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Antrostomy preparation for maxillary sinus floor augmentation using drills or a sonic instrument: a microcomputed tomography and histomorphometric study in rabbits

ABSTRACT

Regarding sinus floor augmentation, many different techniques and instruments have been suggested to prepare the access antrostomy, mainly with the aim of decreasing the incidence of sinus mucosa perforations and simplifying the technique compared to the standard use of drills. Among these alternatives, the piezoelectric technique was proposed. As a recent meta-analysis failed to show differences in intra- and postoperative complication rates among the various techniques used for sinus floor elevation and histologic data are lacking regarding healing at antrostomies prepared with different approaches, in the present experiment the Authors aimed to assess whether the use of a sonic instrument may affect healing after sinus floor augmentation at antrostomies prepared with either a drill or a sonic instrument. Sinus mucosa elevation was performed bilaterally in 18 rabbits, with the antrostomy prepared with either a drill or a sonic instrument. The elevated space was filled with similar amounts of a collagenated corticocancellous porcine bone (OsteoBiol® *Gen-Os*®, Tecnoss®, Giaveno, Italy). Afterwards, collagen membranes (OsteoBiol® *Evolution*, Tecnoss®) were placed to protect the access window bilaterally. After 2, 4, and 8 weeks of healing, animals were sacrificed and microcomputed tomography and a histologic analysis were performed. After 8 weeks of healing, 29.1%±18.6% and 28.4%±15.6% of new mineralized bone was occupying the analyzed zone in the antrostomy at the drill and sonic sites, respectively.

CONCLUSIONS

Within the limitations of the present study - due to the use of phylogenetically lower animals than humans and the small sample of animals for each healing period - the outcomes have shown that the use of a sonic device or drills to prepare an antrostomy resulted in similar healing outcomes in both the antrostomy and the elevated regions.

EXPERIMENTAL STUDIES

K Masuda[1,3]
ER Silva[2]
D Botticelli[3]
KA Apaza Alccayhuaman[3]
SP Xavier[2]

1 | Department of Pediatric Dentistry, Osaka University, Osaka, Japan
2 | Depto CTBMF e Periodontia FORP-USP-Faculty of Ribeirão Preto, Ribeirão Preto, Brazil
3 | ARDEC Academy, Rimini, Italy

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