The use of stents in the treatment of aneurysm continues to offer new fields of investigation. New technologies, such as flow-diverting stents, allow previously uncoilable cerebral aneurysms to be treated with great success. We report a rare case of mycotic intracavernous carotid aneurysm in a child treated with a new-generation of stent.

**CASE REPORT**

A 10-year-old girl was admitted to our emergency unit with headache, fever, and meningeal syndrome. She had a history of uncomplicated hemolytic-uremic syndrome. The initial workup confirmed the diagnosis of streptococcal meningitis, and the patient was treated conservatively. On day 8, however, the patient reported severe facial edema, diplopia, ptosis, and mydriasis of the right eye caused by cranial nerve III palsy. Brain magnetic resonance imaging revealed thrombosis of the right cavernous sinus associated with a large infectious aneurysm of the intracavernous segment of the right carotid artery. The aneurysm was confirmed by digital subtraction angiography, which showed a wide-necked, 15-mm diameter, intracavernous aneurysm with a sluggish filling of the aneurysm lumen.

**OBJECTIVE:** To report a unique case of wide-necked mycotic cerebral aneurysm treated with a new generation of intracranial stent.

**CLINICAL PRESENTATION:** A 10-year-old girl presented with meningitis complicated by an infectious intracavernous large aneurysm revealed by cranial nerve palsy.

**INTERVENTION:** The aneurysm was treated by a new-generation, flow-diverting, endoluminal implant (SILK; BALT EXTRUSION, Montmorency, France) placed across the aneurysm neck without coiling. Angiographic controls showed complete thrombosis of the aneurysmal sac with dramatic improvement of symptoms a couple of weeks after the procedure. Follow-up magnetic resonance imaging and digital subtraction angiography 3 months after the procedure, confirmed total occlusion of the aneurysm with normal circulation in the parent vessel.

**CONCLUSION:** This is a simple and highly effective way to exclude an aneurysm from the parent vessel without the difficulties observed with the semi-rigid stents. Flow-disrupting stent grafting may be a safe and effective alternative treatment for large intracranial aneurysms.

**KEY WORDS:** Embolization, Flow-diverting stent, Intracavernous aneurysm, Intracranial aneurysm, Large aneurysm, Mycotic aneurysm, SILK stent, Stent graft
for 3 months). The patient tolerated the operation well. At the time of discharge, the cranial nerve III and IV palsies were stable. The first control magnetic resonance imaging, performed 5 days after the procedure, confirmed the efficacy of the treatment with subtemporal thrombosis of the aneurysmal sac and normal patency of the parent artery (Figure 3).

Follow-up magnetic resonance imaging and digital subtraction angiography were performed 3 months after the procedure and confirmed total occlusion of the aneurysm with normal circulation in the parent vessel (Figure 4). The patient showed complete resolution of her symptoms with no complications as a result of the procedure.

**DISCUSSION**

We describe an intracranial infectious aneurysm treated with a flow-diverting semicovered stent. Infectious aneurysms represent 1.5% to 9% of all intracranial aneurysms. Their occurrence is usually related to infectious occlusion of the vasa vasorum of the parent vessel, leading to weakness of the arterial walls and thus formation of aneurysm dilation.1 The treatment of choice for large septic aneurysms remains a subject of debate.2 Nevertheless, the appropriate antibiotics should be administered as soon as possible, and the optimal treatment is usually occlusion of the parent vessel, leading to a decrease in the mass effect that is the cause of neurological symptoms.3,4 In our case, the patient had cranial nerve III and IV palsies, but sacrifice of the right carotid artery was considered unsuitable because the balloon occlusion test was symptomatic.

Stent grafting is considered a promising alternative, but its use in the supra-aortic arteries has been described in the literature only in the past few years, with a lack of efficacy because of problems of flexibility and the risk of iatrogenic arterial dissection.5,6 To overcome these limitations, a new generation of endoluminal flow-diverting devices is now available for specific use in intracranial vessels and is increasingly discussed in the literature with great expectations. The Pipeline neuroendovascular device (Pipeline NED; Chestnut Medical Technologies, Inc., Menlo Park, CA) offers the potential of aneurysm occlusion related to flow disruption.7 Both devices share the prop-
Two- (NEURO) Disclosure for large intracranial aneurysms. It seems now to be an easy and cost-effective alternative treatment of it has been deployed.

The image shows a reconstructed parent vessel, no filling of the previous aneurysmal sac, and a slight stent protrusion at the site of the neck.

Property of forming a high coverage mesh that, once expanded, covers the neck and induces thrombosis of the aneurysmal sac while preserving patency of adjacent small branch vessels. The SILK stent is composed of 48 braided nitinol strands, which differs from other bimetallic implants. This stent is also original because it offers, once deployed, a sinusoidal radiopaque wire throughout the device that helps in a precise visualization of the stent.

The SILK stent system comprises a self-expanding stent, a delivery system, and a reinforced catheter for its placement. The delivery system comprises a delivery wire (pusher) and introducer. The self-expanding stent is preloaded on the delivery wire within the introducer. The delivery procedure is similar to coil delivery and allows resheathing and repositioning of the stent when up to 90% of it has been deployed.

To increase the stability of the stent, choose a stent length at least 3 times the diameter of the parent vessel plus the neck size. Furthermore, it is important to push slightly on the stent while delivering it to increase the tightness of the mesh. The theory behind this approach is to promote thrombosis of the aneurysm, to avoid long-term recanalization, and to derive benefit from the release of neural compression.

Our case illustrates this simple and highly effective way to separate an aneurysm from the parent vessel without the difficulties observed with semirigid stents designed for coronary use that were inappropriate for the curves seen in the internal carotid artery and basilar artery. More studies are needed to further address SILK stent use in the future, especially in children, because no long-term follow-up after flow-diverting stent placement is currently available. Only repeated clinical and angiographic controls over time will answer the question of the potential drawbacks of this device. It seems now to be an easy and cost-effective alternative treatment for large intracranial aneurysms.

Disclosure
The authors have no personal financial or institutional interest in any of the drugs, materials, or devices described in this article.
The authors report on a 10-year-old girl presenting with a pseudoaneurysm of the cavernous carotid artery treated with stent graft technique. Certainly, this is very problematic, and although vessel occlusion is a reasonable alternative, this new stent technology allows preservation of major cerebral vessels that have proximal pathology. One always has trepidation when inserting a foreign body in the presence of an infectious problem, but, on follow-up, their results clearly indicate that this was very successful in treating this lesion. One of the difficulties in placing devices within this vessel is knowing where the normal vessel ends and the diseased vessel begins. I think additional follow-up is going to be essential in this young girl because the 3-month angiogram clearly indicates that an abnormal vessel still exists. Be that as it may, the results are impressive, and this new technology is certainly exciting and will allow more large vessels to be spared rather than sacrificed.

Robert H. Rosenwasser
Philadelphia, Pennsylvania