

CORNEA

MD Roundtable: Recurrent Corneal Erosions

MODERATED BY CHRISTOPHER J. RAPUANO, MD,
WITH MARK D. EWALD, MD, AND ELMER Y. TU, MD

This is the first installment in an occasional series of MD Roundtables, in which three experts engage in a discussion of a topic of interest in their field. This month, Christopher J. Rapuano, MD, at Wills Eye Hospital, leads a roundtable on recurrent corneal erosions with Mark D. Ewald, MD, at Vanderbilt University, and Elmer Y. Tu, MD, at University of Illinois—Chicago.

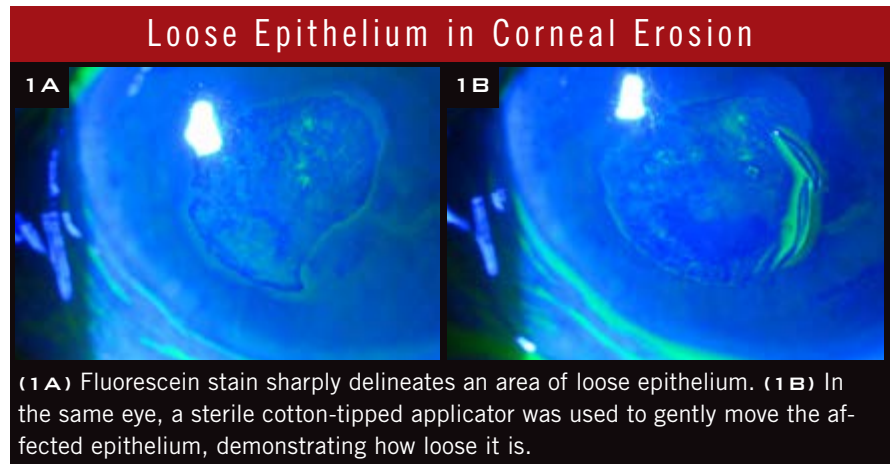
Following are edited excerpts from the conversation; a podcast of the full discussion is available as a Multimedia Extra at www.aao.org.

Diagnosis

Patient History. *Dr. Rapuano: What clues in the patient's history suggest the diagnosis of recurrent erosion?*

Dr. Tu: The classic thing is that patients usually come in with some sort of irritation—but it's not just acute; the key is the recurrent nature. If they describe a pattern of recurrent irritations that last from a half an hour to a couple of hours after they wake in the morning, I think that's one of the biggest clues for me to investigate whether that patient might have a recurrent erosion, even if an epithelial defect is not apparent.

Certainly, the classic symptom is pain waking them up from sleep, usually around 2 to 4 o'clock in the morning—probably from a combination of their eyes drying out and REM sleep. If they wake up with a pain at a normal time, it's a little less specific and could,



perhaps, be dry eye syndrome. Any distant history of trauma adds to the suspicions, but recurrent erosions can occur without that as well.

Problematic Symptoms. *Dr. Rapuano: Is there a symptom that you think bothers these patients the most?*

Dr. Ewald: I think it's the chronicity that really bothers them the most, as opposed to actual pain from an erosion. It happens every day or every month, and it's been going on for years and years. I think that really starts to wear on the patients.

Dr. Tu: I agree. The patients don't know when the next nail is going to fall, and they actually get very tense about this. Many of these patients are afraid to go to sleep—the random pain they get can be so severe that it affects them psychologically.

Dr. Rapuano: It's almost like the sword of Damocles over their heads. They don't know if they will be able to make their big meeting, if they can go

to a party that night, if they're going to miss a family wedding because of a bad episode.

I think that if we had no treatment for this but could tell patients, "Look, every Monday morning, from 7 a.m. to noon, you're going to be in pain," people could adjust their lives. I think that what people appreciate the most when they're treated is a feeling of "I have my life back."

I think that many ophthalmologists who don't treat recurrent erosion patients a lot simply don't appreciate the toll this unpredictability takes. They may think, "Oh, recurrent erosion—take some Muro; it'll go away." They really don't understand how emotionally draining it is.

Dr. Tu: And to that end, just having a physician who understands their pain is incredibly helpful for patients.

Dr. Rapuano: We can tell them, "You're not the only person who has this. I see this all the time; we have

good treatments for it, and we will take care of you.”

Treatment

Initial Therapy. *Dr. Rapuano: What’s your initial treatment for a patient who comes to your office with a large epithelial defect (say, 4 mm) with some loose tissue or the classic history of erosion?*

Dr. Tu: I think a key is preservative-free antibiotics, artificial tears, and lubricants. If you start these patients on topical agents that are preserved in any way, they react extremely poorly—they get worse. If I’m absolutely sure that they have a recurrent erosion and not something infectious, I will often offer preservative-free steroids (compound 1 percent methylprednisolone made by our pharmacy). They have relief after the first or second drop that day, and they’re completely comfortable.

Dr. Ewald: If it’s the first time I’ve seen the patient with that history, and there is some loose epithelium, I might try to debride it a little bit. Certainly, I don’t want to be too aggressive because I’m worried about taking everything off. And rather than starting them on steroids right away, I would probably use lubricating drops, preservative-free artificial tears, and a mild lubricating antibiotic ointment—for example, erythromycin ointment, or possibly something with a combined steroid.

