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RESEARCH ARTICLE

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Botulinum toxin in orofacial pain management: INfORM/IADR recommendations

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ABSTRACT

Objective: To present a list of key points to summarize the standard of care based on the available evidence for the appropriate use of botulinum toxin (BTX) in the management of orofacial pain conditions, including temporomandibular disorders (TMDs), on behalf of the International Network for Orofacial Pain and Related Disorders Methodology (INfORM) of the International Association for Dental, Oral and Craniofacial Research (IADR).

Methods: An open working group discussion was held at the IADR/AADOCR General Session in San Diego (March 2026), where members of the INfORM group debated and finalized a list of key points on the use of BTX in orofacial pain and TMD management during a dedicated Satellite Symposium.

Results: The key points cover the diagnostic prerequisites, therapeutic rationale, indications and limitations, patient selection, procedural and training requirements, and safety considerations relevant to BTX use. They represent a summary of the current standard of care and emphasize that BTX is an adjunctive, off-label, second-line option that does not replace conservative and supported self-management approaches. While there is a need for further research across most indications, these points serve to assist dental practitioners and orofacial pain clinicians in both understanding the interpreted accepted uses and avoiding inappropriate treatment.

Conclusions: The key points can be viewed as a guiding template for other national and international associations to prepare guidelines and recommendations on the use of BTX in orofacial pain and TMDs, adapted to the different cultural, social, educational, regulatory, and healthcare requirements around the world.

KEYWORDS
Botulinum toxin; bruxism; good practice; guidelines; orofacial pain; standard of care; temporomandibular disorders; TMJ

Introduction

Orofacial pain conditions, which include temporomandibular disorders (TMDs), are a heterogeneous group of chronic pain conditions affecting the face, mouth, jaw joints, the masticatory muscles, and the related structures, as well as the neurological components of the orofacial region, as also reflected in current orofacial pain classifications [1,2]. In line with the general principle of "first do not harm" and avoid unnecessary escalation to potential overtreatment, management of most TMDs and related orofacial pain conditions should embrace an approach based on the

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biopsychosocial model. As such, self-management, cognitive-behavioral strategies, physiotherapy, and reversible measures represent the cornerstone of first-line care, consistent with the existing condition-specific guidelines [1,3]. The psychosocial characteristics of patients should also be taken into account when planning treatment and estimating prognosis [1]. For some orofacial pain conditions, such as classical trigeminal neuralgia and other neuropathic conditions, systemic pharmacological treatment is included among first-line approaches and is addressed by dedicated guidelines [4,5].

Within this framework, in recent years, the use of botulinum toxin (BTX) has expanded considerably in dentistry and orofacial pain practice, probably outpacing the available evidence [6,7]. BTX exerts its effect, which also partly depends on the targeted injection structure (e.g., muscle versus nerve), through inhibition of acetylcholine release at the neuromuscular junction, thereby reducing muscle contraction, and through modulation of the expression of nociceptive neurotransmitters as well as the influence on peripheral, and potentially central, pain pathways [8]. These properties have generated interest in its application across a range of conditions, including myogenous TMDs, bruxism-related symptoms [9], and selected neuropathic orofacial pain conditions [10]. However, the strength of the supporting evidence varies markedly across indications, with recent umbrella reviews further emphasizing this heterogeneity for myogenous TMD [9–11], and for several of the proposed uses the evidence remains low or inconclusive.

The off-label nature of BTX for most orofacial indications, the heterogeneity of injection protocols, the variability in clinician training, and the temporary and repeatable nature of its effects (with the consequent need for periodic re-treatment, which has also been associated with potential adverse effects on muscle and bone tissue) all raise the risk of inappropriate prescription and patient harm [6,7]. The current scarcity of dedicated guidelines for the use of BTX for orofacial conditions further contributes to this risk. There is also a recognized overlap between conditions that may present with similar signs and symptoms but require different management, which makes a mechanism-based differential diagnosis essential before any consideration of BTX. Despite the growing clinical interest, these principles had not yet been summarized into a synopsis and a list of key points on behalf of a scientific association to guide health practitioners in search of a concise reference document on good clinical practice for BTX use in this field.

