

JOURNAL OF MEDICINE AND DENTISTRY

*International Peer-Reviewed
Journal of Medical and Dental
Sciences*

Editorial



Launching the Journal of Medicine and Dentistry – A New Platform for Interdisciplinary Science

It is a great honor to introduce the inaugural issue of the *Journal of Medicine and Dentistry (JMDNT)*. The establishment of this peer-reviewed, open-access journal reflects a growing recognition of the need for a dedicated forum that bridges the disciplines of medicine and dentistry. Oral health is inseparable from general health, and the biological, clinical, and social connections between these fields are becoming increasingly evident in both research and clinical practice.

The primary mission of JMDNT is to provide an international platform for the dissemination of high-quality scientific work that advances understanding, improves patient care, and fosters collaboration across the full spectrum of medical and dental sciences. The journal welcomes original research articles, clinical studies, systematic reviews, technical reports, and scholarly commentaries that highlight innovation and promote evidence-based practice.

This first issue presents a diverse selection of contributions that exemplify the journal's scope and ambitions. The articles span clinical medicine, oral and maxillofacial surgery, dental science, epidemiology, and translational research. Each manuscript has undergone rigorous peer review by experts in the respective fields to ensure methodological soundness, clarity of presentation, and scientific relevance. Our goal is to uphold the highest standards of academic integrity while providing timely and accessible publication for authors and readers worldwide.

The creation of a new journal is both a challenge and an opportunity. It requires the coordinated effort of a dedicated editorial board, committed reviewers, and enthusiastic contributors. I am deeply grateful to the members of the editorial team for their expertise and tireless work, to the reviewers for their careful and constructive evaluations, and to the authors who entrusted us with their research for this inaugural volume. Their commitment to excellence has been instrumental in bringing JMDNT from concept to reality.

Looking ahead, JMDNT aims to serve as a catalyst for interdisciplinary dialogue and innovation. By encouraging submissions from diverse specialties and geographic regions, we hope to build a vibrant community of scholars and clinicians who share a common interest in the interplay between systemic and oral health. We particularly welcome

collaborative research that explores the mechanisms linking oral diseases to systemic conditions, novel therapeutic approaches, and the integration of emerging technologies into patient care.

On behalf of the editorial board, I invite researchers, clinicians, and educators to contribute to the growth of this journal by submitting their best work, participating in peer review, and sharing insights with colleagues. Together, we can advance the understanding of medicine and dentistry as interconnected disciplines and promote improved health outcomes for patients around the world.

It is with great anticipation and enthusiasm that we present this first issue of the *Journal of Medicine and Dentistry*. We look forward to your readership, your engagement, and your contributions as we begin this exciting journey.

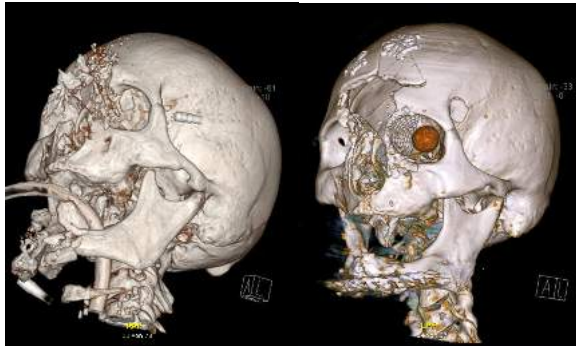


Ayhan Yildirim

Editor-in-Chief

Journal of Medicine and Dentistry

Table of Contents



Case Study

Management of a Complex Craniofacial Injury Following a Self-Inflicted Gunshot Wound

DOI: [10.64951/jmdnt.2025.1.1](https://doi.org/10.64951/jmdnt.2025.1.1)

8

Case Study

Modified micro-marsupialization as an alternative treatment for ranulas

DOI: [10.64951/jmdnt.2025.1.2](https://doi.org/10.64951/jmdnt.2025.1.2)

12



Original Research Article

Maternal Peri- and Postconceptional Folic Acid Supplementation and Ankyloglossia in Newborns

DOI: [10.64951/jmdnt.2025.1.3](https://doi.org/10.64951/jmdnt.2025.1.3)

18

Practice for Dental Prosthetics

René F. Hertach (Certified Dental Prosthetist/Denturist)

Complete and partial dentures, implant-supported prosthetics, palate-free full dentures, repairs, relinings, restoration of existing dentures, emergency treatments, bleaching, dental cleaning, mediation in dispute cases, billing through supplementary benefits possible, second opinion from an expert for greater confidence. We have specialized in removable dental prosthetics for 25 years.

Home and nursing home visits available on request. Let us advise you.

Leimbachstrasse 119 · 8041 Zurich · Phone +41 44 481 82 18 · www.pro-dent.ch





Expertise and Care

Key services:

- Dental Implants
& Bone
Augmentation
- Wisdom Tooth
Extraction &
Complex Oral
Surgery
- Skin / Facial &
Dermato-
Surgery
- Orthodontics
Without Wires
- Emergency &
Urgent Care

Precision & Trust

Seeklinik Zurich Excellence in Oral, Facial & Aesthetic Surgery

Located in the heart of Zurich, Seeklinik Zürich is a state-of-the-art clinic specializing in oral, maxillofacial and facial aesthetic surgery. From dental implants to bone augmentation, wisdom tooth extraction under sedation to plastic procedures on the face — we offer comprehensive surgical care under one roof. Our surgeons hold dual qualifications in both medical and dental fields, and many carry the additional specialization in plastic surgery — making us uniquely qualified for delicate facial and skin interventions.



SEEKLINIK
ZÜRICH

ÄSTHETISCHE CHIRURGIE



Available online at www.jmdnt.com

ScienceTrends

Journal of Medicine and Dentistry

journal homepage: www.jmdnt.comJOURNAL OF
MEDICINE
AND
DENTISTRYInternational Peer-Reviewed
Journal of Medical and
Dental Sciences

Case Report

Management of a Complex Craniofacial Injury Following a Self-Inflicted Gunshot Wound

Yildirim Ayhan ^{a*}, Hertach René ^b, Yildirim Vedat ^b^a Hochschule Zurich, Department of Medicine, Zurich, Switzerland^b Hochschule Zurich, Department of Dentistry, Zurich, Switzerland

ARTICLE INFO

Article history:

Received 15 October 2024,
Revised 25 February 2025,
Accepted 04 April 2025,
Available online 22 April
2025,
Version of Record 22 April
2025.

