

# The value of motor evoked potentials in detecting mechanical versus vascular injury during resection of supratentorial mass lesions

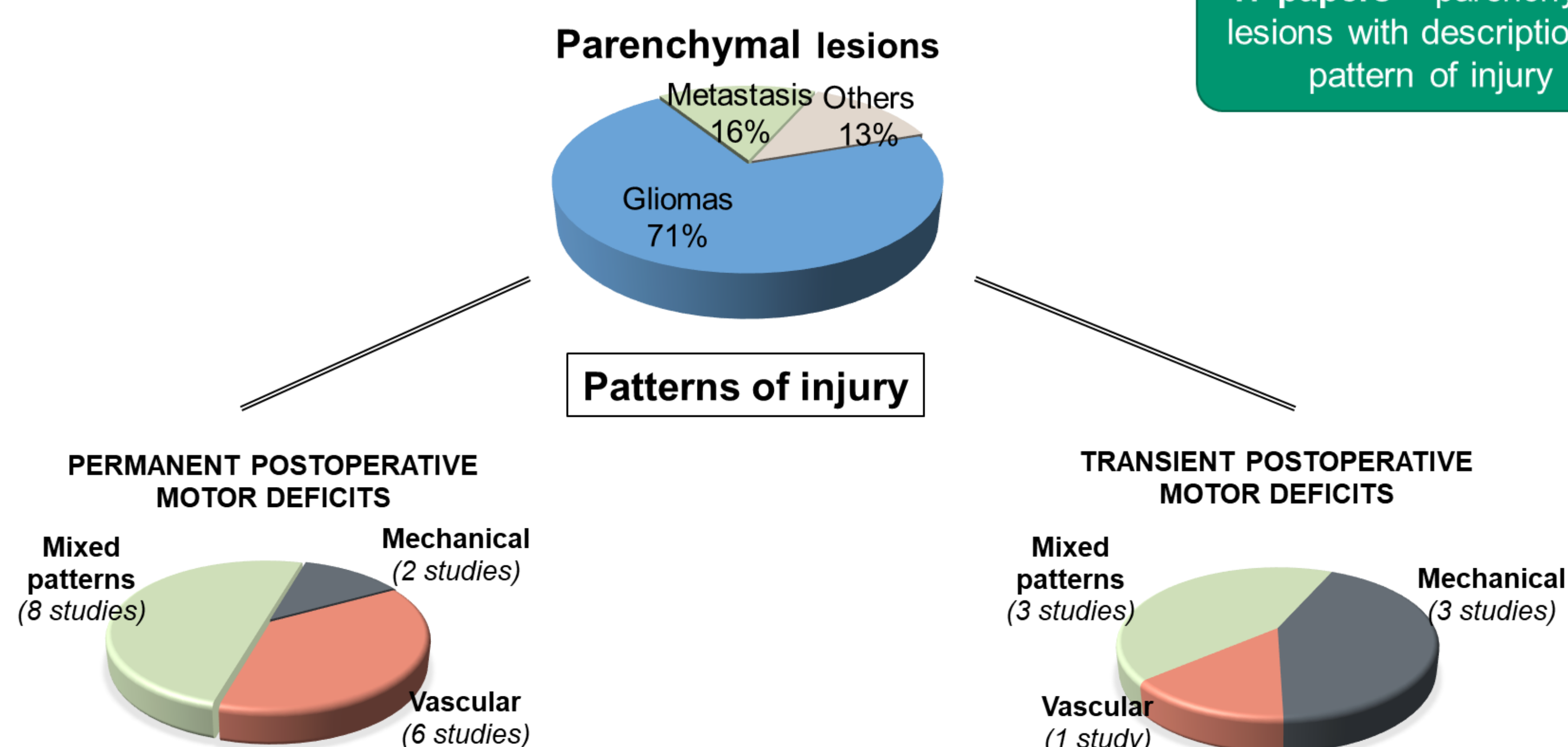
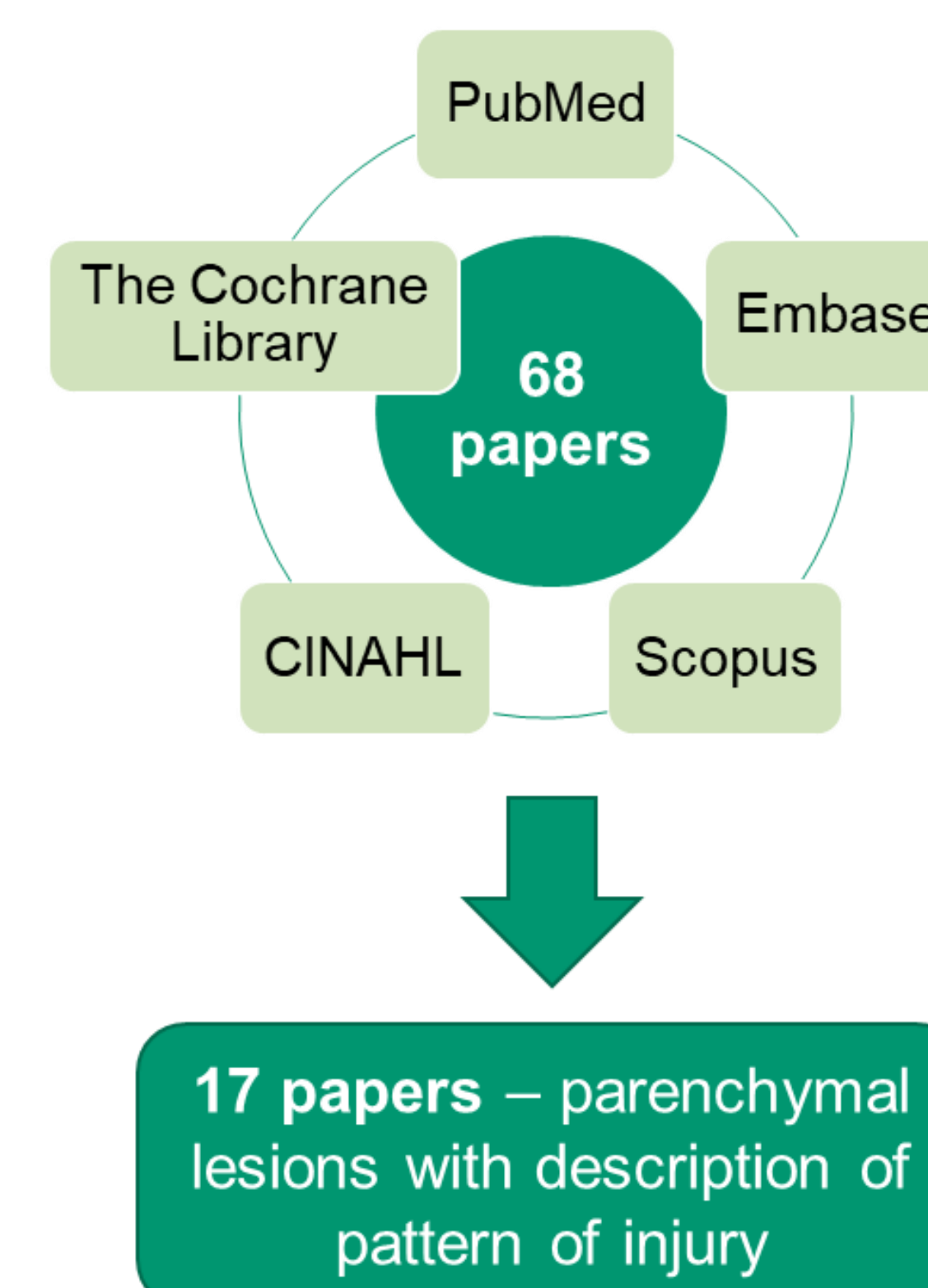
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## Objective

