

Systematic Review of Minimally Invasive Approaches for Anterior Circulation Aneurysms

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Introduction

Aneurysms of the anterior circulation have been approached by the pterional craniotomy for decades, but the search for smaller incisions and craniotomies led to the development of keyhole approaches. We sought the most relevant evidence-based data, to establish the safety of the less invasive cranial approaches for anterior circulation aneurysms.

Methods

This study consist of a systematic review according to the recommendations of Cochrane and PRISMA, proceeding to conduct meta-analysis when plausible. The search strategy was conducted in Embase, PubMed and Scopus, through January 2017. Terms used included variants for aneurysm surgery, pterional, minipterional and supraorbital craniotomies. Safety were measured by the intraoperative rupture rates.

Results

A total of 8189 articles were found, with only 37 included in the final analysis. No randomized controlled trial was found. The included articles did sum 3719 aneurysms treated, 661 by minipterional and 3.058 by supraorbital approaches. The intraoperative aneurysm rupture rates (including unruptured and previously ruptured aneurysms) were 7,8% for minipterional and 7,0% for supraorbital approaches. A high number of 60% and 55%, respectively, of the articles didn't mention or provided enough data of intraoperative aneurysm ruptures. There's a lack of uniformity throughout the articles, from the surgery variations (i.e. transcilliary or transpalpebral incisions; with or without orbitotomies) to the description and outcome measurements, hampering adequate correlations.

Conclusions

There's very little and weak evidence to address the real safety of less invasive cranial approaches for anterior circulation aneurysms. With the provided best evidence we could found, the minimally invasive approaches for anterior circulation aneurysms seems as safe as the standard approaches. There wasn't enough information to adequately analyze surgical complications and

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1- Review the most commonMinimally Invasive Approaches forAnterior Circulation Aneurysms;
- 2- Know the safety of the less invasive surgeries;
- 3- Discuss the lack of evidence and trials on the neurosurgical field.

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