Keywords:

Gunshot wound to the head
(GSWH);
Suicide;
Interdisciplinary management;
Facial trauma;
Ethics.

ABSTRACT

Suicide attempts are tragic and complex events that often require immediate and interdisciplinary treatment to achieve the best possible outcome.

We present the case of a 57-year-old male who attempted suicide with an assault rifle in the presence of his family. He had a long history of depression and had discontinued his prescribed antidepressant medication. Following a family conflict, he attempted suicide by firing a shot that entered the submental region, shattered the mandible, bypassed the maxilla, destroyed most of the nasal and frontonasal structures, and exited through the frontal lobe and frontal bone. Such cases are rare in current medical practice. We describe the acute and interdisciplinary management of this severe craniofacial injury caused by a self-inflicted gunshot wound.

* Corresponding author. Hochschule Zurich, Albisstrasse 80, 8038 Zurich, Switzerland

E-mail address: ayhan.yildirim@uni-zh.ch.

Peer review under responsibility of Hochschule Zurich.

<https://jmdnt.com/issue-2025-1-article-1/>

DOI: 10.64951/jmdnt.2025.1.1 / Hochschule Zurich, Publishing services by Journal of Medicine and Dentistry. This is an open access article

At a glance commentary

Scientific background on the subject

Self-inflicted gunshot injuries to the head are rare but often fatal. Advances in trauma surgery, neurocritical care, and interdisciplinary management have improved survival in selected patients, yet the literature on complex craniofacial injuries caused by high-velocity assault rifles remains limited. What this study adds to the field

What this study adds to the field

This case demonstrates that rapid, coordinated intervention by an interdisciplinary team—including neurosurgery, maxillofacial surgery, anesthesiology, and ophthalmology—can achieve survival and functional preservation even after devastating bifrontal gunshot trauma. The report highlights surgical strategies for skull base reconstruction and addresses the ethical challenges of aggressive care in self-inflicted injuries.

INTRODUCTION

Worldwide, more than 720,000 people die by suicide each year, according to the World Health Organization (WHO). This corresponds to approximately one death every 43 seconds. In 2019, suicide was estimated to account for 1.3% of the total global burden of disease. Mental disorders—particularly depression, alcohol abuse, and other addictive disorders—are major risk factors for suicide in Europe and North America. In many Asian countries, impulsiveness also plays an important role. Suicide is a multifactorial phenomenon influenced by psychological, social, biological, cultural, and environmental factors [1]. Assault rifles are high-velocity weapons that cause devastating tissue destruction due to the tremendous energy transfer upon impact. When used on the facial skeleton, the resulting injuries are typically catastrophic.

Map of International Suicide Rates:

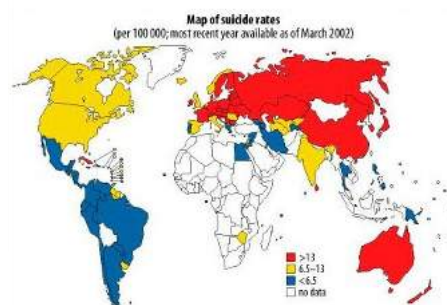


Figure 1: map of international suicide rates from

Case Report

Background

The patient had experienced chronic professional overload for years, which had worsened in recent weeks. He consumed approximately 1 liter of wine and 1–2 packs of cigarettes daily. According to his wife, he had shown signs of neglecting personal hygiene and a marked loss of interest in daily activities. He had been prescribed antidepressants but discontinued the medication after a short period.

Initial Presentation

A 57-year-old man was airlifted to the emergency room of the Seeklinik Zurich, a specialist clinic for oral, maxillofacial, and plastic facial surgery in critical condition after a self-inflicted gunshot wound to the face with an assault rifle. He had not been intubated at the scene but was transported in the prone position due to a compromised airway and the severity of his injuries. His Glasgow Coma Scale (GCS) score was 12 on arrival. He was heavily sedated (blood alcohol level 56.8 mmol/L $\approx$ 2.6 ‰), precluding a full neurological assessment.

Clinical examination suggested that the bullet had entered the submental region, split the lower lip, comminuted the mandible, passed superiorly without damaging the maxilla, and exited through the frontal bone, causing massive destruction of the nasal and frontal areas and injury to the frontal lobe.

Bleeding was surprisingly minimal and controlled with compression bandages. A corneal perforation with complete loss of intraocular contents of the left eye was noted.

Despite the extensive injuries, the patient retained the ability to move all extremities and utter a few isolated words. To protect the airway, he was orally intubated and underwent immediate diagnostic imaging.

