



# Postoperative Physical Therapy Following Primary Cheiloplasty in Cleft Lip and Palate Patients: A Retrospective Analysis

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**Abstract:** Cleft lip and palate (CLP) are common congenital anomalies with significant functional and aesthetic implications. In Chile, the incidence of cleft lip is 14 per 10,000 live births. Primary cheiloplasty is the initial surgical intervention, typically followed by physical therapy for scar management. Despite inclusion in national guidelines, data on postoperative physical therapy after cheiloplasty are limited.

This study aims to describe postoperative physical therapy management in CLP patients following primary cheiloplasty, focusing on initiation timing and number of sessions. A retrospective analysis of records from the Gantz Foundation included 91 patients who underwent primary cheiloplasty between 2022 and 2023. Data collected encompassed age at surgery, dates of surgery and therapy initiation, number of sessions, and the interval between surgery and therapy start.

Seventy-one patients (78%) began postoperative physical therapy at the Gantz Foundation. Ages at surgery ranged from 2 to 24 months (mean: 4.8 mo), with 90.1% between 3.5 and 5 months old. Physical therapy commenced 8 to 136 days postsurgery (mean: 38 d); 47.8% started within the first month, while 10% began after 2 months. The number of sessions ranged from 1 to 11 (mean: 4.67, median: 4).

**Conclusions:** Significant variability exists in the timing and frequency of postoperative physical therapy following primary cheiloplasty in CLP patients. Delays and inconsistencies may result from geographical barriers and access issues. Enhancing referral protocols, improving communication with caregivers, and exploring strategies like telerehabilitation could improve access and adherence, potentially leading to better functional and aesthetic outcomes.

**Key Words:** Cleft lip, cleft palate, physiotherapy

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Cleft lip and palate (CLP) rank among the most prevalent congenital anomalies affecting the orofacial region, impacting both function and appearance.<sup>1</sup> In Chile, cleft lip occurs at a rate of 14 per 10,000 live births (with or without cleft palate), while cleft palate alone affects 7 per 10,000 live births.<sup>2</sup> Managing this condition requires a multidisciplinary approach that may start with prenatal diagnosis and continue throughout adulthood.<sup>3,4</sup> Cheiloplasty, the surgical reconstruction of the upper lip, is the initial procedure for infants with cleft lip (CL). This surgery involves repairing 3 layers—oral mucosa, muscle, and skin—while also addressing nasal structures in the same operation.<sup>5</sup>

In Chile, cleft lip (CL) and cleft lip and palate (CLP) are covered under the Explicit Health Guarantees program, which includes clinical guidelines advocating for interdisciplinary care. These guidelines recommend referring patients to physical therapy after cheiloplasty to address both functional and aesthetic aspects of the scar.<sup>6</sup> Despite the prevalence of these referrals, no statistical data has been published on the role of physical therapy following primary cheiloplasty. This study seeks to describe postoperative physical therapy practices, specifically examining the number of sessions and the time interval between surgery and the start of physical therapy for CLP patients who have undergone primary cheiloplasty.

## MATERIALS AND METHODS

A retrospective analysis was conducted using institutional records from the Gantz Foundation. The study included 91 patients with cleft lip and palate (CLP) who underwent primary cheiloplasty between 2022 and 2023. The inclusion criteria were limited to patients who had their surgery performed at the Gantz Foundation during this period.

The following data were extracted from the records:

The patient’s age at the time of surgery.

Dates of surgery and initiation of physical therapy.

Total number of physical therapy sessions completed.

The time interval between surgery and the start of physical therapy.

Descriptive statistical methods were applied to analyze the collected data. Measures of central tendency (mean, median, and mode) and extreme values (minimum and maximum) were calculated for both the number of physical therapy sessions and the days elapsed between surgery and the initiation of treatment.

Physical therapy in this study refers to a multimodal intervention delivered by trained physiotherapists, aimed at promoting optimal scar healing and preserving tissue mobility and esthetics following primary cheiloplasty. The protocol included:

Scar taping with adhesive strips: applied to reduce mechanical tension and support proper tissue alignment during the healing process.<sup>7-10</sup>

Soft tissue mobilization: techniques used to release tension and improve mobility of tissues adjacent to the repaired area.<sup>11</sup>

Scar massage: gentle manual techniques to mobilize the scar tissue, reduce adhesions, and enhance flexibility.<sup>8,9,11-13</sup>

Therapeutic ultrasound: administered when clinically indicated to promote scar remodeling and reduce inflammation.<sup>11</sup>

Monitoring of scar maturation: physiotherapists regularly evaluated the progress of scar tissue healing, identifying signs of pathologic or hypertrophic scarring that might require additional intervention.<sup>8</sup>

Caregiver education: parents or caregivers were instructed in appropriate home care techniques, including scar massage, to ensure continuity of therapy outside the clinical setting.<sup>14</sup>

Physical therapy was typically initiated within the first postoperative month and consisted of an average of 4 to 5 sessions per patient, depending on individual healing progress and accessibility. These characteristics of the intervention provide the basis for interpreting the patterns of access and timing analyzed in the following section.

