

HOW TO PARTNER WITH PRIMARY CARE MDS • THE BRAVE NEW WORLD OF OFFICE DESIGN • THE PERILS OF GOING PAPERLESS

# REVIEW

## of Ophthalmology

SEPTEMBER 1996

## Why and How to 'Go Deep' with Topical Anesthesia

● BY KENNETH J. ROSENTHAL, MD, FACS, *Great Neck, N.Y.*

*Particularly in patients on blood thinners, topical anesthesia makes more sense than traditional anesthesia.*

**S**ome five years ago, I performed standard phaco and IOL implantation on an 82-year-old woman. Before I sent her home, I told her to resume her regular medications, one of which was coumadin, and to remove the patch that evening. That night, when I called her, the patient told me she was seeing much better, but that she had "terrific pain" in her leg which began soon after she arrived home. I arranged for immediate transportation to the

emergency room, and she underwent a successful emergency embolectomy. During the post-op course, she developed yet another embolus, this one in her lung. After it was all over, I apologized to the patient, and explained that we had needed to stop her anti-coagulant prior to surgery because of the risk of retrobulbar hemorrhage. "Surely," she said, "there must be a way to make my cataract surgery safe without killing me!"

As it turns out, she was absolutely right. Today, I use that method routinely, not only on patients using blood thinners, but on near-

Kenneth J. Rosenthal, MD  
Waternew Office Building  
540 East Shore Road  
Great Neck, NY 11023  
516-465-8088  
Fax: 516-465-8882

**Gear Your Practice for The Baby Boom**  
**4 Ways to Approach Topical Anesthesia**  
**Bob Dole: The Ophthalmic Pick for '96?**

ly all my patients. Here's how I perform my brand of topical anesthesia, which I call Rosenthal Deep Topical, Fornix-applied, Pressurized, "Nerve Block" Anesthesia.

### Vocal Anesthesia

The first step, and perhaps the most critical, is to explain the technique to the patient. Think of it this way: If you stand behind someone and clap your hands without warning, they will be startled. But, if you let them know that you will be clapping, they will be calm.

I tell patients that they will be awake, but relaxed and comfortable; that they may feel pressure, but not pain; and that they will see bright lights (some patients, in fact are quite enraptured with the beautiful prismatic dance of lights as the nucleus is fractured and emulsified!).

### Deep-Topical Anesthesia

On the day of surgery we start by cutting up Ultracell surgical instrument wipes (available from most supply houses) into pieces of approximately 1.5 inches for the upper fornix placement and one-half inch square for the inferior fornix. I generally cut up enough sponges for the entire day at the start of the day. Sliced up, one sponge can generally be used for about eight to 10 cases.

Next, we place lidocaine 4% (Xylocaine, Astra) (with or without bupivacaine [Marcaine, Sanofi Winthrop] 0.5%) preservative free into a small sterile container such as a medicine cup or sterile specimen cup. I then place the sponges in the cup.

About 15 minutes before the case, I place a few drops of tetracaine or proparacaine into the fornices of both

eyes. Drops in the fellow eye make it easier to keep the eyes open.

When I am ready to do a case, I take a sponge and fold it in half or thirds. Then, using a blunt utility forceps with cross serration, I grasp the sponge.

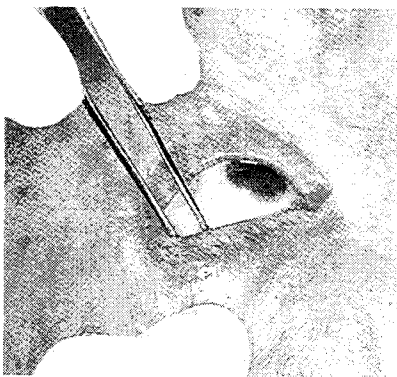
I ask the patient to look down. Then I insert the sponge as far posterior as possible in the upper fornix (Fig. 1). If the sponge "bounces back," I gently press it back into the fornix. I repeat this process in the inferior fornix (Fig. 2). I don't hesitate to press the sponges back!

Now, with the patient's eyes closed, apply a Honan balloon inflated to 30 mm Hg (Fig. 3). According to Fick's law, pressure placed across a semi-permeable membrane helps to accelerate the rate of transport of the anesthetic.

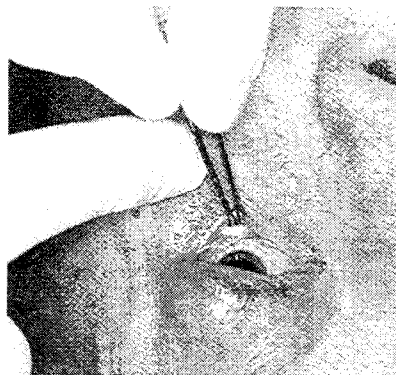
I believe this technique allows for absorption of the anesthetic by the nerve trunks serving the conjunctiva, ciliary body, iris and sclera. In most cases, I also see some lid hypokinesia, suggesting that the anesthetic is absorbed through the palpebral conjunctiva as well.

During placement of the sponges, I keep IV sedation at a minimum to ensure patient cooperation. However, intra-operatively, IV midazolam (Versed, Roche) or propofol (Diprivan, Zeneca Pharmaceuticals) can be used if needed. It is not necessary to oversedate the patient. In fact, I prefer minimal sedation so that the patient can remain cooperative and make eye movements in the desired direction.

