

## **Critical Review: How does age of palatal repair affect speech outcome in children with cleft palate?**

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This critical review examines the speech outcome of children with cleft palate in relation to the timing of cleft palate repair. Overall, research suggests that the timing of palatal repair has some effect on the speech outcome, specifically that earlier repair appears more beneficial to speech development. Children in earlier repair groups demonstrated fewer symptoms of cleft speech such as nasality and misarticulation. The findings of this review have implications for further research and clinical practice in the field of speech-language pathology.

### *Introduction*

The treatment objectives for cleft palate patients are normal speech, normal maxillofacial growth, and normal hearing (Rohrich, Love, Byrd & Johns, 2000). There is a longstanding controversy surrounding the relationship between these objectives and how the timing of cleft palate surgery affects the outcome of each. Generally, earlier cleft palate repair (prior to 24 months of age) has been deemed more advantageous to speech and hearing growth, while delayed closure (after 4 years of age) has been thought to improve maxillofacial growth (Rohrich, Love, Byrd & Johns, 2000). Timing is considered a critical factor in cleft palate treatment because children with cleft palate are potentially at a disadvantage during the prelinguistic phase of speech development due to the structural deviations associated with clefting (Ysunza et al, 1998).

Research in this domain has been difficult due to the high number of variables, such as physical variance of clefts, differences in surgical skill, lack of standard speech evaluation, and invariably the complexity of maturation, growth and development (Peterson-Falzone, 1996). It is likely due to these methodological and environmental factors that the optimal timing for palatal repair has not been scientifically proven (Leow & Lo, 2008).

As active members in an interdisciplinary team approach to cleft palate treatment, speech-language pathologists must be knowledgeable in current controversies surrounding approach to treatment, including the critical issue of timing of surgical repair. The evidence surrounding speech outcomes of children born with cleft palate should be critically examined and understood, so that the discerning clinician may appropriately contribute to the decision-making process. Although optimal timing for repair has not been clearly established, the statistical and descriptive evidence surrounding speech outcome is indicative of the need for speech

pathology services as part of the cleft palate treatment team in general.

### **Objectives**

The primary objective of this paper is to critically evaluate existing literature regarding the impact of timing of palatal repair on speech outcome in children with cleft palate. The secondary objective is to propose evidence-based practice recommendations for speech-language pathologists involved in cleft palate treatment.

### *Methods*

#### **Search Strategy**

Computerized databases, including Scopus and Medline were searched using the following search strategy: (cleft palate repair) OR (timing of palate surgery) AND (speech) OR (speech outcomes).

The search was limited to articles written in or translated to English between 1985 and 2008. Articles were also located using references of reputable articles.

#### **Selection Criteria**

The studies that were selected for this critical review paper investigated the differences in speech skills of children whose cleft palates were surgically repaired earlier versus later in childhood



assessment (Pittsburgh Weighted Values for Speech Symptoms Associated with Velopharyngeal Incompetence test). Speech symptoms were scored at each clinic visit using a standard format including ratings for nasal emission, nasality, phonation and articulation. The elements of velopharyngeal incompetence, articulation assessment (delayed, disordered, compensatory patterns), fistulas, and

follow up testing at age three. The only other researchers to mention speech therapy were Lohmander et al (2006), who indicated that some participants' medical history denoted attendance at speech therapy, while others' did not. This is a limitation of Lohmander et al (2006) and the remaining studies, as speech therapy could significantly impact the speech skills of any of the participants, regardless of age of palatal repair. Without considering the effect of speech therapy, the results of comparisons between early and late repair groups will not accurately reflect the influence of timing of palatal repair alone.

While the studies varied in their sample size, Haapanen and Rantala (1992), Holland et al (2007), Kirschner et al (2000), Rohrich et al (1996) and Ysunza et al (1998) included an adequate number of participants in order to make some general statements regarding the population (108, 82, 90, 44, and 76 participants, respectively) and have a higher degree of confidence in the studies' ability to detect differences between the groups. However, Lohmander et al (2006) presented the cases of only 26 patients (groups of 17 and 9). This low number of participants and uneven group distribution limits the generalizability of the researchers' findings and reduces the probability of detecting existing differences. This small sample size may also explain why Lohmander et al (2006) were unable to detect a difference between the speech skills of the early and late repair groups.

## **Methods**

Each of the studies analyzed used a different set of speech measures to qualify the speech characteristics of the participants, as well as different standardized and subjective assessment measures. Characteristics common to all studies included articulation and nasal resonance. Phonation and substitution or compensatory articulation patterns



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