## RESULTS

Of the total 91 patients who underwent surgery, 71 (78%) began postoperative physical therapy at the Gantz Foundation, with ages at the time of surgery ranging from 2 to 24 months (mean of 4.8 mo). 90.1% of the patients were between 3.5 and 5 months old at the time of the surgical intervention. Physical therapy started between 3 weeks and 2 months after surgery: 47.8% of the patients began within the first month, while 10% started beyond 2 months.

The number of sessions performed had a mean of 4.67 and a median of 4 sessions, with a range between 1 and 11 sessions. The average interval between surgery and the initiation of physical therapy was 38 days, with a range from 8 to 136 days, reflecting variability in follow-up times and access to postoperative treatment.

## DISCUSSION

This study offers a statistical overview of postoperative physical therapy practices in pediatric patients who underwent cheiloplasty for cleft lip and palate (CLP) at the Gantz Foundation. The results are analyzed within the framework of existing literature, emphasizing both the clinical and methodological implications, along with the limitations observed during the study.

The data shows that most patients (90.1%) underwent surgery between 3.5 and 5 months of age, aligning with general recommendations to perform primary cheiloplasty between 3 and 6 months to optimize functional and esthetic outcomes.<sup>5</sup> Significant variability was identified in the timing of the start of physical therapy, with patients beginning between 8 and 136 days after surgery. The literature suggests that early initiation of rehabilitation following primary cheiloplasty is essential to maximize functionality and improve scar outcomes.<sup>5</sup> However, the variability in access observed in our sample, likely resulting from geographical barriers to therapy, may contribute to inconsistent outcomes. This represents an opportunity to review internal referral protocols for physical therapy, aiming to ensure clear communication with parents and caregivers about the importance of initiating physical therapy promptly.

Considerable variability was observed in the number of physical therapy sessions completed, ranging from 1 to 11, with an average of 4 sessions. This variation may be attributed to factors affecting

the healing process—patients with pathologic scarring often require more sessions, whereas those with normal healing may only need minimal monitoring, resulting in fewer sessions.

Twenty-two percent of the patients did not begin physical therapy at the Gantz Foundation, which is explained by the fact that these patients live in remote regions, making access to therapy at the Foundation challenging. This could be addressed by establishing coordination with local centers that offer physical therapy<sup>15</sup> and, if necessary, providing training for the physical therapists.

An alternative to facilitate early initiation of therapy, addressing the mentioned geographical barriers, and to monitor progress is to establish a telerehabilitation program.<sup>16</sup> Although the scope of this therapy modality cannot replace in-person therapy provided by a physical therapist for managing the healing process, it would still offer valuable support by enabling follow-up and providing education to the parents and/or caregivers of the patients.

This study is not a clinical trial designed to evaluate the effectiveness of physical therapy, but rather a descriptive retrospective study focused on documenting access to this intervention. The aim was to describe the timing and frequency with which patients initiate and receive postoperative physical therapy as part of the care pathway recommended by national guidelines. As physical therapy is part of the established standard of care, conducting a controlled trial withholding the intervention would not be ethically acceptable, especially in a pediatric population. The observational nature of this study aligns with international ethical standards, such as the Singapore Statement on Research Integrity (2010), the Declaration of Helsinki, and CIOMS Guidelines, by ensuring that patient care was not altered for research purposes.

This study provides evidence on postoperative physical therapy following primary cheiloplasty in CLP patients, emphasizing the need to enhance access and adherence through innovative strategies. Implementing clear and accessible protocols for physical therapy, as well as exploring telerehabilitation options, can ensure more equitable care and improve functional and esthetic outcomes in this population.

This study stands out by providing specific data in an area with limited published information, contributing evidence on postoperative physical therapy in pediatric patients with CLP. The sample is representative of the population treated at the Gantz Foundation, and the data collected from statistical records allow the identification of relevant patterns for planning therapeutic strategies.

However, being a retrospective study, it depends on the quality and accuracy of medical records, which can introduce biases. The findings may not be generalizable to other institutions with different sociodemographic characteristics, highlighting the importance of conducting comparative studies between centers with diverse access conditions.

This study provides evidence on postoperative physical therapy following primary cheiloplasty in CLP patients, emphasizing the need to enhance access and adherence through innovative strategies. Implementing clear and accessible protocols for physical therapy, as well as exploring telerehabilitation options, can ensure more equitable care and improve functional and esthetic outcomes in this population.

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