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Advantages and risks of the combined unilateral frontobasal / interhemispheric approach compared to more lateral approaches in pediatric craniopharyngeomasMartin U. Schuhmann¹, Jürgen Honegger², Marcos Tatagiba², Artemisia Dimostheni¹¹ Section of Pediatric Neurosurgery, Eberhard Karls University Hospital, Tübingen, Germany² Department of Neurosurgery, Eberhard Karls University Hospital, Tübingen, Germany

Introduction: The lateralised pteryonal (PT-A) and fronto-lateral (FL-A) approaches don't allow complete exposure of third ventricle and retro-chiasmatic cistern due to anatomical barriers. The bifrontal approach enables unrestricted midline vision, however is very invasive. The unilateral frontobasal / interhemispheric approach (FBIH-A) combines midline vision with much less invasiveness. We compared resection rates and outcome between approaches.

Methods: 19 children with craniopharyngeomas underwent 32 surgical interventions. Sequence of used approaches, extend of resection and outcomes were analyzed for each intervention.

Results: First intervention: 3 had transsphenoidal approach (TS-A); 9 PT-A (n=5) and/or FL-A (n=4); 7 FBIH-A. Result of first surgery: 3/3 with TS-A had residual tumor followed by 2nd surgery (2xPT-A, 1 TS-A). 1/9 kids with PT-A/FL-A had total removal and no recurrence. 8/9 had residuals with regrowth (\pm radiotherapy) and second surgery: 2x TS-A (no residual), 3x PT-A (2/3 no residual), 1x transcallosal, 2x FBIH-A (no residual).

Of 7 primary and 2 secondary FBIH-A, 6/9 had no residual: 2/6 suffered recurrence. 1/6 had unacceptable hypothalamic morbidity, 4/6 needed hormonal replacement. 1/6 had no hormonal deficit. In 3/9 FBIH-A, tumor was intentionally left in hypothalamus.

Conclusion: Using FBIH-A the highest rate of total resection with the lowest rate of secondary surgery was achieved. However, follow-up is still too short regarding long-term recurrence rates. Hypothalamic morbidity was experienced in the second FBIH-A case. The fact that FBIH-A enables unrestricted access to third ventricle calls for special caution regarding hypothalamic injury. Small tumor residuals were left in three consecutive cases and hypothalamic injury avoided. The FBIH-A thus seems to offer best surgical options including hypothalamic protection.