Contour enhancements of the midface make up a dominant aspect of aesthetic surgery. The goal of midface rejuvenation is to decrease the prominence of grooves and creases as well as to provide volume to atrophied tissue. There are various options, including autologous tissue grafts, allogenic tissue grafts and alloplastic materials. In turn, patients’ needs have led to an increasing trend of less invasive treatments.

In the present study, 82 implants were used for midface augmentation in 41 patients (38 women, 3 men) between January 2014 and January 2016. Twenty-five patients were treated with Hyaluronic acid implants while the remaining 16 patients were treated with lipofilling. For both groups and in all cases, good integration of the filled material was observed in the malar region, with no significant treatment complications and the last follow-up visit demonstrated good results and overall satisfaction. Hyaluronic acid fillers and lipofilling are therefore the ideal answer to patients who aim for a natural and immediate result with manageable complications, but, unlike Hyaluronic acid, autologous fat allows us to obtain a long-lasting effect over time, resulting the closest thing to an ideal facial filler.
HYALURONAN: AN OVERVIEW

F. ABBRUZZESE, F. BASOLI, M. COSTANTINI, S. M. GIANNITELLI, M. GORI, P. MOZETIC, A. RAINER and M. TROMBETTA

Università Campus Bio-Medico di Roma, Rome, Italy

Hyaluronic acid (HA) is a polyanionic natural polymer occurring as a linear polysaccharide composed of glucuronic acid and N-acetylglucosamine repeats. Hyaluronic acid has a wide range of applications with its excellent physicochemical properties such as biodegradability, biocompatibility, non-toxicity, non-immunogenicity and serves as an excellent tool in biomedical applications such as osteoarthritis surgery, ocular surgery, plastic surgery, tissue engineering and drug delivery. This work provides an overview on hyaluronic acid, its chemistry and biochemistry and its medical applications.
Adhesive capsulitis (AC) is a common pathological condition of the shoulder characterized by painful restriction of range of motion (ROM) of the glenohumeral joint. Currently, no consensus has been reached regarding the best treatment. Hyaluronic acid (HA) injection is a safe procedure that can result in significant improvement in active and passive ROM, alleviating pain and improving shoulder function. We systematically reviewed current literature in order to evaluate the best evidence about the effectiveness of intra-articular HA injection for the treatment of primary AC. We searched Medline, CINAHL, Embase, Google Scholar and Cochrane Library. We selected studies comparing clinical outcomes of patients treated with HA in association or not with conventional therapy. Seven studies were evaluated: 2 uncontrolled randomized studies and 5 prospective randomized clinical trials with level of evidence I. Clinical outcome measures used included, among other, ROM, Visual Analogic Scale (VAS) pain scores, Constant score, Activity of daily living, Shoulder Pain and Disability Index (SPADI), American Shoulder and Elbow Surgeons (ASES) and Japanese Orthopedic Association Score (JOA score). Improvement was noted in terms of ROM, constant scores and pain in patients affected by AC treated with intra-articular HA injections. When compared with cortisone intra-articular injection, HA has equivalent clinical outcomes and ROM. The heterogeneity of treatments used in the studies reviewed, makes it difficult to draw a definite conclusion on the subject. HA injections do not seem to determine the final outcomes directly compared with conventional treatments. However, they could play an important role for early mobilization in the initial stages, during which, due to pain and inflammation, the patient keeps the shoulder immobilized for a long time, determining the direct cause of AC. Numerous variables, including use of lidocaine, different HA and AC stages, could influence the results and deserve to be accounted for in future investigations.
MENISCAL EXTRUSION AS BOOSTER OF OSTEOARTHRITIS

R. PAPALIA, G. PAPALIA, F. RUSSO, L.A. DIAZ, F. BRESSI, S. STERZI and V. DENARO

1University Campus Bio-Medico of Rome, Department of Orthopedics and Traumatology;
2University Campus Bio-Medico of Rome, Physical and Rehabilitation Medicine

