Tackling Ocular Inflammation and Pain
With Lotemax Gel Following Ocular Surgery

INDICATION
LOTEMAX® GEL (loteprednol etabonate ophthalmic gel) 0.5% is indicated for the treatment of post-operative inflammation and pain following ocular surgery.

IMPORTANT SAFETY INFORMATION ABOUT LOTEMAX® GEL
LOTEMAX® GEL is contraindicated in most viral diseases of the cornea and conjunctiva including epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, and varicella, and also in mycobacterial infection of the eye and fungal diseases of ocular structures. Prolonged use of corticosteroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and fields of vision. If this product is used for 10 days or longer, IOP should be monitored. Use of corticosteroids may result in posterior subcapsular cataract formation. Use of steroids after cataract surgery may delay healing and increase the incidence of bleb formation and occurrence of perforations in those with diseases causing corneal and scleral thinning. The initial prescription and renewal of the medication order should be made by a physician only after examination of the patient with the aid of magnification, and, where appropriate, fluorescein staining. Prolonged use of corticosteroids may suppress the host response and thus increase the hazard of secondary ocular infection. In acute purulent conditions, steroids may mask infection or enhance existing infection. Use of a corticosteroid medication in the treatment of patients with a history of herpes simplex requires great caution. Use of ocular steroids may prolong the course and exacerbate the severity of many viral infections of the eye (including herpes simplex). Fungal infections of the cornea are particularly prone to develop coincidentally with long-term local steroid application. Fungus invasion must be considered in any persistent corneal ulceration where a steroid has been used or is in use. Patients should not wear contact lenses when using LOTEMAX® GEL.
The most common ocular adverse drug reactions reported were anterior chamber inflammation (5%), eye pain (2%) and foreign body sensation (2%). Please see Full Prescribing Information for LOTEMAX® GEL on pages 11-12.
Tackling Ocular Inflammation and Pain With Lotemgal Gel Following Ocular Surgery

Zahra Al-Mahmeed, MD, FRCSC, a Senior Resident at University of Toronto, is a member of the Toronto Eye Research and Education Group. Her research focuses on the development of novel treatments for ocular surface disorders.

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Barry蛭明, MD, is a Professor of Ophthalmology at the University of Toronto, where he is also the Director of the Ocular Surface Laboratory.

Bradley S. Smith, MD, is a Professor of Ophthalmology at the University of California, San Francisco, where he is also the Director of the Ocular Surface Research Group.

ERASED TEXT

GALAXY

MOTIVATION

The goal of this study was to evaluate the safety and efficacy of Lotemgal gel in reducing ocular inflammation and pain following ocular surgery.

MATERIALS AND METHODS

The study was a randomized, double-blind, placebo-controlled trial. Participants were randomized to receive Lotemgal gel or a placebo gel at 1, 2, and 3 days after surgery. The primary outcome measure was the change in ocular inflammation and pain scores from baseline.

RESULTS

The results showed that Lotemgal gel significantly reduced ocular inflammation and pain compared to the placebo gel. The treatment also had a good safety profile, with no serious adverse events reported.

DISCUSSION

Lotemgal gel appears to be a safe and effective treatment for ocular inflammation and pain following ocular surgery. Further research is needed to determine the optimal dosage and administration of the drug.

REFERENCES


Figure 1. Diagram shows the effect of Lotemgal gel on ocular inflammation and pain following ocular surgery.
Tackling Ocular Inflammation and Pain With Lotemacia Gel Following Ocular Surgery

FEATURES OF AID TAMILAN

Dr. Baker: What factors are involved in these infections opened up a discussion on the importance of the ocular flora. Prof. Sherwin Hovington detailed the role of the ocular flora in the pathogenesis of infections, focusing on the role of the conjunctival flora in the development of bacterial and fungal infections.

Dr. Hovington: The conjunctival flora is a complex community of bacteria and fungi that plays a crucial role in protecting the eye from pathogens. The polymicrobial nature of the conjunctival flora can lead to interactions between different microorganisms, which may affect the balance of the microbiome and contribute to the development of infection.

Dr. Baker: This led to a discussion on the role of antibiotic resistance in the development of infections. Dr. C. Shah highlighted the importance of antibiotic resistance in the context of intraocular infections, emphasizing the potential consequences of the misuse and overuse of antibiotics in ocular infections.

Dr. Shah: The misuse and overuse of antibiotics can lead to the development of antibiotic-resistant bacteria, which can make infections more difficult to treat. It is crucial to develop strategies to reduce the misuse of antibiotics, such as through education and the promotion of the use of antibiotics only when necessary.

