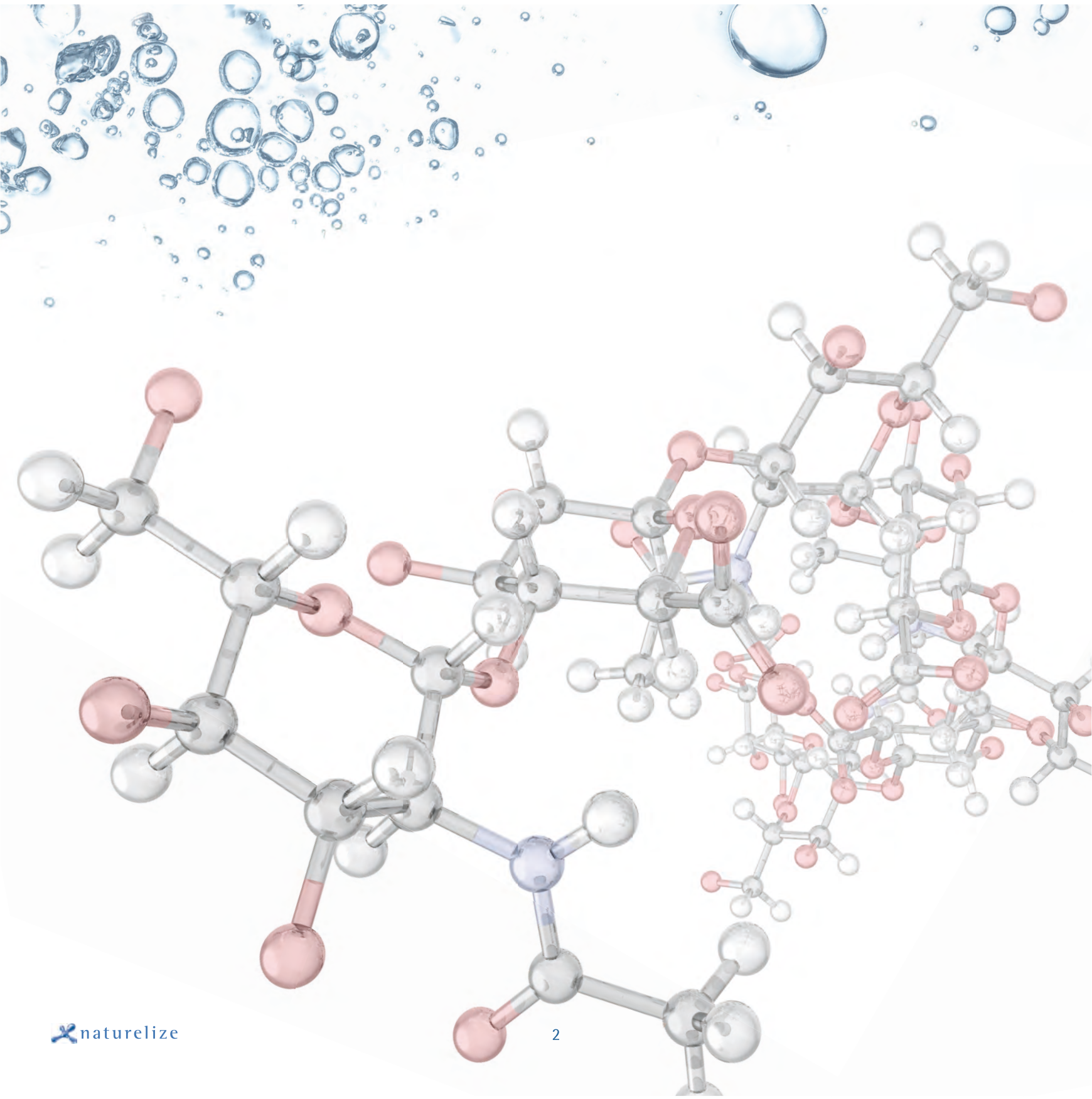




naturelize

Hyaluronic acid - Products



Hyaluronic acid

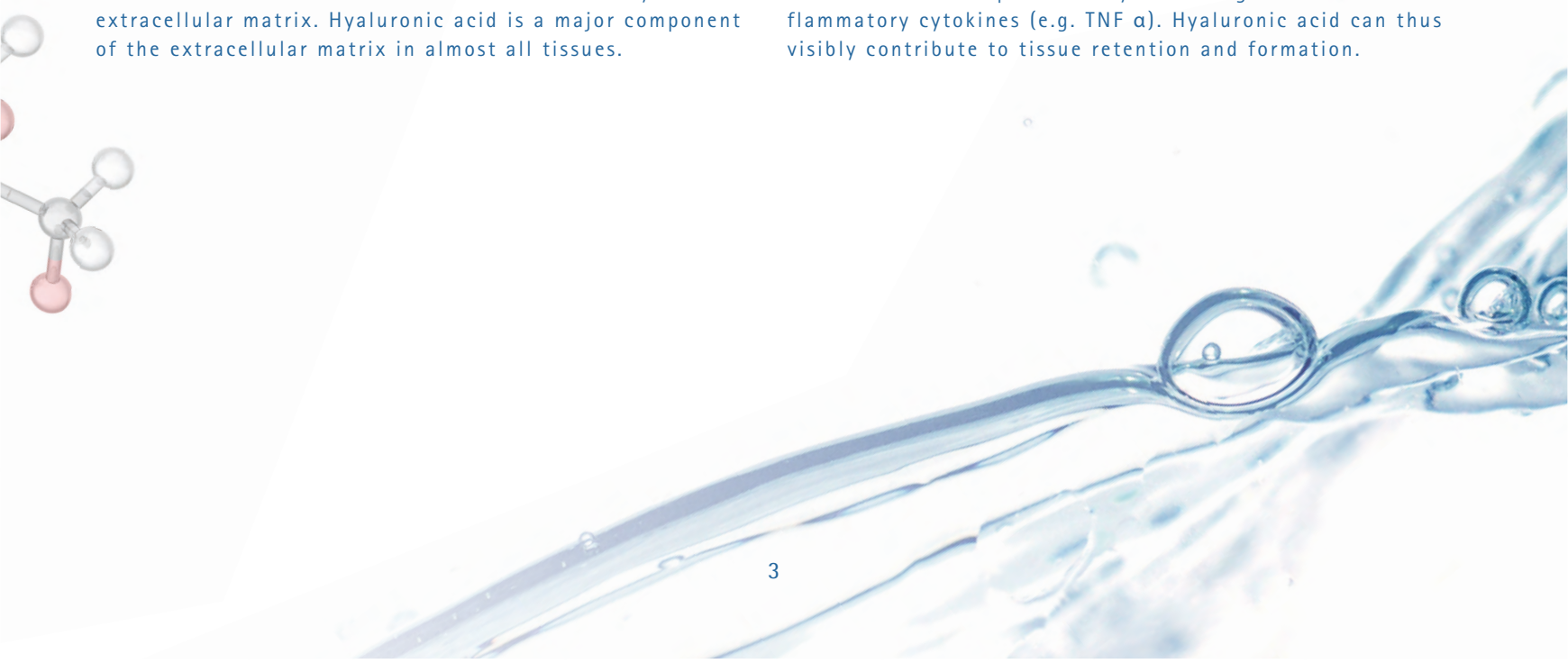
Hyaluronic acid (HA) is a natural polysaccharide and a member of the glycosaminoglycan family (GSG). The molecule consists of a repeating sequence of a disaccharide composed of D-glucuronic acid and N-acetylglucosamine.

Most somatic cells, in particular connective tissue cells, are able to produce hyaluronic acid. Hyaluronic acid is formed at the cell membrane and excreted directly into the extracellular matrix. Hyaluronic acid is a major component of the extracellular matrix in almost all tissues.

As such, its primary role is to bind water to permit the transportation of key metabolites and maintain tissue structure.

Hyaluronic acid activates metalloproteinase inhibitors and blockers, thereby preventing tissue breakdown.

A similar effect is produced by inhibiting the inflammatory cytokines (e.g. $\text{TNF } \alpha$). Hyaluronic acid can thus visibly contribute to tissue retention and formation.



