

## **Preliminary Observations Regarding the Use of Biophytomodulators as Membrane Barriers in Sinus Lift**

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**Abstract:** The concept of the placement of membrane barriers over the window created in the lateral sinus wall following the sinus lift approach is a logical extension of the use of collagen membranes in orthopedics, periodontology or prosthodontic surgery. The aim of this study is to determine the effect of biophytomodulators used as membrane barriers on the integration of sinus grafts. The observations were performed in 10 sheep (divided into two groups, group I - the control group, without biophytomodulators, and group II, with biophytomodulators) matched for age (10 months) and weight (30-31 kg), benefiting from the same breeding and care conditions, which underwent sinus lift, using PerioGlas as an addition material, and a DIEE device was placed between 2 membranes. The clinical, radiological and histomorphometric evaluation showed a more rapid healing, the presence of a higher radiopacity and a greater thickness of the sinus wall in the group II. The use of biophytomodulators as membrane barriers leads to the reduction of the healing period and, implicitly, of the period of integration of the sinus grafts, the final result being a more rapid prosthetic restoration of the implants.

**Keywords:** biophytomodulators, sinus lift, alloplastic material, bone graft

### INTRODUCTION

Energetic loading and balancing devices (DIEE) were patented by the physicist Ancu Dinc RO119756-2004. The functioning of this mechanism would be based on the capacity of plants to generate specific resonance effects. Thus, these modulators were produced using a mixture of 20-40 plants. DIEE generate two types of holographic resonance, as explained by the photon theory of information energy at the level of the fundamental wave of the organism as a whole and at the level of differentiated harmonic waves generated by each organ (Dinc, 2006). The concept of the placement of membrane barriers over the window created in the lateral sinus wall following the sinus lift approach is a logical extension of the use of collagen membranes in orthopedics, periodontology or prosthodontic surgery. Various materials have been used as barriers over the window created following anastomosis: non-resorbable Gore-Tex membranes, resorbable collagen membranes, synthetic membranes, titanium meshes, calcium sulfate membranes, lyophilized bone membranes or bone flap repositioning (Fiorellini *et al.*, 2003, Hurzeler *et al.*, 1997).

## MATERIALS AND METHODS

The observations were performed in 10 sheep matched for age (10 months) and weight (30-31 kg), benefiting from the same breeding and care conditions, which underwent sinus lift (elevation of the sinus mucosa), using PerioGlas (alloplastic material) as an addition material, and a DIII device was placed between 2 membranes. This was used in order to protect the addition material and prevent the proliferation of the connective tissue. The sheep were divided into two groups, group I - the control group, without biophytomodulators, and group II, with biophytomodulators.

The clinical evaluation of the healing of postoperative wounds in the two groups of sheep was performed, followed by radiological evaluation, and finally, the histomorphometric examination of the bone tissue harvested 3 months postoperatively.

## RESULTS AND DISCUSSIONS

### Clinical evaluation

As a preliminary observation at 4 days postoperatively, the postoperative wounds of the two groups were examined, and a more rapid healing was found in the sheep in which biophytomodulators were used (Fig. 1, 2).



Fig.1 Wound at 4 days postoperatively group I

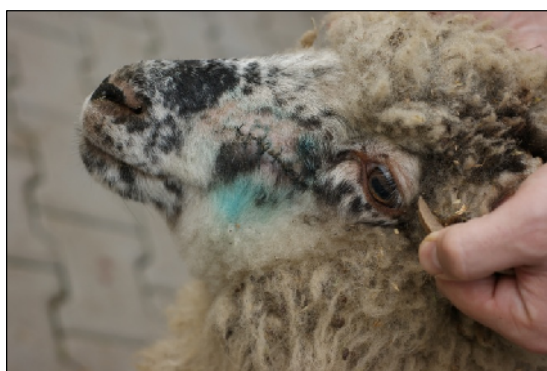


Fig.2 Wound at 4 days postoperatively group II

At 11 postoperative days, before the removal of the sutures, an acceleration of the healing process was found in group II (Fig. 3, 4).



