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Minimally-Invasive Surgery in Intracerebral Hemorrhage: An Updated Systematic Review and Meta-Analysis of Randomized Controlled Trials.

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Learning Objectives

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

1) Summarize the literature supporting MIS in Intracerebral Hemorrhage

2) Compare MIS with conventional treatments

3) Understand the impact of time to evauation and hematoma volume of outcome of minimally-invasive surgery

Introduction

Minimally invasive surgery (MIS) for intracerebral hemorrhage (ICH) has been evaluated in numerous clinical trials. While meta-analyses for this strategy have been performed in the past, new recent trials add important information and permit strategy-specific analyses of endoscopic surgery (ES) and stereotactic thrombolysis (STS).

Methods

Using the Cochrane systematic approach and the PRISMA 2009 guidelines, major scientific databases including but not limited to the Pubmed, CENTRAL, Embase, Web of Science, Scopus,and the Chinese National Knowledge Infrastructure(CNKI) were searched until October of 2017 for randomized controlled trials on MIS treatment of supratentorial spontaneous ICH.

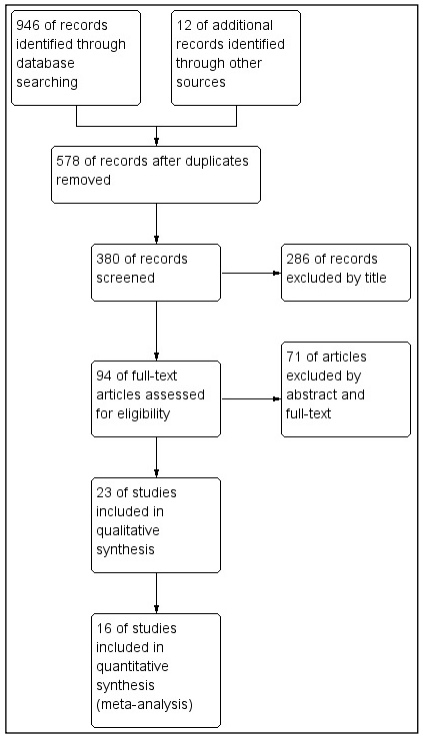
Primary outcome was defined as death or dependence at the end of follow-up.

Secondary outcome was defined as death.

Functional dependence classified by activities of daily living scales: mRS >2; BI =60; GOS =3

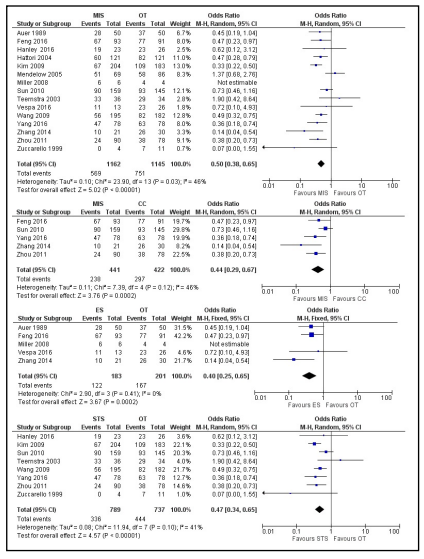
Results

The initial search yielded 958 reports which were initially screened to 380 documents and finally reduced to 16 high-quality RCTs involving 2397 patients.

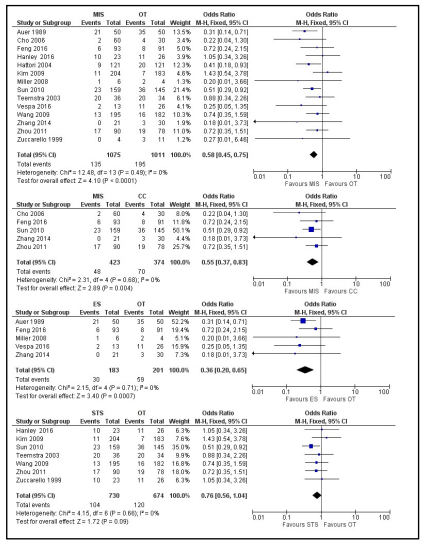


We analyzed MIS overall, ES, and STS compared with conventional treatment(CT) including medical treatment and/or conventional craniotomy(CC).

Primary outcome:

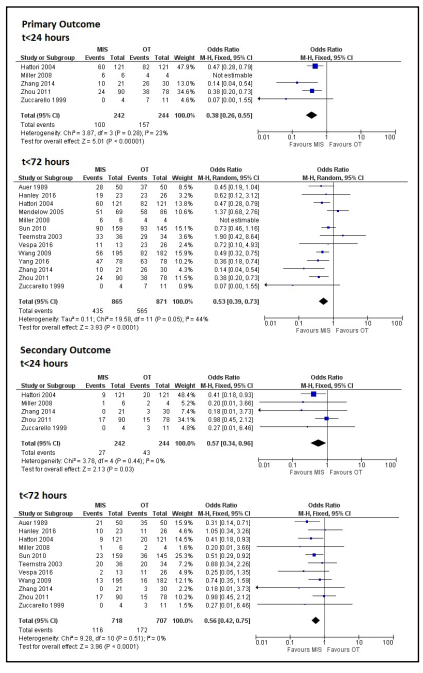


Secondary outcome:

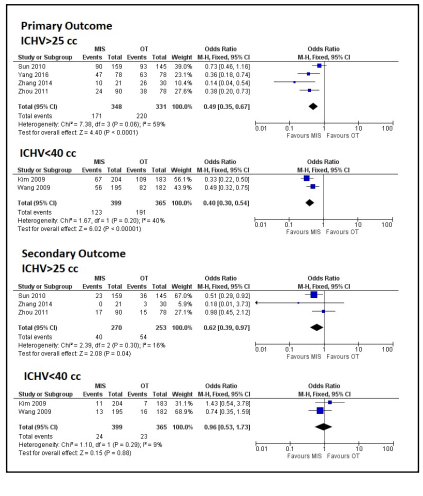


We also conducted a subgroup analysis considering time from ICH onset to surgery and ICH volumes:

Time to treatment:



ICH volume:



Conclusions

1) MIS for ICH is significantly better than CT and CC, especially before 24 and 72 hours and for ICH volumes >25 and <40mL.

2) MIS, ES, and STS are significantly better than CT to achieve the primary outcome.

3) MIS and ES however, also achieved the secondary outcome of decreased mortality while STS did not.

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