Evolution of hemostatic agents in surgical practice.

Authors: Sundaram C.P., Keenan A.C.

Publication Date: 2010

Abstract:

Objective: Topical hemostatic agents are used in a wide variety of surgical settings, and the evolution of this class of surgical tools is an interesting topic. We reviewed and outlined the historical progress of topical hemostats into present day surgery and urology, and highlight opportunities for future research. Materials and Methods: A MEDLINE search of all available literature concerning several classes of topical hemostatic agents was performed. Fibrins sealants, Gelatin sponge hemostatics, cyanoacrylate adhesives, oxidized regenerated cellulose, and microfibrillar collagen were included. References were chosen from a broad range of surgical literature. Results: Topical hemostatic agents have historically taken advantage of a wide variety of mechanisms for hemostasis. Fibrin sealants have a rich history and large potential for further applications. Gelatin sponge hemostatics have been widely used since their introduction, but have changed little. Cyanoacrylate adhesives have a unique mechanism and opportunity for novel applications of existing products. Oxidized cellulose was original in the use of plant-based components. Microfibrillar collagen hemostats have evolved to a wide variety of formats. Conclusions: A review of the evolution of topical hemostatic agents highlights opportunities for potential novel research. Fibrin sealants may have the most opportunity for advancement, and understanding the history of these products is useful. With the drive in urology for minimally invasive surgical techniques, adaptation of topical hemostatic agents to this surgical approach would be valuable and offers an opportunity for novel contributions.