The Use of Seprafilm as a Biological Barrier in Flap Delay

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Abstract

Purpose: Seprafilm is a bioresorbable hyaluronate-carboxymethylcellulose membrane used to prevent adhesion formation in abdominal and pelvic surgery. The clinical efficacy of Seprafilm has been attributed to its properties as a non-immunologic barrier. We experimentally investigated the role of Seprafilm in preventing reactive fibrosis around a rat implant and in delayed flaps.

Methods: Two implants were placed in each of eight Spraque-Dawley rats, one of these wrapped with Seprafilm. Animals were sacrificed at 3 weeks. The periprosthetic capsules were sent for microscopic analysis including capsular thickness and extent of inflammatory infiltrate. Clinically, Seprafilm was utilized as a barrier to adhesion formation in two patients undergoing surgical delay of reverse sural (Figure 1) and trapezius myocutaneous flaps.

Results: Seprafilm wrapping of implants resulted in decrease in minimum (46±47µm vs 189±121µm; p = 0.01) and maximum (241±173µm vs 461±207µm; p = 0.03) thickness of periprosthetic capsules, with areas of non-detectable cellular capsule observed in 3 animals. Four animals (50%) developed distinctly loose periprosthetic capsules with Seprafilm, which was never observed on the control side. Seprafilm did not affect the degree of inflammation. Clinically, no signs of excessive inflammation or infection were observed in either of the patients. The undersurface of each flap displayed no signs of healing and thus no redissection was required (Figure 2).
Conclusion: Seprafilm decreased periprosthetic capsular thickness in the rat model without undue inflammation. Clinically, the application of Seprafilm resulted in no adhesion formation between the delayed flap and surrounding tissues, which facilitated reoperation. We speculate that Seprafilm serves as a barrier to fibrotic healing, and thereby may enhance the development of preferential blood supply of a delayed flap.

References:

