Fibrin sealants in surgical practice: An overview. [Review] [59 refs]

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Abstract:

The need to effectively manage hemostasis and tissue sealing during surgery has had a strong influence on the development of modern surgical techniques. A group of agents known as surgical tissue adhesives has been developed to promote hemostasis and tissue sealing during surgery, and these comprise both natural and synthetic agents. Fibrin sealants are the most effective tissue adhesives currently available, and they are biocompatible and biodegradable. The fibrin sealants are comprised of purified, virus-inactivated human fibrinogen, human thrombin, and sometimes added components, such as virus-inactivated human factor XIII and bovine aprotinin. These agents mimic the final steps of the physiological coagulation cascade to form a fibrin clot. The use of any plasma-derived product in the surgical setting carries a potential risk of viral transmission. In fact, it was the risk of viral transmission from fibrinogen and thrombin that halted development work on fibrin sealants in the United States. Since that time, new techniques for isolating and concentrating plasma fractions have been developed, and national and international guidelines have been introduced to ensure the safety of all plasma products. All plasma donors are carefully selected and their plasma units screened for viral contamination before processing. All plasma donations and bovine tissue used in the production of commercial fibrin sealants undergo rigorous viral reduction/elimination steps. As a result of this carefully controlled and monitored process, there have been no proven cases of viral transmission associated with the use of commercial fibrin sealant. Fibrin sealants are currently used in a number of surgical specialties, including cardiovascular surgery, thoracic surgery, neurosurgery, plastic and reconstructive surgery, and dental surgery. The use of fibrin sealants has a positive effect on surgical outcomes, such as improved time to

hemostasis, reduced blood loss, and reduced complications. This review describes the development of fibrin sealants, the composition of currently available products, and their use in surgical practice. [References: 59]