Dr. Baker: The discussion then turned to the role of wound healing and inflammation in the context of ocular infections. Dr. S. Bhabha discussed the importance of wound healing and inflammation in the development of infections, emphasizing the role of growth factors and cytokines in mediating these processes.

Dr. Bhabha: The growth factors and cytokines play a crucial role in the regulation of the immune response and wound healing. In the context of ocular infections, these factors can affect the degree of inflammation and the severity of the infection.

Dr. Baker: The discussion concluded with a focus on the role of the immune system in the development of ocular infections. Dr. R. Balaji outlined the importance of the immune system in protecting the eye from pathogens, highlighting the role of the adaptive and innate immune responses in the development of ocular infections.

Dr. Balaji: The adaptive and innate immune responses play a crucial role in the development of ocular infections. Understanding the mechanisms by which the immune system protects the eye from pathogens can help in the development of new strategies to prevent and treat infections.

Dr. Baker: The discussion focused on the potential for new therapeutic approaches in the treatment of ocular infections. Dr. J. Razza contributed to the discussion, sharing insights on the potential for innovative therapies in the treatment of ocular infections.

Dr. Razza: Innovative therapies, such as the use of novel antimicrobial agents and immunomodulatory strategies, hold promise for the treatment of ocular infections. The development of these therapies requires a multidisciplinary approach, involving collaboration between researchers, clinicians, and patients.

Dr. Baker: The discussion concluded with a focus on the potential for patient-centered approaches in the treatment of ocular infections. Dr. A. Ramakrishnan outlined the importance of patient-centered approaches in the development of new therapies, emphasizing the need to consider the perspectives and preferences of patients in the development of new treatments.

Dr. Ramakrishnan: Patient-centered approaches are essential in the development of new therapies for ocular infections. By considering the perspectives and preferences of patients, we can develop treatments that are more effective and acceptable to patients, ultimately improving outcomes.

CLOSING THE GAP ON ARCHIVAL PATIENT

Dr. Baker: The discussion focused on the potential for novel diagnostic approaches in the treatment of ocular infections. Dr. P. J. Thomson contributed to the discussion, sharing insights on the potential for novel diagnostic approaches in the treatment of ocular infections.

Dr. Thomson: Novel diagnostic approaches, such as the use of molecular diagnostic methods and the development of biosensors, hold promise for the early detection of ocular infections. By improving our ability to detect infections earlier, we can provide patients with more effective treatment options.

Dr. Baker: The discussion concluded with a focus on the potential for translational research in the treatment of ocular infections. Dr. T. текнинг contributed to the discussion, sharing insights on the potential for translational research in the treatment of ocular infections.

Dr. Tekning: Translational research is essential in the development of new therapies for ocular infections. By translating research findings from the laboratory to the clinical setting, we can provide patients with more effective and accessible treatments.

Dr. Baker: The discussion concluded with a focus on the potential for global collaboration in the treatment of ocular infections. Dr. M. S. Rai contributed to the discussion, sharing insights on the potential for global collaboration in the treatment of ocular infections.

Dr. Rai: Global collaboration is essential in the treatment of ocular infections. By sharing knowledge and resources across borders, we can develop new therapies and treatment approaches that can be accessed by patients worldwide.

Dr. Baker: The discussion concluded with a focus on the potential for policy and regulatory changes in the treatment of ocular infections. Dr. T. Perumal contributed to the discussion, sharing insights on the potential for policy and regulatory changes in the treatment of ocular infections.

Dr. Perumal: Policy and regulatory changes are essential in the treatment of ocular infections. By implementing policies and regulations that support the development and adoption of new therapies, we can improve outcomes for patients.

Dr. Baker: The discussion concluded with a focus on the potential for community engagement in the treatment of ocular infections. Dr. S. Bhat contributed to the discussion, sharing insights on the potential for community engagement in the treatment of ocular infections.

Dr. Bhat: Community engagement is crucial in the treatment of ocular infections. By involving patients and community members in the development and implementation of new treatments, we can ensure that these treatments are more effective and accessible to those who need them.

Dr. Baker: The discussion concluded with a focus on the potential for patient education in the treatment of ocular infections. Dr. R. Chandra contributed to the discussion, sharing insights on the potential for patient education in the treatment of ocular infections.

Dr. Chandra: Patient education is essential in the treatment of ocular infections. By educating patients and caregivers about the importance of proper eye care and the early detection and treatment of infections, we can improve outcomes for patients.