Meniscal extrusion (ME) has shown to play a critical but still unclear role in osteoarthritis (OA) development. ME has been described as an important risk factor in the progression of knee OA, as it is involved in the thinning of articular cartilage, joint space narrowing, spontaneous osteonecrosis of the knee and subchondral bone marrow lesions. Meniscal damage of any degree of severity could cause ME in both compartments, but it is commonly associated with severe meniscal tears or root tears mainly in the medial meniscus. Magnetic resonance imaging is the most commonly used imaging modality in the assessment of ME, while ultrasonography may represent a valid alternative with high sensitivity and specificity. Conservative treatment for ME includes physical therapy and rehabilitation to maintain range of motion, corticosteroid injections and intra-articular injections of hyaluronic acid to provide short-term relief of knee pain. The goal of this study is to review standards of current diagnosis and treatment of ME and its relationship to knee OA.
Osteoarthritis (OA) of the base of the thumb, also known as Trapezi-Metacarpal (TM) OA, is a disabling condition, which mainly affects women and manual workers. When TM OA is not adequately treated, patients develop deformity and loss of function of the thumb. The surgical approach is a widespread strategy to treat this condition, but there is still no consensus on the most effective procedure. Therefore, several conservative strategies are commonly used, such as nonsteroidal anti-inflammatory drugs (NSAIDs) administration, thumb strengthening exercise, splinting, steroid (CS) and hyaluronic acid (HA) intrarticular injections. The present review of the literature aims to summarize the available scientific evidence on the treatment of TM OA with injections of HA. Thirteen studies were included: 7 randomized controlled trials, 5 case series and a case-control study. Among these, 5 studies compared HA versus CS injection. Results from most of them reported better outcomes with HA injections in terms of function (strength) and joint motion, while CS injections had greater effect on pain; moreover, CS action was faster but shorter, while HA required more time to obtain a therapeutic benefit and lasted longer. In non-comparative articles, this trend was also confirmed. Indeed, the authors reported an improvement in pain relief up to six months. Similarly, all studies indicated hand function improvement over time, measured though DASH score, pincher and grip strength tests. Available data from included studies show that there is no clear evidence to suggest a treatment with HA injections as the best advisable non-operative treatment for TM OA. However, promising potentials were shown by the randomized controlled trials, suggesting that there is some benefit and less comorbidities with the administration of HA. Further research, such as trials evaluating larger cohorts with validated scores for long-term follow-up, is still necessary.
TOPICAL HYALURONIC ACID IN RHINITIS MEDICAMENTOSA: COULD OUR PERSPECTIVE BE CHANGED?

M. CASALE¹, P. VELLA¹, A. MOFFA¹, L. SABATINO¹, V. RINALDI¹,², V. GRIMALDI³ and F. SALVINELLI¹

¹Unit of Otolaryngology, University Campus Bio-Medico Of Rome, Italy; ²Department of Clinical Sciences and Community Health, Università degli Studi di Milano, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico; ³Pediatric, Private Practitioner, Rome, Italy

