

## Abstract

### Summary :

Membrane materials have been widely used for guided bone regeneration (GBR). However, the bio-functional limitation of the collagen membranes leads this study to test a new equine cortical membrane ((Osteobiol® Lamina) to another equine collagen membrane ((Osteobiol® Evolution) in a critical size defect (5mm) of 15 Sprague Dawley rats calvaria filled with an equine biomaterial (Osteobiol® Gen-Os). An untreated group was used as a control group.

New bone formation was found in all groups. The results of the histometric analysis showed a percentage of new bone formation  $20.07\% \pm 5.49\%$  for the collagen group, followed by  $19.87\% \pm 5.17\%$  for the cortical group, leading to the conclusion that there is no significant difference between the two test groups.

## Background and Aim

Guided bone regeneration (GBR) has nowadays become an essential therapeutic procedure for bone and peri-implant defects, as well as bone augmentation procedures prior to implant placement (1). Current absorbable membrane used for guided bone regeneration (GBR) have a bio-functional limitation (2).

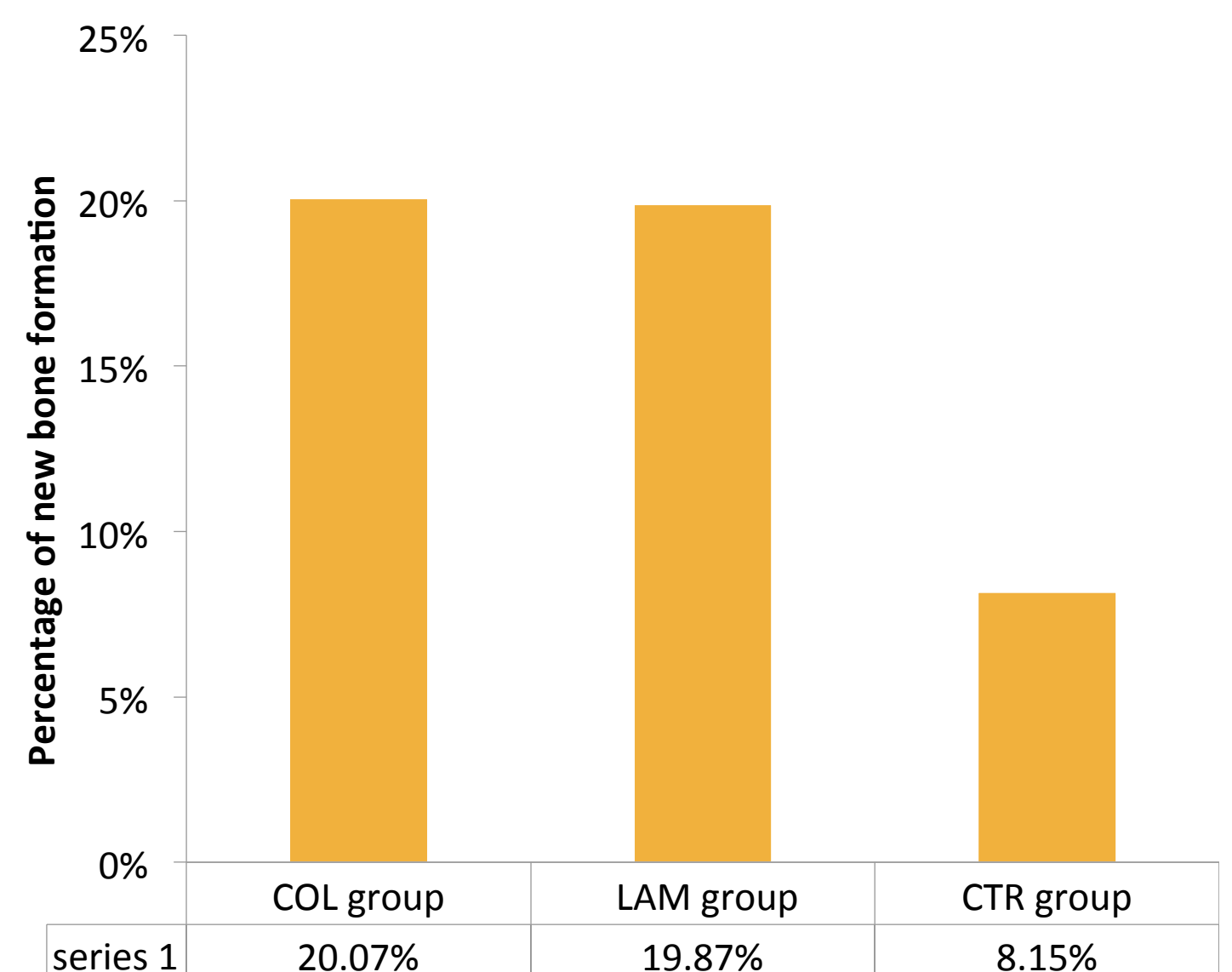
The aim of this study is to compare the collagen membrane of equine origin (Osteobiol® Evolution) to a new equine cortical membrane (Osteobiol® Lamina) and to evaluate the new bone formation in a critical size defect in the rat calvaria filled with an equine biomaterial (Osteobiol® Gen-Os).

## Methods and Materials

Fifteen Sprague Dawley adults rats (250-270g) were used. Two 5mm defects have been made in the calvaria (3). The rats were divided into 3 groups of 5 rats each and treated as follows. The COL group was filled with an equine xenograft covered with a resorbable collagen membrane, the LAM group was filled with an equine xenograft covered with a resorbable cortical equine membrane, in the CTR group the defects were left untreated. The animals were sacrificed at 8 weeks. The preparation of histological sections was made according to the technique of Methyl Methacrylate (MMA) for non-demineralized hard tissue.

## Results

Histological analysis showed new bone formation in all groups. The histometric analysis showed a percentage of new bone formation  $20.07\% \pm 5.49\%$  for the COL group, followed by  $19.87\% \pm 5.17\%$  for LAM group. The CTR group represents the smallest mean new bone formation of  $8.15\% \pm 1.43\%$ .



Histologic slide of LAM group showing the contact between the xenograft ( arrow) and the new immature bone.(Giemsa / Paragon X4)

## Conclusions

The 2 groups test (LAM and COL) have promoted bone formation without any significant difference.

## References

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3. Vajgel A, Mardas N, Farias BC, Petrie A, Cimoës R et al. A systematic review on the critical size defect model. *Clin Oral Implants Res* 2014 Aug; 25(8):879-93