Dr. Baker: The discussion concluded with a focus on the potential for new therapeutic approaches in the treatment of ocular infections. Dr. N. K. Patil contributed to the discussion, sharing insights on the potential for new therapeutic approaches in the treatment of ocular infections.

Dr. Patil: New therapeutic approaches, such as the use of novel antimicrobial agents and immunomodulatory strategies, hold promise for the treatment of ocular infections. By developing new therapies, we can provide patients with more effective and acceptable treatment options.

Dr. Baker: The discussion concluded with a focus on the potential for patient-centered approaches in the treatment of ocular infections. Dr. A. N. John contributed to the discussion, sharing insights on the potential for patient-centered approaches in the treatment of ocular infections.

Dr. John: Patient-centered approaches are essential in the treatment of ocular infections. By considering the perspectives and preferences of patients in the development of new treatments, we can provide patients with more effective and accessible treatments.
surprising that some of these patients can get elevation effects in eye pressure with topical steroids. In these patients with a history of elevated eye pressure, Lotemax Gel can provide overall good results for pterygium patients, in my experience. I am diligent to monitor patients IOP carefully if Lotemax Gel is used for 10 days or longer.

Dr. Starr: With LASIK, once the flap is secure these drops are very useful in the setting of refractive laser vision correction, because Lotemax Gel has a low incidence of IOP elevation.

NO GENERIC SUBSTITUTION

Dr. Starr: There is currently no generic equivalent to the branded Lotemax Gel. How do you make sure that your patients receive the branded medication?

Dr. Shamie: First, we have to educate the patient by explaining the difference. I stress to patients that they will only have this procedure once. Steroids are, in most cases, prescribed as a short-term medication, and we rely on their efficacy for the treatment course. We can offer our eligible patients help though Bausch + Lomb coupons, making Lotemax Gel an affordable option for many patients. I also tell my patients to firmly hold their ground if they are told by the pharmacist that there is a generic equivalent. We need to make sure that the staff also understands the difference. Often, calls from the pharmacy are answered by the staff, and if they are not educated regarding your preferences, they may speak on your behalf and replace what you think is the best drop for the patient.

Dr. Starr: I am not happy when a pharmacist tries to switch my patients to a generic drop, because there is no generic equivalent. If I write Lotemax Gel, I expect patients to get Lotemax Gel. This is where medical-legal issues may come into play, because I have not educated patients on generic products that may be used, which means they may take them incorrectly. Another point of clarification is that Lotemax Gel may get confused with the older formulation of Lotemax. It is important to write Lotemax Gel on the prescription, or the patients might get the original Lotemax.

Thank you all for your time and input. I believe Lotemax Gel is a sophisticated, well-designed formulation.
LOTEMAX®
loteprednol etabonate ophthalmic gel 0.5%

HIGHLIGHTS OF PRESCRIBING INFORMATION
These highlights do not include all the information needed to use LOTEMAX® (loteprednol etabonate ophthalmic gel) 0.5% safely and effectively. See full prescribing information for LOTEMAX®.

LOTEMAX® (loteprednol etabonate ophthalmic gel) 0.5%
Initial U.S. Approval: 1998

1 INDICATIONS AND USAGE
LOTEMAX is a corticosteroid indicated for the treatment of post-operative inflammation and pain following ocular surgery. (1)

2 DOSAGE AND ADMINISTRATION
Invert closed bottle and shake once to fill tip before instilling drops.
Apply one to two drops of LOTEMAX into the conjunctival sac of the affected eye four times daily beginning the day after surgery and continuing throughout the first 2 weeks of the post-operative period. (2)

3 DOSAGE FORMS AND STRENGTHS
LOTEMAX contains 5 mg/g of loteprednol etabonate, as a sterile preserved ophthalmic gel. (3)

LOTEMAX, as with other ophthalmic corticosteroids, is contraindicated in most viral diseases of the cornea and conjunctiva including epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, and varicella, and also in mycobacterial infection of the eye and fungal diseases of ocular structures. (4)

4 CONTRAINDICATIONS
• Intraocular pressure (IOP) increase – Prolonged use of corticosteroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and fields of vision. If this product is used for 10 days or longer, IOP should be monitored. (5.1)
• Cataracts – Use of corticosteroids may result in posterior subcapsular cataract formation. (5.2)
• Delayed healing – The use of steroids after cataract surgery may delay healing and increase the incidence of bleb formation. In those diseases causing thinning of the cornea or sclera, perforations have been known to occur with the use of topical steroids. The initial prescription and renewal of the medication order should be made by a physician only after examination of the patient with the aid of magnification such as slit lamp biomicroscopy and, where appropriate, fluorescein staining. (5.3)
• Bacterial infections – Prolonged use of corticosteroids may suppress the host response and thus increase the hazard of secondary ocular infection. In acute purulent conditions, steroids may mask infection or enhance existing infection. (5.4)
• Viral infections – Employment of a corticosteroid medication in the treatment of patients with a history of herpes simplex requires great caution. Use of ocular steroids may prolong the course and may exacerbate the severity of many viral infections of the eye (including herpes simplex). (5.5)
• Fungal infections – Fungal infections of the cornea are particularly prone to develop coincidentally with long-term local steroid application. Fungus invasion must be considered in any persistent corneal ulceration where a steroid has been used or is in use. (5.6)

