Abstract

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Introduction

Autogenous bone is routinely used for regeneration of osseous defects around teeth and implants. Different types of autografts have been used clinically and different instruments were proposed for bone harvesting.

Objectives

The purpose of this study was to present and describe the scanning electron microscopy (SEM) morphological results of bone particulated grafts after harvesting with four different instruments, in vitro.

Materials and Methods

Bone particles were harvested from fresh cow ribs with following instruments (Figures 1-4):
- Back action chisel (Hu-Friedy, Chicago, IL, USA).
- Back action instrument (Stoma, Tuttlingen, Germany).
- A safescraper (Osseous Glider, Osseous Technologies of America, New Port Beach, CA).
- SONICflex handpiece (Kavo, Biberach, Germany).

The specimens were analyzed under light microscopy with Hematoxylin and Eosin stain (Figures 5-8). Furthermore they were examined morphologically with SEM (Figures 9-12).

Results

The bone particles after the back action chisel (Hu-Friedy), had the appearance of small bony flakes with irregular rough borders. With the back action instrument (Stoma), the bone chips were like thin paper in an “accordion style” appearance. After removal with the safescraper (Osseous Glider), the bone had the morphology of larger irregular shape (with irregular surface) in a “crushed run stone” style. In contrast to that, the appearance of the bone particles after the use of SONICflex (Kavo), was more homogenous and condensed with continuity and looked like “seaweed style”.

Conclusion

Harvesting of particulated bone grafts with the modern SONICflex-technology is a simple technique providing homogenous graft quality, which may be of significance for further bone healing. This may be explained, due to the simultaneous condensation of the bone particles.

References