Comparison of conventional surgical treatment of ankyloglossia and new surgical treatment methods in the pediatric population: a systematic review

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Objective: The aim of this study is to present and compare a conventional surgical treatment of ankyloglossia with newer or other described surgical treatment methods in the pediatric population. Methods: A comprehensive literature review was conducted using the PUBMED and COCHRANE database considering randomized controlled trials published in the English language from its inception to June 30, 2025. Results: Twelve articles were included in the analysis. Five studies were based on a conventional procedure affecting the anterior part of the frenulum (AF procedures), six on a procedure affecting the posterior part of the frenulum (PF procedures), while one study compared the two. We attempted to compare these two groups of surgical methods by presenting breastfeeding outcomes, tongue movement outcomes, speech outcomes and adverse events. There were two studies with AF procedure and two with PF procedure demonstrating a significant reduction in maternal pain scores. The study comparing AF and PF procedure showed no difference in the reduction of mastalgia between the two methods. Tongue movement outcomes were measured only in the PF procedure group of studies. Four studies reported improved tongue mobility. Only two studies investigated speech outcomes. One study showed a significant improvement in the articulation, and the study comparing Z frenuloplasty with AF procedure showed a significantly greater improvement in the frenuloplasty group. No serious adverse events were reported in any study. Conclusion: There are studies comparing different types of surgical treatment for ankyloglossia, mainly comparing the type of instrument used. We believe that the difference may lie in the way the procedure is performed rather than in the instrument itself. Therefore, we divided the surgical interventions into those affecting the anterior frenulum such as conventional surgical blunt scissor resection and those affecting the complete frenulum to the genioglossus fascia regardless of the instrument used, including Z frenuloplasty. Although the literature does not show clear advantages of any of these techniques, it seems that currently authors prefer procedures affecting the posterior frenulum.

Key words: ankyloglossia, frenulectomy, frenulotomy, frenuloplasty