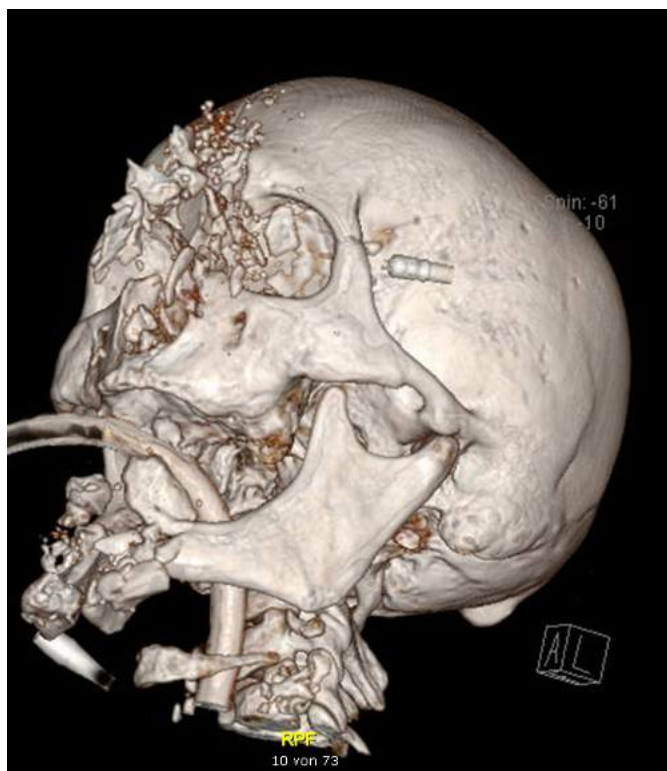


Figure 2: initial situation

Computed tomography revealed comminution of the frontal skull base with interhemispheric distribution of bone fragments, bifrontal cerebral hemorrhage with pneumocephalus extending to the vertex, complex midface fractures, comminution of both orbits, and numerous bone fragments along the bullet trajectory. The nasal bones and septum were completely destroyed and displaced. Multiple mandibular fractures with bone loss were present, and the left eye contained no residual intraocular structures. Due to intracranial injuries, intravenous prophylaxis with ceftriaxone (Rocephin®) was initiated.

After discussion with the family, life-supportive and interventional care was pursued.

Management

An interdisciplinary team consisting of emergency surgeons, anesthesiologists, neurosurgeons, and maxillofacial surgeons was assembled.

The patient was transferred to the operating theater, where a tracheotomy was performed. Neurosurgeons conducted a frontobasal craniotomy, debridement, and reconstruction using a large vascularized pericranial flap based on the left supraorbital vessels. Because closure of the dural defect remained challenging and significant dead space persisted, bilateral transverse temporal muscle flaps were sutured in the midline by the maxillofacial team. Due to the absence of brain swelling and the patient's initially stable condition, the team decided not to place an intracranial pressure catheter.

The maxillofacial surgeons performed conservative debridement, preserving all viable bone fragments. Using miniplates and titanium mesh, both medial orbital rims and walls were reconstructed, and both lacrimal canals were splinted with silicone tubes. The mandible was stabilized with miniplates and lag screws; a reconstruction plate bridged the defect and served as a base for reattaching fragments. Soft tissues were carefully closed, excising only clearly necrotic skin and mucosa. Significant soft-tissue deficits remained in the frontal and frontonasal regions.

Once the extent of the ocular injury became evident, ophthalmologists performed evisceration of the left eye with placement of a silicone implant and temporary tarsorrhaphy. Postoperatively, persistent cerebrospinal fluid leakage was observed from the frontal defect. Three days later, at the request of the neurosurgeons, the residual dural and frontonasal soft-tissue defect was covered using a radial forearm free flap.

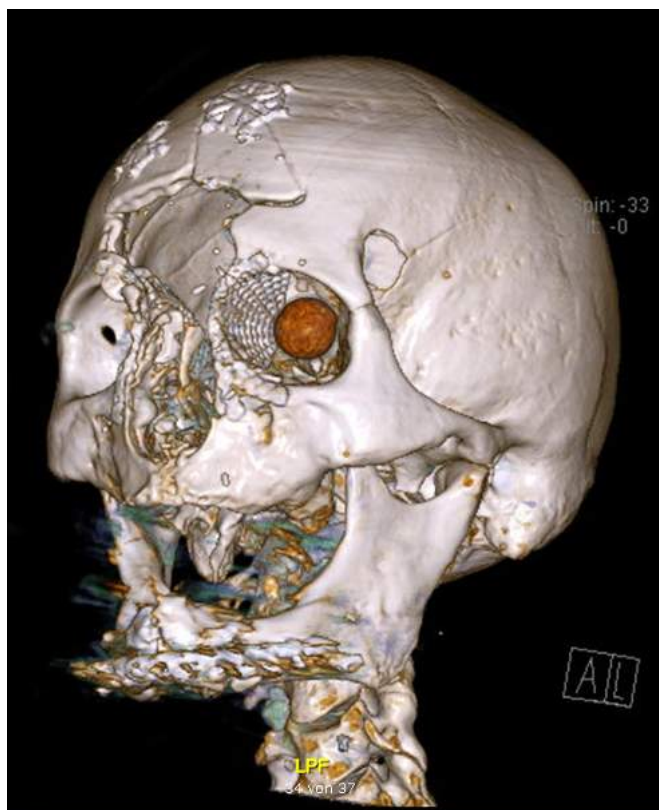


Figure 3: Check-up after 6 months

DISCUSSION

Reported mortality rates for suicide attempts with gunshot wounds to the head range from 7.7% to 93% [2–14]. In this case, the patient survived an extensive emergency operation performed by an interdisciplinary team. Between 1990 and 2008, Loyola V. Gressot et al. reported 199 cases of suicide-related gunshot wounds to the head admitted to Ben Taub General Hospital, a Level I trauma center. Among those who survived initial resuscitation, 19% of all patients—and 40% of those who survived the first phase—ultimately achieved a favorable functional outcome at 6-month follow-up. Gressot et al. proposed a scoring system for the rapid assessment of GSWH patients based on GCS score on admission, age, pupillary reactivity, and bullet trajectory [3].

GCS Score

Our patient had an initial GCS of 12, increasing to 13 in the shock room, which was prognostically favorable. Lower GCS scores are associated with higher mortality and worse functional outcomes [4, 5, 7–9, 11, 13, 15, 16].

In cases with ocular injury, tongue trauma, or nerve damage, however, GCS assessment may be limited. Graham et al. and Martins et al. suggested that aggressive surgical intervention should only be considered in patients with a GCS of at least 3–5 [17].

Age and Sex

The patient was a 57-year-old male. Gressot et al. found that most suicide patients are between 20 and 40 years old [8]. Older age is associated with worse outcomes [13, 15]. Kaufman et al. observed that women generally have better survival rates, possibly because they are less likely to use firearms [15].

