



## Psychiatric comorbidities and psychopharmacological outcomes of phantom bite syndrome



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### ABSTRACT

**Objective:** Phantom bite syndrome (PBS) is characterized by a persistent uncomfortable sensation of occlusion without an evident occlusal discrepancy. The aims of this retrospective cross-sectional study were to assess psychiatric comorbidities and evaluate psychopharmacological outcomes of PBS.

**Methods:** The database of the Psychosomatic Dentistry Clinic of Tokyo Medical and Dental University Dental Hospital was reviewed for cases of PBS diagnosed between April 2009 and March 2012. Clinical Global Impression indices were used to assess psychopharmacological outcomes.

**Results:** The review revealed 130 patients (107 women, 23 men) with a mean age of  $53.0 \pm 13.1$  years. They previously visited  $4.4 \pm 3.4$  dental clinics and had a mean symptom duration of  $5.3 \pm 5.4$  years. Only 24 (18.5%) of 63 (48.5%) patients with psychiatric comorbidities had schizophrenia, major depressive disorder, or bipolar disorder. The frequency of psychiatric comorbidities was significantly lower in PBS with a dental trigger than that without a specific trigger. Moreover, patients without a psychiatric comorbidity showed significantly better outcomes than those with a psychiatric comorbidity. Forty patients (30.8%) showed remarkable clinical improvement after receiving amitriptyline, mirtazapine, or aripiprazole.

**Conclusion:** PBS is generally not associated with severe psychiatric disorders. Absence of a dental trigger predicts a psychiatric comorbidity, which affects the psychopharmacological outcome. Antidepressant or antipsychotic therapy may be effective for symptom management in PBS.

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### Introduction

Phantom bite syndrome (PBS) [1] also termed occlusal discomfort [2], or occlusal dysesthesia [3,4], is characterized by a persistent uncomfortable sensation of occlusions without an evident occlusal discrepancy. Affected individuals complain that their occlusion is “wrong,” “somewhat high/low,” or “the bite is off.” They nomadically visit various dentists seeking “bite correction” because of their strong belief in dental treatment despite possible symptom exacerbation [1]. PBS has been regarded as a psychiatric disorder [1,5–11] related to paranoia, personality disorder, or somatoform disorder, while some authors have suggested proprioceptive dysfunction, false peripheral feed-back [12], or phantom occlusal sensation in the central nervous system [13–17] as possible etiologies. However, little is known about its psychiatric comorbidities [10,18]. The management of PBS includes referral for

psychological evaluation [1,5,6] and avoiding occlusal adjustment [3,11,12]. Antipsychotic drugs [1,3,6,11,12] and antidepressants [19–25] have been reported to be effective, but pharmacological evidence from clinical studies is lacking.

The aims of this retrospective cross-sectional study were to assess psychiatric comorbidities and evaluate psychopharmacological outcomes of PBS.

### Methods

#### Subjects

We reviewed the database of the Psychosomatic Dentistry Clinic of Tokyo Medical and Dental University Dental Hospital, Tokyo, Japan, for all patients diagnosed with PBS between April 2009 and March 2012. The Psychosomatic Dentistry Clinic specializes in the management of various oral psychosomatic disorders such as burning mouth syndrome, atypical odontalgia (atypical facial pain), disturbance in taste or salivation, and PBS.

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The study protocol was approved by the Ethical Committee of Tokyo Medical and Dental University (no. 356). All subjects provided written informed consent for participation.

Before diagnosis, the patients were interviewed to obtain detailed information on symptoms and dental treatments including occlusal adjustment. Thorough clinical examinations were performed by at least three dentists, including prosthodontic and orthodontic specialists, to exclude occlusal discrepancies and temporomandibular joint disorders. Previously reported clinical characteristics and criteria were also considered for definitive diagnosis [12,26].

Amitriptyline was prescribed as the first choice for psychopharmacological management based previous reports [19–25]. Other antidepressants or antipsychotic drugs were added or switched consensually according to weekly clinical assessments of symptom severity, quality of life, and adverse reactions.

### Assessments

Clinicodemographic data and information on triggers and oral psychosomatic comorbidities were obtained from medical charts. Psychiatric diagnoses were recorded from referral letters of the patients' psychiatrists.

Psychopharmacological outcomes were assessed consensually by experienced attending doctors using the Global Improvement and Efficacy Index of the Clinical Global Impression (CGI) scale [27] 6 months after the initial examination. CGI scores representing "very much improved" and "much improved" were considered indicative of clinical improvement. "Improved" implied a therapeutic response, but insufficient recovery.