Tissue Support:

Significant added value in terms of tissue regeneration

Tissue Support consists of non cross-linked hyaluronic acid, which has been designed specifically to treat inflammation of the oral mucosa, as well as to improve and control wound healing after surgery (GTR).

The low viscosity of Hyaluronic Acid Liquigel allows for easy clinical application.

Implantology:

- Tissue Support's ability to activate the regeneration of bone material optimizes handling and malleability, and accelerates wound healing.
- Enhances osteoblast formation, thereby reducing the time required to regenerate bone.
- Anti-inflammatory properties support and accelerate wound healing (by inhibiting the production of pro-inflammatory cytokines, e.g. TNF α).
- Reduces scarring in aesthetically demanding areas (HA matrix prevents accumulation of collagen and reduces scarring).

Parodontology:

- Bacteriostatic effect supports the regeneration process post parodontal surgery (especially for *Actinobacillus actionomyecetemcomitans*, *Prevotella intermedia* and *Staphylococcus aureus*).
- Improves bone level after HA-supported parodontal therapy.
- Significantly improves SBI (Sulcus Bleeding Index).



Tissue Support

Applications for general dentistry and oral surgery

- Accelerates the healing process after vestibuloplasty.
- Reduces scar tissue.
- Enhances surgical wound closure capabilities.
- General inflammatory disorders of the oral mucosa.
- Safety and prevention after surgical treatment by way of an antiseptic and bacteriostatic effect in the wound area.
- Promotes regeneration of fibroblasts.

Mode of action:

Tissue Support Hyaluronic Acid Liquigel is resorbed locally within 6 to 12 hours via the oral mucosa. To achieve optimum treatment success, it is important to apply Hyaluronic Acid Liquigel directly to the wound before closing the wound with a suture.

Product	Application form	Packaging	Quantity	Applied via
Tissue Support	Single-use syringe direct application possible	Blister, sterile	1 x 1 ml	Blunt angulated cannula

Flex Barrier

Much more than just another membrane!

Flex Barrier is the safe, synthetic, and user-friendly alternative to resorbable membranes. Flex Barrier Gel is comprised of two-thirds cross-linked and one third non cross-linked hyaluronic acid.

After manufacture, the hyaluronic acid is particulated (150-200 μm) and then treated with non cross-linked hyaluronic acid. Defined particle sizes ensure excellent profile conformity.

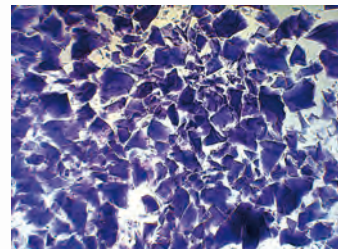
After applying the barrier gel uniformly and a relatively short 6-12 hour period required for the non cross-linked hyaluronic acid to be absorbed, a homogeneous layer of cross-linked particles remains on the defect.

Since the particles vary in size, they compress and form a flexible membrane on the area to be shielded. The barrier function remains active for 3 weeks.

The material is completely resorbed in about 6 to 8 weeks.

Hyaluronic acid's beneficial effects:

- bacteriostatic
- antiseptic
- promotes wound healing



(150 – 200 μm particle size
at 40x magnification, toluidine stain)



Tissue Sealer

A applications for general dentistry and oral surgery

Mode of action:

The barrier function remains active for 3 weeks.
Flex Barrier is subsequently absorbed locally by surrounding tissue.

Flex Barrier's high viscosity provides biological protection for the tissues, thereby preventing contamination of the operative field for the duration of the resorption period.

Product	Application form	Packaging	Quantity	Applied via
Flex Barrier	Single-use syringe can be applied directly	Blisters, sterile	1 x 1 ml	Blunt and sharp straight cannula

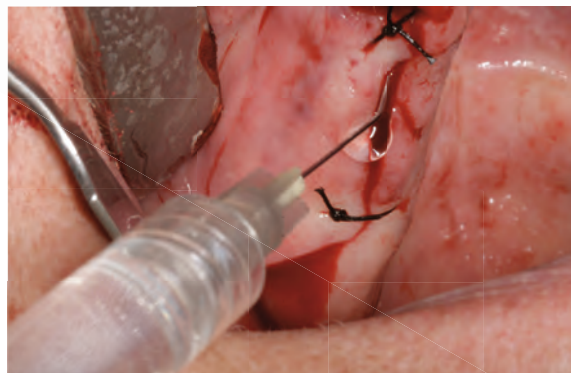
Tissue Support

Examples of uses in implantology

To support and accelerate wound healing, Tissue Support Hyaluronic Acid Gel is applied directly into the operation area immediately prior to wound closure. By way of gingiva formers, Tissue Support can also help improve wound healing and optimize tissue regeneration in the area of implantology care.