Pupils

Bilaterally nonreactive pupils are a negative prognostic indicator [14, 15, 18]. In this case, the left pupil was destroyed, and the right pupil was 3 mm, slightly oval, and sluggishly reactive to light. Assessment was challenging due to bleeding. Some authors caution that pupillary response is unreliable in patients with very low GCS scores [4]. Pupil reactivity appears most predictive in patients with GCS scores of 3–5 [19].

Bullet Trajectory

The bullet in this case destroyed the frontal area and injured the frontal lobe. Trajectory significantly influences mortality and morbidity, with bihemispheric and posterior fossa injuries associated with worse outcomes [4, 5, 7–9, 11–13, 15, 16, 18]. Martins et al. reported mortality rates of 96.2% for bihemispheric injuries and 100% for posterior fossa injuries [8]. In contrast, Nathoo et al. reported a mortality rate of only 19.2% in a cohort with higher mean GCS scores (≥ 6) [10]. Patients with isolated bifrontal injuries, such as in this case, may have outcomes similar to those with unihemispheric injuries [14].

Other Factors

Associated injuries, respiratory arrest, and hypotension on arrival have been linked to higher mortality [5, 15, 20]. On admission, the patient had a blood pressure of 70/30 mm Hg, a heart rate of 161 bpm, oxygen saturation of 83%, respiratory rate of 12, and a core temperature of 35.4 °C.

Ethical considerations are critical in treating self-inflicted injuries. While suicide attempts may represent a patient's autonomous decision, they often signal a desperate cry for help. Physicians must balance respect for patient autonomy with the ethical imperative to preserve life, ideally in consultation with family members and psychiatric specialists.

Conclusion

Gunshot wounds to the brain remain a major challenge for clinicians due to their high mortality and poor neurological outcomes. We report the survival of a patient with a self-inflicted bifrontal gunshot injury, discussing key prognostic factors including GCS score, age, pupillary response, and bullet trajectory. Despite the often grim prognosis, every patient should receive the best possible medical care, independent of initial clinical scoring.

Ethics statement

This case report was conducted in Hochschule Zurich, under the approval of the Institutional Review Board (IRB) of Hochschule Zurich. Written informed consents were obtained from the patient.

Conflicts of interest

The authors have no financial conflicts of interest.

References

- [1] Shah, A., et al., Suicide in centenarians: the international landscape. *Int Psychogeriatr*, 2014: p. 1-6.
- [2] Benzel, E.C., et al., Civilian craniocerebral gunshot wounds. *Neurosurgery*, 1991. 29(1): p. 67-71; discussion 71-2.
- [3] Cavaliere, R., et al., Gunshot wounds of the brain in civilians. *Acta Neurochir (Wien)*, 1988. 94(3-4): p. 133-6.
- [4] Grahm, T.W., et al., Civilian gunshot wounds to the head: a prospective study. *Neurosurgery*, 1990. 27(5): p. 696-700; discussion 700.
- [5] Jacobs, D.G., et al., Transcranial gunshot wounds: cost and consequences. *Am Surg*, 1995. 61(8): p. 647-53; discussion 653-4.
- [6] Kaufman, H.H., Civilian gunshot wounds to the head. *Neurosurgery*, 1993. 32(6): p. 962-4; discussion 964.
- [7] Kim, T.W., et al., Penetrating gunshot injuries to the brain. *J Trauma*, 2007. 62(6): p. 1446-51.
- [8] Martins, R.S., et al., Prognostic factors and treatment of penetrating gunshot wounds to the head. *Surg Neurol*, 2003. 60(2): p. 98-104; discussion 104.
- [9] Nagib, M.G., et al., Civilian gunshot wounds to the brain: prognosis and management. *Neurosurgery*, 1986. 18(5): p. 533-7.
- [10] Nathoo, N., et al., Civilian infratentorial gunshot injuries: outcome analysis of 26 patients. *Surg Neurol*, 2002. 58(3-4): p. 225-32; discussion 232-3.
- [11] Ozkan, U., et al., Analysis of 107 civilian craniocerebral gunshot wounds. *Neurosurg Rev*, 2002. 25(4): p. 231-6.
- [12] Shoung, H.M., J.P. Sichez, and B. Pertuiset, The early prognosis of craniocerebral gunshot wounds in civilian practice as an aid to the choice of treatment. A series of 56 cases studied by the computerized tomography. *Acta Neurochir (Wien)*, 1985. 74(1-2): p. 27-30.
- [13] Siccardi, D., et al., Penetrating craniocerebral missile injuries in civilians: a retrospective analysis of 314 cases. *Surg Neurol*, 1991. 35(6): p. 455-60.
- [14] Stone, J.L., T. Lichtor, and L.F. Fitzgerald, Gunshot wounds to the head in civilian practice. *Neurosurgery*, 1995. 37(6): p. 1104-10; discussion 1110-2.
- [15] Kaufman, H.H., et al., Gunshot wounds to the head: a perspective. *Neurosurgery*, 1986. 18(6): p. 689-95.
- [16] Khan, M.B., et al., Civilian Craniocerebral Gunshot Injuries in a Developing Country: Presentation, Injury Characteristics, Prognostic Indicators, and Complications. *World Neurosurg*, 2013.
- [17] Clark, W.C., et al., Analysis of 76 civilian craniocerebral gunshot wounds. *J Neurosurg*, 1986. 65(1): p. 9-14.

- [18] Levy, M.L., Outcome prediction following penetrating craniocerebral injury in a civilian population: aggressive surgical management in patients with admission Glasgow Coma Scale scores of 6 to 15. *Neurosurg Focus*, 2000. 8(1): p. e2.
- [19] Levy, M.L., et al., Outcome prediction after penetrating craniocerebral injury in a civilian population: aggressive surgical management in patients with admission Glasgow Coma Scale scores of 3, 4, or 5. *Neurosurgery*, 1994. 35(1): p. 77-84; discussion 84-5.
- [20] Murano, T., et al., Civilian craniocerebral gunshot wounds: an update in predicting outcomes. *Am Surg*, 2005. 71(12): p. 1009-14.
- [21] Turina, D., et al., War head injury score: an outcome prediction model in War casualties with acute penetrating head injury. *Mil Med*, 2001. 166(4): p. 331-4.

