No-anesthesia cataract surgery

We read with interest the recent article by Coelho et al.1 showing the effect of cryoanalgesia in phacoemulsification. The authors have done good work in comparing 2 modalities of anesthesia; one is commonly performed and the other has shown promising results.1–3 In this context, we would like to add our experience of no-anesthesia phacoemulsification surgery, which was first reported by one of us (A.A.) in 1998 and subsequently compared with topical anesthesia and intracameral anesthesia in 2001 in a study by Pandey et al.4 In the prospective randomized double-masked study of 75 patients who had clear corneal phacoemulsification with foldable intraocular lens implantation, 3 groups were randomized for no anesthesia, topical anesthesia, or topical with intracameral anesthesia. No-anesthesia eyes received 2 drops of a balanced salt solution every 5 minutes 3 times beginning 10 to 15 minutes before surgery. No patient in any group required supplemental anesthesia. Even though the mean intraoperative pain score (scale 0 to 10) in the no-anesthesia group was slightly higher than in the topical and topical plus intracameral groups, the difference was not statistically significant (P = .610). The exact etiology or reason for the no-anesthesia phenomenon remains unknown; however, factors such as surgeon skill, tissue manipulation, incision creation, and corneal innervations have been proposed.4

A study by Álvarez Marín et al.2 found satisfactory pain control during phacoemulsification using an intraocular irrigation solution at 4°C in 2002. Álvarez Marín et al.2 and Gutiérrez-Carmona3 found that phacoemulsification under cryoanalgesia was safe, with an acceptable level of pain, and was preferred over topical anesthesia by some patients. Variation in corneal sensitivity and innervation has been reported, and this has been considered as a main reason for less pain sensation intraoperatively in phacoemulsification.4 The superior cornea is the least sensitive, probably because of difference in the density of the innervational network.5 Although the data indicated in the index study showed no differences in pain intensity between topical anesthesia and topical plus cryoanalgesia, 60% of patients reported less pain with topical plus cryoanalgesia (Figure 1).1 Apart from temperature, a few factors that can influence pain in those eyes would be the luminance of the microscope, iris manipulation, and phaco power, which might vary between the eyes intraoperatively.

The choice of anesthetic method depends on several factors; that is, the characteristics of the patient, the type of cataract surgery, and the surgeons’ skills and preferences. Because of its simplicity and low cost, topical anesthesia has been increasingly used for clear corneal phacoemulsification by experienced surgeons. However, the risks for epithelial toxicity and microbe transmission in topical anesthesia remain. We would like to know whether the authors have considered the no-anesthesia effect that can be concomitantly present in eyes under topical anesthesia. We would again like to commend the authors’ comparative study of bilateral cataract cases for topical and topical with cryoanalgesia, which sheds light on anesthetic use in modern-day cataract surgery. At the end of the day, it is for the surgeon to decide what is most comfortable in his or her hands—whether it be topical intracameral cryoanalgesia or no anesthesia.

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Reply: We are glad that Drs. Kumar and Agarwal appreciated our work and raised the question about effects of no anesthesia regarding our comparison between topical and topical with cryoanalgesia for phacoemulsification.

As a matter of fact, although we knew about the interesting article describing cataract surgery without anesthesia,1 we do not have experience performing surgery with no anesthesia in our routine. Nevertheless, we agree that the factors associated with the supportable procedure without anesthesia,
such as the surgeon’s skill, tissue manipulation, incision creation, and corneal innervations, are most likely to be involved with the intensity of pain during phacoemulsification.

We must never ignore the following: Definitions, descriptions, and perceptions of pain and pain control are culturally specific and presumably also individually very variable.

Therefore, as Drs. Kumar and Agarwal pointed out, the decision about the best anesthetic modality during phacoemulsification takes into consideration surgeon experience, patient comfort, and safety in each individual case.—Roberto Pinto Coelho, MD, PhD, Ricardo Helio Biaggi, MD, Rodrigo Jorge, MD, PhD, Maria de Lourdes Veronese Rodrigues, MD, PhD, André Marcio Vieira Messias, MD, PhD

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Ophthalmic viscosurgical devices for intumescent cataracts: Pressure-equalized cataract surgery

I read with great interest the article by Hengerer et al.1 They presented a small study that shows the value of using trypan blue and increasing the anterior chamber pressure anterior to the anterior capsule using highly viscous ophthalmic viscosurgical devices (OVDs) for intumescent cataract cases. It is important for cataract surgeons to be aware of this principle, and I congratulate the authors on its demonstration. I do, however, have a few comments about the paper.

First, the study did not show any value of the variant of the soft-shell technique used by the authors in Group 2; it simply stated the advantage of using a very highly viscous viscoadaptive OVD, which enabled the intraocular pressure to be increased in front of the anterior capsule. Ophthalmic viscosurgical devices with lower viscosity used in conjunction with viscoadaptives do not contribute to pressurization of the chamber but allow the pressure induced by the highly viscous and elastic viscoadaptives to be transmitted through the lower viscosity OVD, because the 2 OVDs are confined together in a single space, even if that lower viscosity OVD is a balanced salt solution, as in the ultimate soft-shell technique. Soft-shell techniques use dispersives, or water-based solutions of drugs, in conjunction with viscoadaptives, because they add additional benefits to the procedure, while the viscoadaptives contribute pressurization. The use of Healon, in addition to Healon5, really does not add an additional benefit in the situation presented here.

Second, the authors did not refer to the OVDs with their accepted classification categories. The current classification of OVDs is shown in Figure 1, updated

![Figure 1](https://example.com/image1.png)

**Figure 1.** The current classification of OVDs, updated and modified from Arshinoff and Jafari 2005 (CDI = cohesion-dispersion index [percentage aspirated/mm Hg]; HPMC = hydroxypropyl methylcellulose; mPa.s = millipascal-seconds; OVDs = ophthalmic viscosurgical devices) (*Manufactured by Abbott Medical Optics, Inc. **Sold by iMed Pharma. ***Manufactured by Bohus Biotech AB. #Sold by Bectin, Dickenson and Co. ##Manufactured by Carl Zeiss Meditec AG. ###Manufactured by Bausch & Lomb (Croma-Pharma GmbH). †Manufactured by Alcon Laboratories, Inc. +Manufactured by Bausch & Lomb. †††Manufactured by Bio-Technology General (Israel) Ltd. ???Manufactured by Rayner Intraocular Lenses Ltd. ††Manufactured by Shisheido Co. Ltd. †††Manufactured by Seikagaku Corp. - Santen, Inc. *Available in the United States).