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Superselective Transcatheter Embolization to Halt an Arterial Esophageal Hemorrhage: Is the Use of N-Butyl Cyanoacrylate the Best Choice?

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We read with great interest the article by Park et al. (1), recently published in the *Korean Journal of Radiology*, whom reported on the effectiveness of selective embolization using N-butyl cyanoacrylate (NBCA) in patients with acute arterial esophageal bleeding. We have several comments: over the last decade, transcatheter arterial embolization (TAE) has gained widespread acceptance as a first-line treatment for endoscopic therapy-resistant, acute nonvariceal upper gastrointestinal bleeding (1, 2). The rate of efficacy for this approach in the initial hemostasis of such a condition has been reported to range from 52% to 97% (1–3). Coils have emerged as the currently preferred embolic agent for treating upper gastrointestinal hemorrhage. However, higher rates of recurrent bleeding have been reported with coil embolization, especially in patients with coagulopathy (3). We recently reported our results of nearly 10 years of arterial embolization treatment for cases of refractory massive bleeding from the upper gastrointestinal tract (3). Our report includes 60 patients, which makes it one of the largest case-series studies of this sort in the existing literature. Using coils alone to occlude the feeding artery, as well as the presence of a coagulation disorder defined as having an international normalized ratio greater than 1.5, partial thromboplastin time longer than 45 seconds, or a platelet count less than 80,000/mm³, significantly predicted early re-bleeding (within 30 days) by univariate analysis ($p = 0.003$ and 0.007 , respectively) and by multivariate analysis ($p = 0.022$ and 0.027 , respectively). Furthermore, no cases of rebleeding occurred in the 10 patients in whom surgical NBCA glue was used alone for the selective embolization of the bleeding vessel. Moreover, no cases of bowel ischemia occurred over the course of our study. Consequently, the similar results for the efficacy and safety of glue embolization for the vessel supplying the segment

of the upper gastrointestinal tract responsible for the bleeding in esophageal and gastrointestinal hemorrhages with angiographic extravasation lead us to agree with the findings in Park et al. (1). We find that the use of NBCA glue is particularly of interest in hemodynamically unstable patients and in cases of underlying coagulopathy, because it provides faster and better hemostasis than other embolic agents, as described by the authors. At our institution, selective embolization using glue as the only embolic agent for upper gastrointestinal hemorrhage has become the salvage treatment of choice in upper gastrointestinal hemorrhage cases. However, we want to stress the fact that the use of NBCA glue requires training and considerable experience, given the risk of bowel infarction and glue reflux into other vessels. Reflux of NBCA may also result in its polymerization to the catheter tip. This bit of NBCA may then be stripped from the catheter during catheter retraction, resulting in nontarget embolization. The use of a proper technique, including prompt removal of the catheter after injection as well as aspiration of the guide catheter after microcatheter removal, can significantly reduce this risk (3). This technical note is very important and is not specified by Park et al. (1). Additional disadvantages include cost and the need for prompt microcatheter removal after injection, which surrenders superselective vessel access before the confirmation of adequate cessation of hemorrhage. Another drawback is the potential risk of bowel stenosis over the long-term; Lang (4) found a 25% duodenal stenosis rate in a study of 28 patients that were followed up for at least five years after embolization for bleeding duodenal ulcers, even if the link between glue embolization and duodenal stenosis is difficult to evaluate. Long-term follow-up at the esophagus level is not available in the study by Park et al. (1), because most patients expired within one month of the procedure. In conclusion, we do not recommend visceral arterial embolization with glue by young inexperienced interventional radiologists who are neither highly skilled in microcatheterization techniques, nor aware of the materials and methods used for arterial embolization. On the other hand, our experience suggests that transcatheter embolization using cyanoacrylates in well-trained hands is effective and safe for the control of gastrointestinal tract bleeding and the rate of ischemic complications is comparable to other embolic agents if used cautiously. A prospective, randomized study comparing NBCA with coil and particulate embolization would be useful in the future. Until then, NBCA may be useful in the setting of hemodynamic

instability, coagulopathy, extreme vessel tortuosity, and narrowed vessels that are not amenable to distal embolization by microcoils.

References

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