

## Histomorphometrical evaluation of the effects of Aminogam® gel in oral healing process of post-surgical soft tissue

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Wound healing is a dynamic process that involves a complex interaction of inflammatory cells, cytokines and mediators of extracellular matrix [1]. One of the processes that occur during tissue regeneration is angiogenesis and it is considered to have a pivotal role in wound repair. Previous studies have shown that a topical application of proteins and sodium hyaluronate to wounds can expedite the repair of damaged tissue [2].

The aim of this preliminary study is to evaluate the efficacy of Aminogam® gel (A®) (ErreKappa Euroterapici SpA, Milano), a topical medication which contains 4 amino acids (glycine, leucine, proline, lysine) and sodium hyaluronate, used to improve and accelerate gingival flap healing following molar extraction by analyzing collagen fibers amount, orientation and microvascular distribution (MVD).

Ten patients (mean age 49ys) were included in the study. Two teeth (38 and 48) were extracted at an interval of 30 days. The “test” site (AM) was treated with A® while the “control” site (no AM) was not. Dental extraction was performed and the flaps were sutured with a consequent excess of tissue for histological processing (T0). A® had been applied only at the AM site for 10 days post-extraction. At suture removal, a gingivoplasty was performed and the exceeding tissue was histologically analysed (T1).

Paraffin blocks were cut and slides were stained with haematoxylin-eosin and Sirius Red. No signs of inflammatory infiltrate or necrosis were observed. Sirius Red staining highlighted a lower degree of organized collagen fibers at T1 vs T0. At T0 the fibers were organized in closely packed and well-oriented bundles. At T1-no AM fibers were thin and formed a disorganized grid. At T1-AM fibers appeared thicker and the tissue appeared more mature compared to T1-no AM.

Immunohistochemistry against CD31 was performed to mark endothelial cells and to calculate MVD by stereological method [3]. MVD resulted highest at T1-AM. The T1 data normalized on T0 presented a statistically significant difference ( $p=0.012$ ) between AM and no AM group.

In conclusion, A® gel seems to increase new blood vessels formation and to promote collagen deposition and organization.

### References

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- [2] Zhu et al. *BMC Oral Health*. 2015;15:60.
- [3] Canullo et al. *J Clin Periodontol*. 2016;38:86-94.

### Keywords

Wound healing, angiogenesis, collagen matrix