Fig.3 Group II wound at 11 days postoperatively

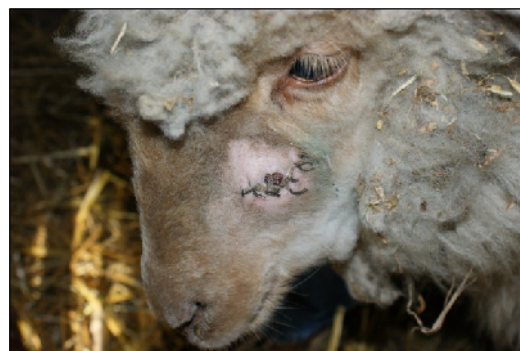


Fig.4 Group I wound at 11 days postoperatively

The bone tissue was taken 3 months after the first intervention. The graft was taken with the chisel and hammer, the use of the bur being avoided so as not to cause changes in the harvested bone tissue (Fig. 5).



Fig.5 Harvesting of the bone tissue from the area in which SL was performed.

#### Radiological evaluation

Lateral view radiographs were performed both immediately postoperatively and at the time of bone tissue harvesting.

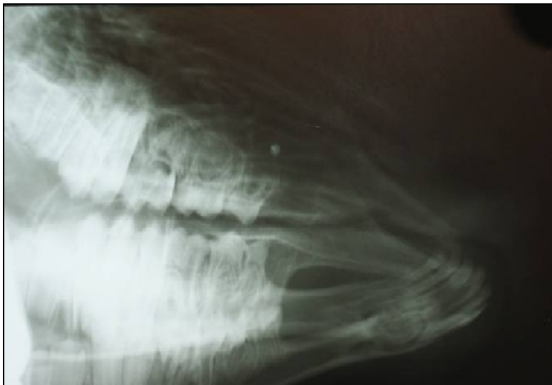


Fig.6 Lateral view Rx group I.

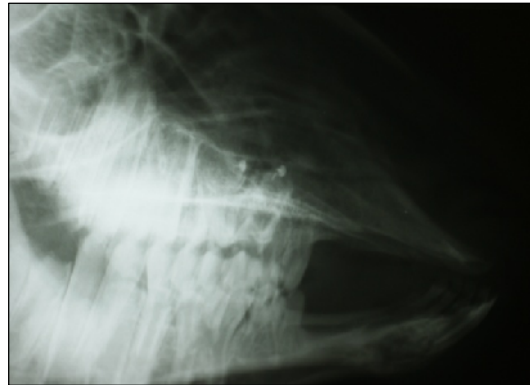


Fig.7 Lateral view Rx group II.

In order to determine the area of interest as precisely as possible, we used the pins by which the biophytomodulators were fixed as reference points. The comparative analysis of the radiographs for the two groups of sheep showed the presence of a higher radiopacity in group II, which indicates a higher mineralization of the subantral graft in the group in which biophytomodulators were used.

### Histomorphometric evaluation

It showed a greater thickness of the sinus wall taken from the sheep of group II. For the performance of measurements, the samples taken from the two groups were photographed and, considering the fact that one fixation pin was 0.9 mm in size, we used the Cell software for the exact determination of the thickness of the sinus wall bone plate, for the two groups.

