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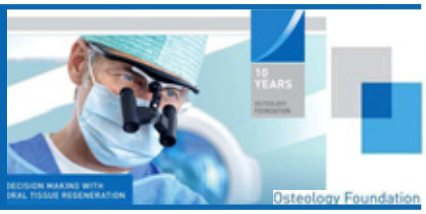
INTERNATIONAL SYMPOSIUM
OSTEOLOGY MONACO
MAY 2–4, 2013



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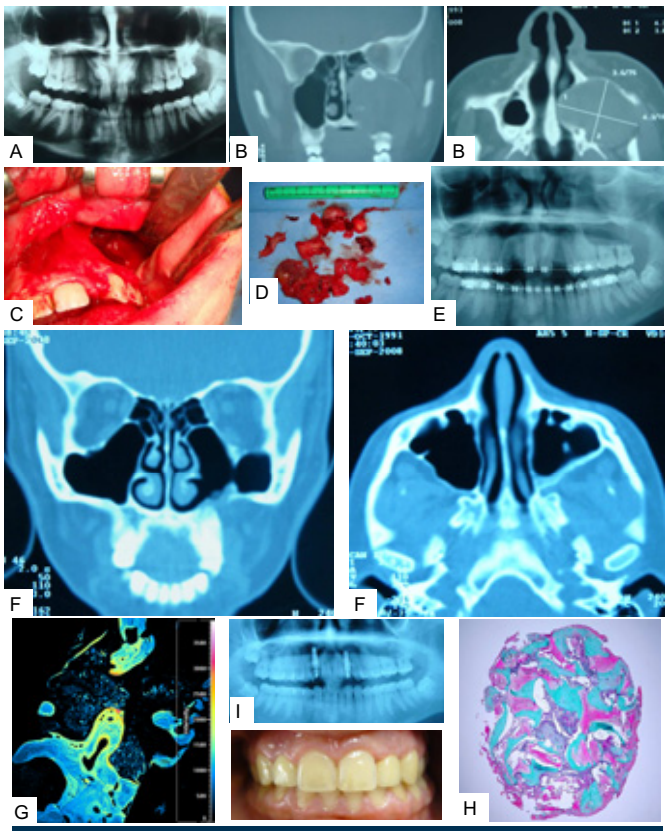
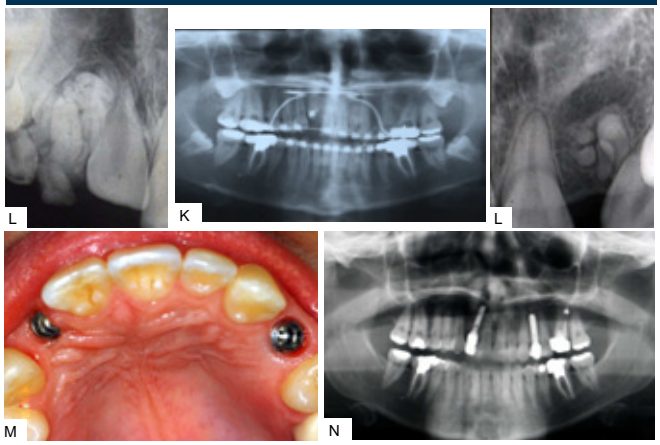
Objective: This study was designed to evaluate whether a sterile gel formulation of sodium hyaluronate and amino acids Gly-Pro-Leu-Lys (AMINOGAM®) is effective in accelerating post-surgical bone defects regeneration, implant rehabilitation and complication management.

Materials and Methods: We selected 56 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 (<1cm^2) and major defects (>1cm^2).
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 Tumour affecting a 16-year old girl:
(A) OPT rx and (B) pre-surgical CT: canines included and 3,6x4,3cm radiolucency
(C) Intra-surgical overview (D) Specimen (E) 30 days OPT rx (F) 5 months CT
(G) Bone densitometric analysis (H) Masson trichromic coloration of bone and gel
(I) Post-implants OPT rx: complete osseointegration



(**K**) Pre-surguical OPT rx: bilateral odontoma
(**L**) Pre-surgical occlusal rx
(**M**) Clinical implant healing
(**N**) Post- implants OPT rx: complete osseointegration

Results: Soft tissues outcomes in test group show similar results in both subgroups with immediate haemostatic effect, pain and swelling decrease and infective complication dejection (0%) compared to control group (6%). Gel preparation reduces the removing stitches and wound complete healing time at 6 days in minors defects and 14 days in major ones of test group compared to 14 and 23 days of control group. Hard tissues outcomes show faster healing time: 20% difference between ossification level in test and control group at 2 months. The difference decrease in following months until 3% at 12 months. Pre-implantar bone specimen get with 2,5mm trephine drill shows a more dense and mature lamellar bone with twisted fiber and different calcification level also evaluated through densitometic analysis, allowing implant insertion at 30-45 days in minor defects and at 60 days in major ones of test group compared to 60 and 90 days of control group. Osseointegration rate in regenerated defects is 100%.

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 quickly 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.

AMINOGAM® gel sterile

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