An angulated, blunt cannula is used for this purpose (27G / 0.4 x 18 mm). Angulation of the cannula permits easy application of the Tissue Support Hyaluronic Acid Gel between the wound margins. Subsequent suturing ensures direct contact between the wound margins and the hyaluronic acid gel, which the wound then resorbs locally.

Purpose-adapted viscosity characteristics and short resorption time (6-12 hours) ensure complete absorption by the surrounding tissue. Appropriate and correctly executed suturing technique can prevent the gel from being rinsed away by saliva.



1 | Tissue Support applied between the wound margins in the context of suture closure



2 | Application of Tissue Support for open healing of implants

Use in apicoectomy



1 | Partsch incision



2 | Flap mobilization to expose the affected area



3 | Exposure of the root tip



4 | Filling the bone defect with bone regeneration material and Tissue Support



5 | Defect area covered to optimize Flex Barrier's tissue regeneration effect

Apicoectomy is the second most common oral surgical procedure after surgical tooth extraction. With its good prognosis – an 85% success rate over 3 to 6 years – this procedure represents an excellent option to preserve natural teeth when used for the relevant indications.

Tissue Support

Use in sinus lifts

Non cross-linked hyaluronic acid gel enhances osteoblast regeneration, and by way of its osseointegration stimulating effects, reduces the time required for new bone formation.

Sasaki T, Watanabe C: Stimulation of osteoinduction in bone wound healing by high-molecular hyaluronic acid. Bone 16, 9-15 (1995)

Schwartz Z, Goldstein M, Raviv E, Hirsch A, Ranly DM, Boyan BD: Clinical evaluation of demineralized bone allograft in a hyaluronic acid carrier for sinus lift augmentation in humans: a computed tomography and histomorphometric study. Clin Oral Implants Res 18, 204-211 (2007)

In sinus elevation surgery, the use of hyaluronic acid offers numerous benefits for both surgeons and patients.

Source: Dental Clinics, Journal Of General Dentistry,

„Hyaluronic acid: biological effects and clinical applications“ Demarosi F, Sardella A, Lodi G, Carrassi A.

One of the main advantages in the application of Tissue Support is its ability to stabilize bone granules. Precise application of bone regenerating material is made much easier, as the highly viscous gel structure of the cross-linked preparation prevents subsequent displacement.



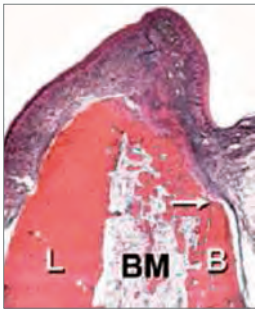
1 | Using Tissue Support to enrich granules



2 | Rigid granules ready for application

Use in ridge-socket preservation

Without socket preservation:



Six weeks post-extraction, marked vertical and horizontal resorption



Buccal resorption in the alveolar region six weeks post-extraction

Modern implantology is facing increasing demands in terms of aesthetics and functionality. Removable prostheses are nearly obsolete. Everyone wants beautiful and healthy teeth. To satisfy these demands, preparatory measures must always be initiated beforehand to help preserve hard and soft tissues.

Modern techniques and products are now available that can help to preserve tissue after tooth extraction.

In order to achieve the best possible esthetic result over the course of the planned restorative treatment and to minimize bone loss, augmentation using bone regeneration material is frequently carried out immediately after tooth extraction.

Here, Tissue Support can help to accelerate wound healing, thereby quickly stabilizing the affected area and preventing marginal bone loss.

Before and after socket preservation:



After extraction



After filling the defect with collagen sponge

Tissue Support

Use in periodontal therapy

A key facet of systematic periodontal therapy is effective removal of supra and subgingival plaque. Plaque reduction alone is effective in treating periodontitis in the majority of patients.

