Fibrin Glue Injection for Cavernous Sinus Hemostasis Associated with Cranial Nerve Deficit: A Case Report

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Abstract

Fibrin glue injection has been used to control intraoperative cavernous sinus (CS) venous bleeding. There have been no reported complications related to this maneuver.1,2 We present a case where a patient developed a sensory trigeminal nerve deficit after injection of fibrin glue into the posterior CS during resection of a petrosal meningioma. We believe that this deficit was due to the compression of the trigeminal ganglion similar to balloon compression procedures. Although fibrin glue injection may achieve satisfactory cavernous sinus homeostasis, the volume and rate of injection should be kept in mind to avoid a compressive lesion on traversing cranial nerves and surrounding structures, or retrograde filling of the venous tributaries.

Keywords

► fibrin glue
► cavernous sinus
► cranial nerve

Introduction

Fibrin glue injection (Baxter Healthcare Corp., Deerfield, Illinois, United States) has been used to control intraoperative cavernous sinus (CS) venous bleeding. There have been no reported complications related to this maneuver.1,2 We present a case in which a patient developed a sensory trigeminal nerve (TN) deficit after injection of fibrin glue into the posterior CS during resection of a petrosal meningioma. We believe this deficit was due to the compression of the trigeminal ganglion (TG) similar to balloon compression procedures but persistent until the glue resolves.

Case Report

A 40-year-old woman with radiation-induced petrous apex meningioma underwent resection of the lesion via a posterior fossa approach. After complete resection of the lesion, the involved dura was excised to the junction of the superior petrosal sinus and the posterior wall of the CS, where venous hemorrhage ensued. This was easily controlled with injection of fibrin glue into the posterior CS. The remaining of the procedure was uneventful. Postoperatively the patient developed new-onset ipsilateral facial numbness. There was dense hypoalgesia and hypoesthesia in the trigeminal V1 and V2 distributions, and less affected, in V3. The motor trigeminal function was intact. Postoperative magnetic resonance imaging (MRI) demonstrated total gross resection; however, there was expansion of the CS by the fibrin glue. Repeated postoperative MRI at 3 months demonstrated resolution of the CS expansion (►Fig. 1). However, the patient’s sensory TN deficit persisted after the 18-month follow-up.

Discussion

Multiple intraoperative techniques have been described for cavernous sinus hemostasis that include the use of Surgicel...
Fig. 1 Preoperative magnetic resonance imaging (MRI) demonstrating part of the lesion with normal configuration of the cavernous sinus (left panel). Postoperative MRI demonstrating nonenhancing expansion of the cavernous sinus due to fibrin glue injection (center panel). Repeat postoperative MRI at 3 months demonstrating resolution of the expansion (right panel).

Studies have demonstrated a direct correlation between the amount of pressure applied to the TG by the postoperative MRI, as compared with seconds for PBC. The amount of pressure applied to the TG by the fibrin glue injection is unknown, although it was sufficient to produce the sensory deficit without a motor deficit.

Although fibrin glue injection may achieve satisfactory cavernous sinus homeostasis, the volume and rate of injection should be kept in mind to avoid a compressive lesion on traversing cranial nerves and surrounding structures or retrograde filling of the venous tributaries.

**References**

5 Bedi AD, Toms SA, Dehdashti AR. Use of hemostatic matrix for hemostasis of the cavernous sinus during endoscopic endonasal pituitary and suprasellar tumor surgery. Skull Base 2011;21(3):189–192