

ABSTRACT

J Neurosurg Sci. 2022 Oct 14. doi: 10.23736/S0390-5616.22.05866-0. Online ahead of print.

Applicability and efficacy of ultrasound elastography in neurosurgery: a systematic review of the literature.

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INTRODUCTION: Neurosurgery is one of the fields in which intraoperative imaging is paramount. One of these main imaging tools that have been acquiring the interest of the neurosurgical community is Ultrasound elastography (USE), which is an imaging technology sensitive to tissue stiffness. Here we present a systematic review of the use of USE in neurosurgery.

EVIDENCE ACQUISITION: A systematic review of the literature has been performed, according to the PRISMA guideline, for the last 30 years on 3 different databases (MEDLINE, Scopus and Cochrane), in order to gather all the studies on the use of ultrasound elastography for neurosurgical pathologies, including both clinical and laboratory studies.

EVIDENCE SYNTHESIS: A total of 15 articles met the inclusion criteria. USE has widely and safely been used especially for oncological lesions (meningiomas and gliomas) and focal cortical dysplasia. However, there are also encouraging laboratory studies about its application for the management of traumatic brain injury, and ischemic stroke.

CONCLUSIONS: This systematic review showed that, despite the lack of strong evidences, USE is a valid intraoperative tool, especially in oncological neurosurgery.

DOI: 10.23736/S0390-5616.22.05866-0

PMID: 36239425