Evolution of Fibrin Glue Applicators.

Authors: Marx G.

Publication Date: 2003

Abstract:

Fibrin glue (FG) is used worldwide as a potent surgical tool, which establishes hemostasis in wounds and also bonds tissue. The standard FG applicator is based on a dual-syringe system. This review, based mainly on the patent literature, describes the development of the quasi-standard dual syringe system as well as the rise of other FG applicator designs based on mechanical force (ratchet systems), Bernoulli gas flow, positive gas pressure, or electro-servo devices. The packaging of commercial FG components is reviewed within the context of "loading" the FG applicators and the need to minimize the number of needles required to access the packaged (vials) components. Parameters such as internal clogging, homogeneity of spray, the requirement for gas or vacuum house lines, the number of parts that must be handled, and the time required to assemble the applicator, load it, and have it ready for use are also discussed. A rating system is proposed that permits one to use such parameters to rank the various applicator designs, relative to the dual-syringe system. Hopefully, this review will stimulate the design of better FG applicators and packaging required for elective surgery, emergency treatments, and tissue engineering in the 21st century.