

Cyanoacrylates as an Easy Versatile Oral Dressing

By John Hendy, DDS, MS

For many years researchers have been investigating the uses of cyanoacrylates in dentistry. In the 1960s, Dr. S.N. Bhaskar had several articles published discussing cyanoacrylates as effective periodontal dressings, and in April 1973, an article was published in the Journal of American Medical Association (Dermatology) discussing cyanoacrylates as superior extra-oral wound dressings. Cyanoacrylates were discovered in 1942 by Dr. Harry Coover, however they were not commercialized until 1951. They were used extensively during the Vietnam War to dress wounds incurred on the battlefield. Analogues of the original formulation, n-butyl and 2-octyl, have been used extensively in both medicine and dentistry for topical wound closure and as periodontal dressings due to their ease of use and lack of histotoxicity. Those analogues as well as blends of both have evolved over the last 50 years to become efficient, convenient, paint-on dressings which set up instantly when they come in contact with hydroxyl ions (water). Applying a gentle water spray will accelerate the setting time. Objections regarding ease of handling have been greatly overcome due to the use of microbrushes and micropipettes, along with higher viscosity formulations. The standard material has a viscosity similar to water, and can be applied freely and rapidly over a large area. Cyanoacrylates with higher viscosity are denser and will not flow over tissues as quickly, allowing the practitioner to spread easily over the desired area of application. Areas covered are then protected from trauma induced by brushing and food impaction. Loose and mobile flaps can be held in place to form an initial blood clot and then secured with a thin layer of cyanoacrylate. I use a technique I call tacking or spot welding to secure the graft, and then I apply additional layers to form an excellent periodontal dressing. Using this process, I am able to make an otherwise difficult and lengthy suturing process, take less than a

minute. This dressing can be used alone or with sutures to completely secure loose tissues and achieve full primary closure. When a more coronal positioning of a flap is desired (Fig.1), cyanoacrylates can be used with tissue pick-ups to hold where desired for cosmetic or biologic rationale. When performing soft tissue grafts (Fig.2), the dressing can be used alone or with minimal suturing to secure the graft in place and provide a protective shield for post-operative comfort. The most important component is to ensure that a secure fibrin clot has formed, and no cyanoacrylate finds its way underneath the tissue. In osseous grafts (Fig.3, courtesy of Dr. Ron Zokol), complete closure or coverage can be achieved, often securing or protecting a membrane or gel foam, over an osseous augmentation or socket preservation graft after an extraction. This will take only seconds. A complete cyanoacrylate membrane can be placed to completely protect all areas of the soft tissue margins and the contents of the osseous graft. When sutures pull the tissue in an attempt to cover the contents of the graft or implant (Fig.4), the cyanoacrylate membrane can be incorporated with the sutures to extend the time of protection and coverage for as long as two weeks. In areas of gingivectomy (Figs.5&6), a thin layer of cyanoacrylate can provide protection to the sensitive tissue. Multiple layers can be built up over the area and secured to adjacent tissue and teeth. In areas where crowns or bridges have had soft tissue managed with gingival retraction cord, laser or electrosurgery, a thin layer of dressing can be used to secure the soft tissue in place without sutures. Often the tissue is loose and inflamed, and a cyanoacrylate dressing will fix this damaged tissue in place where it is most cosmetically pleasing or biologically healthy. The tender tissue will be more comfortable and protected from toothbrush injury, food impaction, and a more desirable result will be achieved.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6

In areas of aphthous ulcers or herpes simplex (Fig.7), cyanoacrylate can be placed over the site to protect the area and provide patient comfort. In our hygiene department, the hygienist places cyanoacrylate dressings along the gingival margin to make the patient more comfortable and prevent injury after root planning (Fig.8). It also preserves and protects the blood clot to ensure better reattachment results. Often before the use of cyanoacrylate dressings the patient would not return for all quadrants of root planning, due to the pain incurred during the healing process. By using cyanoacrylate as a protective dressing, hot, cold, and tactile sensitivity can be

reduced or eliminated during the healing process. With the costs of sutures and the time to place them, cyanoacrylates provide great benefits to the practitioner. At about \$2 per application, there is tremendous savings in both time and suture costs. They are available in clear for anterior cosmetic zone use or can be pigmented for easy visualization in posterior areas. I believe that with time and practice, adding cyanoacrylates to the surgical management options of wound closure by the practitioner will yield huge benefits both for the clinician and the patient.



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Fig. 7



Fig. 8