Short communication

Pterygium surgery and fibrin glue: Avoiding dehiscence

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\textbf{Abstract}

Objective/method: The purpose of the study is to evaluate those cases of pterygium surgery with fibrin sealant that produced dehiscence of the graft, and then apply and evaluate the efficacy of a different surgical technique in an attempt to eliminate this complication in previously identified cases of high risk. The first phase is a retrospective study of 42 cases of pterygium surgery. In the second phase, the variation in the surgical technique was prospectively used in 14 cases of pterygium surgery.

Results/conclusions: Cases of recurrent pterygium, broad pterygium, and complicated surgery were identified as the groups with a risk of suffering dehiscence of the graft. With the variant applied surgery no dehiscence occurred when using the variation in surgical technique, with no added complications.

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Cirugía del pterygium y adhesivo de fibrina: evitar la dehiscencia

\textbf{Resumen}

Objetivo/método: Pretendemos un doble objetivo: valorar en qué casos de pterygium intervenidos con tisucoh producen dehiscencia del injerto y aplicar y valorar la eficacia de una variante quirúrgica destinada a evitar dicha complicación en los casos de riesgo previamente identificados. La primera fase es un estudio retrospectivo de 42 cirugías. La segunda fase, es la que aplicamos la variante de la técnica, es prospectiva.

Resultados/conclusiones: Identificamos como grupos de riesgo predisponentes a padecer dehiscencia del injerto los pterygium recidivados, los pterygium anchos, y cirugías complicadas. Con la variante quirúrgica aplicada no ocurrieron nuevas dehiscencias, y su aplicación no reportó complicaciones añadidas.

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Introduction

Numerous surgical techniques have been described for treating pterygium, including free resection with denuded sclera, simple resection with application of MMC and the use of conjunctival autograft. The latter technique maintains the ocular surface even, restores the anatomy of the area and has demonstrated good results in what concerns esthetics and relapse. The graft can be anchored to the scleral bed by means of stitches or tissue adhesives, which produce less post-surgery symptoms than the use of stitches. However, the use of adhesives leaves open the possibility of losing the tissue grafts in the first days after surgery due to detachment, with the complications that this entails.

Materials and methods

This is a retrospective study to determine whether the conjunctival autograft technique with Tissucol (Baxter, Deerfield IL, USA) is valid for all types of pterygium, making reference only to the graft stability and not to relapse. After identifying the cases with predisposition to dehiscence, it was applied to 14 predisposed pterygium using a technique which we have named “the sandwich technique”, with prospective assessment of its efficiency. Said study fully complies with the ethical principles of the Helsinki declaration.

Surgical technique

All the surgeries were carried out by the same surgeon (DPS). Just a few minutes prior to surgery brimonidine tartrate was instilled (Alphagan, Allergan Pharmaceuticals Ireland, Westport, Ireland) to maintain the surgical area as free of blood as possible, limiting the pterygium area. Topical anesthesia (dual anesthetic, Alcon labs, Forth Worth, Texas, USA) and subconjunctival anesthesia (2% lidocaine) were applied, the latter in the pterygium area with immediate pressure with a cotton swab on the bulba created to extend lidocaine to the superior bulbar conjunctival area from where the graft was subsequently to be obtained, thus avoiding a second infiltration. Subsequently, using Wescott scissors the head of the pterygium was separated from the body which still remained adhered to the cornea. At this point it was separated by means of avulsion of the pterygium head from the corneal bed with corneal tweezers, carrying out several successive separation maneuvers avoiding losing the initial plane. Subsequently, possible corneal and limbar remnants were removed with a scarifier spatula, thereafter removing the perilesional conjunctival tissue which appeared susceptible to extirpation, and the underlying Tenon capsule. Bipolar cautery was applied in bleeding areas in order to remove most of the blood from the scleral bed. Mitomycin was not applied in any one of the cases. The conjunctival graft was obtained from the superior temporal area, as clean as possible of Tenon and penetrating 1 mm in the corneal epithelial area. It was placed with the epithelium downwards over the cornea with the limbar area of the graft matching the limbus of the implants area. Tissucol, thrombine, was applied on the graft and sealing protein in the naked and dry scleral area, turning the graft over the sclera and subsequently applying slight pressure on its surface. In the sandwich technique variation the adhesive was also applied over the graft at this point, slightly exceeding the limits thereof to cover also the intervened corneal area, taking care not to allow the adhesive to reach the tharsal conjunctival area. Care must be taken at this point because the amount applied must be as small as possible to form a thin film covering the intervened area, avoiding the formation of lumps or excessive accumulation of Tissucol. After 3 min without manipulation, the blepharostat was withdrawn and corticoid and antibiotic ophthalmic cream was applied (neomycin prednisone [Alcon labs, Forth Worth, TX, USA]), and occlusion. After 24 h the first examination was carried out in which a thin transparent layer was observed over the graft in most cases (Fig. 1), corresponding to the adhesive applied over the graft. This layer was not observed in the second examination 3 days after surgery.

