Comparison of the bonding power of various autologous fibrin tissue adhesives.

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Abstract:

Objective: Three known autologous fibrin tissue adhesives were evaluated for bonding power on Silastic and animal and human tissues. These adhesives were also injected into living tissue to determine if any of these fibrin glues cause inflammatory or deleterious reactions when kept in living tissue for a sustained period. Methods: In Part I of our study, blood was drawn from 59 healthy volunteers, and autologous fibrin tissue adhesives were manufactured using the cryoprecipitation (AFTA-C), ammonium sulfate (AFTA-A), and ethanol/freezing (AFTAE) methods. Blocks were then prepared using Silastic, porcine dermis, and human dura mater and bonded together for 10 or 30 minutes using the three adhesives. The blocks were then separated while bonding power was measured. In Part II of our study, 0.01 mL AFTA-C, AFTA-A, or AFTA-E was injected subcutaneously into the auricles of 60 rats. The rats were then killed 3, 7, 14, or 21 days later, and the auricles were examined histologically for signs of toxicity. Results: The bonding powers of AFTA-E and AFTA-C were found to be statistically similar, and both were statistically stronger than AFTA-A. The injection of AFTA-A, AFTA-E, and AFTA-C into rat auricles did not cause any adverse effects. Conclusions: All three methods for manufacturing AFTA are effective in producing a reliable, stable fibrin glue. However, AFTA-E and AFTA-C demonstrate stronger bonding power than AFTA-A. In addition, all three forms of AFTA produce no undesirable tissue changes when injected into rat auricles.