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CASE REPORT

# Clinical efficacy of mono-block acrylic resin occlusal splint in management of ronchopathy patient: A case report

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## ABSTRACT

Ronchopathy is a prevalent sleep-related breathing disorder that may lead to significant medical, psychological, and relational consequences if left untreated. Management strategies for snoring include surgical interventions, continuous positive airway pressure therapy, and intraoral prosthetic appliances. Among prosthetic approaches, mandibular advancement devices either mono-block or twin-block are designed to maintain patency of the oropharyngeal airway during sleep. This case report presents a clinical case illustrating the management of ronchopathy using a mono-block acrylic resin occlusal splint. While contemporary mandibular advancement devices offer proven efficacy and adjustability, their fabrication often requires advanced technical infrastructure and specialized expertise. In settings where such resources are limited, acrylic resin occlusal splints remain a practical, cost-effective, and accessible therapeutic alternative. The clinical outcome observed in this case supports the continued relevance of acrylic occlusal splints in the prosthetic management of snoring, particularly in resource-constrained environments. (*Int J Maxillofac Prosthetics 2025;8:65*-69

### Keywords

Ronchopathy; occlusal splint; acrylic resin; mandibular advancement; prosthetic management.

### AUDIOABSTRACTACT

## INTRODUCTION

Ronchopathy, commonly referred to as snoring, is a frequent clinical manifestation encountered in patients with obstructive sleep apnea syndrome (OSAS).[1] It represents a spectrum of sleep-related breathing disturbances, ranging from simple, isolated snoring to more severe forms associated with apneic episodes. The heterogeneity of its clinical presentation contributes to the complexity of diagnosis and underscores the potential seriousness of the condition when associated with OSAS. Despite its high prevalence, the diagnostic value of patient-reported symptoms remains incompletely defined, necessitating the use of standardized assessment tools.

Clinical evaluation of ronchopathy often relies on structured questionnaires designed to assess daytime sleepiness and the likelihood of associated sleep disorders. Instruments such as the Epworth Sleepiness Scale and the Berlin Questionnaire are widely used to screen for OSAS and related conditions, enabling clinicians to identify patients who may require further diagnostic investigation. However, these tools serve primarily as adjuncts, as they do not provide definitive diagnostic confirmation and must be interpreted in conjunction with clinical findings and, when indicated, polysomnographic evaluation.

Untreated ronchopathy may lead to significant short-term and long-term consequences, including cardiovascular complications, impaired quality of life, and interpersonal disturbances. Therapeutic strategies aimed at mitigating these effects include surgical interventions,

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continuous positive airway pressure therapy, and intraoral prosthetic appliances.[2-4] Among prosthetic options, mono-block and twin-block mandibular advancement devices are commonly employed to enhance oropharyngeal airway patency during sleep.[3,4] In this context, the present case report presents a clinical case illustrating the management of ronchopathy using a mono-block acrylic resin occlusal splint as a prosthetic alternative.

## CASE REPORT

A 59-year-old female patient, a dental assistant by profession, presented on January 11, 2025, to the Department of Maxillofacial Prosthetics at the Cocody University Hospital Consultation and Treatment Center with a primary complaint of chronic nocturnal snoring. The patient reported that her snoring was persistent and disruptive, with frequent complaints from her spouse, prompting the consultation. A structured clinical interview was conducted in the presence of her husband using validated questionnaires commonly cited in the literature to assess snoring severity and associated sleep disturbances (Tables 1-3).[5-7] The Epworth Sleepiness Scale (Table 2) indicated mild daytime somnolence, while the Berlin Questionnaire (Table 3) classified the patient as a snorer with reported breathing pauses during sleep. The patient denied alcohol consumption and tobacco use. Her medical history was notable for glaucoma and a gastric ulcer, with a familial history of glaucoma on the paternal side. General health assessment revealed normal blood pressure (120/70 mmHg), a body weight of 95 kg, and a height of 165 cm, corresponding to a body mass index (BMI) of 34.9 kg/m², indicative of moderate obesity.

