

Patient-derived fibrin sealant: Clinical, preclinical, and biophysical aspects.

Authors: Kjoergard H.K.

Publication Date: 2003

Abstract:

Today, there is an enormous interest in surgical sealant, not only for hemostasis, but also for binding of tissues together during surgery, and to improve wound healing. Man has imitated nature in developing fibrin sealant that is biodegradable. However, the risk of transmission of both known and unknown infectious agents can generally not be ruled out completely for plasma products from donors. In addition there is a considerable immunologic risk of using biological products of animal origin. Preclinical and clinical data has demonstrated that a safe and useable surgical fibrin sealant can be prepared from the patient's own blood using the enzyme batroxobin. Experimental data showed that patient-derived fibrin sealant provided enhanced instant adhesion strength and elasticity compared with conventional fibrin sealant due to its faster polymerisation rate. Test methods for fibrin sealant were found to be inaccurate, and we constructed and validated a new computer assisted test method to get information about elasticity and other dynamic properties of biological sealant. The method is highly reproducible and is the first validated using vital human tissue as the adhesion substrate. It takes about one half hour to prepared patient-derived fibrin sealant, which may turn a good operation into a perfect operation without any known risk.