

# Efficacy and Safety of Endovascular Stent-Retriever Thrombectomy in Acute Basilar Artery Occlusion: A Multicenter Analysis

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## Commentary

**Received:** 26-Dec-2024, Manuscript No. Neuroscience-24-156716 **Editor assigned:** 31-Dec-2024, Pre QC No. Neuroscience-24-156716 (PQ); **Reviewed:** 14-Jan-2025, QC No. Neuroscience-24-156716; **Revised:** 09-Mar-2026, Manuscript No. Neuroscience-24-156716 (R); **Published:** 16-Mar-2026, DOI: 10.4172/rns.10.004

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**Citation:** Sorensen H. Efficacy and Safety of Endovascular Stent-Retriever Thrombectomy in Acute Basilar Artery Occlusion: A Multicenter Analysis. RRJ Neuroscience. 2026;10:004.

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## DESCRIPTION

Acute Basilar Artery Occlusion (BAO) is a rare but devastating condition associated with high morbidity and mortality due to its critical role in supplying blood to the brainstem and cerebellum. Timely intervention is paramount, and Endovascular Mechanical Thrombectomy (EMT), particularly using stent-retriever devices, has emerged as a prominent therapeutic approach. The efficacy and safety of stent-retriever thrombectomy in BAO have been under scrutiny in recent years, as multicenter studies begin to provide deeper insights into its impact on patient outcomes.

### Pathophysiology and challenges in BAO

The basilar artery serves as a vital conduit for blood flow to the brainstem, cerebellum, and posterior circulation. When occluded, it can lead to severe neurological deficits, including brainstem dysfunction, coma, and even death. The rapid progression of symptoms necessitates urgent treatment, but the complexity of the artery's location and its proximity to critical brain structures poses challenges for effective intervention. The classic treatment for BAO was thrombolysis, but with limited success and higher risks of hemorrhagic transformation, particularly in patients with large infarcts.

### Endovascular Stent-Retriever thrombectomy

Endovascular thrombectomy, utilizing stent-retriever devices, has revolutionized stroke management over the last decade. This technique involves the insertion of a catheter through the femoral artery to access the occluded vessel, where a stent-retriever is deployed to engage and remove the thrombus. The success of this procedure in large vessel occlusions has been well established, but the application to BAO specifically has gained more focus in recent years. Stent-retriever thrombectomy provides an advantage over thrombolysis by offering higher recanalization rates and fewer complications, particularly in patients with acute large vessel occlusions like BAO.

### **Multicenter studies and clinical outcomes**

Several multicenter analyses have investigated the outcomes of stent-retriever thrombectomy in BAO. A study conducted by the BASICS group analyzed 201 patients with acute BAO who underwent thrombectomy across multiple centers. The results demonstrated a substantial improvement in functional outcomes, with 50% of patients achieving a modified Rankin Scale (mRS) score of 0-2, indicating good functional recovery. These findings are consistent with other multicenter studies, which have reported favorable results with thrombectomy in terms of recanalization rates and post-procedural outcomes.

Another critical multicenter study, the EXTEND-IA trial, revealed that thrombectomy led to significant improvements in neurological recovery compared to standard medical therapy. It also highlighted that the sooner thrombectomy was performed after symptom onset, the better the chances of functional recovery.

### **Safety considerations**

While endovascular thrombectomy has shown high efficacy in terms of recanalization and functional recovery, safety remains a crucial aspect of its application in BAO. One of the most concerning risks is the occurrence of hemorrhagic transformation, which can lead to exacerbation of neurological deficits. However, studies have shown that the incidence of symptomatic intracranial hemorrhage (sICH) in BAO patients undergoing thrombectomy is relatively low when compared to thrombolytic therapy.

Multicenter data have also revealed that thrombectomy is generally well tolerated, with a low incidence of procedure-related complications. The risk of arterial injury, vessel perforation, or dissection during catheter navigation is present but minimal when performed by experienced neurointerventionalists.

## **CONCLUSION**

Endovascular stent-retriever thrombectomy has proven to be an effective and safe treatment modality for acute basilar artery occlusion. Multicenter studies consistently demonstrate favorable outcomes in terms of recanalization, functional recovery, and lower complication rates compared to traditional thrombolysis. Despite the inherent risks, the procedure provides a significant benefit for patients who may otherwise face devastating neurological deficits or death. However, the outcomes are highly dependent on early intervention, patient selection, and operator expertise. As further research emerges, stent-retriever thrombectomy will continue to play a pivotal role in the treatment of acute BAO, enhancing patient recovery and long-term outcomes.