PTFE surgical sutures: Is it worth to use them in oral surgery?

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Effective wound healing is a key factor determining the success of a surgical process. Any disturbances to that process may lead to inflammatory reactions hindering tissue regeneration, as well as various complications, such as extensive scarring that creates functional and aesthetic problems. Treating the complications is difficult and contributes to discomfort of a patient.

Minimising the risk of complications is crucial particularly in precise periodontological procedures, as well as in bone augmentations. Proper suturing techniques and a careful selection of suture material have a direct impact upon correct tissue fixing. Absorbable sutures, particularly braided ones, should not be used for external tissue fixing in the oral cavity. The reason for this is a significant risk of bacterial plaque adhesion, a quick loss of sustaining properties resulting from harmful effects of digestive enzymes, and increased susceptibility to microbes penetrating the wound together with blood, saliva, and nutritional fluids.

So far, it has been recommended that external fixing of oral cavity tissues be carried out with the use of non-absorbable, monofilament materials, most often made from nylon, polypropylene and polyvinylidene fluoride (PVDF). Their scabrous surface does not permeate liquids and does not yield to enzymatic processes, while bacterial plaque aggregation is minimal. Unfortunately, traditional non-absorbable suturing materials are not void of faults. The fibers are not flexible enough and will not adapt to the varying volume of the healing tissue. Significant rigidity of polymers that are the core of their structure is a characteristic ill-taken by the patients. It causes irritation of the mucous membrane and often leads to painful erosions, as well as viral-caused lesions. From the clinical point of view, voluntary contact between the tongue and the irritable spot is unfavorable to the healing process, as well as to the integration of ingrafted material or transplanted tissues.

Currently, it seems that the best suturing material for dressing the wounds within the oral cavity is polytetrafluoroethylene (PTFE). It is a suture having the characteristics of a filament, yet at the same time maintaining unprecedented fiber flexibility. PTFE sutures were introduced many years ago for demanding cardiosurgical procedures, due to their high biocompatibility and unique physical qualities.

The various available types of PTFE sutures differ mainly in the structure of fiber. For dental procedures, during which the sutures have only temporary contact with the tissues, the most appropriate suturing material is one based on a smooth, high density called dPTFE. It is characterized by a degree of flexibility, which is a great asset in tissue fixing, irrespective of the changing volume that accompanies a given healing stage. High bio-compatibility of dPTFE sutures, the softness of fiber, a restricted adhesion of bacterial plaque, and minimized microbial penetration into the wound provide for the highest level of security.

The analysis of clinical usefulness of sutures 45 cm in length has indicated that most complex dental procedures require two packages of the suturing material. Longer sutures (approx. 75 cm) are less comfortable to use: suturing with the use of an instrument is more difficult, while the risk of suture infection in a restricted operating area is increased. Therefore, it seems that the most appropriate length of sutures for oral cavity dental procedures is approx. 55 cm.

The suturing material that meets all criteria discussed above is COREFLOW (Booth 52e). It is available in sizes ranging from 3-0 to 6-0 and comes together with high-quality needles with modern geometry. A perfect alignment of the needle’s diameter and the diameter of the Teflon fiber results in a significantly smaller post-operative bleeding. PTFE sutures are more expensive than other available suturing materials, but considering their unique characteristics of reducing complications after expensive, highly-specialised procedures, this factor seems to be of little relevance.