

Hypothalamic Injury During Craniopharyngioma Resections in Children: A Learning Curve. Reid Hoshide MD; Mark Calayag MD; David D. Gonda MD; Hal S. Meltzer BS, MD; Michael L. Levy MD, PhD University of California - San Diego

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Introduction

Hypothalamic injury from craniopharyngioma resection is a well-known complication, and carries morbid consequences. The nature of craniopharyngiomas make this tumor challenging, especially to novice neurosurgeons. Here, we demonstrate a learning curve in relation to damage to the hypothalamus over the senior author's career.

Methods

Cases of craniopharyngioma resection were reviewed over the senior author's career, starting in 1991. Iatrogenic insults to the hypothalamus, as well as iatrogenic exacerbation of pre-operative hypothalamic insults, were noted.





Results

Cases involving resection of craniopharyngiomas in children were reviewed over the senior author's career, spanning from 1991 to 2011. Injuries to the hypothalamus, as well as exacerbation of preexisting hypothalamic injuries, were noted. 54 total cases were identified.

Over the first 8 years, new hypothalamic injuries were seen at a rate that approaches 50% of all cases. However, the subsequent 12 years demonstrated a lack of new injuries, essentially a 0% injury rate. Of patients with pre-existing hypothalamic injuries from the nature of disease, injury exacerbation occured at a rate of 10% over the first 10 years, which fell to 0% over the next 10 years of the observational period.

Conclusions

Resection of craniopharyngiomas can be a technically daunting task, especially large tumors and in children, regardless of the neurosurgeon's experience. However, the risk of collateral injury during this surgery is likely increased in the hands of inexperienced neurosurgeons. One main problem, the senior author notes, is the identification of the hypothalamus during the resection. The physical consistency of the hypothalamus has the same feel and texture as craniopharygiomas. Moreover, familiarity with the vascular supply of the hypothalamus allows for situational awareness in a very disorienting mileu in craniopharyngioma surgery.

Here, we illustrate a learning curve of the senior author's experience. New hypothalamic injuries ceased after 8 years, and exacerbation of hypothalamic injuries from surgery ceased after 10 years. Identifying and understanding the potential pitfalls and complication avoidance in craniopharyngioma surgery may lessen the learning curve for newer, less experienced neurosurgeons.

Learning Objectives

By the conclusion of this session, participants should able be to:

 understand that a learning curve exists when performing technically demanding operations and
identify the causes for hypothalamic injury during craniopharyngioma resections in children.

References none