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piezosurgery for infra and supratentorial



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Piezosurgery for infra- and supratentorial craniotomies in brain tumors surgery.

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Author information**Abstract**

OBJECTIVE: Piezoelectric surgery represents an innovative technique to perform safe and effective osteotomies, alternative to traditional bony tissue management using rotating or perforating instruments. We evaluated safety and feasibility of craniotomies using an ultrasonic device that allows the selective cut of mineralized structures, avoiding damages to the vascular, dural and parenchymal structures.

METHODS: We analyzed a series of 300 patients (range 1-81 years, SD±15.2) that underwent elective cranial surgery for brain tumors, in which the craniotomy was performed using a piezoelectric device. Preoperative and postoperative imaging, clinical notes and intraoperative details were collected.

RESULTS: 197 patients (66%) underwent surgery for supratentorial tumors, the remaining 103 (34%) for infratentorial ones. Tumors involved the skull base in 125 cases. Meningiomas, gliomas and schwannomas represented the most common histotypes. Duraplasty for dural damages was not necessary in all cases; no venous sinuses or parenchymal injuries were reported during bone work. We noted in 13 cases (4,3%) a minor dural tear, requiring only direct sutures. Bone flaps were always intact after craniotomy. No subgaleal cerebrospinal fluid (CSF) collection or CSF leak were recorded. Due to the minimal bone gap, we always achieved correct bone flaps ossification. No reabsorption or mobilization of bone flap was noted.

CONCLUSION: We illustrate the feasibility and safety of a piezosurgical cutter to perform craniotomies. This alternative technique appears to be safe, with excellent cosmetic effects. adding another tool to the neurosurgical armamentarium.

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KEYWORDS: Brain tumors; Craniotomy; Dural sinuses; Piezosurgery; Ultrasonic surgery

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