

Daniel Hellmann, Hans J. Schindler

# A subtle trap – occlusal dysesthesia

**Introduction:** Patients complaining of uncomfortable and unpleasant tooth contacts are encountered in the dental practice time and time again, as well as in the fields of physiotherapy, pain therapy, and psychotherapy. These tooth contacts are neither clinically identifiable as premature contacts nor associated with other disorders (e.g., of the periodontal tissues, dental pulp, masticatory muscles, or temporomandibular joint). It is not uncommon for patients to experience this perceived occlusal discomfort as a constant impairment of their oral or physical well-being. This is often accompanied by psychosocial problems. The cases discussed in this article often concern patients suffering from occlusal dysesthesia (OD), although a differential diagnosis must always be carried out to distinguish OD from occlusal disease.

**Methods:** This article presents clinical features of occlusal dysesthesia that are relevant to everyday practice. These features are explained based on the current guideline “Occlusal Dysesthesia – Diagnostics and Management” published by the Association of the Scientific Medical Societies in Germany (AWMF) and by means of case examples. Psychopathological factors, neuroplasticity, phantom phenomena, and changes to the transmission of proprioceptive stimuli and perception have been discussed as etiological factors of OD; however, the exact connections have not yet been extensively researched or fully understood. Invasive occlusal therapy is not advisable. The use of dental splints is also a controversial topic of discussion in the literature. Patient counselling and education about the nature of OD (“information therapy”) that aims to explain and defocus is a recommended measure. Other therapeutic alternatives include cognitive behavioral therapy, specialist medical treatment of possible comorbid psychological factors, pharmacotherapy, and the prescription of physical activity.

**Conclusion:** Despite professional therapy, treatment of affected patients is often unsuccessful.

**Keywords:** occlusion; lost bite; false bite; occlusal discomfort; occlusal disease; occlusal dysesthesia

## Introduction

*“This might sound funny, but I’ve lost my bite!”*

Patients complaining of uncomfortable and unpleasant tooth contacts are encountered in the dental practice time and time again, as well as in the fields of physiotherapy, pain therapy, and psychotherapy. These patients often experience their occlusal discomfort as a perpetual constraint on their oral or even whole-body well-being. According to latest knowledge, occlusion is considered a low risk factor for the development of painful musculoskeletal disorders inside and outside the masticatory organ, and in this context should be understood only as a cofactor and not as a sufficient condition on its own [8, 17, 28]. Nonetheless, the widespread view remains that humans can only tolerate their occlusion if it fulfills certain conceptual rules.

Based on these classical views in dentistry with regard to the “optimum bite”, the consulting dentist will often undertake invasive procedures in the cases described above. Unfortunately, however, such an approach usually leads to unsuccessful therapy attempts, conflicts, and a complete loss of trust between dentist and patient. If the costs of treatment are high, it is not unusual for therapeutic efforts to be followed by legal proceedings. As the title of this article suggests, these cases often involve patients who are suffering from occlusal dysesthesia (OD).

Without claiming to be exhaustive, this article presents and discusses clinical features of occlusal dysesthesia that are relevant to everyday dental practice. This discussion is based on the guideline of the Association of the Scientific Medical Societies in Germany (AWMF), “Occlusal Dysesthesia – Diagnosis and Management” [1, 11] and the authors’ experiences as practitioners, as well as those of experts appointed in legal disputes. The article also includes several patient quotations that the authors consider typical of the clinical picture of OD. Here we would like to express our gratitude to the authors of the guideline, whose explanations have provided a valuable basis for

making decisions when treating patients suffering from OD and a helpful aid for dental experts.

## Treatment methods

### Diagnostics

*“It all started back in 1988 when I received an inlay on tooth 14. The contact with the opposite tooth was much too strong. All of a sudden, I was unable to move my left leg back while dancing – from then on, nothing was right anymore. [...] With every dental treatment I received, things just got even worse! I’ve brought you all the models made over the years, in case you would like to see them. [...] Please help me! I’m at my wits’ end.”*

In general, patients do not consciously perceive the contact between antagonist teeth in the upper and lower jaws [23]. The substantial difference in perception experienced by patients who “suffer” from OD in the truest sense of the word is clearly to be found in the AWMF guideline’s definition of the condition. This defines OD as “a condition in which tooth contacts that are neither clinically identifiable as premature contacts nor associated with other conditions (e.g., of the periodontium, dental pulp, masticatory muscles, or tem-

poromandibular joints) are continuously (for more than 6 months) perceived as uncomfortable or unpleasant. The clinical findings do not bear a clear relationship to the nature and severity of the symptoms reported. The patients suffer from severe psychological and psychosocial strain.” [1].

