Post-surgical pre-implantar bone defects regeneration with sterile gel based on sodium hyaluronate and amino acids (Gly-Pro-Leu-Lys): complication management, clinical and histopathological evaluation.

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Objective: The study was designed to evaluate whether a sterile gel formulation of sodium hyaluronate and amino acids Gly-Pro-Leu-Lys (AMINOGAM®) is effective in accelerating post-surgical bone defects regeneration, implant rehabilitation and complication management.

Materials and Methods: We selected 50 patients aged between 16 and 64 years and we evaluated different healing in 80 bone defects divided in 2 groups: - Test group: 40 defects treated with intracavitary intraoperative filling of gel and application 4 times/die upon the stitches till the complete mucosal healing (sandwich technique). - Control group: 40 untreated defects. Each group was divided in two subgroups: minor (<1cm2) and major defects (>1cm2).

Outcomes were evaluated by clinical and radiographic follow-up with OPT rx and CT scan through densitometric analysis. Defects treatment after bone healing in both groups was completed with histological pre-implantar examination and insertion of 52 implants in test group and 49 implants in control group.

Clinical and radiographic examinations of implants were performed at 12 months after functional loading. Gel preparation enhances angiogenesis, fibroblast and osteoblast proliferation, collagen biosynthesis, production of growth factors as evidenced by MTT test and alkaline phosphatase histochemical staining. In vivo and in vitro studies suggested that hyaluronic acid plays important roles in bone wound healing by enhancement of osteoblast differentiation through the down-regulation of BMP-2 antagonists. Lysine and proline are important metabolic factors regulating collagen matrix synthesis during osteogenesis.

Keratocystic Odontogenic Tumor affecting a 16-year old girl:

1OPT rx and 2pre-surgical CT - canines included and 3.6x4.3cm radiolucency
2Histological overview (D) Specimen (E) 30 days OPT rx (F) 3 months CT
3Bone densitometric analysis. (H) Masson trichrome coloration of bone and gel
4Post-implants OPT rx: complete osseointegration

Conclusions: Sterile gel based on sodium hyaluronate and amino acids is a new cheap and useful medical device able in resetting post-surgical morbidity to zero. It allows a quick bone defects healing time with an earlier implant insertion and a faster osseointegration thanks to more quality bone evaluated by histological analysis and grey scale densitometry. Therefore the whole rehabilitation treatment is considerably shortened and free from complication.

BIBLIOGRAPHY: