

Implications of head and neck burn sequelae on orofacial myofunctional aspects: a literature review

Implicações das sequelas de queimaduras de cabeça e pescoço nos aspectos miofuncionais orofaciais: revisão de literatura

Implicaciones de las secuelas de quemadura en cabeza y cuello en los aspectos miofuncionales orofaciales: revisión de la literatura

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Abstract

Introduction: Head and neck burns can lead to sequelae and cause significant orofacial myofunctional alterations. Injuries in this region may result in various consequences, such as microstomia, restriction of mandibular movements, dysphagia, dysphonia, and impaired facial expression, as well as aesthetic and psychological impacts. **Objective:** To investigate the impact of head and neck burn sequelae on orofacial myofunctional aspects. **Method:** This is a narrative literature review. The bibliographic search was conducted in the Virtual Health Library (VHL), Scientific Electronic Library Online (SciELO), the CAPES Journal Portal (Coordination for the Improvement of Higher Education Personnel), and the National Library of Medicine (PubMed). The descriptors used were “burns,” “head,” “neck,” and “myofunctional therapy,” along with their English equivalents. Articles published between 2014 and 2024 that addressed sequelae of head and neck burns were selected. The following data were extracted for analysis: title, objective, affected region, treatment, type of sequela, and conclusion. **Results:** Out of 1,260 articles initially identified, nine were selected. These were categorized into two groups: characterization of speech-language therapy interventions and characterization of orofacial myofunctional alterations. Reported sequelae included impairments in facial mimicry, swallowing, mastication, voice, speech,

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and breathing. **Conclusion:** The most frequently cited sequelae in the analyzed literature were related to facial mimicry, mainly associated with facial contractures. Furthermore, the findings underscore the importance of the speech-language pathologist in the rehabilitation of burn patients.

Keywords: Burns; Head; Neck; Myofunctional therapy.

Resumo

Introdução: As queimaduras de cabeça e pescoço podem deixar sequelas e causar importantes alterações miofuncionais orofaciais. Queimaduras nessa região podem trazer diversas repercussões como microstomia, restrição dos movimentos mandibulares, disfagia, disfonia e comprometimento da expressão facial, além de impactos estéticos e psicológicos. **Objetivos:** Investigar o impacto das sequelas de queimaduras de cabeça e pescoço nos aspectos miofuncionais orofaciais. **Método:** Trata-se de uma revisão narrativa de literatura. O levantamento bibliográfico foi realizado na Biblioteca Virtual em Saúde (BVS), Scientific Electronic Library Online (SciELO), Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) e National Library of Medicine (PubMed). Os descritores foram queimaduras, cabeça, pescoço e terapia miofuncional e seus correspondentes em inglês. Foram selecionados artigos publicados entre 2014 e 2024 que abordassem sobre sequelas de queimaduras de cabeça e pescoço. Para análise foram extraídas informações como: título, objetivo, região acometida pela queimadura, tratamento, tipo de sequela e conclusão. **Resultados:** Dos 1.260 artigos identificados inicialmente, nove foram selecionados. Foram divididos em caracterização da intervenção fonoaudiológica e caracterização das alterações miofuncionais orofaciais. Foram descritas sequelas na mímica facial, deglutição, mastigação, voz, fala e respiração. **Conclusão:** As sequelas decorrentes de queimaduras de cabeça e pescoço mais citadas na literatura analisada foram relacionadas à mímica facial, associada principalmente às contraturas faciais. Além disso, ficou evidente a importância do fonoaudiólogo na reabilitação do paciente queimado.

Palavras-chave: Queimaduras; Cabeça; Pescoço; Terapia miofuncional.

Resumen

Introducción: Las quemaduras de cabeza y cuello pueden dejar secuelas y causar importantes alteraciones miofuncionales orofaciales. Quemaduras en esta región pueden traer diversas repercusiones como microstomía, restricción de movimientos mandibulares, disfagia, disfonía y comprometimiento de las expresiones faciales, además de impactos estéticos y psicológicos. **Objetivos:** Investigar el impacto de las secuelas de quemaduras de cabeza y cuello en los aspectos miofuncionales orofaciales. **Método:** Se trata de una revisión narrativa de literatura. El levantamiento bibliográfico fue realizado en la Biblioteca Virtual en Salud (BVS), Scientific Electronic Library Online (SciELO), Portal de Revistas de la Coordinación de Perfeccionamiento del Personal de Nivel Superior (CAPES) y National Library of Medicine (PubMed). Los descriptores fueron quemaduras, cabeza, cuello y terapia miofuncional y sus correspondientes en inglés. Fueron seleccionados artículos publicados entre 2014 y 2024 que trataran de secuelas de quemaduras de cabeza y cuello. Para la análise fueron extraídas informaciones como: título, objetivo, región afectada por la quemadura, tratamiento, tipo de secuela y conclusión. **Conclusión:** Las secuelas que surgen a partir de las quemaduras de cabeza y cuello más citadas en la literatura analizada fueron relacionadas a la expresión facial, asociada mayoritariamente a las contracturas faciales. Además, fue evidenciado la importancia del fonoaudiólogo en la rehabilitación del paciente quemado.

