Endoscopic use of fibrin adhesives: problems when injecting through long catheters.

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Abstract:

When used endoscopically fibrin adhesives are injected through twin-lumen catheters, which can reach up to 180 cm in length. Because fibrinogen solutions have a high viscosity, significant delivery forces are necessary, resulting in discomfort for the operator. Therefore, the two predominant fibrin sealants were characterized with respect to their viscosity and the force needed for their injection. Viscosity was determined at 18 degrees C, 25 degrees C, and 37 degrees C in a micro-Ostwald viscosimeter. Additionally, the maximum forces needed for injection through a 27-cm and a 160-cm catheter were determined at 25 degrees C in an Instron materials testing machine. Compared with preparation A the viscosity of preparation B was 8.0-34.5 times higher at 18 degrees C, 4.6-13.8 times higher at 25 degrees C and 3.1-6.4 times higher at 37 degrees C. In consequence, the delivery forces were 1.5-2.5 times (27 cm probe) and 3.4-4.5 times (160 cm probe) the values determined for preparation A. For preparation B a maximum load of 3.8 kg was necessary for injection. Assuming that different adhesive preparations have the same effect, a preparation of lower viscosity seems to be more suitable for use via long catheters than a preparation of high viscosity.