This study was designed to prospectively evaluate the role of nebulized hyaluronic acid (HA) administered for 10 days as treatment for patients with rhinitis medicamentosa (RM). RM is a pathological condition of the nasal mucosa induced by prolonged, excessive or improper use of topical decongestants. It is characterized by persistent nasal congestion that can lead the patient to increase the frequency of application and the quantity of the substance being applied, resulting in dependence on topical nasal decongestants. Twenty-five patients were treated with HA nebulized via Spray-sol twice a day for 10-days (T1) (HA Spray-sol treatment group). Subsequently, after 3 days of washout, patients were treated with physiological saline nebulized via Spray-sol twice a day for 10 days. (T2) (saline Spray-sol treatment group). The HA Spray-sol treatment group (tp) significantly improved visual analogue scale (VAS) scores (T0=6.25±1.64 vs T1=3.91±1.30; p<0.05), whereas there was no statistically significant difference in the saline Spray-sol treatment group (tp) (p>0.05), results confirmed by the anterior active rhinomanometry (AAR) data (HA Spray-sol tp T0=1.19±0.64 vs T1=0.44±0.25, p<0.05; saline Spray-sol tp (p>0.05). An improvement in the Global Rhinitis Score (GRS) was recorded in both groups (T0=15.37±5.16 vs T1=5.54±3.23, p<0.05; saline Spray-sol tp T0=15.37±5.16 vs T2=10. 7±5.43; p<0.05). Both groups showed a significant reduction in mucosal oedema and nasal secretions. Patients treated with HA Spray-sol reduced or even eliminated (11/25 patients) the use of topical decongestant within 10 days of treatment with HA. The results of this study suggest nebulized topical 9-mg sodium hyaluronate plays a pivotal role in the management of RM.
The management of oral ulcers is a challenge for clinicians. Whilst there is widespread use of topical corticosteroids, antibiotics and antimicrobial, there is only weak evidence for the effectiveness of any of the topical treatments. Hyaluronic Acid (HA) has been recently proposed for topical administration in the treatment of oral ulcers and other painful oral lesions. The aim of the study is to systematically review the published literature regarding all the therapeutic effects of HA on painful oral lesions such as oral ulcers and oral lichen planus. Relevant published studies were found in PubMed, Google Scholar and Ovid using a combined keyword search or medical subject headings. At the end of our study selection process, 4 relevant publications were included: two regarding oral lichen planus, one Behcet’s Disease and Recurrent Aphthous ulcer and one in oral ulcers in general. Both subjective parameters such as healing period, VAS for pain and objective assessments such as number of ulcers, maximal area of ulcer and inflammatory signs, significantly improved after HA treatment. These data allow us to suggest that HA may play a pivotal role in the treatment of oral ulcers.
Rhinosinusitis is one of the most common inflammatory conditions of the nasal cavity and paranasal sinuses and is one of the most common causes of absence from work and for visits to the family doctor. The treatment strategy in both acute rhinosinusitis (ARS) and chronic rhinosinusitis (CRS) is to reduce the severity of the symptoms, minimize the duration of the disease and prevent complications. Topical therapy has become an important tool in otolaryngologists’ armamentarium for rhinosinusitis treatment. Recently, topical hyaluronic acid (HA), the major component of many extracellular matrices that promotes tissue healing, including activation and moderation of the inflammatory responses, cell proliferation, migration and angiogenesis, has been proposed for ARS and CRS adjuvant tool. The aim of the study is to systematically review the published literature regarding all the therapeutic effects of HA on the ARS and CRS. Relevant published studies were found in PubMed, Google Scholar and Ovid, using a combined keyword search or medical subject headings. At the end of our study selection process, 5 relevant publications were included: 2 of them investigated the potential role of HA in reducing symptoms and preventing exacerbations of CRS in adult population, two of them in paediatric patients affected by upper respiratory tract infections and one of them in cystic fibrosis patients with bacterial rhinopharyngitis. Data deriving from the present review of 5 clinical studies showed that the use of topical HA represents a relevant therapeutic advance in rhinosinusitis to minimize symptoms and prevent reacutization with a significant improvement of their quality of life, as it avoids systemic side effects and increases local drug activity. Further studies on larger populations and with new specific nebulization devices for upper airway are needed to confirm these encouraging results.
We prospectively evaluated the efficacy of nebulized Hyaluronic Acid (HA) as an adjuvant treatment to hasten the improvement of nasal respiration and to minimize patients’ discomfort in the postoperative functional endoscopic sinus surgery (FESS) for chronic rhino-sinusitis (CRS). We enrolled 33 CRS adult patients who underwent endoscopic functional sinus surgery. They were randomly assigned into two groups: Spray-Sol group (18 patients) with HA nebulized with a new nasal device named Spray-Sol and Spray group (15 patients) with a HA nebulized with a common spray. Both groups were treated twice daily for 4 weeks. CRS questionnaire, Visual analogic scale (VAS) and nasal endoscopy were used to assess the outcomes of the treatments during the 1st month of follow up. The mean VAS score of the Spray-Sol group at 2 weeks was significantly lower than the Spray group (5.2±2.1 vs 10.5±3.7; p<0.05). The VAS score remained significantly lower in the Spray-Sol group also at the 4 weeks (2.9±0.8 vs 6.1±3.4; p<0.05). The CRS score was significantly better at week 2 and 4 in both groups in comparison with baseline values, with better results in the Spray-Sol group. Since the first visit the Spray-Sol group also showed significantly lower crusts, edema and secretions than the Spray group (p<0.05). The compliance to treatment was similar in both groups. The results of this prospective study suggest a role nebulized of HA through new device (Spray-sol) as a supportive treatment for faster improvement of nasal respiration, also minimizing patient discomfort, promoting nasal mucosa healing in postoperative FESS for CRS.
THE USE OF HYALURONIC ACID IN THE TREATMENT OF ANKLE OSTEOARTHRITIS: A REVIEW OF THE EVIDENCE