Psychological factors, neuroplasticity, phantom phenomena, and changes in the transmission and perception of proprioceptive stimuli have been discussed as etiological factors of OD, although the exact links have not been researched in much detail [9, 19, 21].

*“It was all rather inconvenient at the time. I was on business abroad (in Spain) to set up a branch there. Of course, that’s when my tooth chose to break, and I had to go to the dentist there. [...] Something had not been right with the crown from the beginning. It felt as if I had just this one tooth in my mouth. The dentist always said that everything would be fine, yet he reground the crown countless times. At this stage, my jaw and neck had already begun to hurt.”*

The onset of OD is often connected to dental treatment, and commonly happens in conjunction with a stage of life that the patient has

### Diagnostically important and frequently encountered signs of OD in the context of the specific anamnesis are [16, 19, 24, 25, 27]:

Complaints exist for longer than 6 months (frequently a long-standing medical history with numerous changes of practitioners and negative emotions towards the previous practitioners)

There is a focus on the conscious perception of the occlusion

The trigger was a dental treatment (regardless of the intensity)

The complaints have a relevant influence on living and experience

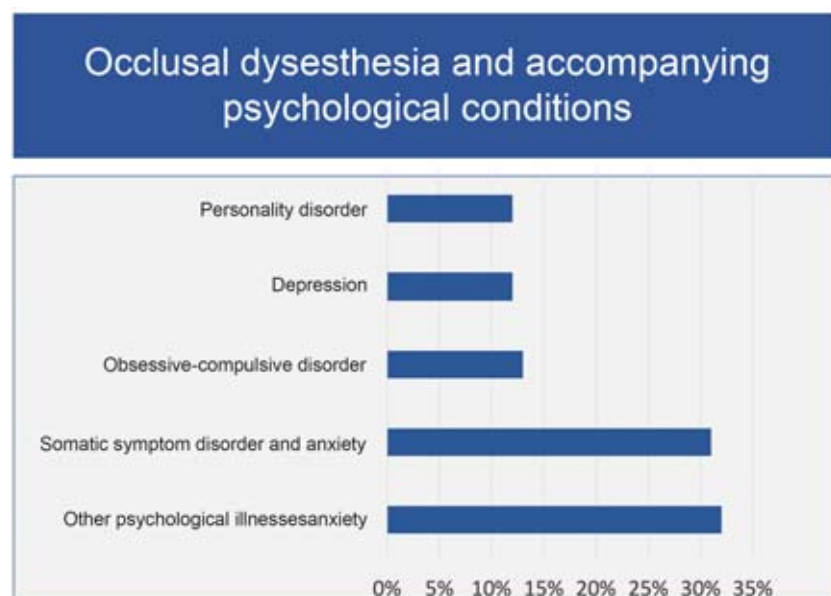
Non-specific complaints are attributed to the occlusion

Frequently, extremely detailed descriptions of the occlusal disturbances using specialized terminology

Despite clarification, there is a vehement insistence on the person’s own pathophysiological beliefs

Repeated changes to the occlusion remain unsuccessful

**Table 1** Diagnostic evidence that can indicate the presence of OD (modified after [1]).



**Figure 1** As a rule, occlusal dysesthesia is accompanied by additional psychological stresses, of which, an illustration in percentage frequency is shown for a selection of them (modified after [1])

found stressful [5, 26]. The type and complexity of the dental intervention does not appear to have an effect [23]. OD occurs in isolation or in combination with temporomandibular joint (TMJ) disorders [12]. Occlusal interventions aimed at eliminating non-specific symptoms have been described as iatrogenically contributing to the development of OD [24]. In

most cases, it is middle-aged women who visit the dentist with symptoms of OD [9, 25] (women are affected approximately five times more often than men). Current data indicate that the average age of onset for the condition is 45 [9, 14]. Only adults appear to be affected [1] (Table 1).

*“I just want to bite the way I used to. I want my old life back!”*

Over time, patients with OD generally become fixated on their occlusion [15, 23, 24]. It is evident that the described symptoms play a central role in the lives of those affected, and that the patient’s environment is tightly interconnected with his or her situation. Pseudo-scientific posts on the internet confirm that those affected ascribe a clearly exaggerated pathophysiological potential to their occlusal disorders, usually involving extensive effects on the general health of the entire body. This situation often also causes patients to become extremely anxious. OD fulfills the criteria of a “somatic stress disorder” (DSM-5 300.82). It is often accompanied by other psychological problems [9, 22, 25] (Fig. 1).