Available online at www.jmdnt.com

ScienceTrends

Journal of Medicine and Dentistry

journal homepage: www.jmdnt.comJOURNAL OF
MEDICINE
AND
DENTISTRYInternational Peer-Reviewed
Journal of Medical and
Dental Sciences

Case Report

Modified micro-marsupialization as an alternative treatment for ranulas

Yildirim Ayhan ^{a*}, Hertach René ^b, Yildirim Vedat ^b^a Hochschule Zurich, Department of Medicine, Zurich, Switzerland^b Hochschule Zurich, Department of Dentistry, Zurich, Switzerland

ARTICLE INFO

Article history:

Received 13 November 2024,

Revised 14 March 2025,

Accepted 25 April 2025,

Available online

12 May 2025,

Version of Record

12 May 2025.

Keywords:Adult,
modified micro-
marsupialization,
swelling,
ranula.

ABSTRACT

The anatomical location of ranulas poses an enormous treatment challenge for the dentist. Due to several elementary structures, the regional complexity of the area requires a very high level of expertise on the part of the practitioner. The correction of surgical interventions in this area requires great effort. Although complete excision with removal of the sublingual gland remains the gold standard of treatment, recent literature highlights successful results through simple modification of the conventional technique of granular marsupialization. This micromarsupialization option is minimally invasive and beneficial due to the shorter procedure time, minimal discomfort, and lack of postoperative complications. The following case report highlights the successful management of a case using a modified micro-marsupialization technique in an adult.

* Corresponding author. Hochschule Zurich, Albisstrasse 80, 8038 Zurich, Switzerland

E-mail address: ayhan.yildirim@uni-zh.ch.

Peer review under responsibility of Hochschule Zurich.

<https://jmdnt.com/issue-2025-1-article-2/>

DOI: 10.64951/jmdnt.2025.1.2 / Hochschule Zurich, Publishing services by Journal of Medicine and Dentistry. This is an open access article

At a glance commentary*Scientific background on the subject*

Currently, the standard therapeutic approach to obstruction of the submandibular gland duct involves surgical excision of the entire gland. This practice is widely accepted in clinical routine, as ductal obstruction is commonly associated with recurrent infections, pain, and impaired gland function—conditions that are often refractory to conservative management.

What this study adds to the field

The authors propose a treatment strategy that enables preservation of the submandibular gland while avoiding surgical excision. Moreover, this approach has the potential to reduce healthcare costs and mitigate the financial burden on the healthcare system.

INTRODUCTION

Ranulas are rare mucocèles found on the floor of the mouth. The treatment of ranulas is a challenging and divisive issue. There are still conflicting statements about which treatment method is best. The standard procedure used today is complete excision of the lesion together with excision of the sublingual gland. This intervention ensures a high level of protection against recurrence, as advocated by Pandit and Park [1]. Epidemiologically, these lesions are most common in the first two decades of life; therefore, the treatment approach is generally conservative. In this regard, there have been developments over the last three decades regarding modification of the marsupialization technique that have drastically reduced the likelihood of recurrence [2].

Case Report

A 43-year-old man presented to the ich Seeklinik Zurich, a specialist clinic for oral and maxillofacial surgery and facial plastic surgery, with a feeling of pressure due to swelling on the floor of the left side of the mouth for two weeks.

Two weeks ago, the man noticed a small swelling on the floor of the mouth on the left, which expanded to the size of a cherry in circumference.

The swelling was painless, with no associated dysphagia, paraesthesia or anaesthesia. The man noticed a slight change in the size of the existing swelling, especially during and after meals. Intraoral examination revealed a prominent swelling on the left side of the floor of the mouth, measuring approximately 2 cm × 2 cm × 1.5 cm in length, width and depth. Its anteroposterior margin extended from the mesial surface of the mandibular first molar to the distal aspect of the mandibular lateral incisor. The swelling appeared translucent, reddish and dome-shaped, with some fluid retention therein. No secondary changes, such as ulceration, fistula formation, infection or discharge, were observed [Figure 1].



Figure 1: Preoperative view

No similar swelling had been noted in the past, and the medical history was unremarkable. There was no associated head and neck swelling.

Consent and clinical technique

The patient was informed about the various treatment options in such a case, and he decided on the least invasive treatment method. The patient gave written informed consent.

The area was disinfected with a 0.1% povidone iodine solution. The affected area was anesthetized with an inferior alveolar nerve block. Four interrupted sutures of 1-0 silk were passed superficially through the lesion and secured with loose knots [Figure 2]. The patient was instructed to maintain good oral hygiene and to rinse with chlorhexidine mouth rinses twice daily. Follow-up was performed weekly to determine if the sutures were still in place and if the patient was maintaining satisfactory oral hygiene. On the second day, 1 stitch had already been lost. The remaining three sutures were removed after 30 days as described by Matondkar et al. [3]. It was observed that the lesion had already subsided without complications in the first week and did not reappear thereafter. Currently, over twelve months have passed since the procedure, with no evidence of recurrence of the lesion [Figure 3].



Figure 2: Post suture placement



Figure 3: Twelve months postoperative

DISCUSSION

Ranulas are a rare disease that occurs mainly in the first two decades of life and is a going concern for every dentist. Ranulas typically have a high risk of recurrence. Currently, the only widespread form of therapy is complete excision with removal of the sublingual gland [4]. It should be mentioned that this therapy option is associated with numerous complications and risks.

The difficulties mentioned in every surgical explanation are bleeding/hematoma (1%), neuropathic pain due to damage to the lingual nerve and damage to the Wharton duct (2%). In addition, there is a risk of dehiscence in the mylohyoid muscle, which generally leads to recurrence. There is also a risk of restricted mobility of the tongue due to scarring in the surgical site [5]. The surgical field requires careful hygiene postoperatively to prevent secondary infection.

In 1995, Morton and Bartley began to modify the conventional marsupialization approach, placing a single suture of silk on the dome of the ranula.