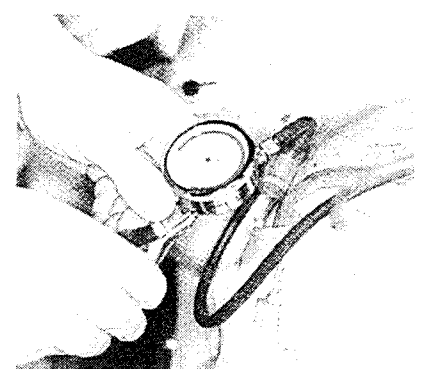
Incidentally, one of the challenges most surgeons experience when adopting this technique is becoming comfortable with the eye movement. I prefer to think of this as an advantage because I can coach the patient during



**Figure 1.** I place the first piece of sponge in the upper fornix.



**Figure 2.** Then I place the second sponge in the lower fornix.



**Figure 3.** After the sponges are inserted, I apply a Honan balloon and inflate it to 30 mm Hg.

# 4 Ways to Do Topical

surgery to control the movement of the eyes. After performing so many surgeries under topical, I actually think I would miss not being able to instruct the patient to look toward me during IOL insertion in order to provide counter-traction.

Intra-operatively, I use "verbal anesthesia" extensively. I make it a point to let patients know how things are going, when they should anticipate pressure or movement. I also tell them to let me know if they have any concerns. I speak in a calm, steady reassuring voice. I also like to have some kind of soothing music playing in the background.

At the end of the case, I sprinkle some additional Xylocaine or Marcaine on the cornea to reduce post-op irritation.

I've used this technique in about 1,500 consecutive surgical cases, and I haven't needed to supplement this anesthetic with any form of block. I've found it works equally well with scleral-tunnel and clear-corneal incisions. Plus, I've used this topical anesthesia technique not only with my standard phaco cases, but also with extracapsular cases for subluxated nuclei in patients with hypermature cataracts, secondary sutured PC IOLs, phaco-trabeculectomy, and anterior vitrectomy.

Recently, a cardiologist I know evaluated one of his patients for cataract surgery. The patient had visual acuity of counting fingers in the right eye due to a dense nuclear cataract, and the patient was quite anxious about it. However, the cardiologist was equally anxious because the patient's prothrombin time had fallen quite precipitously. He felt that this patient would be at increased risk for a

stroke if his anticoagulant therapy were reduced. In fact, he wanted to immediately increase his dose of coumadin. The cardiologist could have referred to any cataract surgeon in the area, but he referred the patient to me,

because he knew my technique would not put the patient at risk. In contrast to my 82-year-old patient from five years before, this patient was spared the hazard of going off coumadin and was able to see 20/30 immediately after surgery, letting him know his vision was intact.

Cardiologists tell me that with the more widespread indications for anticoagulation, approximately 10 to 15 percent of patients 65 years of age or older are on coumadin, and perhaps as many as 60 to 70 percent are taking aspirin to help thin their blood. This means that up to 85 percent of our patients could benefit from an anesthesia technique which requires no injections or needles. This is the reason I started doing topical anesthesia, and one of the big reasons I plan to continue using my technique. □



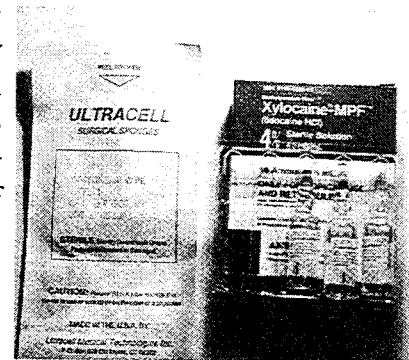
*Dr. Rosenthal specializes in cataract, refractive and oculoplastic surgery. He is also director of the Ambulatory Surgical Eye Center of Long Island. In his spare time, he is a classical pianist.*

#### References

- Rosenthal, K. Deep Topical, Nerve-Block Anesthesia J Cataract Refract Surg, 1995;21:499-503  
Claoe, C Letter to Editor (and response by K. Rosenthal) J Cataract Refract Surg, 1996;21:  
Rosenthal, K. Ophthalmology Clinics of North America, 1997 (in press), David Davis III, Editor, "My personal technique: Rosenthal Deep Topical Anesthesia." Video Textbook of Viscosurgery Vol. IV, "Rosenthal Deep Topical, Pressurized, Fornix-Applied "Nerve Block" Anesthesia. Kabi-Pharmacia, Inc.  
Herschfeld, JJ. Carl Koller and the discovery of local anesthesia. Bull. History of Dentistry. 1986; 34:2, 122-7.  
Liljestrand, G. Carl Koller and the development of local anesthesia. Acta Physiol Scand. Suppl. 1967;299:1-30  
Moore et al. Bupivacaine: A Review of 2,077 Cases. JAMA;1970;214:713  
Koller C. Ueber die Verwendung des Cocain zur Anaesthetisierung am Auge. Wien med Wochenschr 1884; 34:1276-78j, 1309-11.  
Breathnach CS: Biographical sketches 45. Koller. Irish Medical Journal, 1984;77:10, 335.  
Petersen WC, Yanoff M. Why retrobulbar anesthesia. Tr. Am. Ophth. Soc.; 1990;88:136-40.  
Fine IH, Fichman RA, Grabow HB. Clear Corneal Cataract Surgery and Topical Anesthesia. New Jersey, Slack, 1993. 101-4.  
Gills JP, Husted RF, Sanders DR. Ophthalmic Anesthesia. Thorofare NJ, Slack Inc., 1993; 63.

## VIRTUAL REALITY HELPER

**T**o enhance the patient's experience and to assist the patient in fixation, I have recently developed a "virtual reality" device. This device allows the patient to fixate with the fellow eye and to keep both eyes open without squeezing. It also serves to distract the patient by presenting pleasant images for them to look at. You'll be able to read more about this device in an upcoming issue of *Review of Ophthalmology*.



**The main ingredients for deep topical anesthesia: Ultracell sponges and lidocaine.**