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Minimal-invasive Resektion eines Knochentumors im Bereich der temporoparietalen Schädelbasis

Minimally invasive navigation-assisted removal of a bone tumor in the temporo-parietal skull base

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Purpose

Skull bone tumours are highly complicated to resection especially those originating between external and internal skull table. The primary treatment is surgical resection. Traditional surgical approaches are associated with a significant bone deformity. We introduce and outline the clinical advantages of a navigation-assisted approach to lateral skull bone tumours using image-guided surgery.

Material and Methods

Our experience includes one patient with a bone tumour. Skull radiographic computed tomography revealed a bone lesion in the left temporo-parietal region. Computed tomographic scan indicated a destructive lesion involving external and internal skull bone layer. The patient was scheduled for image-guided surgery by use of a wireless passive infrared surgical navigation system (VectorVisionTM, BrainLAB). The preoperative computed tomography (CT) data was obtained before surgery using a newest generation Somatom Sensation 16 multi-slice-scanner (Siemens). After attaching the skull reference to the patients. head, the patient-to-image registration was performed using laser surface scanning. The registration accuracy was expressed by a calculated value, the root mean

square (RMS) and while for system validation the intraoperative accuracy was visually checked by identification of anatomical landmarks.
Results: The procedure was successful and the tumour was minimally invasively removed, with no peri- and postoperative complications. The patient was ready for discharge 2 days after surgery. Postoperative imaging scans showed no recurrent tumour process.

Conclusion

Traditional surgical approaches to skull bone tumours may result in significant cranial deformity and morbidity. Image-guided excision with surgical navigation techniques is a safe and effective minimally invasive surgical treatment option.