PTERYGIUM SURGERY: COMPARATIVE STUDY OF CONJUNCTIVAL AUTOGRAFT WITH SUTURE VERSUS FIBRIN ADHESIVE

CIRUGÍA DEL PTERIGIÓN: ESTUDIO COMPARATIVO ENTRE AUTOINJERTO CONJUNTIVAL CON SUTURA Y CON ADHESIVO TISULAR

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ABSTRACT

Purpose: To compare recurrence rate, complications, and biomicroscopical findings after conjunctival autograft pterygium surgery with the use of a fibrin glue (Tissucol Duo®, Baxter AG, Vienna, Austria) or suture (7-0 silk).

Methods: Patients with nasal pterygium were included in two groups of conjunctival autograft surgery. In 9 of them the graft was sutured to the surrounding conjunctiva and in 8 of them the graft was fixed to the conjunctiva using fibrin glue.

Results: 17 patients (17 eyes) 41.2% women and 58.8% men were surgically treated. Mean patient age was 59.8 years. Five of the patients presented recurrence for simple excision and 12 presented primary pterygium. The extent of corneal invasion was 2 to 4 mm. In the suture group, 33.3% of the patients experienced pain after surgery compared to none in the fibrin glue group. In the suture group, 44.4% of the patients presented inflammation after surgery compared to none in the glue group. One patient from the glue group lost the graft and presented a recurrence one month later.

RESUMEN

Objetivo: Comparar la tasa de recurrencias, complicaciones y hallazgos biomicroscópicos después de cirugía de pterigión con autoinjerto conjuntival usando adhesivo tisular (Tissucol Duo®, Baxter AG, Viena, Austria) o sutura (seda 7-0).

Material y métodos: Se han incluido en el estudio pacientes con pterigión nasal en dos grupos de cirugía de autoinjerto conjuntival: en 9 de ellos el injerto se sutura a conjuntiva y en 8 de ellos se fija con adhesivo tisular.

Resultados: Se intervinieron 17 ojos de 17 pacientes, 17% mujeres y 58.8% hombres con edad media de 59.8 años. 5 ojos presentaban recurrencia de resección simple y 12 de ellos presentaban pterigión primario. El tamaño de la invasión corneal osciló entre 2 y 4 mm. 33.3% de los pacientes del grupo de sutura presentaron molestias después de la cirugía frente a ninguno en el grupo de adhesivo. 44,4% de los pacientes presentaron inflamación tras la cirugía frente a ninguno en el grupo de sutura. En uno de los pacientes del grupo del adhesivo se pro-
Conclusions: The use of fibrin glue in pterygium surgery reduces patient symptoms, inflammation and discomfort. The rate of recurrence seems to be similar in both procedures (Arch Soc Esp Oftalmol 2009; 84: 179-184).

Key words: Pterygium surgery, autograft, fibrin glue, recurrence, postoperative discomfort.

INTRODUCTION

«Pterygium» is a Greek term which means «fin». It is used to describe an overgrowth of fibrovascular connective tissue of the conjunctiva over the cornea which can affect the eyesight (1).

The main problem of this condition is that, even when different treatment techniques have been utilized throughout the history of ophthalmology, the recurrence rate continues to be high.

Pterygium surgery is under continuous modifications in the quest for reducing relapse rates. Resection with conjunctival autograft has exhibited good results because it maintains the ocular surface even and restores the anatomy which existed prior to the corneal invasion caused by the pterygium, anchoring the denuded scleral bed with sutures such as silk or polyglactine, or by means of tissular glues (2). Both techniques yield excellent results for reducing the number of recurrences in this type of surgery. In addition, patient comfort the first few days after surgery is also an important factor in this type of intervention.

The above approaches were utilized as a basis for carrying out said techniques with pterygium patients in our hospital, evaluating the following data:

1. Surgery and post-surgery complications for both techniques
2. Post-surgery biomicroscopic findings for both procedures
3. Subjective discomfort of patients in both groups after surgery
4. Determine any differences in the number of relapses.

SUBJECTS, MATERIAL AND METHOD

This is a retrospective observation study on pterygium surgery patients with autograft intervened in our centre by two surgeons from January 2006 to January 2007.

The study included patients with corneal invasion by pterygium exceeding 2 mm, with symptoms or relapse after a simple previous resection. Patients with pterygium recurrence after autograft technique were excluded, as were those in whom posterior filtering surgery was expected to be necessary in glaucoma cases.

For classifying the pterygium we utilized the Madrid group’s system in accordance with: atrophic (vascularization below the pterygium body), fleshy (vascularization in the pterygium body) and intermediate.

After signing an informed consent, the patients were included in two groups according to the surgical treatment to be carried out. Accordingly, 9 patients were treated with the conjunctival autograft technique with suture, and a further eight with the same autograft technique but with fibrin glue (Tissucol Duo®, Baxter AG, Vienna, Austria).

Surgical technique

With the exception of one patient who gave us reason to believe that co-operation would be deficient and therefore opted for peribulbar anesthesia, in the remaining patients we used topical anesthesia (Tetracaine eyedrops) together with subconjunctival
anesthesia (bupivacaine with vessel constrictor) applied below the pterygium and in the donor conjunctival area.

Subsequently, a keratectomy was performed with a 45° scalpel, trying to achieve a good separation between the pterygium tissue adhered to the cornea and taking care to avoid leaving remains or lumps. Subsequently, the pterygium head was removed together with the underlying Tenon capsule utilizing Westcott scissors, trying to leave the scleral bed free of Tenon’s capsule as well as the perilesion conjunctiva margins, paying special attention to the area next to the caruncle to avoid damaging the insertion of fibers of the middle rectum. In cases of dense scleral vascularization secondary to intense inflammation, low intensity cauterization was applied with bipolar diathermia over the area.