*“No dentist listens to me properly – they all immediately want to pigeonhole me as a loony!”*

If the affected patient’s medical history provides corresponding indications of OD, the extent of his or her symptoms can be recorded by means of suitable and frequently used questionnaires (Table 2). If such findings are obtained, the results must be discussed with the persons concerned. However, a delineation of mental or psychiatric symptoms does not fall within the area of competence of the dentist and must be carried out by an appropriate specialist.

*“Surely you can also see that the shape of my crowns is not correct. As a result, my lower jaw has lost its stability and is always slipping to the left.”*

Somatic findings are characterized by a discrepancy between the patient’s subjective occlusal sensations and the occlusal findings. Patients with OD usually describe their complaints in very vivid and precise terms, and generally go far beyond the degree of explanation used by untroubled patients to describe occlusal interventions.

### Occlusal disease compared with occlusal dysesthesia

It is important to differentiate OD from occlusal disease (Fig. 2). The main difference is that occlusal disease can have dentogenic, myogenic, or arthrogenic causes. This means that the discomfort mentioned by

#### Questionnaires for evaluating possible cofactors of occlusal dysesthesia

##### Localization of pain

- Full body mapping of all areas of pain

##### Chronification

- Graded Chronic Pain Scale (GCPS)

##### Anxiety and depression

- Personal Health Questionnaire 4 (PHQ-4)
- Hospital Anxiety and Depression Scale (HADS)
- Depression-Anxiety-Stress Scale (DASS)

##### Emotional Stress

- Social Readjustment Rating Scale (SRRS)
- Depression-Anxiety-Stress Scale (DASS)

##### Somatization

- Symptoms list (B-LR and B-LR’ symptoms lists)
- Somatic Symptom Scale (SSS-8)
- Personal Health Questionnaire 15 (PHQ-15)

**Table 2** Questionnaires to evaluate possible cofactors of occlusal dysesthesia (modified after [1])

(Tab. 1 and. 2, Fig. 1 and. 2: Adoption of the contents of the tables and figures from [1])

the patient can be clearly and convincingly objectively identified by means of standard dental diagnostics. In this case, subjective sensations and objective findings coincide.

Thus, a patient merely stating that his or her bite is not or is no longer correct should not necessarily lead to the diagnosis of OD. Additional diagnostic information should be obtained first.

### Management

*“I’ve heard that you are a very good dentist. My previous dentists didn’t examine me as thoroughly as you have. I’m sure you’ll be able to sort me out.”*

Because the symptoms of OD are an expression of a functional condition, it should be emphasized at this point that they cannot be effectively treated by means of dental interventions, but instead require further specialist medical care. It is therefore more appropriate to speak of management than of treatment. Even if the presumed solution often seems obvious to those affected, and they vehemently demand the implementation of occlusal therapy in accordance with how they expected to be treated, it is advisable to repeatedly offer non-invasive measures and therapy alternatives from outside the field of dentistry.

*“Your predecessor almost succeeded. But when almost everything was fine, in the end, he didn’t want to grind down the point where I told him to any further.”*

It should always be noted that interventions to treat a patient’s occlusion will not bring lasting success if the patient has OD. After apparent initial success, the occlusal “corrections” will often be ineffective or even lead to a worsening of symptoms [14, 25]. In most cases, this creates a lasting strain on the dentist-patient relationship. If invasive interventions are performed simply at the request of the patient, despite the fact that the described sensations cannot be objectively substantiated by means of established dental procedures, then the dentist is simply straying away from the rules that underlie the practice of their profession. In the case of any possible subsequent dispute, no plausible justifi-

| Clinical differentiation between occlusal disease and occlusal dysesthesia   |  |
|--|--|
| Occlusal disease   | Occlusal dysesthesia   |
| <ul style="list-style-type: none"> <li>• Uncomfortable tooth contacts in static and/or dynamic occlusion (findings = subjective sensation)</li> <li>• If the cause is treated (muscular, arthrogenic, skeletal, occlusal), responds well to treatment</li> </ul> | <ul style="list-style-type: none"> <li>• Supposedly uncomfortable tooth contacts in static and/or dynamic occlusion (findings ≠ subjective sensation), which are frequently deemed responsible for (several) other unspecific body complaints</li> <li>• Changes to occlusal contacts do not lead to lasting symptom relief</li> </ul> |

**Figure 2** Clinical differentiation between occlusal disease and occlusal dysesthesia (modified after [1])

cation exists for such actions. Based on the current guideline [1], the question of a differential diagnosis between OD and occlusal disease is likely to be raised in any future legal disputes.

