

Posterior Circulation Tandem Occlusions- Classification and Techniques: A Commentary

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We want to congratulate the authors for this well-written review on posterior circulation tandem occlusions. Posterior circulation tandem occlusion is an area of neurosurgery that has not been heavily studied, particularly in regards to treatment modalities. These strokes occur more rarely than other forms of stroke and, frequently, conventional surgical intervention is no longer an option by the time patients present to the hospital. Fortunately, evolving technologies have made it possible for neurosurgeons to add mechanical thrombectomy in the posterior circulation to the armamentarium of posterior stroke treatment. They have successfully adapted their surgical skills for treating anterior circulation tandem occlusions to perform similar procedures in the posterior circulation.

Surgery of posterior circulation tandem occlusion is technical and challenging, but crucial; unfortunately, the outcome is dismal if the condition goes untreated. Multiple modalities exist for mechanical thrombectomy. Cohen et al. divide them into categories they define as “dirty road pathway” and “clean road pathway”. The dirty road pathway is more technically complicated and has an increased risk of complications. It can be done using either an antegrade or a retrograde approach. All the cases reviewed in this paper underwent mechanical thrombectomy in what Cohen et al. describes as “a dirty road pathway with a retrograde approach” [1].

As in any surgical procedure, it is essential to understand how supplementary steps may alter outcomes. Thus, the author needed to address the pros and cons of stenting for plaque management at the vertebral artery ostium before versus after thrombectomy. In an antegrade approach, stent placement at the vertebral artery ostium is followed by basilar artery thrombectomy. While it is argued that this may stabilize the plaque, there is a reported increase

in TTR of the posterior fossa and hemorrhage risk. In the retrograde approach, the basilar thrombectomy precedes the proximal vertebral artery stent-assisted angioplasty. This approach reportedly offers a decreased TTR and improved patient outcomes, but may increase the risk of vertebral to basilar re-embolization during stent placement. Providing the best possible care for each patient requires weighing the risks and benefits of each approach on an individual basis.

In the paper, three very distinct posterior circulation tandem occlusions are defined: true tandem occlusion of the vertebral and basilar artery, “J” occlusion, and posterior circulation pseudo-occlusion. Each case demonstrated either acute basilar artery occlusion due to vertebral artery stenosis or occlusion with thromboembolism. Despite the technical complexity and increased risks, a dirty road pathway with a retrograde approach was deemed necessary in these cases. With the more challenging procedure, a higher rate of complications was expected. Though Weinberg et al. did not report any periprocedural distal embolic occurrences, the mortality of 41.2% parallels previous literature. Even when the vertebral artery presented with stenosis or high-grade occlusion, mechanical thrombectomy was shown to be feasible, safe, and effective for the treatment of the basilar artery occlusion. While the treatment modality for maintaining patency of the vertebral artery differed, overall outcomes were relatively similar. Thus, the author nicely addresses the technical aspects of mechanical thrombectomy in such challenging diseases, describing the different approaches and treatment options to illustrate the safety and feasibility of mechanical thrombectomy in posterior circulation tandem occlusions.

While the study is small and nonrandomized due to

the disease's rarity, the outcomes were consistent with published data. Only 17 cases of posterior circulation tandem occlusions were encountered during the five years covered in the study. The small sample size makes generalizing the results difficult, especially when discussing post-procedural complications. The complications recorded by the authors included periprocedural intracranial hemorrhage (2 cases, 11.8%), periprocedural distal embolic (0 cases, 0%), periprocedural vessel dissection (1 case, 5.9%), periprocedural vessel perforation (1 case, 5.9%), and post-procedural symptomatic intracranial hemorrhage (1 case, 5.9%). With only one or two cases of the 17 having peri- or post-procedural complications, it is tempting to consider the surgeons' treatment modalities unequivocally successful. However, it is unknown whether the rate of complications would remain low with a larger sample size.

Currently, there is no well-established optimal approach to the endovascular intervention of posterior circulation tandem occlusions. In our opinion, this paper offers an excellent blueprint for the future. It outlines very clearly the definitions for posterior circulation tandem occlusion, its various treatment modalities, and complications that may arise with each methodology. Most of all, it gives

promise that posterior circulation tandem occlusions can be remedied. Future and larger randomized studies evaluating different treatment modalities and the risk and benefits of each intervention will show which approach is the best when confronted with posterior circulation tandem occlusions. Until then, we will rely on such small cohorts' papers which demonstrate the safety and effectiveness of mechanical thrombectomy following a posterior circulation tandem occlusion.

References

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