



## Comfortable Glue Injection Therapy

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N-butyl-2-cyanoacrylate glue injection therapy is a well known very effective therapeutic method for gastric variceal bleed, all over the world, over two decades. The injection catheter preferably 23gauge size, 7 Fr and 240 cm length, is first filled with distilled water and the amount of dead space is determined. Depending on the size and extent of the gastric varix, the approximate quantity of glue required to completely obliterate the varix is decided.

In many centers, three glue injection catheters are kept ready and three or four 2 ml syringes each filled with 0.5 ml glue and 0.5 ml lipiodol and one 2 ml syringe with distilled water of volume equal to the dead space, are taken to inject successively till the gastric varix gets hardened upon palpation with catheter. Since the glue gets polymerized very rapidly, it has to be injected very faster to prevent the needle getting clogged at the tip, followed finally by a very faster injection with distilled water. Injecting the glue faster may cause serious complications in few individuals, like portal vein embolism, cerebrovascular embolism, pulmonary embolism and splenic or pancreatic infarction. To prevent this systemic embolization the glue is injected faster in smaller quantities multiple times.

Injecting the glue with high volume as a single injection may result in complications like blockage of endoscopic accessory channel and air-water channel tip and sometimes damage to the lens at the tip of the gastroscope. To prevent this the scope tip is always kept about 4 cm away from the gastric varix.

Also, during the procedure, it takes two seconds every time, to disconnect the glue injection syringe attached to the catheter needle and to connect the syringe with distilled water to flush the glue in the catheter into the fundic varix. Because of this, the catheter

needle gets blocked before it is injected fully into the fundic varix. Hence, two or more catheters are required for the procedure which increases the cost of procedure.

Overall, the glue injection therapy is a stressful procedure for the gastroenterologist and for the endoscopic technician, especially in actively bleeding cases.

To decrease the stress related to the procedure, keeping in mind the safety and success of the procedure, a simple method of using an inexpensive “three way stopcock” (that is normally used in pleural fluid aspiration to prevent the pneumothorax), is used in injecting the glue.



**Figure**

A single catheter is generally required and it is connected with the three way stopcock at its outer end. This catheter with stopcock is injected with distilled water and the dead space volume is determined. Then two 2 ml syringes are taken, one syringe with roughly calculated required quantity of cyanoacrylate glue and the other syringe with distilled water of quantity equal to the dead space. To the side port of the three way stopcock the syringe with glue is connected and to the straight port, the syringe with distilled water is connected. During the procedure, keeping the endoscope tip about 4 cm away from the fundic varix, three fourths of dead space of catheter is initially injected with cyanoacrylate glue thereby clearing the distilled water inside and then the catheter needle is pushed to puncture the varix close to the red sign. Soon after puncturing the varix the glue is injected with moderate speed and it is continued by injecting the distilled water at moderate speed. Since both glue and distilled water are continuously injected the catheter does not get blocked easily. Since it is not injected very faster this method is less likely to cause systemic embolization. However, in this method, we used only up to a maximum of 2 ml of glue per injection, as a larger quantity of continuous injection may result in higher chances of embolization. One more catheter is always kept ready in case the first one gets clogged with glue. In our experience, this method is more comfortable with a great success. Comments are welcome at [veerai.subbu@gmail.com](mailto:veerai.subbu@gmail.com).

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