

Supplement Materials

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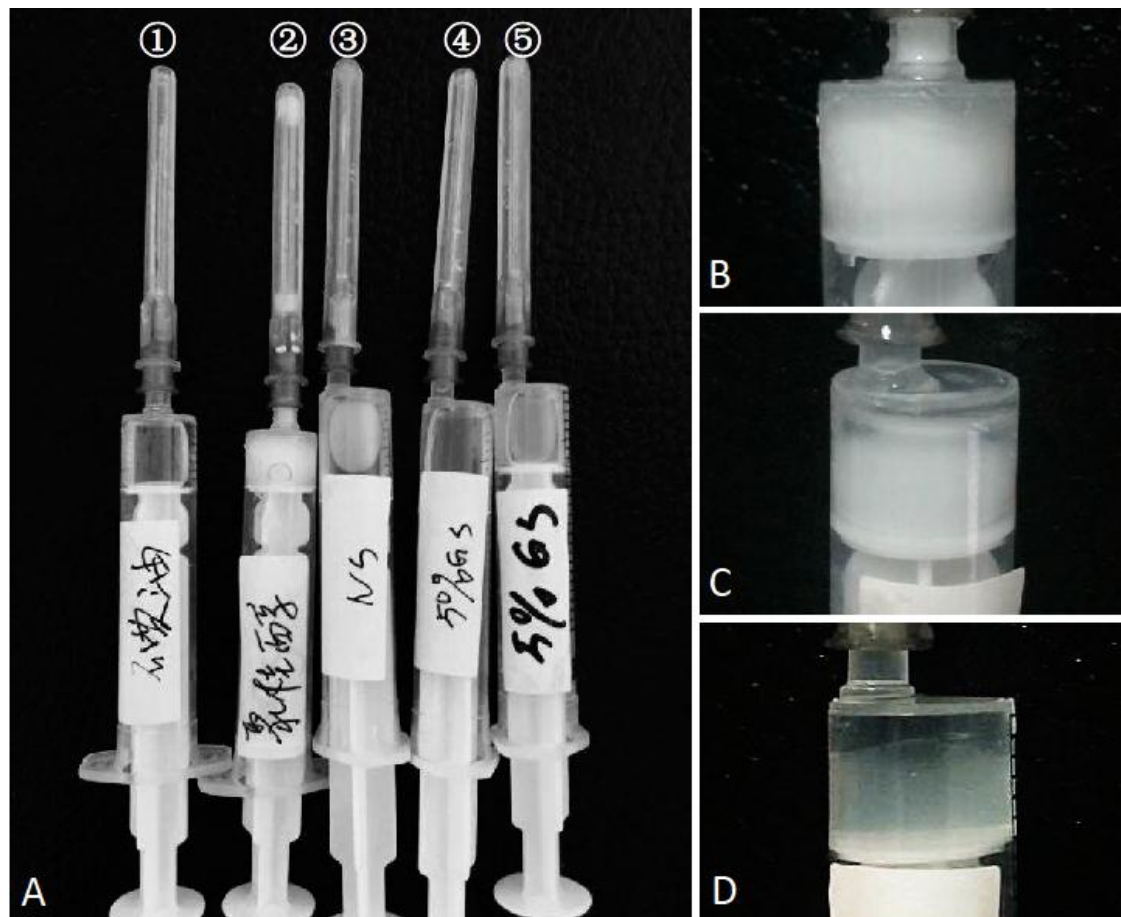
Mixture experiment of tissue glue

Background: Because sticking of the needle to the varix and obstruction of the injection catheter occurred in some procedures, especially those that used undiluted NBC, some endoscopists tried to dilute the NBC with 50% glucose. Some endoscopists inject a certain volume of 1% aethoxysklerol, which was mainly used in sclerotherapy of some esophageal varices, to reduce the volume of NBC in the treatment of large gastric varices. Sometimes, sterile saline was used to flush the injection catheter before or after the injection. Mixture experiment of tissue glue was performed.

Methods: NBC (Compant, SMR China) was mixed in vitro with lipiodol, 50% glucose, 5% glucose, 1% aethoxysklerol and sterile saline at a ratio of 1.0: 1.0 in 5 ml injection syringes. The solidification and the time of solidification were observed. The end point of observation was 10 min after mixing.

Results: NBC dissolved well in the lipiodol and the mixture did not solidify for 10 minutes. NBC and the 50% or 5% glucose mixture did not solidify for 10 minutes, but they separated into two layers very quickly and turbidity was noted in the 5% glucose mixture. The NBC and sterile saline mixture solidified at 1 minute and 10 seconds in vitro. The NBC and 1% aethoxysklerol mixture solidified at approximately 35 seconds

Conclusion: Although the experiment was not rigorous, it suggested that prefilling or flushing the injection catheter with sterile saline and injecting 1% aethoxysklerol before the NBC injection would increase the risk of the needle sticking to the varix and blockage of the injection catheter. The 50% glucose and 5% glucose solutions are both safe for flushing the catheter.



Tissue glue mixture experiment

A: Tissue glue (Compant, SMR China) was mixed in vitro with lipiodol ①, 1% aethoxysklerol ②, sterile saline ③, 50% glucose ④, or 5% glucose ⑤ at a ratio of 1.0: 1.0 in 2 ml injection syringes. The mixture is transparent in the ① and ④ injection syringes. Tissue glue dissolved well in the lipiodol and the mixture did not solidify until 10 minutes in vitro. B: The tissue glue and 1% aethoxysklerol mixture solidified at approximately 35 seconds and formed a hard white solid. C: The tissue glue and sterile saline mixture solidified at 1 minute and 10 seconds and formed a

semi-hard white solid. D: The tissue adhesive and 50% glucose mixture did not solidify for 10 minutes, but the solution separated into two layers very quickly with 50% glucose in the upper layer and tissue adhesive in the lower layer.