Comparison of fibrin glue and vicryl sutures in conjunctival autografting for pterygium surgery.

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Publication Date: 2017

Abstract:

Purpose: To compare clinical parameters and the tear levels of inflammatory cytokines between pterygium surgery using sutures or fibrin glue. Methods: Fifty-six patients with primary pterygium were divided into the suture group and the glue group, in which the autograft was secured with 10-0 Vicryl sutures and fibrin glue, respectively. A questionnaire, slit-lamp examination, Schirmer test, and visual acuity test were performed in all participants. Real-time quantitative PCR (q-PCR) was used to analyze the expression of genes in pterygium and healthy conjunctival tissues. Based on the qPCR results and literature reports, five inflammatory cytokines, including hepatocyte growth factor (HGF), fibroblast growth factor 2 (FGF2), transforming growth factor-beta1 (TGF-beta1), matrix metalloproteinase 2 (MMP2), and tumor necrosis factor-alpha (TNF-alpha), were selected, and their protein levels were measured with enzyme-linked immunosorbent assay (ELISA) in patient tears before surgery as well as at postoperative day 1, 7, and 30. Results: There are 28 patients in either the suture or the glue group. The average duration of surgery was 20.17 +/- 3.23 min for the glue group and 32.42 +/- 4.47 min for the suture group ($p = 0.000$). Visual acuity in both groups was improved ($p = 0.002$) after the surgical procedures. There were more symptoms in the suture group than in the glue group at postoperative day 7 ($p = 0.002$). Postoperative symptoms disappeared in both groups at 1 month after surgery. Recurrence was observed in one case in the glue group and in two cases in the suture group at the 6 month postoperative follow-up ($p = 0.714$). In comparison to the preoperative levels (4.33 +/- 0.43 ng/ml for the suture group; 4.20 +/- 0.26 ng/ml for the glue group), the levels of TNF-alpha in tears increased in the suture group (5.02 +/- 0.49 ng/ml, p =

0.016) and decreased in the glue group (3.84 +/- 0.35 ng/ml, p = 0.052) on postoperative day 1. The glue treatment induced higher HGF production (4.78 +/- 1.25 ng/ml) than the suture treatment (3.04 +/- 1.18 ng/ml) at postoperative day 1 (p = 0.020). Higher levels of TGF-beta1 in the glue group were detected at postoperative day 1 (3.71 +/- 0.18 ng/ml) and postoperative day 30 (4.50 +/- 0.51 ng/ml), compared to those in the suture group, respectively (2.74 +/- 0.21 ng/ml, p = 0.000 for day 1; 3.36 +/- 0.96 ng/ml, p = 0.017 for postoperative day 30).Conclusions: Fibrin glue is effective and safe for attaching conjunctival autografts with an easy surgical procedure, shortened operating time, and less postoperative discomfort. In the early postoperative period, the protein expression of inflammatory cytokines implicates that fibrin glue may induce accelerated healing and subdued inflammation on the ocular surface compared to sutures.