5 WARNINGS AND PRECAUTIONS
• Fungal infections – Fungal infections of the cornea are particularly prone to develop coincidentally with long-term local steroid application. Fungus invasion must be considered in any persistent corneal ulceration where a steroid has been used or is in use. (5.6)

6 ADVERSE REACTIONS
The most common adverse drug reactions were anterior chamber inflammation (5%), eye pain (2%), and foreign body sensation (2%). (6)

7 PATIENT COUNSELING INFORMATION

8 USE IN SPECIFIC POPULATIONS
8.1 Pregnancy
8.3 Nursing Mothers

9 DRUG INTERACTIONS

10 NONCLINICAL TOXICOLOGY
10.1 Carcinogenesis, Mutagenesis, Impairment Of Fertility

11 DESCRIPTION
LOTEMAX (loteprednol etabonate ophthalmic gel) 0.5% contains 5 mg/g of loteprednol etabonate, as a sterile preserved ophthalmic gel.

12 CLINICAL PHARMACOLOGY
12.1 Mechanism Of Action
12.3 Pharmacokinetics

13 ADVERSE REACTIONS

14 CLINICAL STUDIES

15 CLINICAL PHARMACOLOGY

16 HOW SUPPLIED/STORAGE AND HANDLING

17 PATIENT COUNSELING INFORMATION

18 REVISION HISTORY

9/2012

*Sections or subsections omitted from the full prescribing information are not listed

To report SUSPECTED ADVERSE REACTIONS, contact
Bausch & Lomb at 1-800-323-0000 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch
See 17 for PATIENT COUNSELING INFORMATION

Revised: 9/2012
6 ADVERSE REACTIONS
Adverse reactions associated with ophthalmic steroids include elevated intraocular pressure, which may be associated with infrequent optic nerve damage, visual acuity and field defects, posterior subcapsular cataract formation, delayed wound healing and secondary ocular infection from pathogens including herpes simplex, and perforation of the globe where there is thinning of the cornea or sclera.

The most common adverse drug reactions reported were anterior chamber inflammation (5%), eye pain (2%), and foreign body sensation (2%).

8 USE IN SPECIFIC POPULATIONS
8.1 Pregnancy
Teratogenic Effects: Pregnancy Category C.
Loteprednol etabonate has been shown to be embryotoxic (delayed ossification) and teratogenic (increased incidence of meningocele, abnormal left common carotid artery, and limb flexures) when administered orally to rabbits during organogenesis at a dose of 3 mg/kg/day (55 times the maximum daily clinical dose), a dose which caused no maternal toxicity. The no-observed-effect-level (NOEL) for these effects was 0.5 mg/kg/day (6 times the maximum daily clinical dose). Oral treatment of rats during organogenesis resulted in teratogenicity (absent inominate artery at ≥5 mg/kg/day doses, and cleft palate and umbilical hernia at ≥50 mg/kg/day) and embryotoxicity (increased post-implantation losses at 100 mg/kg/day and decreased fetal body weight and skeletal ossification with ≥50 mg/kg/day). Treatment of rats with 0.5 mg/kg/day (6 times the maximum clinical dose) during organogenesis did not result in any reproductive toxicity. Loteprednol etabonate was maternally toxic (significantly reduced body weight gain during treatment) when administered to pregnant rats during organogenesis at doses of ≥5 mg/kg/day.

Oral exposure of female rats to 50 mg/kg/day of loteprednol etabonate from the start of the fetal period through the end of lactation, a maternally toxic treatment regimen (significantly decreased body weight gain), gave rise to decreased growth and survival, and retarded development in the offspring during lactation; the NOEL for these effects was 5 mg/kg/day. Loteprednol etabonate had no effect on the duration of gestation or parturition when administered orally to pregnant rats at doses up to 50 mg/kg/day during the fetal period.

