

Orbital cortical approach to lesions around the frontal horn of the lateral ventricle: indication and surgical parameters

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Abstract

Background

An orbital cortical approach to lesions in the region of the frontal horn is described on the basis of surgical experience with five cases and dissections of three cadaveric brain specimens. The approach involves cortical incision over the orbital surface of the frontal brain and directing the surgical trajectory superiorly. The possible indications of the approach and the critical surgical parameters are described.

Method

To assess the landmarks that could be used to employ the approach, three formalin-fixed frozen cadaveric brains were appropriately dissected. A number of parameters were analysed to identify the safe entry points and the trajectory to approach the frontal horn.

Five lesions located in the region of the frontal horn were operated upon by employing the discussed approach.

Results

The frontal horn is located at the depth of approximately 18 mm (range, 17–20 mm) from the orbital surface of the frontal brain. In a lateral perspective, the tip of the frontal horn is in line with the tip of the temporal pole. Wide opening of the Sylvian fissure, relaxation of the brain and lateral basal frontal exposure can be used effectively to obtain a suitable angulation for conduct of surgery. Avoidance of olfactory tracts and Heubner's perforating artery at the site of medial orbital gyrus cortical incision and appropriately directing the corticectomy that avoids the association fibre tracts, caudate head and internal capsule can lead to a safe exposure of the frontal horn. The approach is suitable for lesions involving or in the vicinity of the inferior aspect of the frontal horn and in the region of the caudate head. Neuronavigation can be of assistance during surgery and avoid critical misdirection. All the five lesions were treated without consequence.

Conclusions

For selected indications, an inferior frontal or orbital cortical approach can be used effectively and safely to approach lesions in relation to the frontal horn. The approach needs to be precise to avoid injury to vital adjoining structures.

Keywords

Orbital cortical approach Frontal horn Caudate head

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Notes

Conflicts of interest

None.

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