

Onyx for Embolization of Life-Threatening Hemoptysis: A Promising but Luxury Embolic Agent!

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To the Editor,

We read with great interest the article by Bommart et al. recently published in *Cardiovascular and Interventional Radiology*, which reported the effectiveness of selective arterial embolization using Onyx[®] in patients with life-threatening hemoptysis [1]. We have several comments. Since its marketing, Onyx[®] has been used for the endovascular treatment of intracranial aneurysms and cerebral arteriovenous malformations [2]. Until now, few studies have examined its use for peripheral applications. Onyx[®] is a biocompatible polymer, which is an ethylene vinyl alcohol copolymer (EVOH) that is dissolved in an organic solvent—dimethylsulfoxide (DMSO). It becomes radiopaque by mixing with micronized tantalum powder. When Onyx[®] is injected into the vessels, the DMSO rapidly diffuses, and EVOH solidifies at the tip of the catheter in a shape that conforms to the target area. The main advantage of Onyx[®] is that, unlike other liquid embolic agents, such as cyanoacrylates, it does not adhere to the endothelial wall and catheter tip, allowing better control of delivery over the embolization procedure [3].

However, Onyx[®] has some limitations that should be emphasized for use in interventional radiology, as previously reported [4]. First, DMSO can cause severe vasospasm, which is most likely to occur in the early phase of the procedure. This limitation may be avoided by using no more than 0.2 ml of DMSO in the first minute of injection. Second, we find the duration of injection often time-consuming, depending of the amount of Onyx[®] needed. This propensity

is confirmed by the authors who used up to 3 ml of EVOH per patient and reported a total injection time of DMSO and Onyx[®] up to 45 minutes for their procedure. Procedural time often is of essence when used on an emergency basis, and the use of Onyx[®] may lead to a loss of precious time compared with other faster embolic agents, such as glue, in such a setting. Third, DMSO is volatile and is excreted via respiration and sweat. This has a typical smell, which may last a few days. The patient should be warned to expect this. Last, Onyx[®] is very expensive compared with other commonly used embolic materials, and its cost increases with higher concentrations of copolymer. Its high cost explains its restricted use in neuroradiology in most of the institutions around the world and needs to be borne in mind when used in other organs. In conclusion, we think that Onyx[®] is a very promising, but too luxurious, embolic agent at this time for its use in peripheral indications.

Conflict of interest None.

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