



King Saud University
The Saudi Journal for Dental Research

www.ksu.edu.sa
www.sciencedirect.com



REVIEW ARTICLE

Role of bone graft materials for cleft lip and palate patients: A systematic review



Aiysha Wahaj^a, Kashif Hafeez^b, Muhammad Sohail Zafar^{c,*}

^a Department of Orthodontics, Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, Dow University, Karachi, Pakistan

^b Oxford Deanery; Broadshires Dental Practice, Carterton, Oxon OX18 1JA, UK

^c College of Dentistry, Taibah University, Madinah Al Munawwarah, Saudi Arabia

Received 2 January 2015; revised 31 January 2015; accepted 4 February 2015

Available online 19 February 2015

KEYWORDS

Autogenous bone graft;
Congenital anomalies;
Distraction osteogenesis

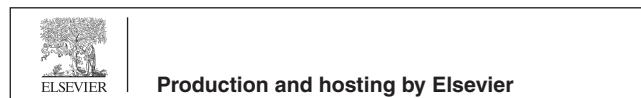
Abstract Cleft lip and palate is a congenital anomaly. Its management requires a long term commitment, multidisciplinary and structured treatment. Treatment is initiated at infancy and continues till adolescence. Bone grafting is performed in order to provide bony stabilization for cleft maxillary alveolar arch and room for subsequent canine tooth eruption. The aim of this review was to discuss the success of various bone graft materials in managing unilateral and bilateral cleft lip and palate patients. For this purpose, a detailed literature search was performed using available electronic databases for peer reviewed papers published in English language. The review is based on published papers reporting the use of various bone graft materials for managing cleft lip and palate patients. The success of bone grafts was studied using the grading scales measuring the bone height at the grafted sites. Various types of bone graft materials including autogenous and allogenic were reviewed. Implant placement in cleft lip and palate patients required bone grafting after orthodontic expansion because of deficient bone in the anterior maxillary region. The grafted bone consequently provides stability and support to the maxillary alveolar arch. Success of bone graft as well as dental implants is multifactorial and therefore depends upon the type of bone graft, bone quality at cleft site and severity of cleft lip and palate.

© 2015 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

* Corresponding author at: College of Dentistry, Taibah University, PO Box 2898, Madinah Al Munawwarah, Saudi Arabia. Tel.: +966 507544691.

E-mail address: drsohail_78@hotmail.com (M.S. Zafar).

Peer review under responsibility of King Saud University.



Contents

1. Introduction	58
2. Material and methods	59
2.1. Focused question	59
2.2. Eligibility criteria	59
2.3. Search strategy	59
3. Results	60
4. Discussion	60
5. Conclusion	62
Funding statement	62
Conflict of interests	62
Acknowledgments	62
References	62

1. Introduction

Cleft lip and palate is a developmental anomaly that has a significant genetic diversity. Inherited genetic mapping demonstrated distinct craniofacial morphologies like unilateral cleft lip palate, bilateral cleft lip palate, cleft of lip, cleft of alveolus or isolated cleft palate defects.¹⁻⁷ Cleft lip and palate patients present with a number of complaints such as wide alveolar bone defects, congenitally missing teeth (hypodontia), supernumerary teeth, hypoplastic and impacted teeth. The treatment planning and clinical care of such patients are challenging and start at a very early stage of life. The ultimate goals of this treatment are to improve the functional capability and quality of life of these patients. The practical management is complex and may involve multidisciplinary approaches [such as dental, maxillofacial, orthodontics, prosthodontics, plastic surgery, speech therapy and psychological departments]. The orthodontists have an extensive role that starts on day one during infant orthopedic nasoalveolar molding and continues until comprehensive

orthodontic treatment at adolescence. Orthodontic space closure is the treatment of choice with concomitant esthetic restorative contouring.¹⁻⁷

Endosseous dental implant along with bone graft can be used for the replacement of missing teeth.^{3-5,7} The closure of the bony defects and stability of the maxillary arch are the crucial elements of the treatment plan. Bone grafting is performed preferentially during the orthodontic treatment to enhance the stability of maxillary arch and success of dental implants. Bone grafting can be performed using autogenous and/or allogeneic grafts followed by dental implant placement. It supports the tooth in alveolar arch, establishing maxillary basal bone morphology and ensuring stability after orthodontic treatment. This also increases alveolar bone support for the dentition, nasal alar cartilage and maintains functional bone volume with soft tissues for dental implant placement.^{2-6,8-11} The success of bone graft and bone quality is assessed using various grading systems (Table 1) based on parameters such as amount of bone formation, intact bone or bone level from amelocemental junction (ACJ).

Table 1 Various grading systems used for the assessment of alveolar bone grafts.

<i>Bergland scale (for erupted canine)</i> ²⁻⁹	
Type I	Normal interdental bone level
Type II	Bone level more than 75% of normal height
Type III	Bone level less than 75% of normal height
Type IV	No bone bridge achieved
<i>Modified Bergland index (secondary alveolus grafting)</i> ²⁻⁹	
Grade A	Intact alveolar bone graft
Grade B	Marginal deficiency up to 1/4th of root length
Grade C	Marginal deficiency greater than 1/4th of root length
Grade D	Bone graft failure
Grade E	Nasal defect greater than 1/4 th of root length
<i>Grading system for grafted bone in cleft lip and palate patients</i> ²⁻¹⁰	
Grade 0	Bone bridge is undetectable
Grade 1	The vertical height of bone bridge is 0–5 mm
Grade 2	The vertical height of bone bridge is 5–11 mm,
Grade 3	The vertical height of bone bridge is more than 11 mm
<i>Bone bridge evaluation with reference to Amelo-Cemental Junction (ACJ)</i> ²⁻⁴	
Category A	The bone bridge covering more than 75% of root surface from ACJ
Category B	The bone bridge covering less than 75% of root surface from ACJ
Category C	The bone bridge covering less than 50% of root surface from ACJ
Category D	The bone bridge covering less than 25% of root surface from ACJ
Category E	No bone bridge at either the apical or the amelocemental level.
Category F	Has 75% or greater uncovered root surface from ACJ

Download English Version:

<https://daneshyari.com/en/article/3175222>

Download Persian Version:

<https://daneshyari.com/article/3175222>

[Daneshyari.com](https://daneshyari.com)