This document follows the format previously adopted by the INfORM group of the IADR for the key points on good clinical practice in the management of TMDs [1], and is intended to complement it by focusing specifically on the appropriate use of BTX in orofacial pain practice.

Material and methods

An open workshop was organized as a satellite symposium on behalf of the International Network for Orofacial Pain and Related Disorders Methodology (INfORM) group of the International Association for Dental, Oral and Craniofacial Research (IADR) during the IADR/AADOCR General Session in San Diego, held in March 2026. Before the event, the coordinators of the project (M.V.; L.G.-N.; D.M.; L.B.-H.) drafted a bulleted list of 10 points to summarize the main aspects of BTX use in orofacial pain and TMD management, covering diagnosis, therapeutic rationale, indications, patient selection, procedural requirements, and safety. The draft was circulated by e-mail among the coordinators in the weeks preceding the event.

The workshop was structured so that, initially, the draft was read aloud for the participants' convenience. Four speakers summarized the available evidence on different topics to facilitate the discussion (M.V.; L.N.; G.D.T.C.; D.R.N.). The participants were then split into two working groups, supervised by one of the project coordinators, who debated about the relevance of the proposed ky points as well as whether and how the summary sentences should be adjusted. All participants are listed as coauthors of this manuscript.

Each group discussed the indications, the strength of the supporting evidence for the management of the different conditions, and the wording of the proposed statements. Several points of debate emerged. Both groups agreed that for the conditions specifically discussed (TMDs, bruxism-related symptoms, and neuropathic orofacial pains), BTX should be framed as an adjunctive, second-line option to be considered only after total or partial failure of appropriate conservative and reversible therapies and in light of its possible adverse effects, and that it should never replace self-management care and cognitive-behavioral approaches. There was discussion on the limited and variable strength of the evidence across indications and injection protocols (including dosages, injection sites, and frequency), on the off-label status of BTX for most orofacial pain and TMD indications, and on the importance of communication and collaboration with colleagues from other branches of dentistry and medicine.

Attention was paid to three indications. With respect to neuropathic orofacial pain, it was noted that peripheral neuropathic pain and classical trigeminal neuralgia are already addressed by published evidence and guidelines [4,5], and that any statement should refer to those recommendations rather than duplicate or oversimplify them. With respect to TMJ degenerative joint disease, the limited evidence base on the use of BTX to reduce the muscle load was emphasized, and the group recommended a cautious, explicitly evidence-limited formulation. For bruxism, the discussants agreed on the need to stress the concept of bruxism as a behavior and the distinction between treatment of bruxism itself (i.e., reduction of the number of events) and management of the potential consequences via the reduction of the intensity of events (an approach that has been explored, for example, in patients planned for prosthodontic rehabilitation) [12]. Specifically, any intervention should aim at limiting the negative consequences of bruxism activity (e.g., tooth wear, restorative and prosthetic complications, and jaw muscle pain) rather than at suppressing the activity itself.

The groups also recommended highlighting current knowledge gaps and the need to define and report standardized outcomes (core outcome sets) in future BTX intervention studies, and underlined that any provider using BTX in orofacial conditions should be appropriately trained, licensed, and competent to diagnose and manage the relevant conditions, offering BTX only after recommended management approaches, including supported self-management as outlined in dedicated international Delphi recommendations and in the INfORM/IADR TMD key points [1,13], have been provided. After the group work, the supervisors summarized the proposals of their groups, and the original draft was adjusted by consensus with all participants, under the supervision of an English mother-tongue participant, by reading it aloud and fine-tuning it. A list of 10 key points was then prepared and approved by all the presenters and organizers.

In the weeks following the IADR/AADOCR General Session, the leading supervisor drafted this paper, which was circulated initially amongst the coordinators and the speakers, and then amongst all the authors for two rounds of amendments and a final check before definitive approval.