Jentsch H, Pomowski R, Kundt G, Gocke R: Treatment of gingivitis with hyaluronan. J Clin Periodontol 30, 159-164 (2003)

A number of scientific studies have shown that periodontal pathogenic microorganisms cannot be adequately eliminated using purely mechanical methods. For this reason, supporting products or therapies are used in periodontal therapy. These include disinfecting agents, antiseptics, non-steroidal anti-inflammatory drugs and systemically applied antibiotics. Sub or supragingival application of hyaluronic acid (one of four glycosaminoglycans in gingival tissue) can also be a successful additional therapeutic measure for treating periodontal disease. Hyaluronic acid's bacteriostatic properties (especially against *Actinobacillus actinomycetemcomitans*, *Prevotella intermedia* and *Staphylococcus aureus*) aid tissue regeneration.

Pirnazar P, Wolinsky L, Nachnani S, Haake S, Pilloni A, Bernard GW: Bacteriostatic effects of hyaluronic acid. J Periodontol 70, 370-374 (1999). Galgut P: The role of hyaluronic acid in managing inflammation in periodontal diseases, Dental Health 42, 3-6

Periodontal therapy with hyaluronic acid support has been shown to increase bone levels.

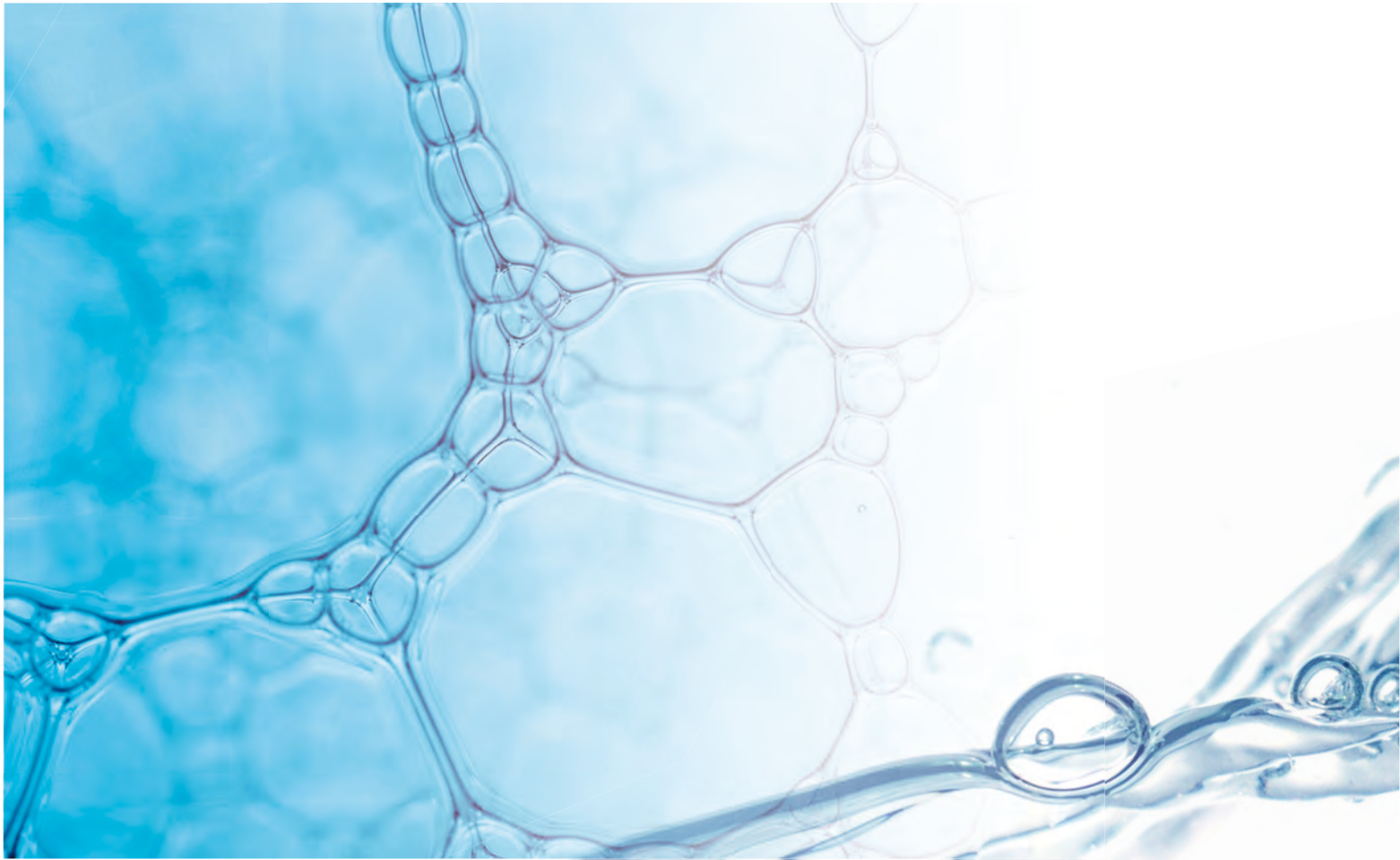
van den Bogaerde L, MD, DDS: Behandlung von intraosären Parodontaldefekten mit veresterter Hyaluronsäure: Klinischer Bericht über 19 nacheinander behandelte Läsionen. (Translation: Treatment of intraosseous parodontal defects with esterified hyaluronic acid: Clinical report on 19 successively treated lesions.)