R. PAPALIA¹, E. ALBO¹, F. RUSSO¹, A. TECAME¹, G. TORRE¹, S. STERZI², F. BRESSI² and V. DENARO¹

¹University Campus Bio-Medico of Rome, Department of Orthopedics and Traumatology; ²University Campus Bio-Medico of Rome, Physical and Rehabilitation Medicine

Ankle osteoarthritis (OA) is a progressive degenerative joint disease that causes ankle pain and functional limitation especially during walking. It tends to involve younger people with high functional request and has often a post-traumatic origin. Symptoms control through conservative treatment is essential to procrastinate as long as possible the need for surgery. Although few data are present in literature about the use of local viscosupplementation in ankle OA, their potential use for ankle OA has been suggested. We systematically reviewed literature to evaluate the best evidence about short and long term effectiveness of intra-articular HA injections in the treatment of ankle OA. After having screened titles and abstracts from PubMed, Ovid, Cochrane Reviews, Google Scholar, we identified 14 full text articles and collected the outcome rates of intra-articular cycles of HA injections in patients with symptomatic ankle OA. Only 4 randomized controlled trials were included. Ankle Osteoarthritis Scales (AOS), American Orthopedic Foot, Ankle Society (AOFAS) clinical rating score, visual analog scales (VAS), Western Ontario and McMaster Universities (WOMAC) OA Index of Pain, Stiffness, and Physical Function Score were most frequently used to evaluate outcomes. Although randomized trials showed scores improvement also in placebo-treated patients, current evidence suggests that viscosupplementation for treatment of ankle OA is a safe and effective method. More randomized controlled trials with a large number of patients that compare not only the different types, dosages and frequency of HA injections, but also the effectiveness of HA versus corticosteroids infiltrations and HA versus other types of conservative treatment are still needed.
HYBRID HYALURONIC ACID VERSUS HIGH MOLECULAR WEIGHT HYALURONIC ACID FOR THE TREATMENT OF OSTEOARTHRITIS IN OBESE PATIENTS

R. PAPALIA1, F. RUSSO1, G. TORRE1, E. ALBO1, V. GRIMALDI1, G. PAPALIA1,
S. STERZI1, G. VADALÀ1, F. BRESSI3 and V. DENARO1

1University Campus Bio-Medico of Rome, Department of Orthopedics and Traumatology,
Rome, Italy; 2Pediatric, Rome, Italy; 3University Campus Bio-Medico of Rome, Physical and
Rehabilitation Medicine, Rome, Italy

Osteoarthritis (OA) of the knee is one of the most relevant and debilitating health problems. Obesity represents one of the major risk factor for early development of OA. In the obese population, knee replacement should be delayed and eventually avoided and prefer conservative treatments including intrarticular hyaluronic acid (HA) viscosupplementation. In the present clinical randomized trial, we present a comparison between two groups of 24 obese patients which were randomized to be treated with two intrarticular injections of hybrid (low and high molecular weight) hyaluronic acid (Group A) or two injections of high molecular weight hyaluronic acid (Group B). Patients were followed-up through to 6 months and assessed though IKDC and KOOS scores, pain was evaluated with VAS. All patients reported a significant improvement when compared to baseline value in all outcome measures. At 3-month follow-up, IKDC had significantly improved in patients of Group A, compared to Group B (53.1±1.9 vs 51.4±2.4, p=0.0079) and the same for KOOS (52.1±2.0 vs 50.1±2.9, p=0.010). Furthermore, the difference in KOOS was persistently significant at 6-month follow-up (54.7±2.3 vs 51.7±4.9, p=0.014). The VAS reduced significantly more in Group A at 3 months (3.7±0.5 vs 5.2±0.7, p<0.001). In an obese population, where basal inflammatory pattern increases symptoms of OA and conservative treatment is recommended, HA viscosupplementation improved function and pain of the knee. The treatment with hybrid HA showed better outcomes than high molecular weight HA in obese patients. The combination of the anti-inflammatory action of low molecular weight HA on chondrocytes and the biomechanical role of high molecular weight HA might explain the different results.
Recently, a specifically designed device was proposed that is able to nebulize particles with a diameter of approximately 16 micrometres to be used mainly in the management of diseases of the upper airway respiratory tract. The purpose of this pilot study is to evaluate the potential efficacy of nebulized hyaluronic acid in the management of gingivitis. The results of the statistical analysis demonstrate that there was no difference between the pocket depth as measured in the treated sites at time 0 (pre-treatment) and time 1 (15 days post-treatment). However, the difference between bleeding on probing as measured at time 0 and time 1 indicated an improvement on both sides, with a slightly greater improvement on the side treated with HA.
THE USE OF HYALURONIC ACID AS AN ADJUVANT IN THE MANAGEMENT OF MUCOSITIS