Results

As a result of the above procedures, the INfORM network of the IADR proposes the following list of 10 key points for good practice in the use of botulinum toxin in the orofacial pain discipline, which represents a summary of the current standard of care and of the available, and at times limited, evidence. The key points specifically address the use of BTX in temporomandibular disorders (TMDs), bruxism-related symptoms, and neuropathic orofacial pains, including trigeminal neuralgia, i.e., the conditions specifically discussed during the symposium and for which supporting evidence and/or dedicated guidelines exist. Condition-specific caveats were highlighted where appropriate. The evidence for the use of BTX in idiopathic or other orofacial pain conditions not specifically addressed here is not supported by the current scientific literature, and these key points are not intended to extend beyond the conditions and statements listed below:

(1) The decision to consider BTX must be based on a mechanism-based diagnosis. BTX should only be considered after a comprehensive differential diagnosis that distinguishes odontogenic pain, temporomandibular disorders, neuropathic pain, and centrally mediated pain conditions, taking into account the frequent overlap between these conditions [14].

(2) BTX is an adjunctive, second-line therapy at best, not a first-line treatment. BTX should be considered only after total or partial failure of trials of appropriate conservative and reversible therapies. For selected neuropathic pain conditions, BTX has been positioned as a third-line option in dedicated guidelines and should be considered accordingly [4]. It does not replace supported self-management, cognitive-behavioral approaches, and physiotherapy, which should be continued during and after BTX treatment, and which remain the cornerstone of care for many OFP conditions [1,6,7]. Criteria to identify patients with myofascial TMD pain refractory to conservative care have been recently proposed and may help in selecting candidates [15].

(3) The therapeutic rationale includes neuromuscular and antinociceptive effects. BTX reduces the strength of muscle contraction and may modulate nociceptive neurotransmitters and peripheral pain pathways, with the antinociceptive effect increasingly recognized as a major contributor to the clinical benefit observed in some neuropathic pain conditions [8]. The relative contribution of these mechanisms to any clinical benefit is still incompletely understood and varies across conditions.

(4) The evidence for use in refractory neuropathic orofacial pain is partially supported. Moderate-quality evidence supports the use of BTX as a third-line option in selected neuralgias and neuropathic pain conditions [4,5,10,16,17]. Where published evidence and guidelines already exist, for example for classical trigeminal neuralgia, those recommendations should be followed and

referred to [4,5,17]. The specific neuropathic pain conditions in which BTX may be considered, and the corresponding protocols, should be defined by experts in the relevant fields, with reference to the existing guidelines.

(5) BTX may reduce pain in myogenous TMD. BTX injections may reduce pain and improve function in patients with prevalently myogenous TMD symptoms, in particular in refractory cases in which muscle overload is considered to contribute to the clinical picture and cannot be adequately controlled with other approaches (e.g., behavioral suggestions; control of awake bruxism) [11,18–22]. The evidence remains limited and BTX should not be regarded as a routine treatment, also in light of potential long-term adverse effects on the masticatory muscles and adjacent bone tissue with repeated injections [23].

(6) In bruxism, BTX targets the management of consequences rather than the reduction of events. Bruxism should be conceptualized as a behavior rather than a disorder [24,25], and there is limited evidence of a linear causal relationship between bruxism activities and painful consequences. Therefore, the use of BTX for possible prevention purposes is not justified [26,27]. The assessment of both bruxism activities and the possible consequences requires standardized and validated instruments, together with solid justification that bruxism behaviors are a substantial contributor to the patient's painful symptoms before BTX is considered. BTX may help manage the muscle overload and pain associated with bruxism but does not eliminate the behavior itself; any intervention should therefore aim at limiting its negative consequences (e.g., tooth wear, prosthetic and restorative failure, and jaw muscle pain).

(7) The use of BTX as an adjunct in TMJ degenerative and disc-related disorders is not supported by adequate evidence. Although it has been proposed that, by reducing masticatory muscle load and the consequent contribution to excessive joint load, BTX might complement established therapies for TMJ degenerative and disc-related disorders, the current evidence is insufficient to support this indication [9], and it should be regarded as experimental rather than standard of care.