In 2000, Delbem et al. reported the successful use of a micro-marsupialization technique in the successful treatment of 38 cases of mucus retention phenomena at different sites. The procedure involved the use of a single 4-0 silk suture across the inner portion of the lesion to its widest diameter. This suture was maintained for a week [6].

However, reports of recurrences within 30 days of surgery have appeared in the literature [3]; therefore, this micro-marsupialization technique has undergone further modifications.

In 2007, Sandrini et al. made additional modifications by increasing the number of sutures and reducing the distance between the entry and exit of the needle. The residence time of the sutures in the mucosa was increased to 30 days. Care was taken in tightening the knots to avoid tissue necrosis due to stagnation of blood flow. The mechanism of action in the placement of the large silk suture over a 30-day period is the formation of new, durably epithelialized pathways that serve as additional outlets for the release of the retained mucus [7].

Patient selection plays an important role in the success of therapy. It should not be used in large ranulas that completely fill the floor of the mouth or where the site of origin is difficult to locate [8]. However, it appears to be an ideal approach in cases involving primary lesions up to 4–5 mL in volume. The number of sutures depends on the size of the ranula. The seams should be about 1cm apart. Very thick silk sutures should be made with 1-0 silk so that the epithelization of the replacement duct should be as wide as possible.

CONCLUSION

The discussion of the aforementioned procedure underscores the fact that a modified micro-marsupialization technique is a viable alternative to other, more invasive, techniques.

The benefits of the procedure are that it is a quick, easy, chairside procedure with minimal postoperative discomfort and complications. As such, it should be explored further as an alternative treatment. The technique definitely deserves wider application.

Ethics statement

This prospective study was conducted in Hochschule Zurich, under the approval of the Institutional Review Board (IRB) of Hochschule Zurich. Written informed consents were obtained from the patient.

Conflicts of interest

The authors have no financial conflicts of interest.

References

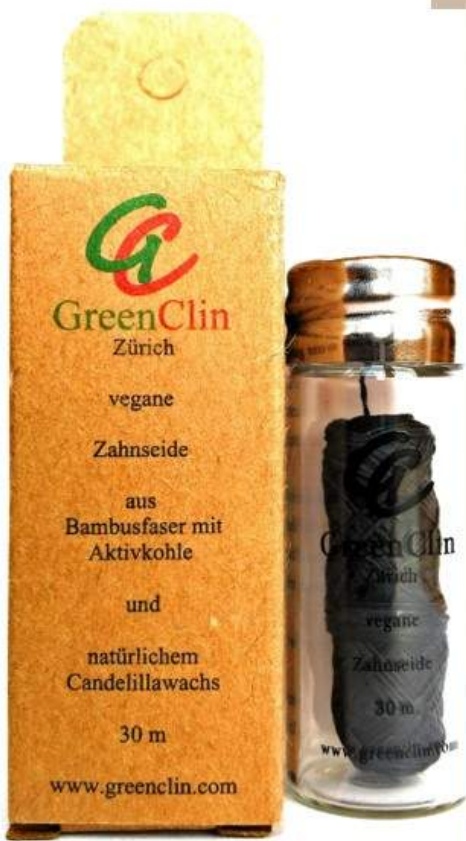
- [1] Pandit, R.T. and A.H. Park, Management of pediatric ranula. *Otolaryngol Head Neck Surg*, 2002.127(1): p.115-8.
- [2] Baurmash, H.D., Treating oral ranula: another case against blanket removal of the sublingual-gland. *Br J Oral Maxillofac Surg*, 2001. 39(3): p. 217-20.
- [3] Matondkar, S.P., C. Yavagal, and P. S. Mandroli, Modified micro-marsupialization as an alternative treatment for the management of ranulas in children. *Natl J Maxillofac Surg*, 2019.10(1): p. 95-97.
- [4] Crysdale, W.S., J.D. Mendelsohn, and S. Conley, Ranulas--mucocoeles of the oral cavity: experience in 26 children. *Laryngoscope*, 1988. 98(3): p. 296-8.
- [5] Zhao, Y.F., J. Jia, and Y. Jia, Complications associated with surgical management of ranulas *J Oral Maxillofac Surg*, 2005. 63(1): p. 51-4.
- [6] Delbem, A.C., et al., Treatment of mucus retention phenomena in children. by the micro-marsupialization technique: case reports. *Pediatr Dent*, 2000. 22(2): p. 155-8.
- [7] Sandrini, F. A., M. Sant'ana-Filho, and P.V. Rados, Ranula management: suggested modifications in the micro-marsupialization. technique. *J Oral Maxillofac Surg*, 2007. 65(7): p. 1436-8.
- [8] Goodson, A.M., et al., Minimally invasive treatment of oral ranulae: adaption to an old technique. *Br J Oral Maxillofac Surg*, 2015. 53(4): p. 332-5.

Experience health in a new way

GreenClin Zürich



Choose GreenClin Zurich –
Your partner for a healthy
future, aligned with nature
and innovation“





Dental Care Wollishofen,

we combine gentle, patient-centered care with the latest dental technology. Our goal is to ensure every patient leaves with a healthier, brighter smile and a comfortable experience.

Whether it's routine check-ups, cosmetic treatments, or complex dental procedures, we provide tailored solutions that meet the highest standards of modern dentistry.

- **Preventive Dentistry**

Regular check-ups, cleanings, and personalized advice to maintain optimal oral health.

- **Cosmetic Dentistry**

Teeth whitening, veneers, and aesthetic restorations to enhance your smile.

- **Restorative & Implant Dentistry**

From fillings to implants, we restore function and beauty with precision.

- **Emergency Care**

*Prompt attention for urgent dental issues to minimize *pain* and complications.*

- **Pediatric Dentistry**

Gentle care for children in a friendly and welcoming environment.

What Sets Us Apart

- **Experienced Team** — Qualified dentists and staff committed to excellent care.
- **Modern Technology** — Digital imaging, laser dentistry, and state-of-the-art equipment.
- **Patient Comfort** — Relaxed environment, sedation options, and attentive care.
- **Convenient Location** — Easily accessible in Wollishofen, Zurich.