M. A. LOPEZ¹, N. MANZULLI¹, A. D’ANGELO¹, V. CANDOTTO²,
M. CASALE³ and D. LAURITANO⁴

¹Private practice, Rome, Italy; ²Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Ferrara, Italy; ³Unit of Otolaryngology, University Campus Bio-Medico, Rome, Italy; ⁴Department of Medicine and Surgery, University of Milan-Bicocca, Monza, Italy

In recent years, with an increase in the number of implants, there has been a related increase in cases of pathologies related to infections around the implant site and on the implant surface i.e. mucositis and peri-implantitis. The purpose of this pilot study is to evaluate the potential efficacy of nebulized hyaluronic acid in the management of mucositis. The results of the statistical analysis demonstrate that there was no difference between the pocket depth as measured in the treated sites at time 0 (pre-treatment) and time 1 (15 days weeks post-treatment). However, the difference between bleeding on probing as measured at time 0 and time 1 indicated an improvement on both sides, with a slightly greater improvement on the side treated with HA.
THE USE OF HYALURONIC ACID AS AN ADJUVANT IN THE MANAGEMENT OF PERIODONTITIS

M. A. LOPEZ¹, N. MANZULLI¹, A. D’ANGELO¹, D. LAURITANO², M. CASALE³ and V. CANDOTTO⁴

¹Private practice, Rome, Italy; ²Department of Medicine and Surgery, University of Milan-Bicocca, Monza, Italy; ³Unit of Otolaryngology, University Campus Bio-Medico, Rome, Italy
⁴Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Ferrara, Italy

The emollient and restructuring action exerted on the mucous membranes by hyaluronic acid is of particular significance. This is thanks to its reparative (it stimulates angiogenesis) and soothing properties (hyaluronic acid is used in wound care to improve the processes of wound healing), which are effective in treating the symptoms of local inflammation and irritation.

The purpose of this clinical trial is to evaluate the potential efficacy of nebulized hyaluronic acid in the management of chronic periodontitis in adults. The results of the statistical analysis demonstrate that there was a slight improvement in the measurement of pocket depth in the side treated with HA at time 0 (pre-treatment) and time 1 (15 days post-treatment). Furthermore, the difference between bleeding on probing as measured at time 0 and time 1 indicated an improvement on both sides, with a slightly greater improvement on the side treated with HA.
THE USE OF HYALURONIC ACID AS AN ADJUVANT IN THE MANAGEMENT OF PERI-IMPLANTITIS

M. A. LOPEZ¹, N. MANZULLI¹, A. D’ANGELO¹, D. LAURITANO², R. PAPALIA³ and V. CANDOTTO⁴

¹Private practice, Rome, Italy; ²Department of Medicine and Surgery, University of Milan-Bicocca, Monza, Italy; ³University Campus Bio-Medico of Rome, Department of Orthopedics and Traumatology; ⁴Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Ferrara, Italy

It is well known in dentistry that there are numerous chronic conditions that require ongoing and constant management over time, the most noteworthy being periodontal disease, gingivitis and periodontitis. Yet, in recent years, with the increase in the number of implants being placed, mucositis and peri-implantitis have become more and more prevalent pathologies. The results of the statistical analysis demonstrate that there was a slight difference between the pocket depth as measured in the treated sites at time 0 (pre-treatment) and time 1 (15 days post-treatment), although the difference was so small as to render it statistically irrelevant. Bleeding on probing as measured at time 0 and time 1 indicated an improvement on both sides, but with no greater improvement noted on the side treated with HA.
THE USE OF HYALURONIC ACID AS A SUPPORT OF TWO DIFFERENT MICRONIZED BIOMATERIALS IN CRESTAL SINUS LIFT PROCEDURES. A REPORT ON TWO CASE STUDIES WITH VOLUME COMPARISON

