



significant, progressive reduction in aGH from post-surgery to 36 months. No significant inter-group differences in totCON% and aGH were found at each observation interval.

**Conclusions:** Although the height of the peri-implant radiopaque area apical to the implant apex tends to reduce overtime at sites which have received tSFE, the peri-implant bone support seems to be maintained long term irrespective of the graft material used.

### Hyaluronic acid evaluation in the treatment of dental implant surfaces and latest generation prosthetic components: in vitro experimental analysis

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**Aim:** Implantology is a branch of dentistry that has achieved excellent results in recent years. The fundamentals of osseointegrated implantology have undergone important changes that have made it possible to change the therapeutic techniques of this profession thanks to the introduction of more efficient and versatile components to be used in oral rehabilitations. Implant-supported prostheses have greater benefits when compared to conventional fixed cemented retained prostheses or removable dentures. The titanium dental implant stimulates the bone and maintains its size in a similar way to natural teeth. The purpose of this work is to focus attention on the latest generation of surface treatments and, specifically, on hyaluronic acid capable of interacting with the biological responses of the host, determining positive biological implications during the first stages of healing.

**Methods:** Analysis of the literature shows the following results. Hyaluronic acid is a non-sulphurous glycosaminoglycan free of protein core, it is made up of long sequences of glucuronic acid and N-acetylglucosamine. The choice of hyaluronic acid is justified by its presence in the human body as a component of the extracellular matrix and by its characteristics of osteoconductivity and positive action on the progenitor cells responsible for creating bone. Hyaluronic acid covalently bonded to the titanium surface of the implant increases bone growth and determines greater maturity for the interfacial bone. The same shows a decrease in inflammation during wound healing since, by increasing the wettability of the surface in contact, it favors the organization of the blood clot and all other closely related phenomena. Scientific studies

analyze the effects of hyaluronic acid in the post-surgical phase. The evaluation of the TNF- $\alpha$  on the experimental group showed a higher value for osteoblasts and osteocytes if compared to the control group. On histomorphometric and histochemical analysis, newly formed bone tissue showed greater presence of osteoid tissue and new bone tissue was found in the experimental group. The surface study by X-ray photoelectron spectroscopy showed a layer of titanium oxide on the surface with the presence of high percentages of pure titanium and nitrogen.

**Results:** With the analysis of surface by atomic force microscopy it has been shown that the layer of hyaluronic acid deposited on the implant surface interacted with the surrounding bone by virtue of its chemical qualities and not correlated to the surface modification at the topographical level. Finally, the micro-TC evaluation confirmed BIC, BAIT and BAOT values more represented in the experimental group than in the control group with a high degree of osseointegration; the lower turns with woven bone and the upper turns with the bone cortex. Type I collagen used as a coating affects the migration, adhesion, proliferation and differentiation of cells on titanium implants, promoting early osteogenesis.

**Conclusions:** The aim of this research was to demonstrate that, in the osseointegration phases, there is an acceleration around the implant site. Hyaluronic acid has a chemotactic effect on inflammatory cells thus resulting in a faster healing response. The data are still not sufficient to conduct a review and further studies are needed.

### Peri-implant tissue conditions at implants treated with sub-periosteal peri-implant augmented layer technique: a retrospective, cross-sectional study

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**Aim:** To assess peri-implant tissue conditions on the short-term in patients receiving the Sub-periosteal Peri-implant Augmented Layer (SPAL) technique compared to patients with adequate thickness ( $\geq 2$  mm) of the peri-implant buccal bone plate (PBBP) at placement.

**Methods:** Patients where a deficient or thin PBBP at placement was corrected by SPAL technique (SPALdehiscence and SPALthin groups, respectively) and patients presenting a residual PBBP thickness