NEW GENERATION DEVICES

Choice without compromise

CollaVET™

Building A Foundation For Healing

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What is Type I Collagen?

Collagen is the most abundant protein in the human body. Type I collagen is also the most common of the collagens in vertebrates. It comprises up to 90% of the skeletons of mammals and is found throughout the body. In addition to bones, it is found in skin, tendons, ligaments, cornea, intervertebral discs, dentine, arteries and granulation tissues. Type I collagen is the major collagen of tendon and bone and is essential for the tensile strength of bone.

Collagen plays an integral role in the repair and replacement of both soft and hard tissue by providing an extracellular scaffold, and supporting tissue granulation. Collagen implants and dressings are specifically used to facilitate the natural process of wound healing. It is highly biocompatible and has a very long history of clinical use in implantable products dating back to the early 1980's. The rate of in vivo resoprtion of collagen-based implants can be "programmed". The Sponge & Fibrillar forms of collagen can be fully resorbed within one to eight weeks depending on where the collagen is implanted. The more vascular the location, the quicker the collagen will be resorbed.

The manufacturer of our products starts with bovine Achilles tendon, a collagen-rich tissue, and removes the non-collagenous material to form highly purified collagen fibers, which are then "engineered" into a porous matrix. Because Type I collagen is a basic structural protein of connective tissue, it has maintained its structure over evolution and across species. Type I collagen of different animals – sheep, horses and cows – is homologous and it is extremely biocompatible to humans and other species. The body doesn't recognize the Type I collagen of animals as foreign material, which makes collagen products extremely biocompatible.

- **Animal type I collagen is homologous to human type I collagen**[1]
- **Purified type I collagen is highly biocompatible**
- **Degradants during resorption are metabolized through normal metabolic pathways**[2,3]
- **Implantable collagen products have a long clinical history**[2]
- **Intact type I collagen fibers have intrinsic hemostatic properties to control minor bleeding**[2,4]

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Indications For Use

Type I Collagen is available in 3 types of configurations, Foam, Sponge and Fibrillar. Each form can be used for any of the indications listed below.

Localized Delivery

Collagen Foam
20 x 40 x 3mm
25 x 75 x 1mm
1cm diam x 2cm length

Wound Healing

Collagen Sponge
2” x 2” x 3mm
3” x 4” x 3mm

Hemostat

Fibrillar Collagen
0.1 gram
0.2 gram

Localized Delivery – Provides a way of targeting the optimum concentration of a drug to precisely where it is needed, rather than distributing excessive and sometimes unnecessary doses throughout the body via systemic circulation. Such delivery systems can be more efficient than those administered intravenously or orally. A wide variety of drugs are known to act locally; including antibacterial, anesthetic, analgesic, anti-inflammatory, anti-cancer, wound healing agents and various growth factors.

- Antibiotic – in order to treat and prevent surgical site infections
- Pain Management – such as using bupivacaine to control pain at the surgical site in order to reduce the amount of pain medication required post-operatively
- Topical analgesic such as lidocaine hydrochloride for the relief of pain associated with minor burns, cuts and skin irritations.
- BMP – Bone Morphogenic Protein
- PRP – Platelet Rich Plasma
- Other small molecule drugs

Wound Healing – Full & partial thickness wound dressing (acute/chronic)

- Canine lick granuloma treatment
- Light, moderate and heavily exudating wounds
- Ulcers (diabetic, vascular, stasis)
- Burn Coverage

Hemostat Agent – The design of Absorbable Collagen Hemostats is based upon proprietary Type 1 collagen material which consists of intact collagen fibers known to have intrinsic hemostatic properties. Each collagen configuration is designed to effectively control bleeding when applied to the bleeding site.

4 Phases of Wound Healing

CollaVET™
Resorbable Wound Healing Implant

Type I collagen fibers have intrinsic hemostatic properties to control bleeding[2,4]. Collagen implants and dressings are specifically used to support the natural process of wound healing by providing the scaffolding for wound healing.

Inflammatory Phase – The Inflammatory phase begins with the injury itself. When tissue is first wounded, blood comes in contact with **collagen**, triggering blood platelets to begin secreting inflammatory factors. The healing process begins with bleeding, immediate narrowing of the blood vessels, clot formation, and then the release of various chemical substances into the wound.

Proliferative Phase – In the Proliferative phase, a matrix or lattice work of cells begin to form where later, new skin cells and blood vessels will occupy. New blood vessels will supply the rebuilding cells with oxygen and nutrients to sustain growth of the new cells and support the production of proteins, primarily **collagen**. During this phase, fibroblasts also begin to enter the wound site. One of the fibroblasts most important duties is the production of **collagen**. **Collagen** deposition is important because it increases the strength of the wound. The collagen acts as a framework upon which the new tissues build.

Remodeling Phase – During the Remodeling phase, the **collagen** framework becomes more organized making the tissue stronger.

Epithelialization Phase – This is the process of laying down new skin, or epithelial cells. The skin forms a protective barrier between the outer environment and the body. Its primary purpose is to protect against excessive water loss and bacteria.

References:
1. Miller EJ. 1984. Chemistry of the collagens and their distribution. Extracellular Matrix Biochemistry, KA Piez, AH Reddi (eds.), pp 41-82, Elsivier, New York, NY.
2. Li ST. 2000. Biologic Biomaterials: Tissue-Derived Biomaterials (Collagen) Biomedical Engineering Handbook, Second Edition, Vol. I, JD Bronzino (ed.), pp 42:I-23, CRC Press, Boca Raton, FL.
3. Nimni ME, Harkness RD. 1988. Molecular structures and functions of collagen. In Collagen, vol. I, ME Nimni (ed.) pp I-78, CRC Press, Boca Raton, FL.
4. Jaffe R, Deykin DJ. 1974. Evidence for a structural requirement for the aggregation of platelet by collagen. Clin Invest 53:875-883.

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