

INPLASY

Selection criteria for maxillomandibular advancement surgery in adults with obstructive sleep apnea: a scoping review protocol

INPLASY202670004

doi: 10.37766/inplasy2026.7.0004

Received: 2 July 2026

Published: 2 July 2026

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ADMINISTRATIVE INFORMATION

Support - Universidad Nacional de Colombia.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202670004

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 2 July 2026 and was last updated on 2 July 2026.

INTRODUCTION

Review question / Objective To map the scientific evidence available on the clinical, anatomical, polysomnographic and functional criteria used to select adult patients with obstructive sleep apnea (OSA) who are candidates for maxillomandibular advancement (MMA) surgery.

Review question: What clinical, anatomical, polysomnographic and functional criteria are reported in the scientific literature for selecting adult patients with OSA as candidates for MMA surgery?

Rationale Despite well-documented surgical success rates, patient selection for MMA lacks a standardized protocol. Clinical, cephalometric, polysomnographic criteria and drug-induced sleep endoscopy (DISE) findings used to indicate surgery vary considerably across groups and reference centers, which prevents comparison between studies and limits evidence-based decision-making. No comprehensive prior systematic or

scoping review on selection criteria was identified after searching INPLASY, PROSPERO and Open Science Framework.

Condition being studied Obstructive sleep apnea (OSA) is a breathing disorder characterized by recurrent upper airway collapse during sleep, with documented cardiovascular, metabolic and neurocognitive consequences. Standard diagnosis is via polysomnography (PSG), with severity classified by the apnea-hypopnea index (AHI): mild (5-15 events/h), moderate (15-30 events/h) and severe (>30 events/h).

METHODS

Search strategy PUBMED: ("Obstructive Sleep Apnea"[Mesh] OR "Obstructive Sleep Apnea" OR "Sleep Apnea, Obstructive" OR OSA) AND ("Maxillomandibular Advancement"[Mesh] OR "Maxillomandibular Advancement" OR "Orthognathic Surgery"[Mesh] OR "Orthognathic Surgery" OR "Genioplasty"[Mesh] OR Genioplasty OR "Distraction Osteogenesis"[Mesh] OR

"Distraction Osteogenesis" OR "Palatal Expansion"[Mesh] OR "Palatal Expansion") AND ("Patient Selection"[Mesh] OR "Eligibility Determination" OR "Inclusion Criteria" OR "Exclusion Criteria" OR "Indications" OR "Clinical Decision-Making" OR algorithm OR protocol OR checklist OR "Decision Support Techniques")
 EMBASE: ('obstructive sleep apnea'/exp OR 'obstructive sleep apnea':ti,ab OR 'sleep apnea obstructive':ti,ab OR osa:ti,ab) AND ('maxillomandibular advancement'/exp OR 'maxillomandibular advancement':ti,ab OR 'orthognathic surgery'/exp OR 'orthognathic surgery':ti,ab OR 'genioplasty'/exp OR 'genioplasty:ti,ab OR 'distraction osteogenesis'/exp OR 'distraction osteogenesis':ti,ab OR 'palatal expansion'/exp OR 'palatal expansion':ti,ab) AND ('patient selection'/exp OR 'eligibility determination':ti,ab OR 'inclusion criteria':ti,ab OR 'exclusion criteria':ti,ab OR indication*:ti,ab OR 'clinical decision making'/exp OR algorithm*:ti,ab OR protocol*:ti,ab OR checklist*:ti,ab OR 'decision support technique'/exp)
 SCOPUS: TITLE-ABS-KEY("obstructive sleep apnea" OR "obstructive sleep apnoea" OR "sleep apnea" OR "sleep apnoea" OR "obstructive sleep apnea syndrome" OR "obstructive sleep apnoea syndrome" OR OSA OR OSAS OR "sleep-disordered breathing" OR "sleep disordered breathing" OR SDB) AND TITLE-ABS-KEY("maxillomandibular advancement" OR "maxillo-mandibular advancement" OR "maxillomandibular advancement surgery" OR "maxillomandibular advancement procedure" OR "maxillary mandibular advancement" OR "maxillomandibular skeletal advancement" OR "bimaxillary advancement" OR "jaw advancement surgery" OR MMA OR "orthognathic surgery" OR "orthognathic surgical procedures" OR "facial skeletal surgery").

