

HASTENING OF WOUND HEALING OF MUCOSA BY MEANS OF AMINOACIDS COMBINED TO SODIUM HYALURONATE AFTER ORAL BIOPSY: AN OPEN TRIAL

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Introduction

Hyaluronan, a component of extracellular matrix, has been shown to enhance wound healing by stimulating fibroblasts to proliferate, increasing the production of growth factors and the biosynthesis of several types of collagen¹. Sodium hyaluronate is widely used in order to promote wound healing in oral cavity also for its anti-inflammatory effects. Aim of this open clinical trial is to evaluate the efficiency of topical application of a combination of amino-acids and sodium hyaluronate, in minor oral surgery.

Materials and Methods

In this open trial twenty-seven minor oral surgery procedures with quantic molecular resonance scalpel (QMRS) were executed (21 F e 6 M; mean age: 50,7 yr; range: 11-67). Eighteen excisional biopsies, six incisional biopsies and three frenulectomies were performed. Immediately after surgery a gel with aminoacids combined to sodium hyaluronate (Aminogam[®], Errekappa Euroterapici, Milan, Italy) has been applied directly on the surgical wound, in order to favorite healing by secondary intention. Furthermore, all patients applied this gel on the wound 3-4 times/day, after meals and oral hygiene, massaging it with a finger in order to promote the distribution of the concerned area.

In all patients, we assessed the quality of the postoperative course in terms of hemostatic effect, edema and pain symptoms by VAS (Visual Analogue Scale, 0-100) and clinical healing for 6 steps (from baseline to 14 days after surgery). The recording and evaluation of parameters were performed at:

- Baseline (T#0): Registration data and clinical symptom. Relief illustrations. Surgery by QMRS;
- The second hour after surgery (T#1): evaluation of pain, bleeding and edema;
- After 24 hours (T#2): evaluation of clinical aspect, pain and edema;
- After 72 hours (T#3): evaluation of clinical resolution, pain and edema;
- After 7 days (T#4): assessment of clinical resolution and pain;
- After 14 days (T#5): evaluating of clinical resolution and pain.

To assess the severity of symptoms, patients were asked to use a visual analogue scale (VAS) of the linear type. The patients marked the symptom score on a line from 0 to 100 of the VAS scale at every step (T#0, T#1, T#2, T#3, T#4 and T#5), where "0" indicates the absence of symptoms, and "100" a pain that interferes with the stomatognathal functions (chewing, swallowing, phonetic). Postoperative pain was assessed by Wilcoxon Test (assessment intra-group) T#1 vs T#0, T#2 vs T#1, T#3 vs T#2, T#4 vs T#3 and T#5 vs T#4.

The level of statistical significance was set at $p \leq 0.05$; data analysis was performed using StatView 5.0.1 (SAS Institute, Cary, NC). The clinical evaluation of the bleeding was defined as: a) mild; b) moderate; c) severe; while the presence of edema was assessed with the dichotomous criterion (Yes / No). The monitoring of surgical wounds and evaluation of clinical healing were defined as: a) full; b) partial; c) absent. For each step the product compliance was evaluated as: a) high, b) sufficient; c) low. Before each step the possible side effects of the gel were assessed.

Results and Discussion

Regarding pain symptom, mean values registered were: T#0 6.7 (± 20 ; range: 0-60), T#1 12.2 ($\pm 24,5$, range: 0-70), T#2 4.4 (± 7.3 , range: 0-20), T#3 1.1 ($\pm 4,4$; range 0-10); no patient complained pain at T#4 and T#5 (table1).

Score	Present Study (Quantic molecular resonance scalpel and aminoacids combined to sodium hyaluronate gel)	STUDIES	
		Campisi G <i>et al.</i> 2003 ² (Incisional biopsy in oral medicine: punch vs traditional procedure)	Campisi G. (not posted data) (Punch biopsy)
T#0 (Baseline)	6,7(±20)	20 (± 17,97)	0
T#1 (after 2 hours)	12,2 (±24,5)	15,0 (±14,4)	40,5 (±21,8)
T#2 (after 24 hours)	4,4 (±7,3)	Not calculated values	Not calculated values
T#3 (after 72 hours)	1,1 (±4,4)	Not calculated values	Not calculated values
T#4 (after 7 days)	0	5,8 (±9,5)	3,8 (±11,4)
T#5 (after 14 days)	0	Not calculated values	0

Table 1.

was achieved within 2 weeks after surgery, regardless of the size of the initial injury and the surgical procedure (excisional biopsy, incisional and frenulectomy). Only three slight bleeding at T#1 were observed; post-operative edema was never present at T#3 (72 hours after surgery). All patients reported a good compliance and there were no side effects associated with the use of the gel. In historical control², regarding pain evaluation, mean values were in general worst [at T#0 was 20 (±17,97), at T#1 15,0 (±14,4) and at T#4 5,8 (±9,5)]. Several studies demonstrated that hyaluronic acid promote the repair process and reduce the post-operative pain, improving the patient's post-operative comfort^{3,4,5,6}. Hyaluronic acid has an important role in wound healing as part of cell proliferation and migration. Initially, it provides a temporary structure in the early stages of the wounds³, which promotes both the diffusion of nutritional supplies and the elimination of waste products from cell metabolism. Moreover, hyaluronic acid is associated to keratinocyte proliferation and migration⁴.

Our results show that the gel containing amino-acids and sodium hyaluronate in the group of patients undergoing oral surgery can be used efficiently. After three different kinds of surgery, the application of the gel resulted in a hemostatic effect and reduction of edema and pain symptoms in the immediate post-operative, also this product provided a mechanical protection, with a reduction of infectious complications and rapid healing of surgical wounds. Aminoacids combined to sodium hyaluronate application may represent in oral surgery an innovative therapeutic agent thanks to all its effects.

References

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Evaluation of the intra-group symptom score at T#0, T#1, T#2 and T#3 showed no statistically significant differences in T#1 vs T#0 ($p = 0.5930$, $z = -0.535$), T#2 vs T#1 ($p = 0.2850$, $z = -1.069$) and T#3 vs T#2 ($p = 0.1088$, $z = -1.604$), revealing a good early performance. In all patients the complete clinical resolution of the surgical wound