

Patient Assessment: Gel vs Liquid Anesthetic for Intravitreal Injections

There was a high degree of patient satisfaction with the procedure.

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Intravitreal injection has become one of the most commonly performed vitreoretinal procedures, but there is little agreement in the retina community regarding what type of topical anesthetic is most effective for it. We performed a study to assess the effectiveness of gel vs liquid topical anesthetics for this application.¹

This prospective, single-center study included 86 patients receiving either 30-gauge or 31-gauge intravitreal injections. A single physician (JSP) administered the anesthetic and performed the injection procedure. The patients were randomly assigned to one of three topical anesthetic groups prior to injection: 0.5% proparacaine HCl (Akorn, Inc.; Group 1); 0.5% proparacaine HCl plus a pair of 4% lidocaine-soaked cotton-tip swabs applied to the injection site for 20 seconds (Group 2); or 3.5% lidocaine HCl ophthalmic gel (Akten, Akorn, Inc.; Group 3). Statistical analysis was performed using Kruskal Wallis one-way analysis of variance.

Excluded were patients who were receiving injections associated with management of endophthalmitis or retinal detachment, who were unable to comprehend the pain scale that was used to grade discomfort, or who were under 18 years of age.

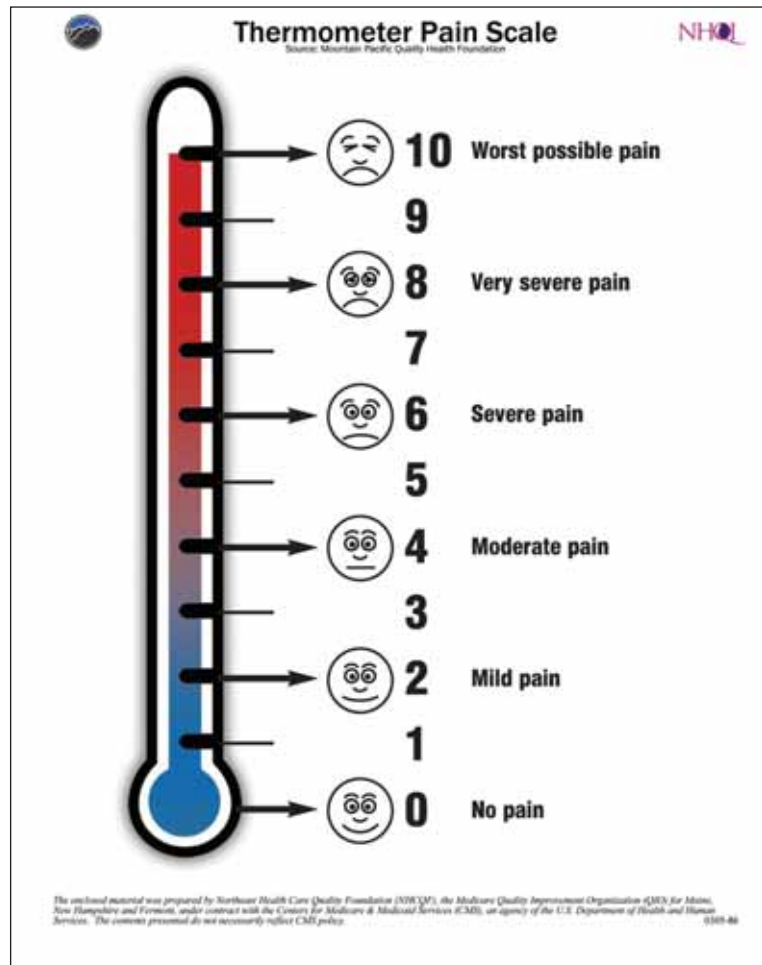


Figure 1. A standardized pain scale was used for all pain assessments.

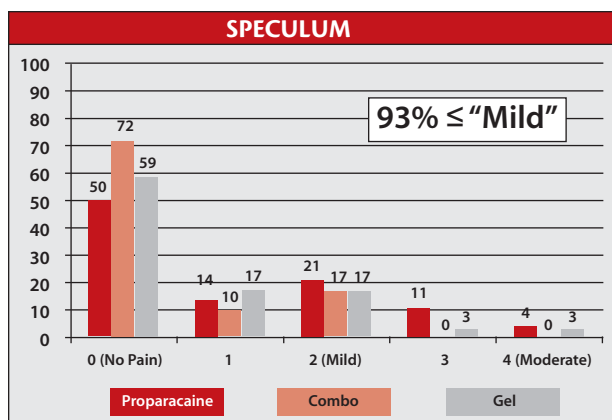


Figure 2. Analysis of pain scores associated with each of the three anesthetic groups revealed no significant differences in lid speculum pain scores between the anesthetic procedures.

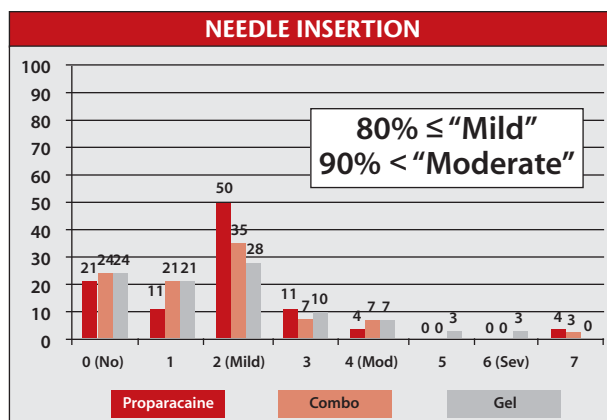


Figure 3. There were no significant differences between anesthetic groups in pain scores for injections.