**Table 1**. Spouse frequently complains questionnaire.

| Questions | Answers |
|---|---|
| Does your husband/wife snore loudly? | 4 |
| Does your husband/wife snore in all positions? | 4 |
| Are you often woken up by snoring? | 2 |
| Are you often forced to sleep in another room? | 2 |

Scores: 1-never; 2-rarely; 3-sometimes; 4-often; 5-always

Clinical examination revealed healthy facial skin, preserved facial symmetry, balanced maxillomandibular relationships, and a convex facial profile. Temporomandibular joint assessment demonstrated asynchronous condylar movement with a bayonet-shaped opening trajectory and a maximum interincisal opening of 40 mm. Intraoral examination showed poor oral hygiene but otherwise healthy oral mucosa

**Table 2**. The Epworth Sleepiness Scale.

| Questions | Chances of falling a sleep |
|---|---|
| Sitting while reading | 0 |
| Watching television | 1 |
| Sitting inactive in public | 0 |
| As a passenger in a car for an hour without stopping | 2 |
| Lying down for an afternoon nap if circumstances allow | 3 |
| Sitting while talking to someone | 0 |
| Driving after a few minutes of stopping in traffic | 0 |
| **Total** | 6 |

0= no risk of falling a sleep, 1= small chance of falling a sleep
2= medium chance of falling a sleep, 3= high chance of falling a sleep.

**Table 3**. Berlin Questionnaire.

| Category | Score |
|---|---|
| Snoring | 5 |
| Drowsiness | 0 |
| Risk factor: high blood pressure | 0 |

without notable pathological findings. Dental examination identified carious lesions on teeth 17, 25, and 46, with teeth 34 and 35 present as residual roots. Occlusal analysis in static intercuspation revealed concordant maxillary and mandibular midlines, the presence of interincisal and maxillary pre-canine diastemata, normal overjet, and an increased overbite measuring 6 mm. Angle classification showed bilateral canine Class I occlusion, Class I molar relationship on the left side, and an indeterminate molar relationship on the right. Functional occlusal assessment demonstrated bilateral group function with non-working side interferences. The maximum active protrusion (MAP) was measured at 11 mm. Panoramic radiographic examination showed no abnormalities of the condylar structures. Overall, the patient was diagnosed with ronchopathy associated with sleep deprivation and apneic episodes, and clinical findings indicated favorable TMJ, dental, periodontal, and functional conditions for mandibular advancement therapy following appropriate oral rehabilitation.

The therapeutic protocol began with comprehensive oral preparation, including scaling, composite restoration of carious lesions, extraction of residual root teeth, and selective coronoplasty to eliminate occlusal interferences. Alginate impressions were then

taken for fabrication of a mandibular advancement orthosis. The appliance consisted of a conventional mandibular splint fabricated from hard acrylic resin (Fig. 1). Initially flat in design, the splint's posterior thickness was progressively increased based on the patient's tolerance to mandibular advancement and corresponding reduction in snoring intensity. Mandibular protrusion was guided according to the patient's MAP, with resin contact points established from the palatal cusp imprints of the maxillary premolars and molars. During follow-up sessions, mandibular advancement was incrementally increased by redefining these palatal cusp landmarks without exceeding 80% of the MAP. In the absence of pain and persistence of snoring, posterior vertical height was slightly increased to enhance airflow through the oropharyngeal region. The appliance was designed with sufficient thickness and relief at the palatal vault and was entirely fabricated from acrylic resin.



**Fig 1**. Mandibular advancement splint made of rigid acrylic resin.

Following insertion of the orthotic device, clinical outcomes were monitored at scheduled follow-up visits. At day 7, the patient reported dental discomfort in the mandibular posterior region described as compressive in nature, without associated TMJ pain. The patient's spouse noted a reduction in snoring intensity (Figs. 2 and 3). In response, the posterior height of the appliance was increased, and mandibular advancement was adjusted by 1 mm, reaching 4 mm from the MAP. At day 14, the patient experienced joint discomfort, leading to intermittent appliance use despite further reduction in snoring. Consequently, the appliance height was returned to the initial therapeutic level while mandibular advancement was maintained. By day 42, the patient's spouse reported a marked clinical improvement characterized by the absence of breathing pauses during sleep. At this stage, TMJ pain had resolved, although mild posterior dental compression persisted. Mandibular advancement was maintained at 9 mm following progressive adjustments, and treatment was continued for an additional two weeks, after which the patient was instructed to discontinue appliance use (Figs. 4 and 5). At the final follow-up on day 56, two weeks after appliance removal, the patient reported only occasional snoring episodes, indicating a sustained therapeutic benefit (Table 4).