M. A. LOPEZ¹, M. CASALE², V. CANDOTTO³, R. PAPALIA⁴, F. BRESSI⁵ and F. CARINCI³

¹Private practice, Rome, Italy; ²Otolaryngology Unit, University Campus Bio-Medico, Rome, Italy; ³Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Italy; ⁴University Campus Bio-Medico of Rome, Department of Orthopedics and Traumatology; ⁵University Campus Bio-Medico of Rome, Physical and Rehabilitation Medicine

In the context of the trans crestal maxillary sinus lift, a wide variety of biomaterials have been used to fill the sub-antral space over the years. The materials that have a pasty consistency and are smooth and free from lumps are the most suitable to come into contact with the Schneiderian membrane which, if torn, cannot perform its graft containment function. In this study, a micronized heterologous bone in a collagen matrix of two different percentages was used in order to fill the maxillary sinus. Before using biomaterial as filler, a spray form of hyaluronic acid was used to disinfect the surgical site before and after the surgery, along with more consistent and pasty form of gel of hyaluronic acid being used in order to facilitate the detachment of the membrane. The surgical procedures were designed and carried out using computer-planned surgery. The filling volume obtained was measured with a comparative software programme and using an ellipsoid formula. This technique allows the surgery to be performed in a way that is both minimally traumatic and invasive, fully careful of the membrane and represents a viable alternative to those surgical techniques for crestal sinus lift currently in use.
EFFECT OF BIOSTIMULATION ON ORAL FIBROBLAST: A PILOT STUDY

A. PALMIERI, A. AVANTAGGIATO, F. CURA, R. PAPALIA, M. CASALE, F. BRESSI and L. SCAPOLI

Department of Experimental, Diagnostic and Specialty Medicine, University of Bologna, Bologna, Italy; Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Ferrara, Italy; University Campus Bio-Medico of Rome, Department of Orthopedics and Traumatology; Otolaryngology Unit, University Campus Bio-Medico, Rome, Italy; University Campus Bio-Medico of Rome, Physical and Rehabilitation Medicine

Bio-stimulation is a technique in aesthetic medicine in which different drugs such as nucleotides, antioxidants and glucosaminoglycans precursors are injected in the dermis to improving the anabolic function of dermal fibroblasts, i.e., protein synthesis, replication and production of extracellular matrix components. It can be achieved with multiple intra-dermal injections, using two protocols: 1) Polydeoxyribonucleotide (PDRN) plus glucosamine sulphate (Gluc); 2) N-acetylcysteine (NAC) and amino acids (Aa) (named Bio- NAC procedure). Since the role of drugs used in biostimulation on human dermal fibroblasts is not completely understood, the aim of this study is to evaluate the effect of these substances in primary cell cultures by using RT-PCR and a panel of specific genes (ELN, DSP, FN1, FBN1, ITGA1, ITGA2, ITGA5, ITGB1, COL1A1, COL3A1) to detect their effect on cell metabolism and extracellular matrix components. Both the treatments were responsible for Elastine and Desmoplakin genes activation. Only NAC plus Aa treatment enhance the expression of other genes related to tissue growth and elasticity like FBN1, ITGA1 and ITGB1. All the other genes investigated (FN1, ITGA5, ITGA2, COL1A1, COL3A1) were down-regulated by both treatments. Since the precise role of these proteins in tissue integrity and aging is not known, this study confirms the usefulness of biostimulation therapies in enhancing some of the genes responsible of cellular wellbeing. This study could be useful to consider the possibility of injective biostimulation in oral cavity, clinical applications in oral healing and in gingival atrophy as well.
Bio-revitalization is a therapy commonly used in aesthetic medicine to improve skin quality by directly integrating hyaluronic acid alone or added to other molecules (i.e. vitamins) through intradermal injections. These injections are not aimed to fill roughness but to achieve extracellular matrix optimization. The injective medical devices used in aesthetic medicine differ for hyaluronic acid content and for the presence of additional molecules that characterize the formulation of a particular company. The aim of the present study is to compare HA with different compounds in regard to their effects on cultured fibroblasts over time by using RT-PCR and a panel of genes (ELN, DSP, FN1, FBN1, ITGA1, ITGA2, ITGA5, ITGB1, COL1A1, COL3A1) involved in connective integrity. Bio-revitalization is able to activate genes involved in tissue integrity. The reported data add new insight in the comprehension of molecular mechanism related to BR. These preliminary data have to be developed through additional experiments. However, an injective therapy seems to be effective in gingival fibroblast stimulation.