The autograft was taken from the superior conjunctiva of the same eye, measuring the scleral bed with a ruler and carrying the measurement to this area, asking the patient to look downward to obtain an adequate exposure of the area (from the limbar edge to the sac fundus) and marking the edges with a surgical pen.

When infiltrating the anesthetic in the area, hydro-dissection was utilized whenever possible, separating the conjunctiva from Tenon’s capsule. The area was dissected with Westcott scissors, starting by the sac fundus and moving towards the limbus. Once the graft was obtained, it was cut at the limbar area and turned over the cornea with great care. Then, the grass was turned over the cornea to leave it facing the scleral bed, maintaining the juxtalimbar-limbus direction.

In the variant with suture, the graft is anchored to the peri-lesional conjunctiva with 7-0 silk applied in loose stitches.

In the fibrin glue variant, a drop of thrombin is placed on the scleral bed and a further drop of fibrinogen on the stromal face of the graft, bringing both together and pressing for about 10 seconds over the graft with an absorbing sponge.

For both techniques, after the operation topical cure was made with cyclopegic, a combination of tobramycin-dexamentasone and gentamycin cream with semi-compressive occlusion.

The patients were checked the following day to remove bandages and the cyclopegic, maintaining the cream and the combination of corticoids and antibiotics for the first month. Checkups were carried out 15 days later to remove the stitches in this group of patients and after two and six months for an visual acuity ophthalmological test, including biomicroscopy and intra-ocular pressure (figs. 1 y 2).

**Statistical analysis**

The variables for the analysis were age, sex, personal risk history (ocular traumatism, agricultural occupation, living in countries with a high sun rate), the existence of prior surgery, type of pterygium, millimeters of corneal invasion, post surgery symptoms and signs and the presence or absence of relapses.

For quantitative variables, the Shapiro-Wilk test was utilized to check if they followed a normal distribution within each surgery group. Accordingly, to
compare the mean age and the millimeters of corneal invasion depending on each surgery, the t for student test was utilized.

As regards the qualitative variables, contingency tables were utilized to analyze the relationship between the type of surgery and said variables. Subsequently, the independence hypothesis was checked against Fisher’s exact test for 2x2 tables. This test has the main advantage that it can be utilized for very small sample sizes such as this one.

In all cases, the existence of an error probability below 5% (p< 0.05) was considered to be statistically significant.

RESULTS

17 eyes operated for pterygium were included (table 1), of which seven were women (41.2%) and 10 were men (58.8%) with a mean age of 59.8 years (range from 36 to 81). The mean age in the suture group was 52 and 62 in the adhesive group.

Five patients had already been operated for pterygium by means of simple resection, 3 in the suture group and two in the tissular adhesive group (p=1.00).

The size of pre-surgery corneal invasion of the pterygium ranged between 2 and 4 mm. No statistically significant differences were found in the mean size of the pterygium between the two groups (p=0.097).

Three patients in the suture group (33.3%) referred discomfort in the post-op against none in the fibrin glue group. However, this result was not statistically significant (p=0.12).

As regards the post surgery signs, 4 of the suture group patients (44.4%) exhibited intense inflammation with conjunctival chemosis the first day post-op. One exhibited a conjunctival granuloma. Two patients of the fibrin glue group exhibited detachment of the graft. In both cases, we allowed cicatrization with second intent. These results were not statistically significant in our statistical analysis (p=0.58).

And a number of relapses was only one in the fibrin glue group (fig. 3), in one of the patients where the graft was lost due to detachment after surgery.

DISCUSSION

There is a large variety of techniques utilized in pterygium surgery, ranging from simple techniques such as avulsion or simple resection to complex techniques such as lamellar keratoplasty (3), as well as covering with different tissues such as amniotic membrane and the use of coadjutant anti-metabolites like mitomycin and daunorubicine (4).

All of the above techniques have three main objectives: To reduce the rate of relapses, to avoid complications during and after surgery and to obtain a satisfactory cosmetic result (5). To achieve this it is necessary to cause a minimum inflammation and endeavor to inhibit angiogenesis during surgery, leaving the scleral bed as clean as possible.

Table I. Data of patients operated on pterygium

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<tr>
<th>Patient</th>
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<th>Previous surgeries</th>
<th>Type</th>
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M = Male; F= Female; R= Right; L=Left; Size= Size of corneal invasion in mm.
to reduce the growth of subconjunctival tissue with anti inflammatory drugs and trying to restore the function of the limbar barrier (6).

The pterygium recurrence rate in published series ranges between 2% and 39% after surgery, the most frequent and fast relapses being those after simple resection surgery (7). On the contrary, the surgical technique which has achieved the best results in reducing the number of relapses is the conjunctival autograft technique (8).

Nowadays, specialists try to fulfill multiple objectives after pterygium surgery going beyond the absence of long-term relapses towards diminishing surgery time, ensuring the highest post-surgery comfort of the patient and avoiding pain. In our study, 44.4% of suture group patients exhibited chemosis and significant information in the postoperative period against 0% in the fibrin glue group, while 33.3% of suture group patients referred discomfort against none of the fibrin glue patients. Even though these results are not statistically significant, probably due to the reduced number of the sample, they match the results published in other larger series (9-11) in which better cosmetic results as well as comfort in the first days after the surgery in the autoplasty groups with fibrin glue. However, there is a possibility of losing the tissular graft due to detachment with the ensuing complications that this may bring and which, in this case, resulted in a relapse of the pterygium.

**REFERENCES**


**ARCH SOC ESP OFTALMOL 2009; 84: 179-184**

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