal or splenic vein prior to transplant: we have no record of this happening.

Glue injection, however, does have some potential hazards. Embolization to the lungs, liver, and spleen is not uncommon but usually asymptomatic. We have encountered one female patient with cirrhosis and pulmonary-hepatic syndrome who developed multiple pulmonary infarcts, and two of our patients had symptomatic cerebral emboli. All these patients recovered.

Glue injection continues to be an important part of the management of bleeding related to portal hypertension.



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### *Summary*

Tetsuya Mine

#### **Indications: gastric varices**

The Japanese classification of gastric varices is slightly different from that described by Professor Mostafa. In Japan, gastric varices are categorized into three types:

- Lg-c: limited to the cardiac region, and supplied mainly from the left gastric vein.
- Lg-cf: located between the cardia and fornix, and supplied from the posterior and short gastric vein.
- Lg-f: limited to the fornix, supplied from the posterior and short gastric vein and draining to the left renal vein.

#### **Contraindications**

These include:

- Severe jaundice (total bilirubin greater than 4 mg/dl)
- Severe hypoalbuminaemia (less than 2.5 g/dl)
- Thrombocytopenia (platelet count less than 20000/ $\mu$ l)
- Disseminated intravascular coagulation (DIC)
- Massive ascites
- Severe hepatic encephalopathy
- Severe renal failure.

However, the patient's clinical and social situation must be taken into account.

#### **Treatment**

##### *Sedation*

Local anaesthesia can be administered. Anticholinergic agents are given. The use of sedative drugs may depend on the patient's condition.



### *Endoscopic injection sclerotherapy (EIS)*

EIS can be done using 5% EO (monoethanolamineoleate) delivered by means of a balloon (15–30-ml) attached to the endoscope and a 23-gauge needle, using antegrade and retrograde approaches. In our department, direct injection into fundal varices using 1.0 ml Histoacryl (adding 0.8ml saline) may be done for varices of the Ig-cf and Ig-f type. In this case, a net volume of 1.0 ml of the Histoacryl solution with 0.4 ml saline might be injected, since about 0.4 ml saline might be left in the catheter. For preparing, first, 0.8 ml saline is sipped and subsequently, 1.0 ml of Histoacryl is sipped into the catheter with a 23-gauge needle and connecting 2.5 ml syringe. In Japan, interventional radiology might be used for Ig-f varices. The balloon-occluded retrograde transvenous obliteration (B-RTO) method was developed in Japan and has been used in cases of Ig-f gastric varices, since most of these are associated with a splenorenal vein shunt which can be used for,angiographic sclerotherapy.

### **Post treatment care**

In the case of bleeding, upper gastrointestinal endoscopy will be done in the next 24 hours. In the course of the treatment, the patient may be fasted and will start eating thereafter. The patient may take antibiotics over several days, and also medication for hemostasis of post-treatment bleeding, and proton pump inhibitors (PPIs) or H2-receptor antagonists.

Competing interests: None