Palabras clave: Quemaduras; Cabeza; Cuello; Terapia Miofuncional.

Introduction

Burns are defined as injuries to organic tissue¹ resulting from various agents, such as thermal, radioactive, biological, chemical, and electrical agents². According to the Brazilian Ministry of Health (2024), approximately one million burns occur annually in Brazil, with 53.3% being thermal burns and 46.1% being electrical burns. Most occur at home, mainly affecting children and older adults, respectively 92% and 84.4%³.

Several factors influence the severity and prognosis of a burn, such as the causative agent, the burned surface area (BSA), depth, location, age, pre-existing diseases, and associated injuries⁴. The depth of the wound is a relevant factor, as it will determine the type of burn. First-degree burns affect only the dermis, second-degree burns, in addition to the dermis, affect part of the skin appendages, and third-degree burns affect all layers of the skin and may affect ligaments, bones, muscles, and other structures⁵.

Burns in the head and neck region are more prone to developing contractures, hypertrophic scars, and keloids due to the excessive accumulation of collagen during the healing process. Hypertrophic scars are characterized by being hard, raised, reddish, itchy, sensitive, and contracted, and can significantly compromise the mobility of adjacent tissues. When located in orofacial areas, these scarring alterations assume special clinical relevance, since they directly affect structures responsible for vital and complex functions, such as breathing, chewing, swallowing, speech, and facial expression^{4,6}.

These scarring processes can cause significant orofacial myofunctional impairments, including incomplete oral occlusion, oral-maxillofacial skeletal deformities, alterations in speech articulation and feeding, difficulties with intubation and oral and dental hygiene, and aesthetic deformities, alterations in facial expression, and vocal changes^{4,6}. Despite the recognized severity of these consequences, the scientific literature still presents incipient descriptions of the relationship between scarring sequelae from head and neck burns and orofacial myofunctional impairments, especially regarding the systematization of these implications.

Head and neck burns should be treated multidisciplinary, with the participation of physicians, speech-language-hearing (SLH) pathologists, nurs-

es, physiotherapists, and occupational therapists⁷. In this context, the SLH pathologist's role focuses mainly on the areas of dysphagia, orofacial motor skills, and voice. In the acute phase, SLH intervention aims to prevent or minimize the development of scarring sequelae⁸. Healing is a complex physiological process, susceptible to interference from factors such as age, severity of trauma, presence of infection, diabetes mellitus, hypothyroidism, coagulation disorders, vitamin deficiencies, and so forth. In the rehabilitation phase, the therapeutic process seeks to improve the functions of breathing, speech, voice, chewing, and swallowing, and reduce the retraction of the affected tissues⁴. However, studies that describe in an integrated way how these interventions specifically impact the orofacial myofunctional aspects in individuals with head and neck burns are still limited.

Burns in this region can have several functional consequences, such as microstomia, reduced mandibular movements, swallowing difficulties, dysphonia, and airway obstruction⁹. Based on a thorough clinical investigation, SLH pathologists are the professionals responsible for evaluating and rehabilitating the affected stomatognathic functions. Thus, a comprehensive clinical evaluation is essential, capable of identifying all myofunctional changes and supporting the definition of appropriate strategies to minimize the functional consequences from burns.

In addition to myofunctional consequences, there are significant impacts on these individuals' quality of life. Burns can compromise their well-being and facial aesthetics, restrict daily activities, impair socialization, and affect their mental health¹⁰. Therefore, the professional who works with this population must be prepared to offer emotional support to the patient and their family, considering the psychological conditions associated with head and neck burns throughout the treatment¹¹.

SLH pathologists attentive to all these aspects and acting with qualified listening can contribute to a broader clinical plan that considers not only the functional demands that need to be evaluated and adapted to a new condition but also recognizes that individuals affected by burn have integral and essential needs in clinical management.