(8) Careful patient selection is essential. The most appropriate candidates are patients with demonstrable consequences of muscle overload and/or selected refractory neuropathic pain conditions [9,28]. BTX is not appropriate as a generic treatment for orofacial pain. Specific contraindications and conditions requiring particular caution should be considered in patient selection, including pregnancy, lactation, known neuromuscular disorders, and pediatric patients [29], as well as patients who have not been adequately engaged with conservative care.

(9) Adequate injection technique, clinician training, and interdisciplinary collaboration are required. While no single standardized injection protocol has demonstrated superiority across conditions, reproducible techniques and adequate anatomical expertise are essential to improve outcomes and reduce adverse effects [6,19]. In the absence of established protocols, lower-dose regimens should generally be preferred. Providers should be trained, licensed medical or dental providers, and competent to diagnose and manage all aspects of the conditions they treat, and they should offer BTX only as part of a broader management plan. Interdisciplinary collaboration and communication with colleagues from other branches of medicine and dentistry are recommended.

(10) Safety, expectations, off-label status, and long-term planning must be addressed. BTX has a favorable safety profile at standard injection sites in the masticatory muscles, although greater caution applies to less established sites such as nerve ganglion injections, but it is used off-label for most orofacial pain and TMD indications and may be contraindicated in certain categories of patients (e.g., pregnancy, lactation, known neuromuscular disorders, and pediatric patients) [6,7]. Repeated injections, which are intrinsic to the temporary nature of the treatment, have also been reported to be potentially associated with adverse effects on muscle and bone tissue and should be planned accordingly. Patients must be informed about the temporary nature of the effects, the possible need for repeated treatment, the off-label use, and the importance of remaining actively involved in self-management strategies and, where indicated, in other partially effective strategies such as systemic pharmacological treatment for neuropathic conditions. Current knowledge gaps should be acknowledged, and future intervention studies should adopt standardized core outcome sets.

Conclusions

The key points for good clinical practice on the use of botulinum toxin in the management of temporomandibular disorders (TMDs), bruxism-related symptoms, and neuropathic orofacial pain, proposed as an official document by the INfORM network of the IADR, cover the diagnostic prerequisites, therapeutic rationale, indications and limitations, patient selection, procedural and training requirements, and safety considerations relevant to BTX. They emphasize that (1) for most TMD and orofacial pain indications, BTX is an adjunctive, off-

label, second-line option (with specific positioning, including as a third-line option, in selected neuropathic pain conditions addressed by dedicated guidelines); (2) that the supporting evidence is variable and at times limited; and (3) that BTX does not replace conservative and supported self-management approaches for TMD and bruxism-related symptoms. They represent a summary of the current standard of care and are in line with the current need to assist dental practitioners and orofacial pain clinicians in advancing their understanding and preventing inappropriate treatment [6,7]. The key points can be viewed as a guiding template for other national and international associations to prepare guidelines and recommendations adapted to the different cultural, social, educational, regulatory, and healthcare requirements around the world.

Author contributions

CRediT: **Matteo Val DDS, MSc, PhD:** Conceptualization, Investigation, Methodology, Project administration, Resources, Writing – original draft, Writing – review & editing; **Lene Baad-Hansen DDS, PhD:** Supervision, Validation, Writing – review & editing; **Donald R. Nixdorf DDS:** Investigation, Writing – original draft, Writing – review & editing; **Matteo Pollis DDS, MSc, PhD:** Validation; **Anna Colonna DDS, MSc, PhD:** Supervision; **Claudia Restrepo DDS, PhD:** Validation; **Nikola Stanisic DDS, PhD:** Visualization; **Aya Al-Salih DDS:** Visualization; **Alessandro Rizzi DDS:** Supervision; **Chris Penlington BSc, MSc:** Visualization; **Andre Mariz Almeida DDS:** Visualization; **Birgitta Haggman-Henrikson DDS, PhD:** Visualization; **Rosana Cid-Verdejo DDS, MSc, PhD:** Visualization; **Justin Durham DDS, PhD:** Visualization; **Corine M. Visscher PT, PhD:** Visualization; **Ovidiu Ionut Saracutu DDS, PhD:** Visualization; **Miguel De Pedro DDs, PhD:** Visualization; **Idoya Orradre Burusco DDS, MSc, PhD:** Visualization; **Daniele Manfredini DDS, MSc, PhD:** Supervision, Validation, Writing – original draft, Writing – review & editing; **Luca Guarda-Nardini MD,DDS:** Methodology, Supervision, Validation, Writing – original draft.