Available online at www.jmdnt.com

ScienceTrends

Journal of Medicine and Dentistry

journal homepage: www.jmdnt.comJOURNAL OF
MEDICINE
AND
DENTISTRYInternational Peer-Reviewed
Journal of Medical and
Dental Sciences

Original Research Article

Maternal Peri- and Postconceptional Folic Acid Supplementation and Ankyloglossia in Newborns

Yildirim Ayhan^{a*}, Hertach René^b, Yildirim Vedat^b^a Hochschule Zurich, Department of Medicine, Zurich, Switzerland^b Hochschule Zurich, Department of Dentistry, Zurich, Switzerland

ARTICLE INFO

Article history:

Received 14 April 2024,
Revised 08 August 2025,
Accepted
16 September 2025,
Available online
30 September 2025,
Version of Record
30 September 2025.

Keywords:

Ankyloglossia
Tongue-tie
Folic acid supplementation
Periconceptional nutrition
Midline development
Newborns / Neonates

ABSTRACT

Background:

Ankyloglossia ("tongue-tie") is a congenital condition characterized by restricted tongue mobility due to a shortened or thickened lingual frenulum. Diagnoses of ankyloglossia in newborns have increased globally. While improved awareness and breastfeeding promotion partially explain this trend, maternal folic acid supplementation may also influence midline tissue development.

Objective:

To investigate the association between maternal peri- and postconceptional folic acid supplementation and the occurrence of ankyloglossia in newborns.

Methods:

A retrospective case-control study was conducted at the Seeklinik Zurich, a specialized center for oral and maxillofacial

* Corresponding author. Hochschule Zurich, Albisstrasse 80, 8038 Zurich, Switzerland
E-mail address: ayhan.yildirim@uni-zh.ch.

Peer review under responsibility of Hochschule Zurich.

<https://jmdnt.com/issue-2025-1-article-3/>

DOI: 10.64951/jmdnt.2025.1.3 / Hochschule Zurich, Publishing services by Journal of Medicine and Dentistry. This is an open access article

At a glance commentary

Scientific background on the subject

Ankyloglossia (tongue-tie) is a congenital condition affecting tongue mobility, potentially impairing breastfeeding and speech. Its reported prevalence has increased, but the role of maternal nutrition, particularly folic acid, in its development is largely unknown

What this study adds to the field

This study shows a strong association between maternal peri- and postconceptional folic acid supplementation and ankyloglossia, suggesting that folate exposure during early embryogenesis may influence midline tissue development. These findings provide a basis for further investigation into nutritional contributions to tongue-tie.

surgery, from February 2019 to March 2025. Maternal folic acid intake was documented via standardized questionnaires. The study group included 247 mother-infant pairs referred for suspected ankyloglossia, of which 216 infants had confirmed tongue-tie. The control group comprised 154 mother-infant pairs with no reported maternal folic acid intake; 10 infants with tongue-tie were excluded, leaving 144 for comparison. Statistical analyses included odds ratios with Haldane’s correction, chi-square tests, and t-tests.

Results:

Maternal folic acid supplementation was reported by 87.45% of mothers in the study group versus 0% in the control group ($p < 0.001$). The approximate odds ratio using Haldane correction was 62.4 (95% CI 24– ∞). Cases showed a male predominance (72.7%) and younger maternal age (27.2 ± 6.5 years vs. 30.1 ± 6.4 ; $p < 0.005$).

Conclusion:

Maternal folic acid supplementation is strongly associated with ankyloglossia in this cohort. While causality cannot be established, the findings suggest a potential influence of folate on midline tissue development. Prospective studies are warranted to confirm these observations and explore underlying mechanisms.

INTRODUCTION

Ankyloglossia, commonly referred to as “tongue-tie,” is a congenital anomaly resulting from an abnormally short, thickened, or tight lingual frenulum, restricting tongue mobility. Clinical manifestations include breastfeeding difficulties, nipple pain, impaired latch, speech development issues, and, in some cases, orofacial developmental complications [Messner & Lalakea 2000; Geddes et al. 2008].

Over the past two decades, an increasing number of ankyloglossia diagnoses have been reported in multiple countries. In the United States, hospital-based records indicated an increase from 3,934 cases in 1997 to 32,837 in 2012 [Walsh et al. 2017]. In Canada, population-level data covering over 3.6 million live births demonstrated an increase from 6.86 to 22.6 cases per 1,000 live births between 2002 and 2014 [Walsh et al. 2017b]. Similar trends are observed in Australia, the UK, and Scandinavian countries [Douglas 2020; O’Shea et al. 2021].

The etiology of this apparent rise is multifactorial:

1. Increased diagnostic awareness, often prompted by breastfeeding promotion initiatives [Buryk et al. 2011].
2. Changes in clinical practice, including more frequent frenotomy.
3. Nutritional factors, particularly periconceptional folic acid supplementation, which may influence midline development.

Folic acid is essential for one-carbon metabolism, DNA synthesis, and methylation, crucial processes during early embryogenesis. Deficiency is a well-established cause of neural tube defects and other midline anomalies [Czeizel & Dudas 1992]. In Switzerland, supplementation of 400 µg/day starting four weeks before conception is recommended; however, adherence is variable (30–40% of women comply) [Hediger et al. 2021].

Given folate’s role in midline tissue development, we hypothesize that higher maternal folic acid exposure during organogenesis may influence midline fusion, potentially increasing the risk of ankyloglossia.

METHODS

Study Design:

Retrospective, monocentric case-control study at Seeklinik Zurich, a specialized center for oral and maxillofacial surgery.

Participants:

- Study group: 247 mother-infant pairs referred for suspected ankyloglossia; 216 infants had confirmed tongue-tie, 31 had normal frenulum.
- Control group: 154 mother-infant pairs with no maternal folic acid intake; 10 infants with tongue-tie were excluded, leaving 144 for analysis.

Data Collection:

Maternal peri- and postconceptional folic acid intake was documented using standardized questionnaires, including dose, start, and duration. Infant tongue anatomy was assessed clinically using standardized criteria. Covariates included maternal age, parity, and infant sex.

