

## Introduction

Brain tumor surgery requires good planning and specific tools such ultrasonic aspirator, bipolar, microsurgical instruments. The use of new tools or equipment to enable better outcomes and improves quality of life is mandatory. Microwave Ablation (MW) is a technique used from other field since 2005 in liver, thyroid tumor with good results. With imaging guidance, the tumor is localized, and a thin (14.5gauge) microwave antenna is placed directly into the tumor. A microwave generator emits an electromagnetic wave through the exposed, noninsulated portion of the antenna.(1).

## Methods

Fifteen cases are described with Brain tumors ,four Astrocytoms and four Glioblastoma Multiforme(GBM). One Cordoma, One Metastasis and Five malignant Meningiomas Treated with Microwave Ablation during conventional surgery. In all cases, the tumor was localized with image guidance by using Transoperative Ultrasound Aloka 5500. A thin antenna (14.5gauge / MEDWAVES ) and energy was applied for 1- 3 minutes until

the temperature sensor at proximal position of the 4-cm antenna reached 7090°Celsius. The cortical brain surface temperature registered 32 to 34°Celsius during the ablation process. Cavitation and ablation was observed, and adjacent vascular and brain structures were preserved, visualized by surgical microscope and Doppler ultrasound Transoperative. Histopathological results of Astrocytoms, Glioblastoma, Chordoma, and metastases were confirmed.

## Learning Objectives

The participants should be able to understand the new application technique for surgery at brain tumors.

## Results

The Application of MW Ablation Intratumoral during Brain surgery was Safe, in All Cases no additional neurological deficit was detected. The Brain temperature around of the tumor was 32 to 34 Celsius grades. The intratumoral vascular flow was decreased, and the tumor was more easily removed. Four cases were treated only with Microwave Ablations with good outcomes.

## Conclusions

- 1.-Microwave Ablation is excellent tool for Brain Tumors Surgery
- 2- Was safe in all cases
- 3.-Decrease Intratumoral Blood Flow , therefore enable the microsurgical resection.
- 4.-The only use of microwave in brain surgery seem to be effective in the treatment of brain tumors
- 5.-The Life expectancy of High Grade of Gliomas was more 15 months, and Karnofsky score was more more 80 the first 12 months

## References

1. **Microwave ablation: principles and applications.** Simon CJ1, Dupuy DE, Mayo-smith. Radiographics 2005 oct:25 Suppl 1:S6983
2. **-Microwave Tissue Ablation: Biophysics, Technology and Applications.** Christopher L. Brace, PhD. Crit Rev Biomed Eng 2010, 38(1) 65-78

