

ORIGINAL ARTICLE

Proparacaine Hydrochloride 0.5 % as a sole topical anesthetic agent in primary pterygium surgery with autologous conjunctival graft: Our experience at tertiary care center, Vadodara

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ABSTRACT

BACKGROUND AND OBJECTIVES: This study aims to evaluate efficiency of Proparacaine Hydrochloride 0.5% as a sole anesthetic agent in primary pterygium excision surgery with glue free conjunctival autograft at tertiary care center in Vadodara. **METHODS:** A prospective, non-randomized interventional study comprising 42 patients (42 eyes) having primary pterygium was conducted at tertiary care center in Vadodara, Gujarat. Pterygium excision with glue free autologous conjunctival grafting done under 0.5% proparacaine (Paracaine) eyedrops. The visual analogue scale (VAS) was utilized to record intra and post-operative pain score. Patient's comfort, intra and post operative pain perceived by patients, supplemental anesthesia, complications and surgeon's comfort noted. Anesthetist also noted vital parameters and any intravenous drugs required. **RESULTS:** No difference between intra and post-operative pain score ($P=0.37$) was observed in patients. The average surgical time from was 24.05 ± 2.05 minutes. 1 score was observed in 28 patients (66.66%). The average surgeon's discomfort score was 1.45 ± 0.59 . **CONCLUSION:** Primary thin atrophic pterygium surgery with autologous conjunctival graft can be performed successfully using 0.5% proparacaine Hydrochloride eyedrops. The ease of application, lack of ocular surface toxicity and sufficient anesthetic effect to complete the surgery make it an efficient & alternative modality to injectable anesthesia

Keywords: Conjunctival Graft, Pterygium, VAS

INTRODUCTION

Pterygium is a common disease worldwide (5-15% prevalence), more prevalent in tropical countries. Clinically it is triangular shaped growth of abnormal subconjunctival tissue that extends horizontally from bulbar conjunctiva across limbus onto cornea¹. It is believed to be related to UV exposure. Simple pterygium excision is associated with high rates of recurrence reported to vary between 29.2 and 88.9%.^{2,3}

Conjunctival autograft transplantation is currently the most frequently used procedure for both primary and recurrent pterygium. This technique has been associated with little complication and recurrence rates, as well as improved post-operative comfort & favorable cosmetic results.^{4,5} Currently autologous conjunctival grafting is most effective method to treat pterygium due to its lower rate of recurrence.⁶ Various anesthetic techniques have been tried to perform primary pterygium like retrobulbar or peribulbar block, subconjunctival injection of 2 % lignocaine hydrochloride^{7,8} ropivacaine eye drops⁹ benoxinate 0.4% drops¹⁰ and 2 % lignocaine jelly.^{11,12} But these procedures are associated with pain, discomfort, chemosis, subconjunctival hemorrhage, globe perforation etc. Role of proparacaine is established in topical uncomplicated clear corneal

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phacoemulsification¹³ and LASIK and PRK¹⁴ so considering this fact of use of proparacaine as topical agent, we designed this prospective, interventional case series to establish the role in the primary pterygium surgery with autologous conjunctival grafting.

MATERIALS AND METHODS

Approval of study was obtained from ethical committee of Parul Institute of Medical Sciences & Research, Vadodara. The study was designed and conducted in Department of Ophthalmology, Parul Institute of Medical Sciences and Research. Written informed consent was obtained from each patient. Total 42 patients (42 eyes) were included in this study. Study was conducted from January 2018 to July 2018. Inclusion criteria was patients with grade I-II, thin atrophic primary pterygium. Exclusion criteria were recurrent pterygium, allergies to topical anesthetics, nystags, deafness, neurological disorders, language communication problem and patients unable to understand visual analogue scale. No non steroidal anti inflammatory eye drops were used and no sedation was required or given to any patients pre & intra operatively.

Surgical Technique:

All 42 patients were operated by a single surgeon. Paracaine eye drops (Proparacaine HCL 0.5 % W/V sunways India, Mumbai) were instilled 10 minutes before surgery two times. A vertical incision was given over the body of pterygium with the help of 15 no. blade, behind limbus. The head of pterygium was dissected from cornea with blunt dissection. Corneal scrapping if required done by crescent knife. Subconjunctival tissue under the body of pterygium was excised. Hemostasis was achieved by mechanical pressure over bleeding points, with the help of swab dipped in adrenaline. The area was dried with cotton bud. Again, a single drop of proparacaine eyedrops instilled in conjunctival sac. A free conjunctival autograft was excised from superior bulbar conjunctiva. The size of

graft was determined by measuring the size of recipient bed on sclera with calipers. The graft was positioned over bare sclera in nasal area with limbus to limbus orientation by applying gentle pressure with the help of sponge. Meanwhile, a single drop of proparacaine eyedrops was again instilled. The position of the autograft and its adherence to scleral bed was confirmed at the end of 10 minutes and then eye speculum removed gently. The eye was bandaged for 24 hours. After completion of surgery, patient was taken to recovery room. A standard 10-point VAS was used to assess intra & post-operative pain.¹⁵ A score of "0" represented no pain at all and score "10" represented the worst pain ever. Post-operative pain was assessed 15 minutes after completion of the surgery. A trained optometrist performed the procedure of assessment of pain. Surgeon was not present during assessment of pain score. The surgeon's subjective impression on discomfort during the procedure, 0 – nil, 1 – moderate, 3 – severe, was noted. Any requirement of supplemental anesthesia, lid squeezing & ocular movement were recorded. The total surgical time was recorded. Time taken from first incision over the body of pterygium to removal of lid speculum was documented.