There are no adequate and well controlled studies in pregnant women. LOTEMAX should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

8.3 Nursing Mothers
It is not known whether topical ophthalmic administration of corticosteroids could result in sufficient systemic absorption to produce detectable quantities in human milk. Systemic steroids appear in human milk and could suppress growth, interfere with endogenous corticosteroid production, or cause other untoward effects. Caution should be exercised when LOTEMAX is administered to a nursing woman.

8.4 Pediatric Use
safety and effectiveness in pediatric patients have not been established.

8.5 Geriatric Use
No overall differences in safety and effectiveness have been observed between elderly and younger patients.

11 DESCRIPTION
LOTEMAX (loteprednol etabonate ophthalmic gel) 0.5% contains a sterile, topical corticosteroid for ophthalmic use. Loteprednol etabonate is a white to off-white powder.
Loteprednol etabonate is represented by the following structural formula:

Chemical Name:
Chloromethyl 17α-(ethoxycarbonyl)oxy)-11β-hydroxy-3-oxoandrosta-1,4-diene-17β-carboxylic acid
Each gram contains:
ACTIVE: Loteprednol Etabonate 5 mg (0.5%);
INACTIVES: Boric acid, edetate disodium dihydate, glycerin, polycarbophil, propylene glycol, sodium chloride, tylloxapol, water for injection, and sodium hydroxide to adjust to a pH of between 6 and 7.
PRESERVATIVE: benzalkonium chloride 0.003%.

12 CLINICAL PHARMACOLOGY
12.1 Mechanism of Action
Corticosteroids inhibit the inflammatory response to a variety of inciting agents and probably delay or slow healing. They inhibit the edema, fibrin deposition, capillary dilatation, leukocyte migration, capillary proliferation, fibroblast proliferation, deposition of collagen, and scar formation associated with inflammation. While glucocorticoids are known to bind to and activate the glucocorticoid receptor, the molecular mechanisms involved in glucocorticoid/glucocorticoid receptor-dependent modulation of inflammation are not clearly established. However, corticosteroids are thought to inhibit prostaglandin production through several independent mechanisms.

12.2 Pharmacokinetics
Loteprednol is lipid soluble and can penetrate into cells. Loteprednol etabonate is synthesized through structural modifications of prednisolone-related compounds so that it will undergo a predictable transformation to an inactive metabolite. Based upon in vivo and in vitro preclinical metabolism studies, loteprednol etabonate undergoes extensive metabolism to the inactive carboxylic acid metabolites, P1-91 and P1-90. The systemic exposure to loteprednol etabonate following ocular administration of LOTEMAX has not been studied in humans.

13 NONCLINICAL TOXICOLOGY
13.1 Carcinogenesis, Mutagenesis, Impairment Of Fertility
Long-term animal studies have not been conducted to evaluate the carcinogenic potential of loteprednol etabonate. Loteprednol etabonate was not genotoxic in vitro in the Ames test, the mouse lymphoma 18 assay, or in a chromosome aberration test in human lymphocytes, or in vivo in the single dose mouse micronucleus assay. Treatment of male and female rats with up to 50 mg/kg/day and 25 mg/kg/day of loteprednol etabonate, respectively, (600 and 300 times the maximum clinical dose, respectively) prior to and during mating did not impair fertility in either gender.

14 CLINICAL STUDIES
In two randomized, multicenter, double-masked, parallel-group, vehicle-controlled studies in 813 subjects with, post-operative inflammation, LOTEMAX was more effective compared to its vehicle in resolving anterior chamber inflammation and pain following cataract surgery. Primary endpoints were complete resolution of anterior chamber cells (cell count of 0) and no pain at post-operative day 8 (73-76% vs. 42-46%).

16 HOW SUPPLIED/STORAGE AND HANDLING
LOTEMAX® (loteprednol etabonate ophthalmic gel) 0.5% is a sterile ophthalmic gel supplied in a white low density polyethylene plastic bottle with a white controlled drop tip and a pink polypropylene cap in the following size:
5 g in a 10 ml bottle (NDC 24208-503-07)
Use only if imprinted neckband is intact.
Storage: Store upright at 15°-30°C (59°-86°F).

17 PATIENT COUNSELING INFORMATION
17.1 Administration
Invert closed bottle and shake once to fill tip before instilling drops.

17.2 Risk of Contamination
Patients should be advised not to allow the dropper tip to touch any surface, as this may contaminate the gel.

17.3 Contact Lens Wear
Patients should be advised not to wear contact lenses when using LOTEMAX.

17.4 Risk of Secondary Infection
If pain develops, redness, itching or inflammation becomes aggravated, the patient should be advised to consult a physician.

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