Mechanical Thrombectomy for Internal Carotid Artery Stenosis

Recanalization of chronic internal carotid artery occlusion has the potential to provide significant benefits for patients in the future, but the procedure is technically challenging. Therefore, a study aimed to identify a better method to predict the success of recanalization for patients with chronic internal carotid artery occlusion. The study's overall success rate was 73.77%. The multivariate logistic regression analysis revealed that two factors were independent predictors of successful recanalization: the continuous low signal lumen in the occluded segment of the internal carotid artery on the MRI image without contrast (OR: 15.9; 95% CI: 2.67-94.63) and the architecture of the clinoid segment of the internal carotid artery on the MRI image with contrast (OR: 11.97; 95% CI: 2.44-58.79). Based on the model coefficient, the researchers established an MRI score system. The MRI score system's area under the curve (AUC) in predicting successful recanalization was 0.916 (95% CI: 0.815 to 0.972; p < 0.001) with a sensitivity of 83.33% and a specificity of 72.22%. Compared to the previous score system based on the DSA morphology, the MRI system had a similar sensitivity and a better specificity. Therefore, the continuous low signal lumen in the occluded segment of the internal carotid artery on the MRI image without contrast and the architecture of the clinoid segment of the internal carotid artery on the MRI image with contrast were identified as independent predictors for successful recanalization in patients with chronic internal carotid artery occlusion (CICAO)¹⁾.

The majority of cases of CTO of the ICA require treatment. In early studies, the results of external-ICA bypass were unsatisfactory, while recanalization is now considered the only viable option. The current treatment indications mainly depend on the degree of injury to the cerebrovascular reserve and the extent to which the oxygen extraction fraction is increased. The length, height and duration of ICA occlusion are also relevant, though more frequently, the condition depends on multiple factors. Endovascular interventional recanalization, carotid endarterectomy (CEA) and hybrid surgery may be conducted in a select group of patients. As novel materials are developed, the success rate of simple recanalization may gradually increase; however, hybrid surgery may be more representative of the current trend, as advanced CEA can remove carotid atherosclerosis plaques, thus reducing the technological demands of the subsequent interventional recanalization. There are many complications that may result from recanalization following CTO of the ICA, including hyperperfusion and technical errors; therefore, the operation must be conducted carefully. If the recanalization is successful, it typically results in a stable improvement of patient condition in the long term. However, despite these conclusions, more studies are required in the future to further improve current understanding of CTO of the ICA ²¹.

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