Thus, this topic is justified by the need to understand in depth the implications of head and neck burn to orofacial myofunctional aspects and

their functional and quality-of-life consequences to affected individuals. It also aims to highlight the scarcity of studies that address this topic from an SLH perspective, reinforcing the relevance of a literature review that supports clinical practice and fosters new research in the area.

Objectives

General objective

To investigate the impact of sequelae from head and neck burns on orofacial myofunctional aspects.

Specific objectives

To characterize the orofacial myofunctional aspects affected by the sequelae of head and neck burns.

Methods

This study is based on the following question: “What are the sequelae of head and neck burns on orofacial myofunctional aspects?”.

This is a narrative literature review, whose objective is to synthesize, analyze, and critically discuss the available evidence on a given topic, allowing the identification of convergences, divergences, and scientific gaps¹². The choice of a narrative review is justified by the heterogeneity of methodological designs found in the literature on head and neck burns and their orofacial myofunctional consequences, which makes the application of systematized protocols difficult.

We sought to ensure transparency, traceability, and methodological rigor in the description of all the steps performed, as recommended for this type of design¹². It is recognized, however, that the absence of a systematized protocol may limit the reproducibility of the findings, an aspect considered in the limitations of this study.

The topic and conceptual scope of the review were initially defined. Next, a bibliographic survey was conducted in the online libraries of the Virtual Health Library (VHL) and Scientific Electronic Library Online (SciELO), and in the Coordination for the Improvement of Higher Education Personnel (CAPES) and National Library of Medicine (PubMed) databases. These were selected for their broad coverage of national and international health

journals, including relevant publications in SLH therapy, rehabilitation, and burn treatment.

The search for studies used the Health Sciences Descriptors (DeCS) and their English equivalents (MeSH): “queimaduras”/“burns”; “cabeça”/“head”, “pescoço”/“neck”, and “terapia miofuncional”/“myofunctional therapy”. The combinations used were: “burns” AND “head” AND “neck” “burns” AND “myofunctional therapy” “burns” AND “head” AND “neck” “burns” AND “myofunctional therapy”.

The inclusion criteria were articles available in full, published between 2014 and 2024, in Portuguese, English, and Spanish, that addressed head and neck burns and their consequences on orofacial myofunctional aspects.

The exclusion criteria were duplicate studies, those not addressing the topic, articles outside the time frame, and studies unavailable in full or not free of charge.

A single reviewer initially screened studies by reading the titles and abstracts, with subsequent application of the inclusion and exclusion criteria. It is recognized that carrying out this step by only one reviewer may introduce selection bias, which constitutes a methodological limitation of the study. To minimize this bias, the critical analysis and full reading of the selected articles were carried out independently by two reviewers, with a consensus discussion of the findings.

The methodological process steps were organized as follows:

1. Selecting materials based on titles and excluding those that did not address the research topic.
2. Reading abstracts and applying inclusion criteria.
3. Reading eligible texts in full.
4. Standardized data extraction, including title, objective, region affected by the burn, treatment, type of sequelae, and conclusion.

After completing the screening, a descriptive table was created for study characterization and subsequent analysis. Finally, a synthesis of the selected articles was carried out.

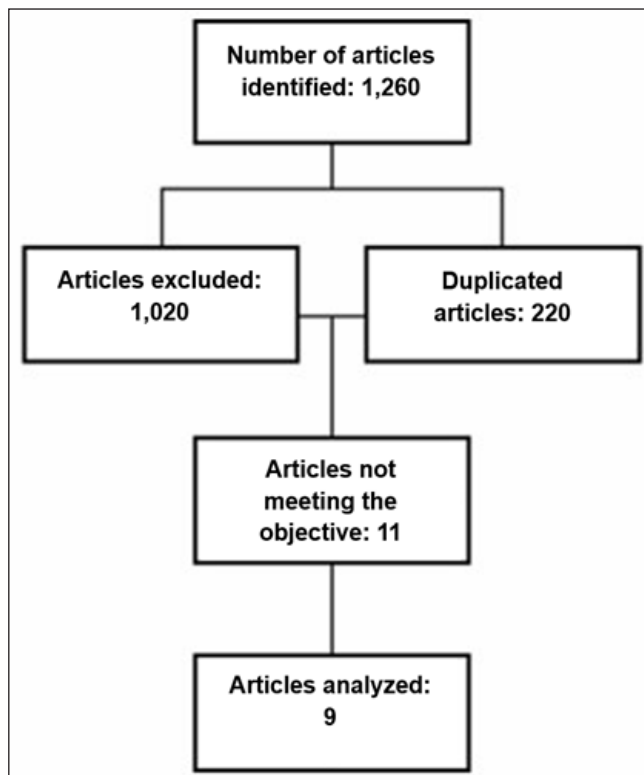
The studies were analyzed by organizing the findings into thematic categories, grouped into two main axes: (1) characterization of orofacial myofunctional impairments resulting from head and neck burns; and (2) SLH interventions described in the literature. This procedure made it possible

to identify patterns, convergences, and gaps in the available knowledge, contributing to a broader understanding of the investigated topic.