During resection of supratentorial mass lesions, motor deficits might be caused by different injury patterns: mechanical, ischemic or lesion of associative motor areas. Recently, we performed a scoping review to assess motor evoked potentials (MEP) warning criteria. Here we present the data of a subgroup of patients, with focus on the pattern of injury.

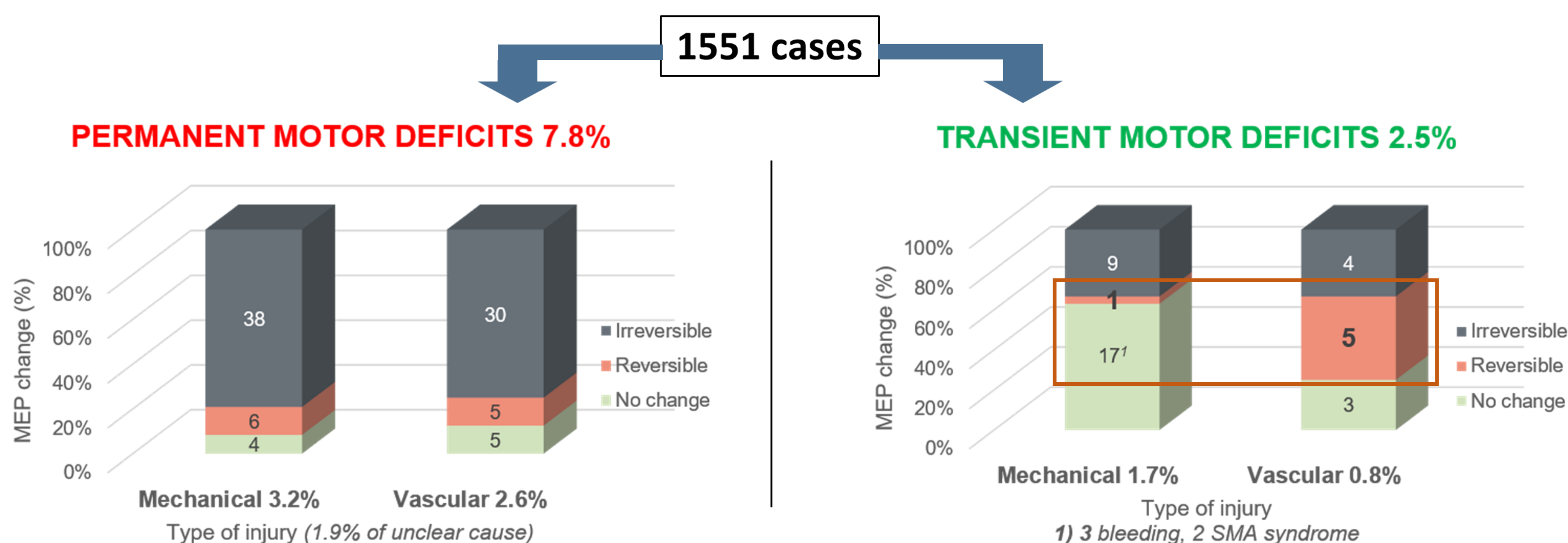
## Material and Methods

A systematic search of the literature using PubMed, Embase, Scopus, CINAHL and the Cochrane Library was undertaken. Inclusion criteria were electrically elicited MEP with predefined alarm criterion in anesthetized patients undergoing supratentorial brain surgery with quantitative report of motor outcome. For this subgroup analyses, we focused on supratentorial parenchymal lesions.



## Results

Of the included papers, 54.8% described the different injury patterns. Of 1551 cases, there were 7.8% of permanent deficits and 2.5% of transient deficits. There was a slight predominance of mechanical injury. For permanent deficits, irreversible loss of MEP predominated for both types of injuries. For transient deficits, there were more reversible changes in vascular than mechanical injuries ( $P=0.01$ -Chi square test).



**More reversible changes in vascular than mechanical injuries**  
 ( $p=0.01$  – Chi square test)

## Conclusions

- In the group with transient motor deficits, the subgroup with vascular injury had significantly more reversible MEP changes. This suggests that an MEP alert may reduce permanent deficits caused by ischemia. Thus, in tumor cases, for ischemic injuries MEP monitoring may prevent permanent deficits.
- For mechanical injuries, MEP monitoring can mostly only predict permanent deficits.
- For this, mapping strategies, especially continuous dynamic mapping, are of additional value.