Because data regarding the management of patients with OD is very limited, the following explanations are based solely on an expert-based consensus derived from the guideline. When a patient has OD, the primary goal of any therapeutic efforts is to improve the patient’s oral-health-related quality of life by means of extensive patient education and defocusing [3, 21]. This is only possible if mutual trust exists between doctor and patient; this means that the dentist takes the patient seriously and that the patient is convinced of the practitioner’s competence. The general recommendation is to avoid confrontational discussions with the patient and, in the context of information therapy, to repeatedly offer them alternative ways out of how they usually interpret their physical perceptions. This is certainly a sensible and helpful approach; given billing arrangements, however – at least for dentists residing in Germany – it is difficult to achieve. Owing to the above mentioned cofactors of OD, the importance of a psychological or psychiatric therapeutic approach again becomes clear at this point. An essential feature of information therapy is to make it clear to patients that, compared with healthy people, their perception of their occlusal contacts is

heightened [13]. Many patients tend to constantly “check” their occlusion in the form of static and dynamic biting behaviors. This can increase the patient’s fixation with their occlusion and also constitutes a risk factor for TMJ disorders [4, 10, 20], because biting behaviors performed with little force and for a prolonged duration can trigger pain within the jaw muscles [7]. Therefore, in the case of myofascial pain, patients should be given instruction that aims to prevent them from consciously checking their occlusion.

Invasive occlusal therapy is not recommended. The use of oral splints is a topic of critical discussion in the literature and, if splints are used at all, they are recommended as a short-term therapy to reduce irritation and thereby possibly achieve defocusing [6, 9, 25].

The therapeutic considerations just mentioned will now be elucidated by means of the example of an affected patient, who for many years originally wanted a comprehensive (unindicated) prosthetic restoration of all teeth in the upper and lower jaws. As the result of talking therapy that aimed to achieve defocusing, the patient learned to accept her clinical picture of OD. Because the patient’s perception of her occlusion remained heightened, she has since adjusted her mandibular occlusal splint – made for her by one of the authors – by adding targeted occlusal contacts in the form of a few small cellulose “underlayings”. The patient did this by way of self-therapy, without consulting a



dentist. According to the patient, this allowed her to return to a normal everyday life that was no longer dominated by her occlusion. This example is not intended to establish this type of splint therapy as the preferred form for patients with OD, but serves as evidence that even partial successes can often signify the start of a patient's return to normal life.

The recommended therapy approach favored by many authors is cognitive behavioral therapy that aims to change a patient's perception of his or her occlusal contacts [2, 6, 9, 13, 18, 21, 26]. As already mentioned above, any comorbid psychological factors should be treated by the appropriate specialist. In Germany, dentists do not have the power to refer; as a result, cognitive behavioral therapy cannot be initiated by the dentist, but is instead usually arranged by the family physician. In spite of this, it is important for the dentist to provide the patient with an explanation of the findings made.

With regard to possible pharmacotherapy, everyday clinical practice suggests that many patients reject this form of therapy. This is due to the lack of a specific medication for OD, and the fact that patients do not wish to use the antidepressant or neuroleptic drugs often used in this context.

Similar to the treatment of chronic pain, the recommendation of physical activity can be a promising therapeutic option for treating OD. Depending on the physical constitution of the patient, possible suggestions include forest walks, dancing, yoga, or endurance sports. Group physical activities can also be used as a way to re-engage socially.

### Outcome/Conclusion

*"I thought you were an expert, but apparently you don't know what you're doing either!"*

The symptoms of OD are indicative of functional disease. For this reason, OD cannot be treated effectively by means of dental interventions, but instead requires further specialized medical care. If OD is suspected, a differential diagnosis should be performed to distinguish it from occlusal disease. In addition, it

is advisable to use validated questionnaires (Table 2) to screen for non-specific risk factors, so as to better capture the disease profile. From clinical experience, the authors have found that a large proportion of patients determinedly evade the therapeutic efforts presented in this article, and continue to search for a supposed specialist who can – as the patient sees it – comprehensively solve their problem by means of invasive therapy methods.

### Conflicts of interest

The authors declare that there is no conflict of interest as defined by the guidelines of the International Committee of Medical Journal Editors.

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**PD DR. MED. DENT.**  
**DANIEL HELLMANN**  
Dental Academy for Continuing  
Professional Development Karlsruhe  
Lorenzstraße 7, 76135 Karlsruhe  
[daniel\\_hellmann@za-karlsruhe.de](mailto:daniel_hellmann@za-karlsruhe.de)