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Review

Oral rehabilitation of patients after maxillectomy. A systematic review[☆]

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Abstract

Patients who have maxillectomy can be rehabilitated with reconstructive surgery or obturator prostheses with or without osseointegratable implants. To identify studies on possible treatments in this group, we systematically searched the Scopus, Embase, PubMed/Medline, and Cochrane databases to collect data on patients' characteristics, radiotherapy, and results related to speech, swallowing, mastication or diet, chewing, aesthetics, and quality of life. Of the 1376 papers found, six were included, and one other was included after an additional search of references. A total of 252 patients were included, and of them, 86 had reconstructive surgery, 91 were treated with obturator prostheses, 39 had reconstructive surgery or obturator prostheses associated with implants, and 36 had reconstruction plus an obturator prosthesis. Data on radiotherapy were incomplete. There is a lack of consensus about the indication for rehabilitation, as the treatment must be based on the individual characteristics of each patient.

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Keywords: Palatal obturators; Maxillofacial prosthesis; Reconstructive surgical procedures; Oral surgical procedures; Rehabilitation

Introduction

Maxillectomy can cause maxillary defects such as oronasal fistulas, loss of support of the cheek and lip, as well as aesthetic defects in the middle third of the face, and functional impairment of speech and swallowing.^{1–4} Treatment includes reconstructive surgery or rehabilitation with an obturator prosthesis, and both can be associated with osseointegratable implants.

Reconstruction with grafts of autogenous tissue seems to be the patients' treatment of choice,^{2,3,5–10} but this can be

challenging¹¹ when defects are large, or when operations are done in conjunction with other treatments such as radiotherapy. Another option is to use obturator prostheses. These are made from diverse components, the vertical extension of which is the most important part, as it contributes to the efficiency of oronasal separation, retention and stability of the prosthesis, and results in a better quality of speech.¹¹

Because of the wide range of treatments available, our objectives were to identify studies that are relevant to the treatment of patients after maxillectomy, to establish which treatments give the best functional and aesthetic results, and to show how radiotherapy can influence the outcome.

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Table 1
Search details.

Terms	Search details
Maxillectomy treatment AND surgical reconstruction	(maxillectomy[All Fields] AND (“therapy”[Subheading] OR “therapy”[All Fields] OR “treatment”[All Fields] OR “therapeutics”[MeSH Terms] OR “therapeutics”[All Fields])) AND (“reconstructive surgical procedures”[MeSH Terms] OR (“reconstructive”[All Fields] AND “surgical”[All Fields] AND “procedures”[All Fields]) OR “reconstructive surgical procedures”[All Fields] OR (“surgical”[All Fields] AND “reconstruction”[All Fields]) OR “surgical reconstruction”[All Fields])
Maxillectomy treatment AND prosthodontic rehabilitation	(maxillectomy[All Fields] AND (“therapy”[Subheading] OR “therapy”[All Fields] OR “treatment”[All Fields] OR “therapeutics”[MeSH Terms] OR “therapeutics”[All Fields])) AND (“prosthodontics”[MeSH Terms] OR “prosthodontics”[All Fields] OR “prosthodontic”[All Fields]) AND (“rehabilitation”[Subheading] OR “rehabilitation”[All Fields] OR “rehabilitation”[MeSH Terms])
Maxillectomy AND obturator prosthesis	maxillectomy[All Fields] AND (obturator[All Fields] AND (“prosthesis implantation”[MeSH Terms] OR (“prosthesis”[All Fields] AND “implantation”[All Fields]) OR “prosthesis implantation”[All Fields] OR “prosthesis”[All Fields] OR “protheses and implants”[MeSH Terms] OR (“protheses”[All Fields] AND “implants”[All Fields]) OR “protheses and implants”[All Fields]))

Methods

This systematic review was based on the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA)¹² guidelines and used the methods recommended by the Cochrane Handbook for Systematic Reviews.¹³ It was registered in the International Prospective Register of Systematic Reviews (PROSPERO) as CRD42015025375.

Search strategy

The search was conducted by two independent examiners (FPC and SBB), and in case of conflicts, the resolution was mediated by a third examiner (DMS) who was also the study advisor. We searched the PubMed/MEDLINE, Embase, Scopus, and Cochrane Library databases using the terms shown in Table 1, and excluded duplicated papers. After reading the titles and abstracts, we selected studies and read the full text. Those included were related to the rehabilitation of patients after maxillectomy whose defects were characterised only by oroantral communications. All studies published up to March 2017 were included.

We also searched for references encompassing all online issues of Head & Neck; the International Journal of Oral and Maxillofacial Surgery; Journal of Oral Rehabilitation; Journal of Prosthetic Dentistry; Plastic & Reconstructive Surgery; Journal of Oral and Maxillofacial Surgery; Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology; Journal of Cranio-Maxillo-Facial Surgery; Journal of Prosthodontic Research; and the British Journal of Oral and Maxillofacial Surgery, in which we found one article¹⁴ that fulfilled the inclusion criteria. Table 2 shows the components of the PICO question (participants, intervention, comparisons, and outcomes). The principal question to be answered was: “Is

Table 2

Components of the PICO (participants, intervention, comparison, and outcome) question.

P (participants)	Patients with oral defects after maxillectomies
I (intervention)	Rehabilitation of patients
C (comparisons)	Different treatments for rehabilitation
O (outcomes)	Effects of oral rehabilitation after maxillectomy on speech, swallowing, mastication, and diet; aesthetics, quality of life, and influence of radiotherapy on the result of rehabilitation

there an optimal choice for rehabilitation of patients after maxillectomy?”.

Inclusion and exclusion criteria and study selection

Randomised clinical trials, and longitudinal and transversal studies, all in the English language, which reported the outcomes of reconstruction and use of obturator prostheses, were included. They reported patients with unilateral or bilateral maxillary defects, independent of the amount of resection. However, they could not involve the orbital floor or the eye socket, or both, since these would generate oroantral communications (Aramany classes I to VI,¹⁵ Cordeiro classes II and III,¹⁶ Brown classes I and II¹⁷ and their horizontal variations (“a”, “b”, and “c”), and all Okay classes,¹⁸ except variation “f”, as this involves the inferior rim of the eye socket) (Table 3).

Studies of patients with congenital defects or those caused by trauma or non-neoplastic diseases, reviews, systematic reviews, and case reports, were excluded. Papers had to contain both surgical and prosthetic treatments with or without osseointegratable implants, and results had to include at least one of the following: complications, functional results, aesthetics, quality of life, and efficacy of treatment.

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