### Statistical analysis

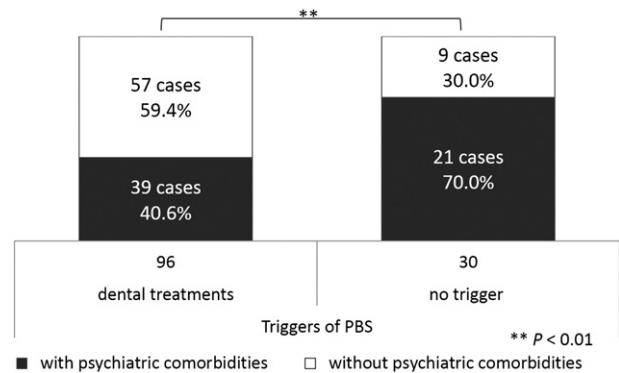
Data were analyzed by two-tailed *t*-test, chi-square test, and binomial logistic regression using PASW Statistics for Windows version 17

**Table 1**  
Clinicodemographic data of the patients with PBS.

Parameter	Cases (N = 130)
Gender (women/men)	107/23
Age (years)	53.0 ± 13.1
Duration of illness (years)	5.3 ± 5.4
Number of previously visited dental clinics	4.4 ± 3.4
<b>Triggers</b>	
Absent	30 (23.1)
Dental treatment	96 (73.8)
Prosthodontic	57 (43.8)
Occlusal adjustment	14 (10.8)
Orthodontic	11 (8.5)
Dental implant placement	9 (6.9)
Extraction	5 (3.4)
Others	4 (3.1)
<b>Oral psychosomatic comorbidities</b>	
Absent	86 (66.2)
Present <sup>a</sup>	44 (33.8)
Burning mouth syndrome	19
Atypical odontalgia (atypical facial pain)	29
Disturbance in taste or salivation	12
<b>Psychiatric comorbidities</b>	
Absent	67 (51.5)
Present <sup>a</sup>	63 (48.5)
Major depressive disorder	17
Unspecific depressive disorder	10
Bipolar disorder	3
Anxiety disorder	10
Somatic symptom disorder	15
Schizophrenia	4
Personality disorder	1
Others	5

Values represent mean ± SD or n (%).

<sup>a</sup> Includes multiple diagnoses.



**Fig. 1.** Differences in the frequencies of psychiatric comorbidities between patients with PBS triggered by dental treatment and those without a specific trigger at onset. Psychiatric comorbidities were significantly less frequent in the patients with PBS appearing after dental treatment.

(SPSS, Inc., Chicago, IL). For binomial logistic regression, the dependent variable was psychopharmacological outcome (improved = 1, not improved = 0), while the independent variables were number of previously visited clinics, presence of a dental trigger, presence of an oral psychosomatic comorbidity, and presence of a psychiatric comorbidity.  $P < 0.05$  was considered significant. Results are expressed as mean ± standard deviation (SD) or number of patients (%).

### Results

#### Patient characteristics

The review revealed 130 patients with PBS among 1629 outpatients including 107 women (82.3%) and 23 men (17.7%). The mean age was  $53.0 \pm 13.1$  years. Women tended to be older than men without a significant difference ( $53.7 \pm 13.0$  vs.  $47.6 \pm 13.5$  years;  $P = 0.058$ ). The mean symptom duration was  $5.3 \pm 5.4$  years, and 80 patients (61.5%) suffered from PBS for under 5 years (Table 1).

Thirty patients (23.1%) did not have specific triggers at onset, but 96 patients (73.8%) developed symptoms after various dental treatments. Four patients reported traffic accidents and abdominal or ocular surgeries as triggers.

In addition, 44 patients (33.8%) complained of other oral psychosomatic disorders. Some met the diagnostic criteria for two oral psychosomatic disorders.

Psychiatric comorbidities were present in 63 patients (48.5%), including two cases of eating disorders, two cases of adjustment disorder, and one case of substance-related disorder. Of the 17 patients with major depressive disorder, 12 patients were in remission at the onset of PBS.

As shown in Fig. 1, 40.6% (39/96) of the patients with dental triggers and 70.0% (21/30) of those without specific triggers had psychiatric comorbidities ( $P < 0.001$ ).

Table 2 shows the characteristic clinical symptoms and their frequencies.

The most common complaints concerned altered occlusal height (83.8%) and uncomfortable occlusal sensation (94.6%) including chewing difficulty and sliding of the jaw or teeth while biting. Moreover, 114 patients (87.7%) suffered from medically unexplained somatoform symptoms: bad posture, shoulder stiffness, headache, and malaise. PBS disturbed quality of lives in 122 patients (86.2%). Because general dental treatments did not improve the symptoms, 104 patients (80.0%) visited several dental clinics ( $4.4 \pm 3.4$  clinics), ranging from fewer than five clinics (95 patients) to 26 clinics (one patient).

**Table 2**  
Frequency of common symptoms of PBS.

Symptom	Cases
1 Uncomfortable occluding position, difficulty in chewing, sliding sensation of the jaw or teeth	123 (94.6)
2 No particular occlusal abnormality	119 (91.5)
3 Medically unexplained symptom in their other body parts	114 (87.7)
4 Disturbed quality of life	112 (86.2)
5 Sensation of altered occlusal height	109 (83.8)
6 Visits to several dental clinics	104 (80.0)
7 PBS appearing soon after dental treatment	96 (73.8)

Values represent n (%).

Multiple answers were counted.

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