

# **Biological sealants and knitted Dacron: Porosity and histological comparisons of vascular graft materials with and without collagen and fibrin glue pretreatments.**

Authors: Jonas R.A., Schoen F.J., Levy R.J., Castaneda A.R.

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## **Abstract:**

Woven Dacron used in extracardiac conduits tends to form a poorly adherent, obstructing layer of pseudointima. Knitted high-porosity conduits allow fibrous and vascular ingrowth and more secure anchoring of the pseudointima. However, at the time of insertion, the porosity rate must be sufficiently low to prevent excessive bleeding in the heparinized patient. Pretreatments with biological sealants are available to temporarily reduce the porosity of knitted Dacron at the time of implantation with subsequent resorption of the sealant. We compared in vitro water porosity rates of knitted Dacron pretreated with conventional techniques, fibrin glue, and collagen impregnation. Only the collagen-impregnated and fibrin glue-treated grafts decreased the porosity of knitted Dacron to an acceptable level. To assess the biocompatibility and resorption of biomaterials used in sealing conduits, pretreated Dacron was implanted subcutaneously in weanling rats. Foreign-body response of untreated Dacron was unchanged by conventional techniques. Fibrin glue also resulted in good capillary ingrowth as well as occasional punctate multifocal deposits of calcium phosphate. The collagen-impregnated grafts differed in the intensity of the inflammatory response and tissue adhesion, possibly related to the degree of collagen cross-linking. This may have important implications regarding structure of the pseudointima in vascular grafts sealed with these materials.