



Use of Hyaluronic Acid in Osteointegration of Dental Implants

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Abstract

The purpose of this study was to investigate the effects of hyaluronic acid gel on the osseointegration of dental implants. Hyaluronic acid is known to have an osteoinductive effect during regeneration of bony defects, it might also have a favourable effect on osseointegration.

New bone and the osteoid matrix content around the dental implants were evaluated and no significant difference as time goes by, it's only a temporary effect.

Keywords: Hyaluronic Acid; Osteointegration; Dental Implants

Introduction

Osseointegration is the firm, stable and lasting connection of the dental implant and the bone tissue formed around it, which is subject to the phenomena of bone-dental implant interface. Osseointegration allows the implant to be integrated directly, solidly and durably into the jaw bone of the jaw, which improves functionality and long-term results. The osseointegration process was defined in 1952 by Professor Per-Ingvar Brånemark, based on his studies on blood circulation. In his experiments, he observed that bone tissue has a strong capacity for adhesion to titanium, which led to the design of a fixation for the dental implant that, thanks to its screw shape and together with a specific surgical technique, favors this natural osseointegration process between titanium and bone. Thus, we can say that osseointegration is a physiological phenomenon necessary for the success of the dental implant. In addition, the knowledge developed in recent years about osseointegration processes has allowed immediate loading implantology to progress significantly.

Hyaluronic Acid has achieved great fame in the world of aesthetics, for its results and duration, thanks to its properties. Therefore, it is not far-fetched that a gap has been won and, increasingly, we hear about hyaluronic acid in dentistry. Hyaluronic acid is an essential glycosaminoglycan of the extracellular matrix of all body tissues. The highest concentrations are found in our cartilage, joints and skin. Thanks to the scientific advances made in recent years, numerous uses of hyaluronic acid in dentistry have been discovered. It is important to know them in order to apply them and offer the best service to our patients. Hyaluronic acid favors tissue regeneration of gums and mucosa thanks to its cell regeneration properties.

Its use in oral surgery is very useful since it reduces inflammation by accelerating the healing process. In turn, it reduces the risk of infection after surgery. Hyaluronic acid reduces inflammation and pain thanks to its mechanical lubrication properties and improves joint function. Hyaluronic acid is used in perioral aesthetics thanks to its moisturizing properties on soft tissues. Hyaluronic acid

infiltrations immediately improve the appearance of our skin and also our smile. It is used as a biomaterial, it is an adjunct in the processes of tissue and traumatic repair, it is used as an antiseptic and it significantly reduces bleeding, coupled with this it is used in the pathology of the temporo-mandibular joint and among many, it plays definitive roles in the genesis, maintenance and resolution of the underlying inflammation. It decreases the type of prostaglandins, which cause inflammation and decreases the inflammatory process. In addition to improving the arrangement of collagen, resulting in better healing and tissue repair [1-3].

Purpose of the Study

The purpose of this work is to analyze whether the use of hyaluronic acid helps osseointegration of dental implants.

Methods

A bibliographic search was conducted in PubMed. The search keywords were: hyaluronic acid for dental implantology, hyaluronic acid for the treatment of dental implantology. 7 articles published in the last 10 years were included.

Once these studies were read and ordered, 3 were selected, since they present a focus on the use of hyaluronic acid in the regeneration and osseointegration of dental implants.

Results

The results obtained when using hyaluronic acid to regenerate the new bone and the osteoid matrix content around dental implants, were favorable in the short term, since when being evaluated histologically and histomorphometrically, the groups with application of hyaluronic acid did not show significant differences. group without its application, as indicated by the Yazan M study in which I observe that dental implants evaluated with hyaluronic acid gel did not show significant differences two months after the operation, in the case of the scientific and clinical foundations of Boot W no differences were found in the amount of bone apposition near the implant of the gel group to that of the non-gel group, all this because hyaluronic acid undergoes degradation over time. the investigate its effects in gel form on the osseointegration of dental implants. During osseointegration, the woven bone that formed during the first stage of healing adapts to the loading forces and is converted to lamella bone, which consists of parallel fibres. There are similar stages during the healing of bony defects and osseointegration of dental implants. Many factors that stimulate bone healing therefore have favourable

effects on the osseointegration of implants. However, we know of no published study that clearly examines the effects of hyaluronic acid on the osseointegration of dental implants.

Conclusion

we knew that it had favourable effects on the healing of bone, we investigated its effect on the osseointegration of dental implants. Our hypothesis was that hyaluronic acid, known to accelerate osteogenic cell differentiation, would have a favourable effect on the osseointegration of dental implants. Osseointegration is in direct relation to both the implant surface and the bone, with no collagen tissue or fibroblast matrix. the effects of hyaluronic acid on osseointegration will be supported by the results of further studies with larger study and control groups. In conclusion, we have shown that the hyaluronic acid may have had a favourable impact on healing of soft tissue and bone. There is a need for further work to be done.

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