All the pterygium were given the TCL classification (T stands for the degree of pterygium atrophy, C for the horizontal cornea millimeters covered by the pterygium and L, the millimeters of width at the sclerocorneal limbus). Complicated pterygium were those in which it was not possible to carry out standard surgery due to intra-surgery circumstances (such as thick and highly adhered Tenon capsule, excessive and difficult to desicate episcleral tissue, abnormally forward muscle insertion which required isolation of the middle rectus, excessive bleeding in pterygium or a combination of several of these circumstances).

Out of the 42 eyes included in the retrospective study, 10 were relapsing pterygium, 7 were classified as 3 in the L of the TCL (i.e., pterygium width at the limbar level of 5 mm or more) and 9 were complicated surgeries in primary pterygium. Of the 14 prospective eyes where the sandwich technique was applied, 5 were relapsing, 6 exhibited maximum L classification and 3 were complicated surgeries.

Partial dehiscence was defined as the existence of scleral areas not covered by the graft which did not exceed 10% of the surgical scleral bottom and which nearly always corresponded to a half-moon shaped area in the caruncle side. This occurred in 9 of the retrospective cases, all of them diagnosed in the first of second visit. None required re-intervention and
Table 1 – Comparison of complete dehiscences observed in Tissucol surgery with standard and sandwich techniques.

<table>
<thead>
<tr>
<th></th>
<th>Standard technique</th>
<th>Sandwich technique</th>
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<tbody>
<tr>
<td>Relapsed Pterygium</td>
<td>2 cases out of 10 surgeries</td>
<td>0 cases out of 5 surgeries</td>
</tr>
<tr>
<td>Pterygium with highest L classification</td>
<td>2 cases out of 7 surgeries</td>
<td>0 cases out of 6 surgeries</td>
</tr>
<tr>
<td>Complicated pterygium</td>
<td>2 cases out of 9 surgeries</td>
<td>0 cases out of 3 surgeries</td>
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In what concerns the TCL classification it was seen that, in what concerns the permanence of the graft over the scleral bottom, the only section which had an influence was the width of the pterygium but not its thickness or the millimeters covering the cornea.

Even though the potency of the sample is low and it precludes reaching statistically significant conclusions, it appears that the technique presented herein could involve a protective effect comparable to that of a contact lens during at least the first 24 h after surgery, thus making the surgery safer as it does not add complications to the surgery or to its subsequent evolution.

Conflict of interest

No conflict of interest has been declared by the authors.

References


Discussion

As described by other authors, small partial dehiscences were observed which were allowed to scar with second intention and important dehiscences (some with absence of the graft) after suture-less pterygium surgery. According to our study, relapsing pterygium, complex surgeries, wide pterygium (grades 3 in L of the TCL classification) and compulsive rubbers are risk groups for this to occur.

Figure 2 – Broad naked sclera area (limited by the white arrows) in severe dehiscence of the conjunctival graft (black arrow) which is folded in the limbar area.

did not exhibit the biomicroscopic differences in the 20-day examination in comparison with the rest of cases. None of these occurred in the group of patients intervened with the applied surgical variant.

In the retrospective cases, 7 full dehiscences were observed, i.e., significant graft displacement (Fig. 2), leaving the scleral area naked, including 2 graft losses. All required re-intervention due to the extension of the affected area. Six occurred in the first 24 h and the remaining one was observed at the second examination in a patient who compulsively rubbed his eyes. The 6 corresponded to the following cases: 2 in relapsing pterygium (out of 10), 2 in pterygium with L of 5 mm or greater (out of 7) and 2 in complicated primary pterygium surgeries (out of 9 complicated surgeries). None occurred in the prospectively studied group (Table 1).