Tissue Support can be applied simply and effectively using an angulated cannula. In addition to manual supragingival and subgingival scaling and root planing of all affected teeth, systematic periodontitis treatment involves the sub or supra-gingival application of Tissue Support. This treatment should then be reapplied 7-10 days after initial application.

As a supplement to mechanical treatment, its use leads to a statistically significant reduction in the sulcus bleeding score and a reduction in redness and swelling. This effect is primarily ascribed to the hyaluronic acid, as it regulates water content in the connective tissue extracellular matrix and the passage of substances into the interstitium. Tissue Support's low-risk and easy application clearly indicate its use in the initial treatment of periodontal disease.



Applying Tissue Support in the parodontal pocket



Practical use of Flex Barrier

Use in esthetic soft tissue reconstructions

Many studies have comprehensively documented the positive clinical outcomes of modern implantology. The use of modern treatment concepts and improved materials has dramatically expanded options for nature-identical esthetic reconstruction of the soft tissues.

Patients who have lost their natural teeth as a result of an accident or unforeseeable circumstances increasingly want to regain that "natural feeling" with the help of fixed dental prostheses. This raises patient expectations and consequently the demands made on the dentists who treat them.

For dentists, Flex Barrier offers a genuine alternative to difficult and lengthy surgical procedures.

The advantages:

- Shorter, simpler procedure under local anesthetic. Here, cross-linked hyaluronic acid-based Flex Barrier is injected directly into the papilla using a sharp needle (23G/0.6 x 25 mm). To achieve the desired effect in full, the injection may be repeated after about 3 weeks. Surgical procedures that cause unwanted scarring are no longer necessary.
- Higher success rates. Flex Barrier offers dentists a highly effective treatment approach that ensures a high success rate.

