

# Embosphere® Microspheres for Control of Epistaxis

## A Case Report

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*Epistaxis is a common problem that affects up to 60% of the population at least once during their lifetime. Epistaxis localized to the anterior nasal cavity usually is self-limited or resolves with manual pressure. However, posterior epistaxis may require surgical packing. In cases of continued epistaxis despite adequate surgical packing and blood pressure control, endovascular embolization is often employed to achieve effective hemostasis.*

*The goal of embolization for epistaxis is reduction of the pressure head to the abnormal vasculature without causing ischemia. Until now, hemostasis was typically achieved using polyvinyl alcohol (PVA) particulate embolization. The use of Embosphere® Microspheres for embolization of epistaxis offers several advantages over PVA. The following case study illustrates the approach and benefits of using microspheres for the effective control of epistaxis.*

### Case History

A 37-year-old male patient presented two weeks after an Orthognathic LeFort I osteotomy with severe right-sided posterior epistaxis. Laboratory studies showed severe anemia requiring packed red blood cell transfusion. Surgical packing and a Foley balloon catheter were placed within the posterior nasal vault and nasopharynx. Over the next few days, several attempts were made to remove the surgical packing. Despite maintaining normal blood pressure, each attempt resulted in the recurrence of epistaxis.

### Procedure

Bilateral catheter angiography of the external carotid, internal carotid and right vertebral arteries was performed to assess the intracranial circulation, locate the source of hemorrhage and define the presence of dangerous collateral vessels. There was no pseudoaneurysm or arterio-venous fistula present.

Superselective catheterization of the internal maxillary artery was obtained and angiography was performed (figure 1). Prominent but normal posterior superior alveolar, infraorbital, greater palatine and sphenopalatine arteries were noted with no extravasation of contrast. Given the patient's uncontrolled epistaxis in the absence of surgical packing, embolization of the nasal and palatine vascular supply was performed. Embosphere Microspheres were diluted in a 25:75 saline:contrast suspension for a total volume of 10-15 mL.

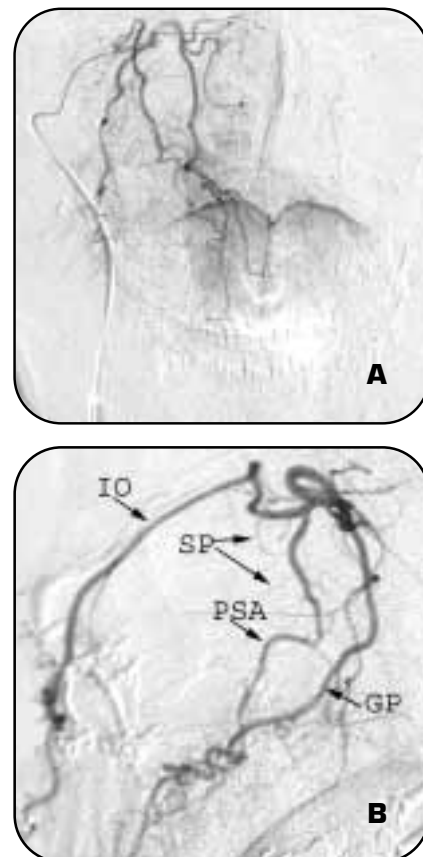


Figure 1: Digital subtraction angiography in the AP (A) and lateral (B) planes shows prominent but normal posterior superior alveolar (PSA), infraorbital (IO), greater palatine (GP) and sphenopalatine arteries (SP) with a dense palatine and inferior nasal mucosal blush. No contrast extravasation, pseudoaneurysm or arterio-venous fistula is seen. Arch bars and screws related to recent orthognathic surgery are noted.

## Procedure (continued)

Embolization proceeded using 5 mL 300-500  $\mu\text{m}$  microsphere suspension followed by 2 mL 500-700  $\mu\text{m}$  microsphere suspension. Serial angiography confirmed significantly decreased flow to the nasal and palatine mucosa without occlusion of the parent vessel or proximal branches (figure 2).

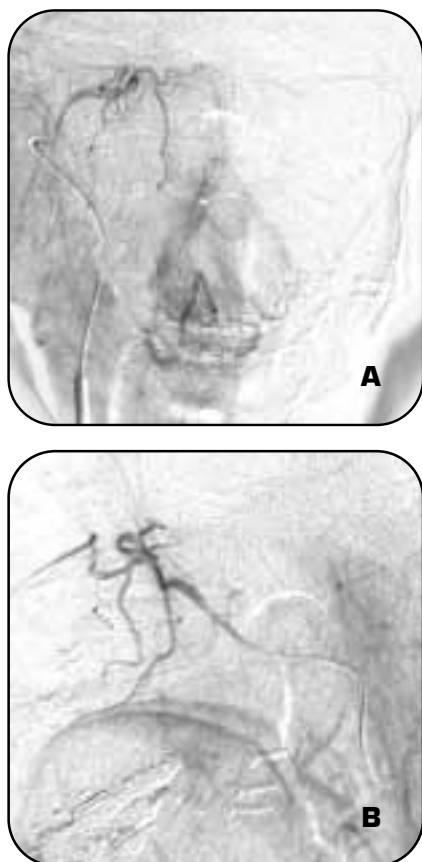


Figure 2: Digital subtraction angiography in the AP (A) and lateral (B) planes following embolization with Embosphere® Microspheres shows significantly decreased flow in the distal nasal and palatine branches and mucosa. Occlusion of the parent arteries and marked stasis of flow is to be avoided due to the risk of ischemic complications.

## Follow-up

The patient was monitored in the surgical intensive-care unit for 12 hours. The surgical packing was then removed without further epistaxis. He was discharged the next day and remained asymptomatic at one- and four-week follow-up clinic visits.

## Discussion

We believe that Embosphere Microspheres are a safe and efficient alternative particulate embolic for endovascular therapy of epistaxis. In our experience, microsphere suspensions, unlike PVA, can be moderately concentrated due to their compressibility and non-aggregation. A smaller volume is used to achieve lasting hemostasis without significant clumping within the microcatheter. A smaller profile microcatheter may therefore be used when necessary for superselective positioning in tortuous vessels.

The Embosphere Microspheres spherical design allows for highly targeted delivery and selection of a particle size slightly larger than is possible with PVA. Unilateral embolization using Embosphere Microspheres in the range of 300-500  $\mu\text{m}$  and 500-700  $\mu\text{m}$  achieves the desired hemostatic effect without occlusion of distal vessels. Preservation of the distal mucosal circulation decreases the risk of ischemic complications, yet, in our experience, has proven effective in preventing further epistaxis.

**In select cases where bilateral embolization is necessary, embolization of the contralateral vasculature using microspheres less than 500  $\mu\text{m}$  is not recommended, as we believe this further increases the risk of ischemic complications.**

We believe that the ease and efficiency at controlling epistaxis with Embosphere Microspheres is a significant benefit to both patient and physician.

Embosphere Microspheres have not been cleared by the FDA for use in epistaxis. Further study is required to substantiate the selection and use of microspheres in the control of epistaxis.

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