Results

The bibliographic survey was conducted in online libraries and databases using selected descriptors related to the research topic. A total of 1,260 studies were found. Of these, after read-

ing the titles, 1,240 were excluded, of which 220 were duplicates. Twenty articles remained, whose abstracts were read, and 11 studies were initially selected for meeting the research objective. After careful reading and methodological analysis of each study, those that did not fit the study's objective were excluded, leaving nine articles in the review (Figure 1). Among the included studies, three are national, and six are international, and all are in the field of SLH pathology.



Source: Developed by the author (2025).

Figure 1. Flowchart of article selection

To better systematize the findings, a table was created containing author/year, title, objective(s), orofacial myofunctional aspect(s) addressed, therapy/treatment (if any), and outcome (Chart 1).

Chart 1. Summary of selected studies

Author/year	Title	Objective(s)	Orofacial myofunctional aspect(s) addressed	Therapy/treatment	Outcome
Clayton, Ward, and Maitz (2017) ⁽¹³⁾	Intensive swallowing and orofacial contracture rehabilitation after severe burn: A pilot study and literature review.	To organize a set of dysphagia rehabilitation strategies based on the literature and apply them, starting from a pilot study of two clinical cases.	Facial expression and swallowing.	Active range of motion exercises, use of a cheek retractor, Orastretch (a device indicated for mandibular movement rehabilitation), Masako maneuver, and effortful swallowing.	The patients experienced complete resolution of dysphagia.
Borges and Lima (2020) ⁽¹⁴⁾	Microstomy: Application of photogrammetry to measure the efficiency of oral orthosis associated with speech therapy.	To verify the effectiveness of using an oral orthosis through computerized photogrammetry.	Facial expressions.	Speech-language-hearing therapy, exercises to be performed at home, and the use of an oral orthosis.	There was an improvement in the horizontal and vertical mouth opening measurements.
Magnani et al (2021) ⁽¹⁵⁾	Orofacial rehabilitation after severe orofacial and neck burn: Experience in a Brazilian burn reference centre.	To compare the effects of early and late intervention in third-degree orofacial and neck burns.	Chewing, swallowing, and facial expressions.	Manipulation and stretching of the skin, scar tissue, and facial and neck muscles. Exercises to increase jaw range of motion and improve chewing and swallowing.	There was improvement in all aspects evaluated, especially regarding horizontal opening.
Pavez and Tobar (2016) ⁽¹⁶⁾	Speech Language Pathologist intervention in burns: a case report of Hospital de Urgencia Asistencia Pública, Chile.	To describe the speech-language-hearing intervention performed in a clinical case report of a severely burned individual.	Swallowing, voice, speech, and facial expressions.	The study implemented strategies such as thermotherapy, therapeutic ingestion with foods of different consistencies, adaptation of feeding utensils, swallowing exercises, semi-occluded vocal tract exercises, simple vocalizations, hyper-high-pitched voice emission, isometric orofacial exercises, facial massages, and digital manipulation.	Swallowing and vocal function were fully recovered. There were minimal sequelae in orofacial motor skills.
Pavez (2018) ⁽¹⁷⁾	Myofunctional therapy for 2nd and 3rd degree orofacial burns.	To describe the effects of speech-language-hearing therapy in a group of patients with second and third-degree orofacial burns.	Facial expressions.	Active orofacial exercises, active exercises with speech-language-hearing support, digital manipulation techniques, and massage therapy.	The patients' anthropometric measurements came very close to or were entirely within the expected values for normality. There was improvement in horizontal and vertical mouth opening and facial expression.
Arguello et al (2023) ⁽¹⁸⁾	A Novel Adjunct for Treatment of Orofacial Contractures After a Facial Burn Injury.	To present an intraoral orthotic system designed to provide prolonged stretching of the skin and orofacial musculature for the treatment of contractures following facial burns.	Facial expressions.	Use of intraoral orthoses.	The treatment showed good results in relation to microstomia and orofacial contractures.

