Irradiated Polyglactin 910 for Mucosal Defects

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The prolonged presence of superficial mucosal sutures or perineal sutures may cause irritation or discomfort and increase the risk of bacterial infections. Although absorbable sutures are commonly used in mucosal areas, many sutures have a prolonged half-life and might still require removal when used superficially. We highlight the use of irradiated polyglactin 910 (IRPG) for closure of mucosal defects and areas where short-term wound support is required. We used IRPG in 50 patients for closure of defects on the lips, oral mucosa, and penis. In all cases, IRPG sutures provided appropriate tensile strength with minimal inflammation, suppuration, or irritation. IRPG resulted in low inflammatory response, rapid degeneration, soft feel, and easy workability, making it an ideal suture option for closure of mucosal defects and areas where short-term wound support is desired.

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An ideal absorbable suture should possess the appropriate strength, handling, and secure knotting characteristics needed for the proper closure of defects. It also should be absorbed at an appropriate rate and produce a minimal inflammatory response in surrounding tissue.[1] We have found that irradiated polyglactin 910 (IRPG) is a well-tolerated and effective suture for closure of mucosal defects.

Case Report

We used IRPG sutures on 50 patients for closure of defects on the lips (Figure 1), oral mucosa, and penis (Figure 2). In all cases, results were satisfactory and the IRPG sutures provided appropriate tensile strength for closure of the defects with minimal inflammation, suppuration, or irritation.

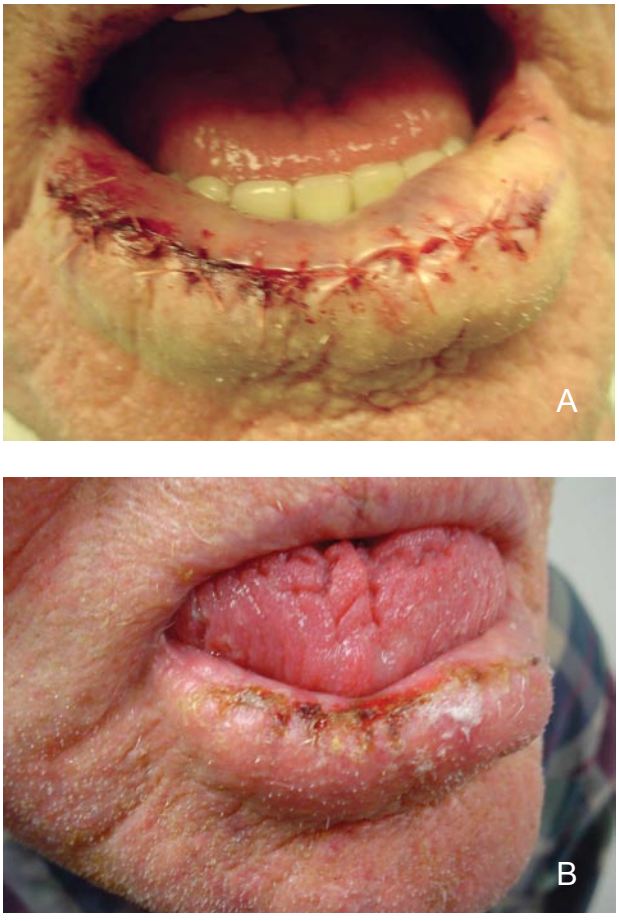

Figure 1. Irradiated polyglactin 910 sutured on the lip (A). The lip one week later (B).

Comment

IRPG is a fast-absorbing synthetic suture intended to duplicate the performance of surgical gut (also known as catgut). It is composed of a copolymer made from 90% glycolide and 10% L-lactide that is pretreated with gamma radiation.[2,3] Consequently, IRPG has an

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Figure 2. Irradiated polyglactin 910 used for closure of a punch biopsy of the penis.

enhanced rate of absorption in vivo, thus providing wound support for only 10 to 14 days.[2,3] Approximately 50% of the tensile strength is lost at 5 days, and the suture is completely absorbed by 42 days. The rapid rate of degeneration of IRPG compared with chromic surgical gut and nonirradiated polyglactin 910 (90 days vs 56–70 days to complete absorption, respectively) obviates suture removal.[2] Not only does this rapid rate of degeneration decrease the need for future visits and the discomfort and anxiety associated with suture removal,[3,4] but it also can decrease the risk of bacteremia that might result from the removal of oral sutures.[5]

Studies also have shown that IRPG produces only mild to minimal inflammation in surrounding tissue, unlike results seen with surgical gut and silk.[1,6] It is a synthetic material absorbed rapidly via hydrolysis, rather than enzymatic digestion.[1] In addition, IRPG has a lower coefficient of friction than surgical gut and passes smoothly through tissue with minimal drag.[7] In our experience, it is easier to work with IRPG than surgical gut and is softer than nylon or polypropylene sutures, making it more tolerable and comfortable for sensitive areas such as the mucosa. IRPG has been successfully used in a variety of procedures, including pediatric, plastic, gynecologic, oral, and maxillofacial surgery.[3,8]

Conclusion

We feel that the low inflammatory response, rapid degeneration, soft feel, and easy workability of IRPG make it an ideal suture option for closure of mucosal defects and areas where short-term wound support is desired.

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