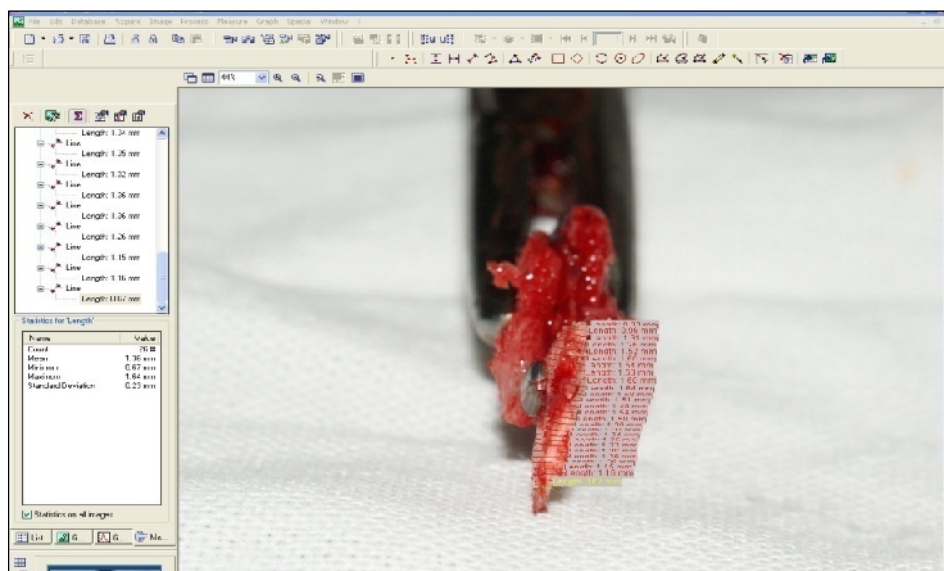


Fig.8 Cell software window with measurements for group I.

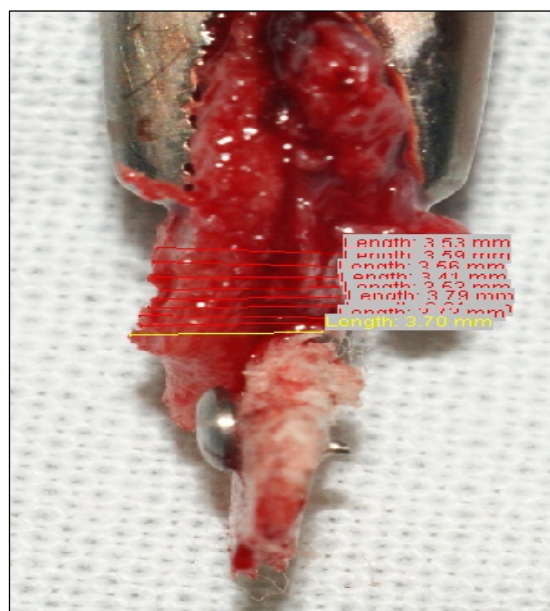


Fig.9 Cell software window with measurements for group II.

The mean of the values resulting from the measurements performed for the control group (I) was 1.48 mm, and for group II, the mean of the values resulting from the determination of the bone plate thickness in the grafted area was 3.14 mm. The measurements performed were statistically significant ( $p=0.000007$ ) (Fig. 8, 9).

The elevation of the sinus floor using autologous and alloplastic materials is currently routine practice. The reduction of the waiting period until the placement of implants is a desideratum for both the surgeon and the patient. The use of biophytomodulators as membrane barriers is aimed at a more rapid integration of the sinus grafts and, implicitly, a more rapid prosthetic restoration of the implants (Oni or-Gligor, Rotaru *et al.*, 2009, Oni or-Gligor, Lung *et al.*, 2009).

The team run by Prof. Dr. Liviu Oana from USAMV Cluj-Napoca studied the effect of biophytomodulators on the wounds induced in rabbits. The research was performed in 7 mixed breed rabbits, in which cutaneous and muscular wounds were induced in the dorsal shoulder area. Three days after surgery, minor differences between the treated wounds and the controls were found. After 7 days, the surface of cutaneous wounds in the rabbits with biophytomodulators was three times smaller than the control wound, while the musculocutaneous wounds had a smaller surface compared to the control wound, with the clear evidencing of epithelialization processes.

In all rabbits in which BPM were used, wound healing was completed by days 12-14, while in the controls, the wounds were still obvious and hair began to grow as small islands (Oana, 1998, Oana, 2007, Oana, 2009).

The effect of biophytomodulators was also studied by the induction of tibial bone defects in sheep and the histological examination of the harvested bone tissue, its quality being higher in the group with biophytomodulators (Oana, 2010).

## CONCLUSIONS

Following the clinical analysis of the two groups of sheep, a more rapid healing of the postoperative wounds was found in group II (with biophytomodulators), the observations being made at 4 days and 11 days postoperatively, when the sutures were removed. The radiological evaluation, through successive radiographs performed at 1, 2, and 3 months, evidenced the presence of a higher radiopacity in the grafted area for group II, in which biophytomodulators were used.

The mean thickness of the bone harvested from the sinus wall of the two groups included in the study was two times higher for the sheep with biophytomodulators.

The use of biophytomodulators as membrane barriers leads to the reduction of the healing period and, implicitly, of the period of integration of the sinus grafts, the final result being a more rapid prosthetic restoration of the implants.

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