Author/year	Title	Objective(s)	Orofacial myofunctional aspect(s) addressed	Therapy/treatment	Outcome
Magnani et al (2015) ⁽¹⁹⁾	Evaluation of oral-motor movements and facial mimic in patients with head and neck burns by a public service in Brazil.	To analyze the characteristics of oral motor movements and facial expressions in patients with head and neck burns.	Facial expressions.		Patients with second-degree burns performed better than those with third-degree burns.
Clayton et al (2020) ⁽²⁰⁾	Influence of Inhalation Injury on Incidence, Clinical Profile and Recovery Pattern of Dysphagia Following Burn Injury.	To determine the incidence of dysphagia and characterize the clinical profile of swallowing function in patients with inhalation burn injury, and to compare this with the profile of patients without inhalation injury after burns.	Swallowing and voice.		The presence of dysphagia is 16 times greater in patients with inhalation burn injury than in those without inhalation injury.
Magnani et al (2019) ⁽⁴⁾	Correlation between scar assessment scales and orofacial myofunctional disorders in patients with head and neck burns	To investigate the correlation between two scar scales and the occurrence of orofacial myofunctional disorders in patients with burns to the head and neck region.	Facial expressions, swallowing, breathing, and chewing.		The results indicated a negative correlation between swallowing, breathing, total function score, total OMES-E score, and wound healing scales, showing that the more severe the score on these scales, the lower the OMES-E score.

Source: Developed by the author (2025).

Characterization of SLH intervention

The work of Clayton, Ward, and Maitz¹³ aimed to organize a set of dysphagia rehabilitation strategies based on the literature from a pilot study of two clinical cases. The study included two patients with third-degree orofacial burns, both with more than 50% of BSA, severe oropharyngeal dysphagia, vocal fold paralysis, and an associated inhalation component. Treatment consisted of active range-of-motion exercises, use of a cheek retractor and an Orastretch device (an appliance indicated for mandibular movement rehabilitation) for facial contractures; Masako maneuver and effortful swallowing for pharyngeal dysphagia; moreover, both patients underwent surgical release of the corner of the mouth. The patients experienced complete resolution of dysphagia between 2 and 7 months after the injury, and of contractures between 11 and 15 months after the injury. In general, the strategies were effective; patients returned to an oral diet without restrictions or the need for compensatory strategies, and they also restored the full range of mouth opening.

The study by Borges and Lima¹⁴ verified, through computerized photogrammetry, the effec-

tiveness of using an oral orthosis as an auxiliary resource in SLH therapy for the treatment of post-burn oral retraction. The sample consisted of 10 patients who had second and third-degree burns in the facial region. Photographic records of the participants' maximum mouth opening were taken before and after treatment. Therapy was performed once a week with instructions to perform exercises at home three times a day. The activities consisted of performing isotonic and isometric exercises, active stretches, and massages. At the end of the session, patients were instructed to use the oral orthosis for 8 hours to maintain the gains achieved. The treatment time varied among participants, but the average was 7.9 months. The results indicated a significant increase in horizontal and vertical mouth opening, with a greater gain in vertical dimensions, reinforcing the role of orthoses in the prevention and management of microstomia.

The research by Magnani et al.¹⁵ sought to compare the effects of early and late intervention in patients with third-degree orofacial and neck burns. Participants were divided into two groups. In group 1, rehabilitation began between 3 and 12 months after the burns. In group 2, rehabilitation

began more than 12 months after the burn. All participants underwent surgical treatment due to burn complications. In addition, before and after treatment, all underwent oral motor clinical assessments, using the Orofacial Myofunctional Evaluation Protocol with Scores-extended (OMES-E), and had their mandibular movement range measured. The therapy consisted of manipulation and stretching of the skin and scar tissue of the facial and neck muscles (intra- and extra-oral orofacial muscles). Furthermore, exercises were performed to improve the mandibular range of motion, chewing, and swallowing. The results showed an improvement in all aspects evaluated, mainly regarding the horizontal opening of the mouth. As for the oral motor clinical assessment and the measurements of mandibular range of motion, both groups had similar measurements in the pre- and post-treatment assessments, although they differed in the time of initiation of therapy after the burns.

