Quantifying and classifying postsurgical pain in pterygium surgery with conjunctival autografts

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\textbf{A B S T R A C T}

Objective: Quantify and define post-surgical pain after pterygium surgery with conjunctival autografts.

Material and methods: The study included 17 patients. The parameters analyzed were, gender, age, pterygium TCL classification, primary characteristics or relapse, usage of isolated tissue adhesive or extra fixation with stitches. A visual analogue pain scale was used immediately after surgery, on days 2 and 3 of post-surgery, and the characteristics of the pain and its frequency on days 2 and 3 following the surgery.

Results: A total of 17 eyes of 17 patients were operated. The majority of patients (52.9%) showed moderate pain on the visual analogue scale immediately after surgery. On day 2 after surgery the pain level was mild in the majority of patients with characteristics of sharp pain and lash pain predominantly. On day 3 after surgery, mild pain was also predominant, with characteristics of stinging and lash pain in majority of patients.

Conclusions: Using scales and pain characteristics we can quantify and define post-surgical pain after pterygium surgery with conjunctival autografts resection immediately after surgery and in the following days.

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\textbf{Cuantificación y cualificación del dolor postquirúrgico en la cirugía de pterigión con autoinjerto conjuntival}

\textbf{R E S U M E N}

Objetivo: Cuantificar y definir el dolor postquirúrgico tras cirugía de pterigión mediante resección con autoinjerto conjuntival.

Material y métodos: En el estudio se han incluido 17 pacientes. Los parámetros analizados han sido sexo, edad, clasificación TCL del pterigión, carácter primario o recidiva del mismo,
Introduction

The term *pterygium* is from the Greek pterygon that means “wing”. Clinically, it appears as a triangular fibrovascular formation extending from the conjunctiva to the cornea. This neoformation is located in the interpalpebral slit, usually being bilateral and asymmetric and more frequently found in the nasal sector.

The prevalence of pterygium varies depending on the population: it differs according to race, latitude and exposure to sunlight. It is known that exposure to UV radiation is one of the main risk factors for developing pterygium.

At present, the cases in which pterygium reduces visual acuity either because of astigmatism, proximity to visual axis or growth activity are considered as indicators for surgical removal. Excision of pterygium only due to irritation, reddening or cosmetic reasons is nowadays under debate.

The surgical technique of choice for pterygium is extirpation with free conjunctival autografts as it has demonstrated the lowest relapse rate.

In the postop of this type of procedures, patients frequently refer pain in variable degrees.

Subjects, material and methods

An observational, prospective study which included patients intervened for pterygium surgery with autograft between November 2008 and February 2009. The study included 17 patients who exhibited nasal pterygium, both primary and first relapses. The study did not include the patients with more than one pterygium relapse.

For classifying the pterygium the TCL system was utilized, where T defines the macroscopic appearance, T1 being atrophic pterygions, T2 intermediate pterygions and T3 fleshy pterygions. C describes the corneal invasion in the horizontal axis of the pterygium, C1 being the cases in which the invasion does not exceed 2 mm, C2 for a range between 2 mm and 4 mm and C3 corneal invasions over 4 mm. Finally, L refers to limbar invasion, L1 being an invasion under 4 mm, L2 between 4 and 6 mm and L3 invasions over 6 mm.

The surgical technique applied in all cases was pterygium resection and underlying Tenon’s capsule, with insertion of autograft obtained from the upper bulbar conjunctiva, fixed by means of tissue adhesive and in some cases adding loose fixation points with nylon 10/0.

The post-surgery analgesia administered to patients was metamizole 575 alternated every 8 h with paracetamol 650 mg on the basis of individual demand. To assess the post-surgery pain the visual analogue scale was utilized, consisting in a straight line, generally 10 cm long, with the phrase “no pain” and “maximum pain” at each end in which the patient was asked to indicate the degree of pain along the line, quantifying pain on a scale from 1 to 10. In addition, patients were asked to define the characteristics of the pain, differentiating between irritation and stinging and between constant and lashing pain. These questionnaires were replied by the patients immediately after surgery and on postop days 2 and 3, complying with all the requirements of the Helsinki declaration.

The analyzed variables were sex, age, pterygium TCL classification, primary or relapse pterygium, use of isolated tissue adhesive all with extra fixation with suture points, pain scale immediately after surgery, on days 2 and 3 post-surgery, and the characteristics of pain and intervals thereof on days 2 and 3 after surgery. The statistical program utilized was Microsoft Office Excel 2007.

Results

Seventeen eyes of 17 patients were intervened, 76.5% female and 23.5% male, with a mean age of 43.05 years.

As regards TCL pterygium classification, 41.2% exhibited degree T2C2L2, 23.5% T1C1L1, 11.8% T2C1L1 and 23.5% other various degrees (Fig. 1).

76.5% of the interventions were made on primary pterygium and 23.5% on the first relapses (Fig. 2).

In 58.8% of cases extra stitch points were utilized in addition to tissue adhesive, and in the remaining 41.2% only adhesive was used (Fig. 3).