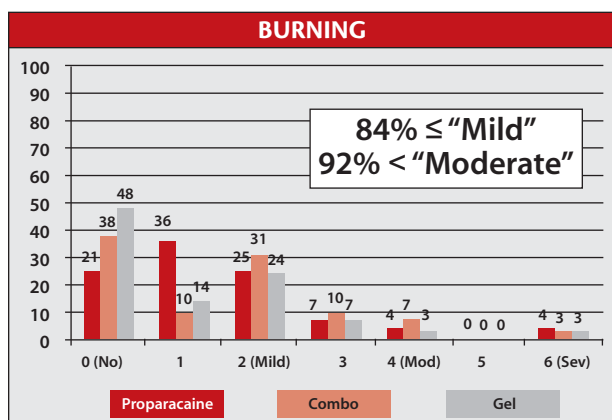


Figure 4. Analysis of pooled data on burning and stinging revealed that 84% of total patients reported mild or less than mild pain, 92% less than moderate pain, and again there were no differences between the anesthetic groups.

INJECTION PROCEDURE AND EVALUATION

For group 1, one to two drops of 0.5% proparacaine were placed over the injection site. For group 2, one to two drops of 0.5% proparacaine were placed over the injection site, after which two cotton-tipped swabs soaked in 4% lidocaine were held over the injection site for 20 seconds by the clock. For group 3, 3.5% lidocaine gel was applied to the injection site. The remainder of the procedure was standardized.

After application of topical anesthetic, the intravitreal medication was prepared. A lid speculum was placed, and one to two drops of 5% povidone iodine solution was applied to the injection site. The injection was then performed, the lid speculum removed, and a drop of moxifloxacin HCl ophthalmic solution (Vigamox, Alcon, Inc.) placed over the injection site. The estimated time from when the first anesthetic

The use of topical 0.5% proparacaine drops alone provides very good or excellent anesthesia during office-based intravitreal injections.

drop was administered until injection was approximately 20 to 70 seconds, depending upon which anesthetic preparation was used.

Approximately 10 seconds after injection, patients were asked to grade discomfort associated with three components of the injection procedure: the lid speculum, the needle insertion, and burning sensation from the 5% povidone iodine solution. A standardized pain scale was used for all pain assessments (Figure 1). Patients were also asked to grade the overall injection procedure experience as either excellent, very good, fair, poor, or awful. Instructions for interpretation of the pain scale were explained to each patient before and again immediately after the injection procedure.

RESULTS

Patients were equally assigned across all three anesthetic groups, and most (83%) received injections with a 30-gauge needle.

Analysis of pooled lid speculum data showed that 93% of patients reported that pain associated with the lid speculum was mild or less than mild. Analysis of pain scores associated with each of the three anesthetic groups revealed no significant differences in lid speculum pain scores between the anesthetic procedures (Figure 2). Analysis of pooled needle insertion data revealed that 80% of patients reported that pain associated with the needle insertion was mild or less

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a chevron-type incision that appears to be more prone to wound gape and leakage from the wound. These incisions appear to have less stability with surgical manipulation and to require stabilization postoperatively.

Eyes in the single-step group required suture closure more frequently than those in the two-step group, and this difference was statistically significant ($P=.002$).

The overall complication rate (5.98%) was low for all patients, and there was no statistical difference in the complication rates between the groups. The most frequent postop complication was vitreous hemorrhage. One eye in this series developed endophthalmitis.

Both types of 23-gauge system allow the performance of safe, easy, and efficient retinal surgery. In this series, the two-step system required suture closure significantly less often than the single-step system.

The difference in rates of inadequate wound closure between the two cannula systems may be related to wound construction and blade design. The stiletto-type design of the MVR blade seems to create a sharper and more controlled incision. In addition, the use of the angled blade with the two-step cannula system may offer the advantage of reproducibility when compared with a single-step system with which the angle of entry may vary.

While in this series the complication rates were similar in the two groups, surgeons must be vigilant of potential complications, in particular hemorrhage and infection, associated with inadequate wound closure in MIVS. ■

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than mild, and 90% reported less than moderate pain. Again there were no significant differences between anesthetic groups (Figure 3). Analysis of pooled data on burning and stinging revealed that 84% of total patients reported mild or less than mild pain, 92% less than moderate pain, and again there were no differences between the anesthetic groups (Figure 4).

Overall satisfaction scores were very high, with 95% of study participants grading the procedure as either excellent or very good. Again, there were no differences between the individual anesthetic groups.

SUMMARY AND DISCUSSION

The purpose of this study was to assess the effectiveness of several topical anesthesia techniques that we felt were particularly efficient. We found no significant differences in pain scores or overall satisfaction scores among the three anesthetic groups. Additionally, there was no significant difference in pain scores between 30 gauge and 31 gauge needles, regardless of anesthetic group.

Although this study found no significant differences in pain or satisfaction scores between the groups, the cost of the 3.5% lidocaine gel technique is greater than the other techniques utilizing proparacaine and liquid lidocaine.

Based on these findings, we conclude that the use of topical 0.5% proparacaine drops alone provides very good or excellent anesthesia during office-based intravitreal injections. This anesthetic technique is both efficient and cost-effective, features worthy of attention in this era of rising health care costs. ■

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