The work of Pavez and Tobar¹⁶ described the SLH intervention carried out in a clinical case report of a severely burned adult. The patient was admitted to the ICU with 53% BSA, with second and third-degree burns involving the face, neck, chest, abdomen, and upper and lower limbs, with inhalation injury. The assessment found alterations in speech, voice, orofacial motor skills, and swallowing, but the therapeutic plan was developed for the rehabilitation of motor skills, voice, and swallowing. The SLH intervention began 7 days after the burns. Initially, therapy was conducted twice a week, and sessions utilized strategies such as thermotherapy, therapeutic ingestion with foods of varying consistencies, adaptation of feeding utensils, effortful swallowing exercises, semi-occluded vocal tract exercises, simple vocalizations, and high-pitched voice production. After the patient became surgically stable, orofacial motor therapy was initiated, conducted once a week with isometric orofacial exercises, facial massages, and digital manipulation. After 2 months of treatment, there was complete recovery of swallowing and voice, and the orofacial motor sequelae were minimal.

Another study, also conducted by Pavez¹⁷, aimed to describe the effects of SLH therapy in a group of patients with second and third-degree orofacial burns. The group consisted of 10 individuals; at the beginning of treatment, all underwent myofunctional assessment, considering general clinical aspects of orofacial motor skills, facial expression

movements, and anthropometric measurements. The therapy aimed to prevent tissue retraction and negative compensatory patterns and balance the stomatognathic system functions. Active orofacial exercises, active exercises with SLH support, digital manipulation techniques, and massage therapy were performed. Treatment was completed when the anthropometric measurements were very close to or completely within the expected normal range, which was achieved with an average of six therapy sessions. Furthermore, there was no impairment of communication or feeding functioning. Only 20% of patients achieved the therapeutic objectives; the remaining cases were considered inconclusive. Comparing the results before and after therapy, there was an improvement in horizontal and vertical mouth opening and facial expression.

The work of Arguello et al.¹⁸ sought to present an intraoral orthosis system designed to provide prolonged stretching of the skin and orofacial musculature for the treatment of contractures after facial burns. An 18-year-old man who had 72% BSA participated in the study; he had already undergone several traditional treatments, such as skin grafting, occupational therapy, and bilateral oral commissuroplasty. The patient started treatment 4 and a half months after the injury; his facial wounds were completely healed, and orofacial contractures had already formed. His main complaints were related to the everted lower lip, sialorrhea, and difficulty speaking. The orthoses were made of silicone with plastic handles and were produced in three different shapes and sizes. Weekly photos of the patient were taken to assess the progress of the therapy, and he was instructed on the correct positioning of the orthoses. The treatment lasted 5 weeks, as the patient underwent unexpected eyelid surgery. Despite the early interruption of treatment, the use of oral orthoses had beneficial results: an increase in the range of facial movement, improved oral competence, and improved facial expression.

Characterization of orofacial myofunctional impairments

Magnani et al.¹⁹ sought to analyze the characteristics of oral motor movements and facial expressions in patients with head and neck burns. Forty patients participated in the study, divided into two groups. G1: with 19 patients with deep second-degree burns. G2: with 21 patients with third-degree burns. All underwent oral-motor

clinical evaluation with OMES-E. It was found that contractures and hypertrophic scars negatively impact the oral myofunctional system. Both groups presented deficits related to posture, position, and mobility of the oral motor organs. Regarding facial expressions, group G1 had better results than G2 and a better measurement of maximum incisor opening. Therefore, patients with second-degree burns performed better than patients with third-degree burns.

The study by Clayton et al.²⁰ sought to determine the incidence of dysphagia and characterize the clinical profile of swallowing function in patients with inhalation burn injury and compare this with the profile of patients without inhalation injury after a burn. Study participants underwent swallowing and laryngeal/pharyngeal assessment. They were divided into two groups: those with inhalation injury and a subgroup without inhalation injury. The results showed that the presence of dysphagia is 16 times greater in patients with inhalation burn injury than in those without inhalation injury. Laryngeal pathologies caused by inhalation injury are associated with increased severity of dysphagia. Endotracheal intubation and mechanical ventilation increase the likelihood of the subject developing dysphagia. Moreover, the effect of the burn injury affects the sensory and motor function of the oral, pharyngeal, and laryngeal mucosa, which can also lead to the development of dysphagia.