Participant or population Adults (≥ 18 years) with a confirmed diagnosis of OSA by polysomnography (level 1 or 2, current AASM criteria). Studies with mixed pediatric/adult populations will be excluded unless results are reported separately by age group.

Intervention Not applicable in the traditional effectiveness sense. This scoping review does not test an intervention's effect; the concept of interest is the set of clinical, anatomical, polysomnographic and functional criteria reported for selecting candidates for maxillomandibular advancement (MMA) surgery.

Comparator Not applicable — this is a scoping review; no comparator intervention is pre-specified.

Study designs to be included Observational studies, clinical trials, systematic reviews, meta-analyses, consensus statements, narrative reviews, book chapters and relevant clinical guidelines.

Eligibility criteria Inclusion — Population: adults (≥ 18 years) with PSG-confirmed OSA. Concept: studies reporting selection criteria, indication variables or predictors of surgical success for MMA. Context: any geographic/clinical setting, no language restriction. Design: see Item 15. Timeframe: publications from 2000 to the final search date.

Exclusion: pediatric population (< 18 years); studies evaluating exclusively soft-tissue procedures (UPPP, genioglossus advancement, hypoglossal nerve stimulation) without a skeletal component; case series with fewer than 10 patients that do not report selection criteria; studies without accessible full-text clinical data; duplicate publications (primary report retained).

Information sources PubMed/MEDLINE, Embase, Scopus, Google Scholar, and grey literature (OpenGrey, ProQuest Dissertations, conference proceedings of maxillofacial surgery and sleep medicine societies).

Main outcome(s) Not applicable in the effect-estimation sense. As a scoping review, no outcome measure is pre-specified for pooling; this review maps reported patient-selection criteria, cephalometric/anatomical variables, polysomnographic and DISE parameters, and factors associated with surgical outcome, as reported by the primary studies.

Additional outcome(s) Not applicable.

Data management Study selection and data extraction will be performed independently by at least Three reviewers using Rayyan/Covidence for screening. A standardized, piloted (3-5 studies) data-charting form organized into 9 thematic blocks will be used. Disagreements will be resolved by consensus.

Quality assessment / Risk of bias analysis Not performed. In accordance with JBI 2020 guidance (Peters et al.), critical appraisal or risk-of-bias assessment is not recommended in scoping reviews, since the aim is to map the extent, range and nature of available evidence rather than appraise its quality. The level of evidence of each

source is recorded descriptively only (JBI scale I-V).

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Strategy of data synthesis Descriptive and narrative synthesis. No meta-analysis will be performed. Results will be presented as an evidence map (distribution of studies by year, country, design and level of evidence), frequency tables of selection criteria by domain (clinical, cephalometric, PSG, DISE), a descriptive conceptual framework linked to the specific objectives, a PRISMA-ScR flow diagram, and a narrative synthesis of knowledge gaps.

Subgroup analysis Not applicable – no quantitative synthesis is planned.

Sensitivity analysis Not applicable – no quantitative synthesis is planned.

Language restriction No language restriction will be applied to the search strategy.

Country(ies) involved Colombia, Curazao.

References Peters MDJ, Marnie C, Tricco AC, et al. Updated methodological guidance for the conduct of scoping reviews. *JBI Evid Synth.* 2020;18(10):2119-2126. – Tricco AC, Lillie E, Zarin W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med.* 2018;169(7):467-473. – Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol.* 2005;8(1):19-32. – Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci.* 2010;5:69.

Keywords obstructive sleep apnea; maxillomandibular advancement; orthognathic surgery; patient selection; polysomnography; drug-induced sleep endoscopy; scoping review.

Dissemination plans "Results will be submitted for publication to a Q1-indexed journal (target: *International Journal of Oral and Maxillofacial Surgery*), presented at maxillofacial surgery / sleep medicine conferences, and shared through the authors' educational channels."

Contributions of each author

Author 1 - Ivonne Ponce - Conceiving and designing the review; coordinating the review; writing the protocol.

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Author 2 - Diana Marcela Gallo Orjuela - Designing the review methodology; critical revision of the search strategy.