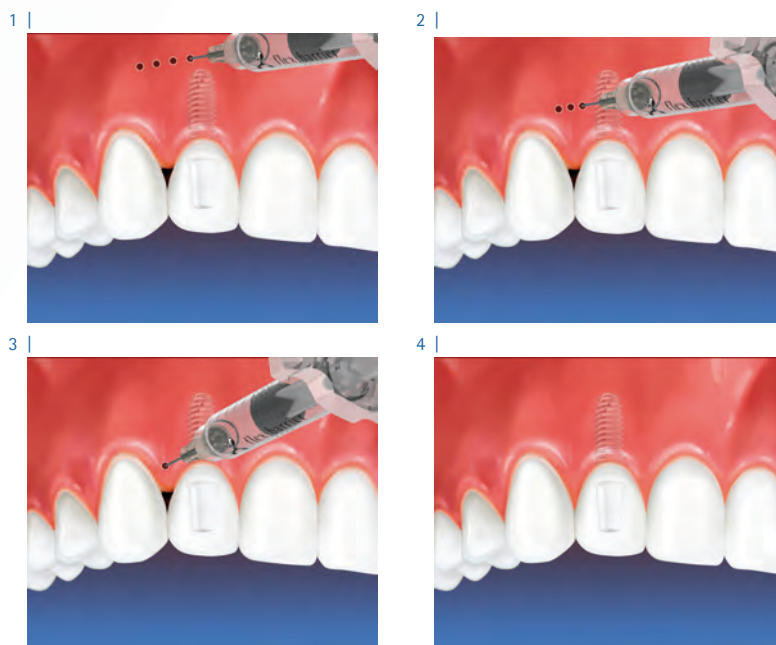


Initial situation



About three weeks after the second injection

Figure 5.11



- 1 | Preparing a broad treatment field by injecting Flex Barrier multiple times into the area of the non-attached gingiva
- 2 | Volumizing the attached gingiva
- 3 | Intrapapillar injection with Flex Barrier, 2-3 mm apical to the highest point of the papilla
- 4 | Final situation after completion of therapy

TST (three-step technique as per Göttfert) is a unique and reliable reconstruction method for intra-oral soft tissue and interdental papillae, depending on the respective tissue status and papilla defect.

The amount to be applied is determined on an individual basis.
(each ~ 0.1 ml / 30 G needle)

The papilla structure provided by Flex Barrier represents a gentle, highly aesthetic and economical alternative to methods such as gingivoplasty.

Flex Barrier

Use in open healing of an implant

The use of Flex Barrier for open healing (without surgical suture) represents an alternative approach in terms of optimizing soft-tissue management.

Initial situation



1 |



3 |



2 |



4 |



5 |



1 | Missing lateral incisor

2 | Implantation, opening with lateral decompression incision

3 | Implant closure using gingiva formers

4 | Seamless wound closure with Flex Barrier

5 | Completely filled soft tissue defect

6 |



7 |



8 |



9 |



10 |



The benefits associated with Flex Barrier Gel make it possible for dentists not only to minimize the risk of infection, but also to maintain the conditions required for optimal natural esthetics.

Final situation



6 | 3 months post-implantation

7 | The papilla has been fully preserved

8 | Impression using repositioning technique

9 | X-ray shows no loss of bone

10 | Clinical crown after insertion

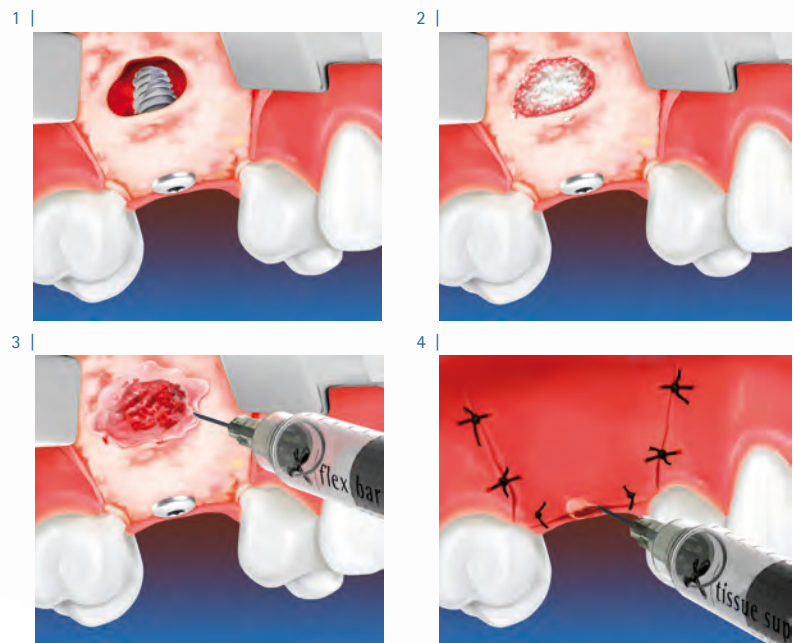
Flex Barrier

Beneficial barrier effect and accelerated wound healing

Clinical examples demonstrate the positive and safe "barrier effect", even in cases requiring extensive shielding. The simple and efficient handling of Flex Barrier is particularly advantageous.