The research by Magnani et al.⁴ investigated the correlation between two scar scales and the occurrence of orofacial myofunctional disorders in patients with burns in the head and neck region. Sixteen individuals with sequelae of third-degree burns in the head and neck region participated in the study. All participants underwent the Patient and Observer Scar Assessment Scales (POSAS), which consists of two scales, one completed by the evaluator and the other by the patient. In addition, the Vancouver Scar Scale, which assesses the functional and aesthetic aspects of the scar, the OMES-E, and mandibular mobility assessment were also performed. In the POSAS evaluation for the patient, the items that received the worst scores were those related to scar rigidity and irregularity, and for the observer, these were malleability, general opinion, and scar thickness. In the Vancouver scale, most participants presented scars with hyperpigmentation, pinkish coloration, contractures, and a height of less than 2 mm. In the OMES-E,

participants did not obtain the expected values, with orofacial organ mobility and mastication showing the most deviant values. In the mandibular amplitude assessment, only the maximum oral opening measurement deviated from normal standards. After correlation between the assessments, the results indicated a negative correlation between the swallowing, breathing, total function score, total OMES-E score, and the healing scales, showing that the more severe the score on these scales, the lower the OMES-E score.

Discussion

Burns to the head, neck, trunk, and upper limbs can cause significant orofacial myofunctional impairments. They can leave sequelae in stomatognathic functions, particularly in the functions of breathing, chewing, swallowing, voice, speech, and facial expression. Therefore, the main objective of SLH therapy with burn patients is to restore the stomatognathic system²¹.

In the studies included in this review^{4,13,15,16,20} it was observed that patients frequently present multiple compromised stomatognathic functions simultaneously. Among the studies analyzed, facial expression was the most addressed; seven out of the nine articles referred to such sequelae. The healing of head and neck burns produces retractions and contractures that are more evident where the tissue is more fragile, such as in the region of the mouth, nostrils, and eyelids. Facial contractures were presented as one of the main factors that compromise facial expression⁹.

One of the studies¹⁹ found that patients with second-degree burns have more satisfactory results in terms of facial expression than those with third-degree burns. These differences reflect the depth of the injury. Second-degree burns affect the dermis and part of the skin appendages, while third-degree burns reach deeper layers of the skin, such as ligaments, bones, muscles, and other structures, therefore more intensely compromising facial functioning⁵.

Another study¹⁷ described and evidenced the effects of orofacial myofunctional SLH therapy. The therapeutic approach comprehensively considered the patient's functional needs, including aspects of voice and other components of communication. The intervention began while the patient was still in the hospital, which is recommended in

the literature, given that immediate treatment helps reduce sequelae^{16,22}.

Only 20% of participants achieved the therapeutic objectives, a result influenced by early hospital discharges, transfers to other units, and psychiatric disorders that hindered adherence. These factors limited the continuity of therapy, highlighting the importance of longitudinal outpatient follow-up. The author emphasizes the need for clinical follow-up to monitor healing and prevent sequelae, reinforcing a crucial aspect often neglected in many services: prolonged and multidisciplinary rehabilitation¹⁷.

Regarding assistive therapy devices, the literature recommends starting the use of orthoses between 10 and 14 days²³ after the injury. However, the study by Arguello et al.¹⁸ showed satisfactory results with the use of oral orthoses in a patient who already had facial contractures and whose wounds were healed. Even with a late start to treatment, the patient increased the range of facial movement and improved oral competence and facial expression. Contractures occur due to reduced connective tissue deposition and decreased re-epithelialization in the region⁴. According to the literature, scar contractures can cause skeletal deformities in the face when not treated properly. Furthermore, contractures in the perioral region can make swallowing difficult, cause deficits in lip sensitivity, hinder oral hygiene, limit jaw movements, hinder tongue adhesion to the floor of the mouth, cause oral incompetence, and make articulation of speech sounds difficult²².

Another article¹⁴ investigated the use of oral orthoses associated with SLH therapy, where patients obtained gains in horizontal and vertical mouth opening measurements. Studies show that oral orthoses apply tension opposite to the force of scar retraction. Thus, it is possible to reduce the contracture of the orbicularis muscle, decreasing the risk of microstomia, adjusting the dimension between the labial commissures, and avoiding surgical treatment²⁴. Burns in the perioral region can lead to the development of scar retractions, which will determine the degree of microstomia (the reduction in mouth opening). This process can impair feeding ability, symmetry, articulation, saliva control, oral hygiene, and dental procedures, and cause skeletal and dental deformities²⁴.

Regarding swallowing sequelae, one of the studies¹³ organized a set of strategies for dysphagia

rehabilitation, where the treatment was effective in both cases studied. In the description of the medical history, the authors report that the patients presented with inhalation injury, but they do not describe the severity or the need for intervention. Inhalation injuries can occur in the tracheobronchial tree, in the upper airways, or in the lung parenchyma, and can also be classified as direct thermal injury or injury caused by chemical agents⁹. It is important to perform an adequate assessment, as inhalation injuries can cause vocal changes⁹. However, although both patients had vocal fold paralysis, no therapeutic strategies aimed at rehabilitating phonatory function were described, a relevant point that could have been explored.

