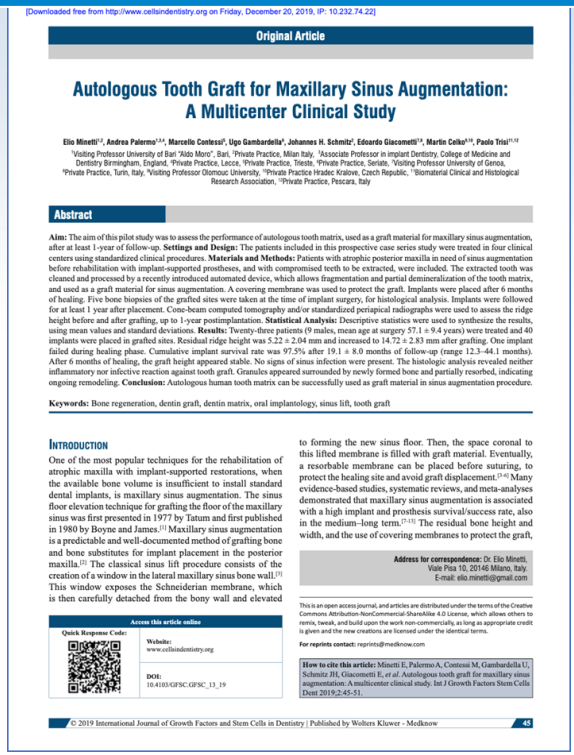
TOOTH TRANSFORMER

.

HYSTOMORPHOMETRY	
Number of Hystologies made	5
Bone Volume/ Total Volume	36,284 +/-9,77
Residual Graft / Total Volume	14,61 +/-14,61
Vital Bone / Total Bone	21,5+/-8,61



Original Article

Autologous Tooth Graft for Maxillary Sinus Augmentation: A Multicenter Clinical Study

Elio Minetti[1,2], Andrea Palermo[3,4,5], Marcello Contessi[6], Ugo Gambardella[4], Johannes H. Schmitz[7], Edoardo Giacometti[7,8], Martin Celko[4,9], Paolo Trisi[10,11]

[1]Visiting Professor University of Bari "Aldo Moro", Bari, [2]Private Practice, Milan Italy, [3]Associate Professor in implant Dentistry, College of Medicine and Dentistry Birmingham, England, [4]Private Practice, Lecce, [5]Private Practice, Trieste, [6]Private Practice, Seriate, [7]Visiting Professor University of Genoa, [8]Private Practice, Turin, Italy, [9]Visiting Professor Olomouc University, [10]Private Practice Hradec Kralove, Czech Republic, [11]Biomaterial Clinical and Histological Research Association, [12]Private Practice, Pescara, Italy

Abstract

Aim: The aim of this pilot study was to assess the performance of autologous tooth matrix, used as a graft material for maxillary sinus augmentation, after at least 1-year of follow-up. **Settings and Design:** The patients included in this prospective case series study were treated in four clinical centers using standardized clinical procedures. **Materials and Methods:** Patients with atrophic posterior maxilla in need of sinus augmentation before rehabilitation with implant-supported prostheses, and with compromised teeth to be extracted, were included. The extracted tooth was cleaned and processed by a recently introduced automated device, which allows fragmentation and partial demineralization of the tooth matrix, and used as a graft material for sinus augmentation. A covering membrane was used to protect the graft. Implants were placed after 6 months of healing. Five bone biopsies of the grafted sites were taken at the time of implant surgery, for histological analysis. Implants were followed for at least 1 year after placement. Cone-beam computed tomography and/or standardized periapical radiographs were used to assess the ridge height before and after grafting, up to 1-year postimplantation. **Statistical Analysis:** Descriptive statistics were used to synthesize the results, using mean values and standard deviations. **Results:** Twenty-three patients (9 males, mean age at surgery 57.1 ± 9.4 years) were treated and 40 implants were placed in grafted sites. Residual ridge height was 5.22 ± 2.04 mm and increased to 14.72 ± 2.83 mm after grafting. One implant failed during healing phase. Cumulative implant survival rate was 97.5% after 19.1 ± 8.0 months of follow-up (range 12.3–44.1 months). After 6 months of healing, the graft height appeared stable. No signs of sinus infection were present. The histologic analysis revealed neither inflammatory nor infective reaction against tooth graft. Granules appeared surrounded by newly formed bone and partially resorbed, indicating ongoing remodeling. **Conclusion:** Autologous human tooth matrix can be successfully used as graft material in sinus augmentation procedure.

Keywords: Bone regeneration, dentin graft, dentin matrix, oral implantology, sinus lift, tooth graft

Introduction

One of the most popular techniques for the rehabilitation of atrophic maxilla with implant-supported restorations, when the available bone volume is insufficient to install standard dental implants, is maxillary sinus augmentation. The sinus floor elevation technique for grafting the floor of the maxillary sinus was first presented in 1977 by Tatum and first published in 1980 by Boyne and James.[1] Maxillary sinus augmentation is a predictable and well-documented method of grafting bone and bone substitutes for implant placement in the posterior maxilla.[2] The classical sinus lift procedure consists of the creation of a window in the lateral maxillary sinus bone wall.[3] This window exposes the Schneiderian membrane, which is then carefully detached from the bony wall and elevated to forming the new sinus floor. Then, the space coronal to this lifted membrane is filled with graft material. Eventually, a resorbable membrane can be placed before suturing, to protect the healing site and avoid graft displacement.[3,4] Many evidence-based studies, systematic reviews, and meta-analyses demonstrated that maxillary sinus augmentation is associated with a high implant and prosthesis survival/success rate, also in the medium–long term.[5-11] The residual bone height and width, and the use of covering membranes to protect the graft,

Address for correspondence: Dr. Elio Minetti, Viale Pisa 10, 20146 Milano, Italy. E-mail: elio.minetti@gmail.com

Access this article online

Quick Response Code:

Website: www.cellsindentistry.org

DOI: 10.4103/GFSC.GFSC_13_19

How to cite this article: Minetti E, Palermo A, Contessi M, Gambardella U, Schmitz JH, Giacometti E, *et al*. Autologous tooth graft for maxillary sinus augmentation: A multicenter clinical study. Int J Growth Factors Stem Cells Dent 2019;2:45-51.