Disclosure statement

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References

[1] Manfredini D, Häggman-Henrikson B, Al Jaghsi A, et al. Temporomandibular disorders: INfORM/IADR key points for good clinical practice based on standard of care. Cranio®. 2025;43(1):1–5. doi: 10.1080/08869634.2024.2405298
[2] International Classification of Orofacial Pain, 1st edition (ICOP). International classification of orofacial pain, 1st edition (ICOP). Cephalalgia. 2020;40(2):129–221. doi: 10.1177/0333102419893823
[3] Durham J, Al-Baghdadi M, Baad-Hansen L, et al. Self-management programmes in temporomandibular disorders: results from an international Delphi process. J Oral Rehabil. 2016;43(12):929–936. doi: 10.1111/joor.12448

[4] Royal College of Surgeons of England. Faculty of dental surgery. Trigeminal neuralgia guidelines. London: RCS England; 2021. Available from: https://www.rcseng.ac.uk/-/media/files/rcs/fds/guidelines/trigemina-neuralgia-guidelines_2021_v4.pdf
[5] Soliman N, Moisset X, Ferraro MC, et al.; NeuPSIG Review Update Study Group. Pharmacotherapy and non-invasive neuromodulation for neuropathic pain: a systematic review and meta-analysis. Lancet Neurol. 2025;24(5):413–428. doi: 10.1016/S1474-4422(25)00068-7
[6] Val M, Manfredini D, Guarda Nardini L. Botulinum toxin in orofacial pain: a clinician's perspective on what we know, what we do, and what we get wrong. Cranio®. 2026;44(4):1–4. doi: 10.1080/08869634.2026.2669199
[7] Val M, Manfredini D, Guarda Nardini L. Is botulinum toxin the future of orofacial pain management? Evidence and perspectives. Dent Med Probl. 2025;62(3):405–407. doi: 10.17219/dmp/200127
[8] Aoki KR. Review of a proposed mechanism for the antinociceptive action of botulinum toxin type a. Neurotoxicology. 2005;26(5):785–793. doi: 10.1016/j.neuro.2005.01.017
[9] Delcanho R, Val M, Guarda Nardini L, et al. Botulinum toxin for treating temporomandibular disorders: what is the evidence? J Oral Facial Pain Headache. 2022;36(1):6–20. doi: 10.11607/ofph.3023
[10] Val M, Delcanho R, Ferrari M, et al. Is botulinum toxin effective in treating orofacial neuropathic pain disorders? A systematic review. Toxins (Basel). 2023;15(9):541. doi: 10.3390/toxins15090541
[11] De la Torre Canales G G, Câmara-Souza MB, Ernberg M, et al. Botulinum toxin-A for the treatment of myogenous temporomandibular disorders: an umbrella review of systematic reviews. Drugs. 2024;84(7):779–809. doi: 10.1007/s40265-024-02048-x
[12] Ali SM, Alqutaibi AY, Aboalrejal A, et al. Botulinum toxin and occlusal splints for the management of sleep bruxism in individuals with implant overdentures: a randomized controlled trial. Saudi Dent J. 2021;33(8):1004–1011. doi: 10.1016/j.sdentj.2021.07.001
[13] Allison JR, Offen E, Cowley T, et al. International network for orofacial pain and related disorders Methodology (INfORM). How dental teams can help patients with temporomandibular disorders receive general dental care: an international Delphi process. J Oral Rehabil. 2023;50(6):482–487. doi: 10.1111/joor.13447
[14] Schiffman E, Ohrbach R, Truelove E, et al. Diagnostic criteria for temporomandibular disorders (DC/TMD) for clinical and research applications: recommendations of the International RDC/TMD consortium network and orofacial pain special interest group. J Oral Facial Pain Headache. 2014;28(1):6–27. doi: 10.11607/jop.1151
