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# Comparing survival outcomes of gross total resection and subtotal resection with radiotherapy for craniopharyngioma: a meta-analysis

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## ABSTRACT

**Background:** Recent studies suggest that subtotal resection (STR) followed by radiation therapy (RT) is an appealing alternative to gross total resection (GTR) for craniopharyngioma, but it remains controversial. We conducted a meta-analysis to determine whether GTR is superior to STR with RT for craniopharyngioma.

**Materials and methods:** A systematic search was performed for articles published until October 2017 in the PubMed, Embase, and Cochrane Central databases. The endpoints of interest are overall survival and progression-free survival. Pooled hazard ratios (HRs) and corresponding 95% confidence intervals (CIs) were calculated using a fixed or random-effects model. The data were analyzed using Review Manager 5.3 software.

**Results:** A total of 744 patients (seven cohort studies) were enrolled for analyses. There were no significant differences between the GTR and STR with RT groups when the authors compared the pooled HRs at the end of the follow-up period. Overall survival (pooled HR = 0.76, 95% CI: 0.46–1.25,  $P = 0.28$ ) and progression-free survival (pooled HR = 1.52, 95% CI: 0.42–5.44,  $P = 0.52$ ) were similar between the two groups.

**Conclusions:** The current meta-analysis suggests that GTR and STR with RT have the similar survival outcomes for craniopharyngioma.

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## Introduction

Craniopharyngiomas are benign brain tumors arising in the sellar and suprasellar regions from embryonic malformations.<sup>1</sup> Although benign, these tumors have been described as

the most challenging intracranial tumors,<sup>2–4</sup> which are frequently closely associated with vital structures such as the hypothalamus, pituitary, optic chiasm, and carotid artery.<sup>5,6</sup>

Currently, the optimal management of patients with craniopharyngioma remains controversial. Historically, gross

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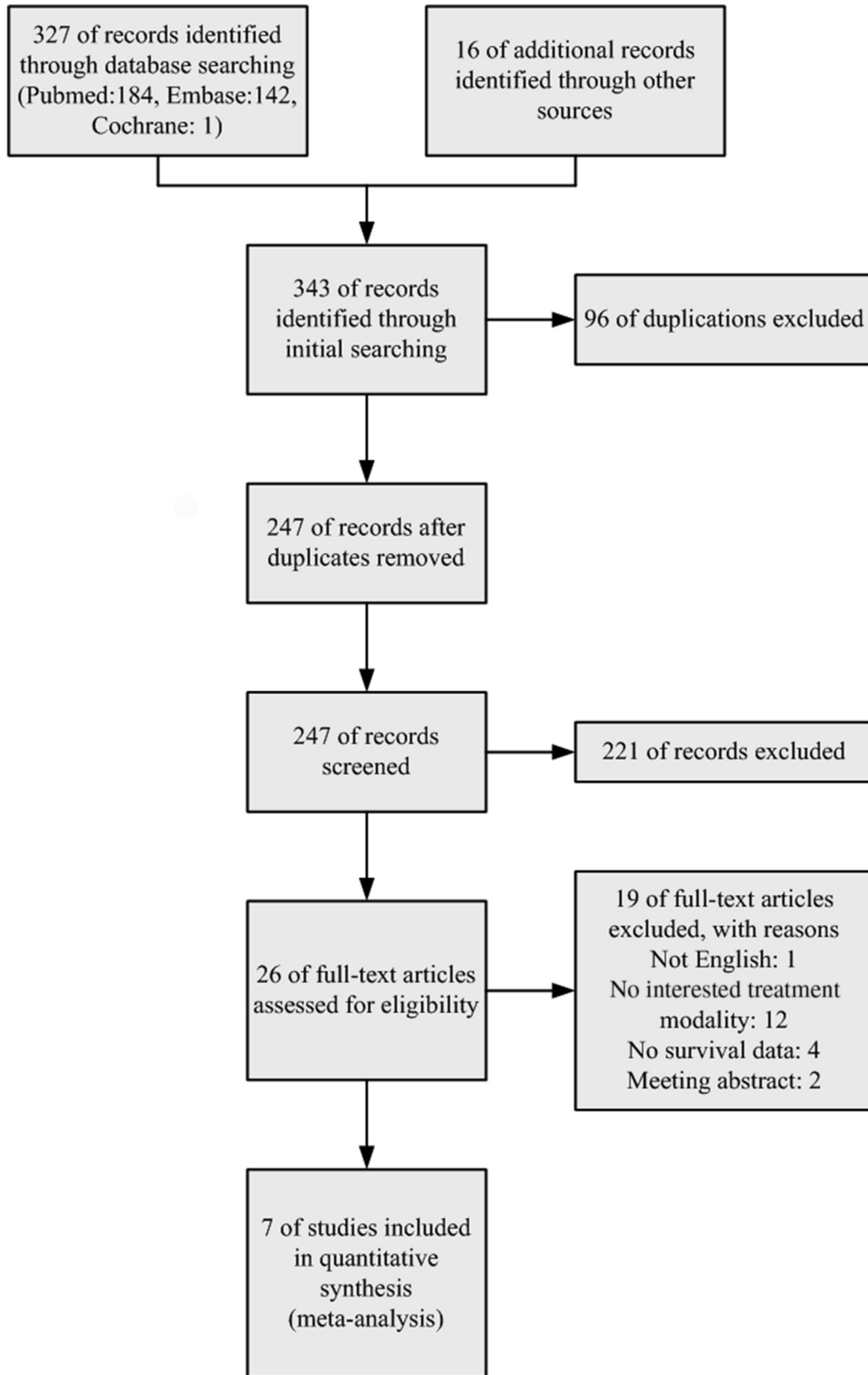


Fig. 1 – A flow diagram of the selection process.

total resection (GTR) has been the preferred treatment approach aiming at reducing the recurrence, with high rates of optic and endocrinological impairment.<sup>7-10</sup> Subtotal

resection (STR) followed by radiotherapy (RT) may be an alternative treatment approach;<sup>10-16</sup> however, serious adverse effects such as development retardation and intellectual

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