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Review Paper

Bariatric surgery as a risk factor in the development of dental caries: a systematic review



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ABSTRACT

Objectives: Obesity is one of the most prevalent chronic pathologies in the world and has become a public health problem. At the present time, bariatric surgery (BS) is considered the best option and the only effective method of treatment, but it can occasionally result in a series of alterations at the oral level. This study aims to review the current literature to establish the possible association of patients who have undergone BS and a greater risk of dental caries.

Study design: This study is a systematic review of the literature.

Methods: A search was made in the database of Medline (via PubMed), over the last 10 years, using the keywords 'bariatric surgery' OR 'gastrectomy' OR 'obesity surgery,' combined independently with the terms 'saliva' and 'dental caries' by means of the connector 'AND.' The criteria used were those described in the PRISMA® Declaration for performing systematic reviews. Inclusion criteria and study selection: (a) studies done with humans; (b) articles published in English and Spanish; (c) series of cases; and (d) clinical trials. The risk of bias was assessed independently by two authors. In both data extraction and risk of bias assessment, disagreements were resolved through discussion with a third author.

Results: Two independent reviewers read the titles and summaries of the 79 articles found. Finally, nine of them were included in the study. In the various articles, the parameters that had clinical relevance to the risk of dental caries were evaluated.

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Conclusions: Within the limitations of this study, it is plausible to think that patients who have undergone BS have a greater risk of dental caries. The oral complications associated with BS could be prevented or minimized by including in the multidisciplinary treatment of these patients a team of odontologists who would be responsible for prevention and oral assessment.

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Introduction

Obesity is a chronic disease that presents with an accumulation of body fat and harms the health of the individual affected. It is a multifactorial phenomenon that includes genetic, behavioral, psychological, social, metabolic, and endocrine factors.¹ Its incidence has increased exponentially in recent years, affecting both developed and developing countries.² In 2014, The World Health Organization estimated that more than 1900 million adults were overweight worldwide, of which 600 million were obese.³ It is estimated that more than half of Europeans are overweight (body mass index [BMI] > 25 kg/m²), and more than 30% are obese (BMI > 30 kg/m²), while in the USA, 64% of the population is overweight or obese.⁴

In the face of these alarming figures, the lack of effective methods in the prevention and treatment of this pathology becomes evident.⁵ In this sense, bariatric surgery (BS) is a procedure indicated for patients who have a BMI ≥40 or ≥ 35 kg/m², if it is accompanied by significant comorbidity,⁶ and who cannot lose weight by means of traditional methods.⁷ BS is considered the only method of treatment for morbid obesity effective in the long term, since it implies a rapid loss of excess weight⁸ and helps to control or eliminate systemic pathologies such as dyslipidemia,⁵ diabetes, hypertension, and respiratory problems like sleep apnea^{2,5,9} or cancer,^{2,9} thus improving the quality of life⁸ and significantly reducing the relative risk of death in these patients by 89%.⁴

The number of BS operations has increased in recent years, and many of these gastric operations modify the anatomy, physiology, and/or dietetic habits. These facts can have negative consequences and give rise to various gastrointestinal complications such as gastritis, malnutrition, nausea and vomiting, anemia, dehydration, or mineral and vitamin deficits (calcium, folic acid, vitamins B12 and D).^{10,11} The mouth is anatomically and physiologically integrated into the digestive tract so that the negative effects of BS could appear at the oral level.² Different studies have described numerous effects in the oral cavity in patients after having undergone BS. Among them, changes in the quantity and quality of saliva, nausea and vomiting or changes in diet, all of them cause an increase in oral lesions, mainly caries.^{11–13}

It is necessary to carry out a systematic review on the increased risk of caries in patients undergoing BS, due to the absence of a preventive odontological protocol to avoid an increase in the incidence of oral problems in these patients while improving their oral and general quality of life. The

patients are unaware that there is an increased risk of caries, such as the need to carry out preventive measures aimed at preventing caries.

The objective of this article is to carry out a systematic review of the existing literature in order to know whether those obese patients who have undergone BS have a greater risk of developing dental caries.

Methods

Search strategy

An electronic search was carried out in the database of Medline (via PubMed) over the last 10 years (01/03/2007 to 01/03/2017). The following terms from MESH (Medical Subjects Headings) were used: 'bariatric surgery' OR 'gastrectomy' OR 'obesity surgery' combined first with the term 'saliva' and then, independently, with 'dental caries' by means of the connector 'AND.'

The criteria used were those described in the PRISMA[®] (Preferred Reporting Items for Systematic Reviews and Meta-analysis) Declaration. The objective of the present systematic review was to reply to the following 'PICO' question (P = patient problem/population; I = intervention; C = comparison; O = outcome):

In obese patients who have undergone bariatric surgery, is there a greater risk of developing dental caries than in healthy subjects?

Furthermore, a manual search was done in BUCea (Scientific literature browser of the Complutense University of Madrid) and in Google Scholar.

Before the beginning of the study, a consensus was reached among all the authors, and a series of inclusion and exclusion criteria were defined.

Inclusion criteria and study selection

(a) Studies done with humans; (b) articles published in English or Spanish; (c) series of cases; and (d) clinical trials.

Exclusion criteria

(a) Experimental laboratory studies; (b) articles whose theme had no relation to the objective of the present study; (c) duplicate articles; (d) books; (e) letters to the editor; (f)

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