[15] De la Torre Canales G, Poluha RL, Soares FFC, et al. Who is the patient with resistant myofascial temporomandibular disorders pain? A somatosensory, psychosocial, and genetic characterization. J Headache Pain. 2025;26(1):98. doi: 10.1186/s10194-025-02055-7
[16] Chávez-Pérez V, Felipe-Spada N, Roldán-Cubero J, et al. Current status of the application of botulinum toxin as a treatment option for trigeminal neuralgia. Cranio®. 2021;39(1):1–3. doi: 10.1080/08869634.2020.1849976
[17] Bendtsen L, Zakrzewska JM, Abbott J, et al. European Academy of Neurology guideline on trigeminal neuralgia. Eur J Neurol. 2019;26(6):831–849. doi: 10.1111/ene.13950
[18] Nixdorf DR, Heo G, Major PW. Randomized controlled trial of botulinum toxin a for chronic myogenous orofacial pain. Pain. 2002;99(3):465–473. doi: 10.1016/S0304-3959(02)00240-3
[19] De la Torre Canales G, Alvarez-Pinzon N, Muñoz-Lora VRM, et al. Efficacy and safety of botulinum toxin type a on persistent myofascial pain: a randomized clinical trial. Toxins (Basel). 2020;12(6):395. doi: 10.3390/toxins12060395
[20] Guarda-Nardini L, Manfredini D, Salamone M, et al. Efficacy of botulinum toxin in treating myofascial pain in bruxers: a controlled placebo pilot study. Cranio®. 2008;26(2):126–135. doi: 10.1179/crn.2008.017
[21] de Lima MC, Rizzatti Barbosa CM, Duarte Gavião MB, et al. Is low dose of botulinum toxin effective in controlling chronic pain in sleep bruxism, awake bruxism, and temporomandibular disorder? Cranio®. 2024;42(4):421–428. doi: 10.1080/08869634.2021.1973215
[22] Guarda-Nardini L, Stecco A, Stecco C, et al. Myofascial pain of the jaw muscles: comparison of short-term effectiveness of botulinum toxin injections and fascial manipulation technique. Cranio®. 2012;30(2):95–102. doi: 10.1179/crn.2012.014
[23] Moussa MS, Bachour D, Komarova SV. Adverse effect of botulinum toxin-A injections on mandibular bone: a systematic review and meta-analysis. J Oral Rehabil. 2024;51(2):404–415. doi: 10.1111/joor.13590
[24] Manfredini D, Lobbezoo F. The biopsychosocial model of bruxism. Cranio®. 2026:1–9. doi: 10.1080/08869634.2026.2655187
[25] Colonna A, Bracci A, Manfredini D. Bracing: the hidden side of the moon. Cranio®. 2025;43(5):711–713. doi: 10.1080/08869634.2025.2472087
[26] De la Torre Canales G, Câmara-Souza MB, Do Amaral Cf, et al. Is there enough evidence to use botulinum toxin injections for bruxism management? A systematic literature review. Clin Oral Investig. 2017;21(3):727–734. doi: 10.1007/s00784-017-2092-4
[27] Alwayli HM, Abdulrahman BI, Rastogi S. Does botulinum toxin have any role in the management of chronic pain associated with bruxism? Cranio®. 2024;42(2):215–222. doi: 10.1080/08869634.2021.1949536
[28] Safarpour Y, Jabbari B. Botulinum toxin treatment of pain syndromes: an evidence-based review. Toxicon. 2018;147:120–128. doi: 10.1016/j.toxicon.2017.10.010
[29] Jabeen A, Kandadai RM, Kannikannan MA, et al. Guidelines for the use of botulinum toxin in movement disorders and spasticity. Ann Indian Acad Neurol. 2011;14(Sup pl 1):S31–S34. doi: 10.4103/0972-2327.83099