Note: To ensure that Flex Barrier can achieve an optimal barrier effect, the gel needs to be applied over the augmented area and adjacent bones.

- 1 | Prepared "sinus window"
- 2 | Filled maxillary sinus with bone regeneration material activated by Tissue Support
- 3 | Defect area covered completely with Flex Barrier
- 4 | After final wound closure, Tissue Support is applied directly between the wound margins to facilitate streamlined and accelerated wound healing



Mode of action

Biological processes during wound healing with hyaluronic acid.

Stage	Process	Mechanisms
1st Phase	Activating the inflammation reaction	Increased cell infiltration, Increase in inflammation-promoting cytokines
	Moderating the inflammation reaction	Inhibition of pro-inflammatory cytokine production
2nd Phase	Cell proliferation	Promotion of mitosis and detachment of cells
	Cell migration	Increase in hyaluronic acid synthesis Hyaluronic acid-rich, hydrated matrix promotes cell migration
	Neoangiogenesis	Low molecular hyaluronic acid stimulates the formation of blood vessels
3rd Phase	Keratinocyte functions	Hyaluronic acid-rich matrix is associated with the proliferation of basal keratinocytes
4th Phase	Scarring	Hyaluronic acid-rich matrix reduces collagen storage and scarring

(mod. as per Chen and Abatangelo 1999)

Mode of action

Flex Barrier Hyaluronic Acid Gel is resorbed locally by the surrounding tissue from the 21st day. As a result, the corresponding barrier function persists for > 3 weeks.

Overview of uses	Tissue Support	Application	Flex Barrier	Application
Uses in general oral surgery:				
Anti-inflammatory properties that support and accelerate wound healing.	X	-	X	-
Prevention and enhanced safety after surgical intervention by way of an antiseptic and bacteriostatic effect in the wound area.	X	-	X	-
Promotes regeneration of fibroblasts.	X	-	X	-
Promotes regeneration of osteoblasts.	X	-	X	-
Uses in implantology:				
Reduces scarring in aesthetically demanding areas by preventing the accumulation of collagen	X	Covering of the wound area by applying gel to the wound just before wound closure (suture).		
Papilla reconstruction to correct "black triangles" in the interdental area.			X	HA preparation is injected into soft tissue (approximately 0.2 ml) – treatment can be repeated if needed.
Barrier effect shields against osseous defects, in particular after augmentation with bone substitute materials.			X	Wound area is covered in its entirety by applying gel to the wound just before wound closure (suture).
Improves positional stability and prohibits dislocation of applied augmentation material (granules).	X	Gel is applied after enriching with augmentation material (e.g. BioOss or similar)		
Supports and accelerates wound healing after implantological intervention (coagulum is stabilized by the hydrophilic properties of HA, resulting in accelerated tissue regeneration and uncomplicated course).	X	Gel is applied after enriching with augmentation material (e.g. Lonardo or similar) and the defect is covered in its entirety		

Overview of uses	Tissue Support	Application	Flex Barrier	Application
Socket preservation	X	Application into the extraction alveolar or for moistening of a collagen plug or tape		
Reduced scarring in the aesthetically demanding area after implantation			X	The wound area is covered in its entirety with Flex Barrier
Uses in general oral surgery:				
Supports the regeneration process after parodontal surgical intervention by way of its bacteriostatic effect	X	Gel is placed in the gingival pocket immediately after surgical treatment		
Enhances bone levels after HA-supported parodontal therapy	X	Gel is placed in the gingival pocket immediately after surgical treatment		
Significantly improves SBI (Sulcus Bleeding Index)	X	Gel is applied to the gingival pocket immediately after surgical treatment		

Product quality

Naturelize products are biologically inert and were developed using hyaluronic acid of non-animal origin, which acts to specifically support the regeneration of soft and hard tissues in dental medicine.

Naturelize products are manufactured in Germany under strict controls using a proven process under conditions of maximum biological purity.

Each production batch is individually tested (cytotoxicity) to ensure that the purity and efficacy of the product remains consistently high.

Tolerance issues

Hyaluronic acid is safe to use. The literature contains no evidence of any negative effect on the immune response from topical treatment with hyaluronic acid.





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The surgical imagery is the property of Dr. Michael Claar, Kassel.
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