Statistical Analysis:

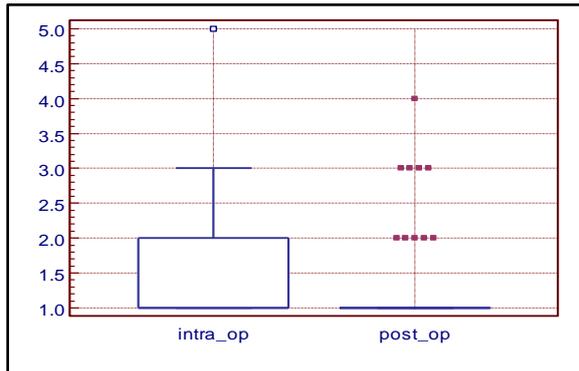
Statistical analysis was performed using Kolmogorov - Smirnov test for both intra operative and post-operative pain score and $P < 0.001$ was statically significant. Statistical analysis was performed using Medcalc Software.

RESULT AND DISCUSSION

The study included 42 eyes of 42 patients in which there were 20 males (47.61%) and 22 females (52.38 %). The mean age of patients was 48.9 ± 5.7 years. All patients have primary thin atrophic pterygium. All patients underwent primary pterygium surgery with autologous conjunctival autograft under proparacaine eyedrops as anesthetic agent. The average intraoperative pain score on VAS was 1.45

± 0.80 (range 0-5). The average post-operative pain score on VAS was 1.38 ± 0.76 (range 0-5). This difference was not statistically significant in terms of their mean pain score ($P=0.37$). This was done using Wilcoxon sum test (non-parametric test) as shown in graph 1.

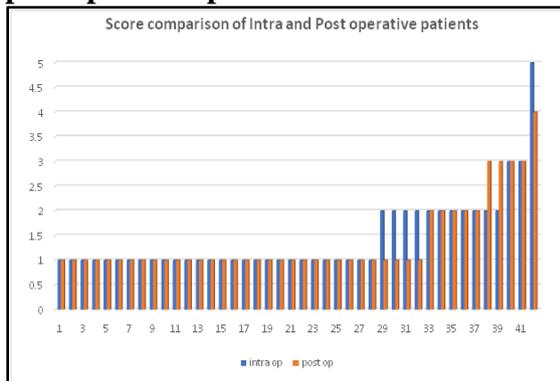
Graph 1: Graph showing the range of the two scores (intra and post operative) using box and whisker plots



Average surgical time was 24.05 ± 2.05 minutes. No corneal epithelial abrasion or any other ocular surface complications were noted during the procedure. The average surgeon discomfort score was 1.45 ± 0.59 . Pterygium is benign wing shaped fibrovascular conjunctival growth, most commonly found in tropical region. While the body of pterygium advances on to the cornea, in many cases affecting vision, causing general discomfort and cosmetic blemish. Various theories has been postulated on aetiopathogenesis¹⁶ and exposure to UV light is believed to be a strong risk factor for development of pterygium. Pterygium is graded according to its position in relation to cornea. Grade I is head of pterygium just touching the cornea (at limbus), grade II Pterygium is head of pterygium encroaching over the cornea not involving pupillary margin. Grade III pterygium is head of pterygium covering the pupillary margin. Conservative treatment for pterygium is mainly symptomatic and temporary, usually for early stage of disease. It involves the use of artificial tear drops or ointment so as to provide comfort and

relief from foreign body sensation. The indication for surgical excision includes disturbance of visual function, significant discomfort and cosmetic reasons. A wide variety of surgical methods are available for treatment of primary or recurrent pterygium. Primary aim for any pterygium excision surgery is to prevent recurrence and to improve aesthetic appearance of eye. Bare sclera technique¹⁷ is an old technique and is associated with high recurrence rate¹⁸ which led to search for adjunctive treatment options. Newer modalities of treatment include conjunctival autograft, use of mitomycin C, amniotic membrane graft¹⁹. All these are with promising result with minimal recurrence rate and good cosmetic appearance. But traditional anesthesia like peribulbar or retrobulbar block used during these procedures are associated subconjunctival hemorrhage, retrobulbar hemorrhage, globe perforation and rarely central artery occlusion²⁰. To minimize these complications due to peribulbar or retrobulbar anesthesia perse, topical anesthesia using ropivacaine²¹ and benoxinate 0.4 %²² had been tried with success for primary pterygium excision with grafting. Also topical anesthesia in the form of topical lignocaine jelly 2 % is used with promising results in recurrent pterygium surgery²³ but all these procedures or techniques requires adjunct use of proparacaine eye drops during surgery. However, there is sparse literature on use of proparacaine eye drops as sole topical anesthetic agent in primary pterygium surgery. Our study showed preoperative single installation followed by intra operative twice installation of 0.5 % proparacaine HCL eyedrops provides satisfactory patients comfort to conduct safe removal of primary patients with conjunctival autograft. There was no significant difference between intra and post-operative pain score. ($P=0.37$) as shown in graph 2.

Graph 2: Score comparison of Intra and post operative patients



atrophied and patient is fully explained about the procedure and need for patient's cooperation during procedure.

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