Statistical Analysis:

Chi-square tests for categorical variables, t-tests for continuous variables. Odds ratios (OR) with 95% confidence intervals (CI) calculated; Haldane’s correction applied for zero cells.

RESULTS

Population Characteristics:

- Study group: 247 infants; 216 (87.4%) with ankyloglossia, 31 (12.6%) normal frenulum.
- Control group: 144 infants with normal frenulum (after exclusion of 10 with tongue-tie).

Maternal Folic Acid Intake:

- Study group: 87.45% supplementation
- Control group: 0% (p < 0.001)

Odds Ratio:

- Haldane correction: OR ≈ 62.4 (95% CI 24–∞)

Additional Characteristics:

- Male predominance: 72.7% in cases vs. 51.4% in controls (p < 0.01)
- Maternal age: 27.2 ± 6.5 vs. 30.1 ± 6.4 years (p < 0.005)

DISCUSSION

This study demonstrates a strong association between maternal folic acid supplementation and ankyloglossia. Potential mechanisms include epigenetic effects, enhanced cell proliferation, and midline tissue fusion influenced by folate levels [Anderson et al. 2012; Yoshida et al. 2017].

Limitations:

- Retrospective design with recall bias
- No biomarker confirmation of folate status
- Possible residual confounding (genetic variants, environmental factors)

Clinical Implications:

Despite the strong association, folic acid's benefits in preventing neural tube defects remain critical. Current supplementation guidelines should not be altered based on these results. Prospective studies with biomarker validation and standardized tongue assessment are needed.



Figure 1: 5-year-old boy with an untreated lingual frenulum whose mother took folic acid before conception and during the first

CONCLUSION

Maternal peri- and postconceptional folic acid supplementation is strongly associated with ankyloglossia in this cohort. Findings suggest a potential influence on midline tissue development, warranting further prospective investigation.

Ethics statement

This prospective study was conducted in Hochschule Zurich, under the approval of the Institutional Review Board (IRB) of Hochschule Zurich. Written informed consents were obtained from the patient.

Conflicts of interest

The authors have no financial conflicts of interest.

REFERENCES

- [1] Anderson OS, et al. *Environ Mol Mutagen*. 2012;53:8–21.
- [2] Bailey LB, Ayling JE. *Adv Nutr*. 2015;6:673–684.
- [3] Buryk M, et al. *Pediatrics*. 2011;128:280–288.
- [4] Czeizel AE, Dudas I. *N Engl J Med*. 1992;327:1832–1835.
- [5] Douglas PS. *Int Breastfeed J*. 2020;15:26.
- [6] Geddes DT, et al. *Pediatrics*. 2008;122:e188–e194.
- [7] Hediger MA, et al. *Swiss Med Wkly*. 2021;151:w30041.
- [8] Messner AH, Lalakea ML. *Int J Pediatr Otorhinolaryngol*. 2000;54:123–131.
- [9] O'Shea RM, et al. *Int J Pediatr Otorhinolaryngol*. 2021;145:110682.
- [10] Parada C, Chai Y. *Development*. 2015;142:3670–3680.
- [11] Sittig LJ, et al. *Dev Neurosci*. 2020;42:1–14.
- [12] Walsh J, et al. *Pediatrics*. 2017;139:e20163194.
- [13] Walsh J, et al. *JAMA Pediatr*. 2017;171:e1711.
- [14] Yoshida M, et al. *Birth Defects Res*. 2017;109:279–289

KIEFERCHIRURGIE MÜNCHEN



**EXPERT
IN ORAL
SURGERY**

CONTACT INFORMATION

Nymphenburger Str. 139
Ground Floor
80636 Munich, Germany

+49 (89) 99 74 66 90
info@kieferchirurgie-muc.com



Imprint

Journal of Medicine and Dentistry

International Peer-Reviewed Journal of Medical and Dental Sciences

Publisher

MeDentClin AG
Albisstrasse 80
CH-8038 Zurich
Switzerland

Represented by:

Ayhan Yildirim, Prof. Dr. med. Dr. med. dent., MHBA

Responsible for content according to Swiss Code of Obligations (Art. 322 OR):

MeDentClin AG

Editorial Board:

Editor-in-Chief: Ayhan Yildirim, Prof. Dr. med. Dr. med. dent., MHBA
Deputy Editor: Vedat Yildirim, Prof. Dr. med. Dr. med. dent., MHBA

Contact:

Email: info@jmdnt.com
Phone: +41 44 527 80 00
Web: www.jmdnt.com

Place of Publication:

Zurich, Switzerland

ISSN: 3042-8106

Printed in Switzerland

Publication Frequency:

Twice annually, on April 15 and October 15

Copyright:

© 2025 MeDentClin AG, Zurich. All rights reserved.

Scope:

The *Journal of Medicine and Dentistry* is an international peer-reviewed journal dedicated to the dissemination of scientific knowledge in the fields of medicine and dentistry.

Legal Deposit:

Legal deposit according to the guidelines of the Swiss National Library.

Hochschule Zurich



Why Choose the Hochschule Zurich? At uni-zh.com, we provide world-class education across a wide spectrum of disciplines, from natural sciences and medicine to law, social sciences, and the arts. Our programs are designed to challenge, inspire, and prepare students for global careers and impactful research. With state-of-the-art facilities, interdisciplinary collaboration, and access to leading academics, the Hochschule Zurich fosters critical thinking and innovation at every level.

Key Highlights

Top-Ranked Research & Teaching
Learn from internationally recognized scholars and participate in groundbreaking research projects.

Wide Range of Programs

Bachelor's, Master's, PhD, and continuing education courses across multiple faculties.

Global Networks & Opportunities

Exchange programs, internships, and collaborations with leading institutions worldwide.

Student Support & Campus Life

Comprehensive academic advising, career services, and vibrant campus communities.

Get Involved. Visit uni-zh.com to explore programs, apply, or book a virtual campus tour. Your future starts here.