**Fig 2**. Front view of the mandibular advancement splint fitted at the start of treatment.



**Fig 3**. Side view of the mandibular protrusion splint placed at the start of treatment.



**Fig 4**. Front view of the mandibular protrusion splint placed at the end of treatment.



**Fig 5**. Side view of the mandibular protrusion splint placed at the end of treatment.

## DISCUSSION

This clinical case involved an obese patient presenting with sleep deprivation associated with nocturnal snoring and breathing pauses, managed within a maxillofacial prosthetics setting. Obesity is a well-established risk factor for ronchopathy and obstructive sleep apnea, particularly in the supine sleeping position, where pharyngeal airway collapse is exacerbated. Several authors have reported a higher prevalence of chronic and habitual snoring among overweight individuals, with the frequency and severity of snoring increasing proportionally with body mass index.[8-10] The clinical presentation of the present patient is therefore consistent with the etiological factors commonly described in the literature.

The indication for mandibular advancement therapy in this case was based on strict adherence to functional and periodontal prerequisites. A sufficient number of teeth and a healthy periodontium are essential to ensure adequate appliance retention and stability. Pancer et al[11] emphasize the need for a minimum of eight teeth per arch for successful orthotic therapy. Additionally, functional limitations such as reduced maximum active protrusion (<6 mm) or the presence of significant masticatory system dysfunctions are considered contraindications to mandibular advancement. In the present case, favorable temporomandibular joint function, adequate propulsion capacity, and acceptable periodontal status justified the use of a mandibular advancement device following oral rehabilitation.

The decision to fabricate a rigid, mono-block mandibular splint was primarily influenced by local technical constraints. In many resource-limited settings, adjustable two-piece mandibular advancement devices are not routinely fabricated by dental prosthetists, limiting their clinical availability. Consequently, the use of a hard acrylic resin monobloc splint was explored as an accessible and cost-effective alternative, with the additional aim of evaluating its therapeutic efficacy and feasibility for broader clinical adoption. Acrylic resin remains a widely available material with favorable mechanical properties, making it suitable for prosthetic management in contexts where advanced technical facilities are lacking.

**Table 4**. Comparative table between before and after.

| | Before wearing the occlusal splint | After wearing the occlusal splint |
|---|---|---|
| Epworth Score | 6 | 3 |
| Berlin Score | 5 | 1 |

The adverse effects observed during appliance use including temporomandibular joint discomfort, posterior mandibular dental compression, and initial patient intolerance are well documented in the literature.[12-15] Although these limitations may favor the use of adjustable twin-block appliances due to improved comfort, the patient's adherence to treatment until a satisfactory clinical outcome was achieved underscores the potential of mono-block devices when carefully monitored and adjusted. Moreover, the acrylic splint used in this case did not induce hypersalivation and remains significantly more affordable than dual-block appliances, an advantage highlighted by several authors.[16] Temporomandibular joint pain observed toward the

end of treatment may be attributed to mandibular advancement approaching 80% of the maximum active protrusion or to intermittent appliance use. While some authors recommend mandibular advancement ranging from 2 mm to 7 mm or up to 75% of maximum protrusion, others support advancement levels between 50% and 80% of the maximum active protrusion.[13,14] Intermittent wear has also been identified as a contributing factor to transient TMJ discomfort.[15]

The therapeutic efficacy of the mono-block acrylic appliance was demonstrated by a marked reduction in snoring severity, with Berlin Questionnaire scores decreasing from 5 to 1 by the end of treatment. Assessment of treatment outcomes in snoring management should not rely solely on objective measurements but must also incorporate patient-reported outcomes and observations from bed partners, as emphasized in previous studies.[15] Although polysomnographic data were not available, the reduction in snoring intensity and the disappearance of breathing pauses strongly suggest an improvement in sleep quality. Adaptation time remains a necessary consideration, as with any intraoral prosthetic appliance. Daytime sleepiness, which was initially mild, showed further improvement, with the Epworth Sleepiness Scale score decreasing from 6 to 3, in agreement with findings reported by Bloch et al.[17] Finally, mandibular advancement achieved through the appliance likely contributed to enlargement of the pharyngeal airway, thereby reducing snoring and apneic events, as previously described by Bacon and N'chô.[13,18]

## CONCLUSION

The management of snoring disorders has become increasingly multidisciplinary, underscoring the important role of maxillofacial prosthetics in the diagnosis and treatment of sleep-related breathing conditions. Maxillofacial prosthetic specialists should incorporate systematic screening for ronchopathy into routine clinical practice and participate actively in patient management when mandibular advancement therapy is indicated. In this context, rigid mono-block mandibular splints fabricated from acrylic resin represent a viable therapeutic alternative. Although less sophisticated than adjustable devices, they provide satisfactory clinical effectiveness while offering advantages of affordability, technical simplicity, and accessibility, particularly in resource-limited settings.

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