In what concerns the pain scale data, the results immediately after surgery showed that 41.2% of patients exhibited pain levels between 0 and 3, 52.9% between 4 and 6 and 5.9% between 7 and 10. On day 2 post-surgery 52.9% of patients exhibited pain levels between 0 and 3, 35.3% between 4 and 6 and 11.8% between 7 and 10, while on day 3 post-surgery 70.6%...
of patients exhibited levels between 0 and 3, 23.5% between 4 and 6 and 5.9% between 7 and 10 (Fig. 4).

As regards the characteristics of the pain, on day 2 post-surgery 58.8% of patients referred stinging pain, 29.4% irritation pain and 11.8% of cases were not definable. On day 3 post-surgery, 29.4% exhibited stinging pain, 41.2% irritation pain and 29.4% of cases were not definable (Fig. 5).

Finally, as regards pain intervals, on day 2 post-surgery these were of the lashing type in 82.3%, constant in 5.9% and undefinable in 11.8% of cases. On day 3 post-surgery, 64.7% exhibited lashing type intervals, constant intervals in 5.9% and undefinable in 29.4% of cases (Fig. 6).

**Discussion**

Pain is a complex perception involving sensitive, affective and cognitive characteristics. According to its origin, pain can be nociceptive, neuropathic or psychogenous. Nociceptive pain arises when specific nervous fibres are irritated by injury of the skin or other peripheral tissue, being a normal and physiological response for tissue protection. Its intensity can be low or high. Generally, this type of pain is controlled if the cause...
of irritation is removed or treated medically, being sensitive to therapy with opiates and anti-inflammatories.

Neuropathic pain is the result of an injury to the nerve itself (or another part of the sensory system) due to injury, disease or trauma circumscribed to a small area (for example, the trauma caused by surgery). It expresses in variable degrees, generally emerging from the area of the damaged nerve and can irradiate to normally innervated adjacent areas; it is described as burning and paroxistic pain (sudden intense and stinging discharges of pain). Frequently, patients with neuropathic pain exhibit symptoms of multiple underlying mechanisms such as hyperalgesia (enhanced response to pain stimuli), allodynia (pain with normally painless stimuli), hyperesthesia (enhanced sensitivity to stimuli), dysesthesia (abnormal perception to stimuli), among others. Neuropathic pain is generally resistant to opiate or anti-inflammatory medication therapy, although generally it is useful to utilize coadjuvants such as antidepressants or anticonvulsants.

In pterygium surgery postop cases the type of pain has not yet been defined because it can be nociceptive or neuropathic. In the study, the surgery was made mostly on medium-degree pterygions (T2C2L2), in 41.2% of cases, followed by slighter degrees (T1C1L1 in 23.5% and T2C1L1 in 11.8%). Of these, 76.5% were primary pterygions against 23.5% that were first relapses. In this way, it was possible to relate the fact of having a majority of primary slight and moderate cases with also moderate results in the pain scales.

All the patients underwent resection with conjunctival autograft, fixed only with tissue adhesive in 41.2% and adding single stitches with nylon 10/0 in 58.8% of the interventions. The use of tissue adhesive reduced patient symptoms, inflammation and discomfort after pterygium surgery in comparison with cases fixed with suture. However, as in our study the stitches were isolated and in most cases single or in some cases double, in order to avoid graft dehiscence after affixment with tissue adhesive, no difference was found between patients with stitches and those intervened only with tissue adhesive.

In what concerns pain intensity, it was observed that in the immediate postop most patients exhibited moderate pain (52.9%), followed by slight pain (41.2%) and only a minority of patients with severe pain (5.9%). By analyzing said data on postop days 2 and 3, it can be seen that the majority of patients described slight pain (52.9% and 70.6% respectively), followed by moderate pain (35.3% and 23.5%), with also a minority of patients exhibiting severe pain (11.8% and 5.9%). Thus, it can be seen that this type of surgery does not cause intense pain in the majority of cases, with moderate pain being referred at the immediate postop and slight pain in the following days.

As regards pain characteristics and intervals, on day 2 of post-surgery, the majority of patients defined it as stinging pain (58.8%), followed percentagewise by those who referred irritative pain (29.4%), with 11.8% of cases being unable to define the pain type. 82.3% described it as lashing against 5.9% of those who referred it as constant pain, with 11.8% of patients being unable to define the pain type. On day 3 postop, the irritative pain was referred by the highest percentage of patients (41.2%), followed by stinging pain (29.4%), with 29.4% of cases being unable to define the pain type. Here a considerable difference was found in the perception of pain between day 2 and day 3 post-surgery, as the majority of patients described stinging pain on day 2 against a predominance of irritative pain on day 3.

The lash feeling remained as the first reference (64.7%), followed by constant pain (5.9%) and 29.4% of cases being unable to define the pain type. In this case, we did find an agreement between the subjective pain and perception of patients: as a majority referred lash feelings, it could point towards a neuropathic pain type in the pterygium surgery postop.

Even though this study comprises a small sample size which is not enough for a multivariate analysis, data such as the high percentage of patients with lash feeling could point to a neuropathic nature of pterygium surgery postop pain. Accordingly, a larger sample size should be studied to reach statistically significant conclusions.

**Conflict of interests**

None of the authors have declared any conflict of interests.

**REFERENCES**