In the study, patients presented with sequelae of third-degree burns to the head and neck, including severe oropharyngeal dysphagia, reduced oropharyngeal muscle strength, difficulty in managing secretions, accumulation of debris in the vallecula region, and a high risk of aspiration. These sequelae corroborate the literature, possibly including difficulties in the oral phase of swallowing, reduced range of motion, deficits in lip seal, decreased masticatory capacity, decreased tongue-palate contact, and decreased laryngopharyngeal sensitivity²⁵.

Although the literature recommends that treatment for head and neck burns should be initiated immediately to avoid future sequelae related to feeding, communication, and facial aesthetics¹⁶, one of the studies¹⁵ showed that late treatment can also promote satisfactory results. In this study, participants presented with oral motor deficits, such as impaired chewing, swallowing, mobility, movement of lips, tongue, cheeks, and jaw, and reduced mandibular movement. The findings reinforce what the literature presents regarding the sequelae of third-degree burns to the head and neck and emphasize that the effectiveness of the intervention depends not only on the time of treatment initiation but also on qualified professionals to carry out the therapy.

Another study¹⁶, a clinical case report, identified sequelae in speech, voice, orofacial motor skills, and swallowing functions; however, the therapy did not include exercises aimed at speech articulation. Moreover, the authors reported that at the end of the intervention, the orofacial motor sequelae were minimal, but they did not specify which sequelae remained or their consequences. The lack of detail generates imprecision in the pre-

sensation of the results, which ultimately weakens the study. Another point to highlight is that it did not mention whether speech impairment remained, even though no exercises were performed to rehabilitate it.

One of the articles²⁰ concluded that the incidence of dysphagia is 16 times higher in patients with inhalation injury from burns than in patients without inhalation injury. This finding corroborates studies that report that patients with dysphagia and inhalation injury may present with mild dysphagic symptoms, mild pharyngeal accumulations, slowed swallowing onset, reduced laryngopharyngeal sensitivity, affecting the integrity and function of the vocal folds, and causing mucosal damage²⁵.

One of the studies⁴ established relationships between scales for assessing scarring and myofunctional changes. The results showed that the more severe the score on the POSAS and Vancouver scales, the worse the total score on OMES-E. Therefore, patients with more intense scarring should be referred to an SLH pathologist for orofacial myofunctional assessment; the sooner the treatment begins, the better the results and the lower the chances of future sequelae¹⁶. Furthermore, the findings corroborate studies that correlate deficits related to posture, position, and mobility of myofunctional structures with head and neck burns. Although the OMES-E was not developed to assess patients with burns, it can investigate oral motor deficits and thus assist in diagnosis²⁶.

Only one study¹⁶ reported a deficit in speech function, but it was only mentioned among the sequelae that the patient presented. It is understood that head and neck burns can significantly impact speech motor production; however, most of the selected studies did not aim to investigate this aspect. The studies included in this review mentioned but did not explore much the sequelae that can occur in masticatory function, although the impacts of burns on this function are known. Furthermore, it is understood that mastication is part of the oral preparatory phase of swallowing, and perhaps for this reason, it was not directly mentioned in the analyzed studies.

Conclusion

This review aims to investigate the sequelae of head and neck burns in orofacial myofunctional aspects. The articles analyzed consistently demon-

strated the importance of SLH intervention in the prevention, reduction, and rehabilitation of functional sequelae resulting from head and neck burns. Analyzing the literature from the last 10 years showed that the most recurrent orofacial myofunctional sequelae in head and neck burns are related to facial expression, since facial contractures restrict mobility during the wound healing process.

However, literature presents important gaps, mainly related to a detailed description of speech sequelae, impact of burns on chewing, specificity of the techniques employed, scarcity of national studies, and the need for standardized evaluation protocols. These gaps limit the generalization of the results and highlight the need for further research that deepens the functional characterization of burn patients.

It is recommended that future studies develop more consistent assessment protocols, expand the number of participants, and investigate in detail underexplored functions such as speech and chewing. In summary, SLH intervention is fundamental in the rehabilitation process for head and neck burn victims, contributing to improved functional performance, reduced sequelae, optimized communication, and a higher quality of life.

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