Solfy F

Dissection and division of tissues are widely performed in microscopic neurosurgery, especially in brain tumor resection. Dissection maneuvers can be divided into two types: sharp dissection with microscissors and blunt dissection using a dissector. It is essential to use the appropriate method according to the intraoperative situation and conditions. Therefore, specific tools for each type of dissection maneuver are required.

Ogiwara et al., from the Shinshu University Hospital, developed an ultrasonic microdissector, a newly designed tool that functions as both microscissors and dissector to further advance brain tumor surgery. This preliminary experimental study was performed to evaluate the usefulness of this new device.

Solfy F (J. Morita Mfg. Corp., Kyoto, Japan), a dental ultrasonic instrument, was used to provide power in this study.

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/o5GF5txT3Qw" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

Two experiments were performed. The first one involved touching the brain parenchyma of a pig cadaver with the tip of the ultrasonic microdissector under various conditions to investigate its side effects. In the second experiment, the rat femoral artery, vein, and nerve were dissected from surrounding structures using a prototype of the ultrasonic microdissector. The effects of this device were then investigated histologically.

The amount of tissue damage was greater with the higher ultrasonic power. No irrigation and a long manipulation time also affected tissue degeneration. Dissection using the ultrasonic microdissector was superior to conventional dissection methods in terms of time ($p < 0.05$) and safety without any additional histologic damages.

The newly developed ultrasonic microdissector can dissect soft tissue without damage to the surrounding tissue. Further studies are required to determine the optimal intensity for its clinical use [1].

1)
Ogiwara T, Goto T, Fujii Y, Hanaoka Y, Hongo K, Okamoto J, Muragaki Y. Usefulness of a Newly Developed Ultrasonic Microdissector in Neurosurgery: A Preliminary Experimental Study. J Neurol Surg A Cent Eur Neurosurg. 2018 Dec 24. doi: 10.1055/s-0038-1675782. [Epub ahead of print] PubMed PMID: 30583303.