Semi-jailing technique

When stent assisted coiling (SAC) is performed for the treatment of intracranial aneurysm, the technique of catheter tip placement into the aneurysm sac can be divided into 2 methods: the catheter jailing technique and through the stent's strut technique.

Although the conventional catheter jailing technique eliminates some of the drawbacks of through the stent's strut technique, it does not offer a possibility of modifying the microcatheter position within the aneurysm sac, which further limits the operator's ability to reposition the coil delivery catheter tip. As a novel method for overcoming such drawbacks of catheter jailing technique, the semi-jailing technique (SJT), which was first described for cerebral aneurysms by Hong and colleagues in 2009, provides stent-assisted remodeling of the aneurysm neck during coil embolization without grasping the coil delivery microcatheter [1].

Coil embolization for cerebral aneurysms using a semi-jailing technique and open-cell stent [2].

Between 2005 and 2013, 26 patients with acute VAD were managed with internal coil trapping (n=10), stent-assisted coiling (n=14), stent only (n=1), and proximal occlusion (n=1). Stent-assisted coiling included the modified stent-assisted semi-jailing technique (n=10), balloon-in-stent technique (n=2), and coiling followed by balloon mounted stent (n=2). Digital subtraction angiography (DSA) was performed in all patients except for three who died during the acute stage.

RESULTS: Of 26 patients with VAD, 14 and 12 presented with hemorrhagic and non-hemorrhagic types, respectively. The dominancy of the relevant artery was defined as dominant (n=9), even (n=12), and non-dominant (n=5). Reconstructive treatment was performed in six patients with ruptured VADs which failed balloon test occlusion and nine with non-hemorrhagic VADs. Clinical outcomes were favorable in 22 (84.6%), severe disability occurred in one, and there were three deaths (11.5%). All patients except the three who died had angiographic follow-up at 6-32 months (mean 10.4 months). The angiographic results of nine cases of internal trapping and one of proximal occlusion all showed a stable occlusion state. Among the 15 cases of reconstructive treatment, follow-up DSAs were available for the 13 surviving patients, 10 of which demonstrated stable occlusion of aneurysmal dilation and patent parent artery.

CONCLUSIONS: This study suggests that internal trapping is a stable and effective treatment for acute VAD. Reconstructive treatment using stent and coils could also be a feasible alternative modality for hemorrhagic type VAD. However, serial DSA follow-up is essential [3].

The semi-jailing technique involves the partial deployment of a retrievable stent, bridging part of the aneurysm neck while leaving space to maneuver the microcatheter. Twenty-two complex, wide-necked aneurysms, including 3 ruptured and 5 dissecting, were treated using the semi-jailing technique (15 women; mean age, 55.2 years).

The semi-jailing technique was successfully applied in all cases. Immediate posttreatment angiograms showed total occlusion of the aneurysm in 17 cases (77%), neck remnant in 3 cases (14%), and aneurysm dome filling in 2 cases (9%). Follow-up angiography available in 10 patients at an average of 8.5 months showed progressive occlusion in 1 aneurysm and 7 remained occluded. In 2 cases of

dissecting aneurysms, retreatment was required. No permanent periprocedural morbidity was encountered. One patient died of complications secondary to intracranial hemorrhage 6 days after treatment. In 2 cases (9%), thromboembolic events after final stent placement were successfully treated with intraarterial thrombolysis. No delayed stent migration was seen.

Semi-jailing is a safe and effective stent-assisted coiling technique that facilitates treatment of complex, wide-necked aneurysms [4].

[1], [4]
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