Dr. Tu: I’d like to add one thing about these patients: You should absolutely never patch them because they’ll be back in your office two or three hours later in horrible discomfort. I may use a bandage soft contact lens, though.

Preventive Measures. *Dr. Rapuano: Once an erosion has healed, what is your first-line preventive management?*

Dr. Ewald: First line would be something lubricating, preservative-free artificial tears and possibly ointment at night for preventive treatment.

And as the best second-line preventive, I’ve had had nice success with doxycycline or another oral medication in that category—tetracycline, minocycline—at a dose of maybe 50 mg twice a day or even once a day.

I often use a topical steroid along

with this. I prefer something that’s not as strong as prednisolone, such as loteprednol or fluorometholone. If I know the patient well and I know they’re good at following up, I’ll see them every four weeks or so to check the pressure and make sure things are going OK. With newer patients, I may see them more often when starting them on longer-term steroid use.

Dr. Tu: The other really important thing is to try to control any ancillary disease patients may have, whether it be allergy, blepharitis, or something of that nature. When any of those flare, it tends to increase the frequency and severity of their erosions. So once they get over the acute episode, part of prevention is to see if we can normalize the ocular surface to reduce the risk of exacerbation promoted by one of these other processes.

Dr. Rapuano: For me, the first-line preventive is some type of ointment every single night. If you read all the books, they talk about Muro 128 being the ointment of choice. I personally have not found Muro to be any better than Refresh PM or Puralube or erythromycin, for that matter if I want it for their blepharitis.

Years ago I used to say, “Use ointment for three months.” Then I had a couple of patients who, the day they stopped at 3.1 months, got an erosion. So now I say six months.

Trauma vs. ABMD. *Dr. Rapuano: Are your treatments different for traumatic erosion versus anterior basement membrane dystrophy-related erosion?*

Dr. Tu: The initial treatment would be very similar between the two processes. Once you start to get into other therapies, I think that having a different algorithm for each is important.

Bandage Lenses. *Dr. Rapuano: Do you ever use long-term bandage soft contact lenses before jumping to surgery—for example, using lenses for six months, changing them every month?*

Dr. Ewald: I don’t use long-term bandage contact lenses if I can help it because I would be worried about the rate of infections associated with them. That being said, though, rarely I’ve had patients who wear long-term bandage

contact lenses; they’re not going to get surgery, and they have an eye with poor visual potential otherwise.

Dr. Rapuano: I’ll talk to patients about bandage lenses, and I’ll use them in people who really do not want surgery; but in general, I don’t use bandage lenses long term, mainly because I haven’t found them very effective. The bandage lens works well when it’s in there. However, when you take it out after three months or sometimes longer, they get erosions again.

Surgery

Choice of Procedures. *Dr. Rapuano: What is your progression to surgical treatment, and is it different for traumatic versus dystrophic erosions?*

Dr. Tu: If bandage contact lens treatment fails after a two- to three-month period, I’ll recommend that patients go on to some sort of surgical procedure. I usually reserve anterior stromal micropuncture as a first-line for patients with traumatic erosions, where it’s a fairly localized process. In patients who have dystrophic disease, it’s so diffuse that you end up following it all over the cornea. So I’m less excited about doing a micropuncture in those patients. But in the traumatic patients, where I’ve observed an erosion multiple times in the same location, I think it’s excellent therapy.

I’ll push the dystrophy patients more toward either a PTK [phototherapeutic keratectomy] or a diamond burr keratectomy because of the more diffuse nature. And the visual axis is often involved in those patients as well. So another decision point is what part of the cornea is affected.

Stromal Puncture Needles. *Dr. Rapuano: When you do anterior stromal puncture, what needle do you use?*

Dr. Ewald: Whatever the smallest one I can get—maybe a 30-gauge. Occasionally, a TB needle if that’s what we have.

Dr. Tu: And obviously it has to be a short needle—I use a 5/8 inch, usually a 27- or a 30-gauge bent needle.

Dr. Rapuano: I like a little bigger needle—I use a 25-gauge.

Diamond Burr. *Dr. Rapuano: What*

do you do if anterior stromal puncture is not appropriate for the patient?

Dr. Ewald: I really like diamond burr debridement. We usually do it in a minor procedure room—I can even do it at the slit lamp. I'll do a superficial keratectomy and then a diamond burr debridement to really polish Bowman's membrane.

I manage patients postoperatively with a bandage contact lens and preservative-free antibiotics and usually see them the next day—more for reassurance than for doing something different. I reassure patients that the pain is going to get better and that it's normal to be irritated and have some photosensitivity.

Diamond Burr Technique. **Dr. Rapuano:** What's your technique for diamond burr? What size of diamond burr do you use?

Dr. Tu: I don't know the size off-hand—we have only one. I'll debride all of the epithelium to within 1.5 mm of the limbus all the way around and then just burr down the exposed Bowman's membrane—fairly lightly, but I'll go over it a couple of times to make sure it's smoothed out.

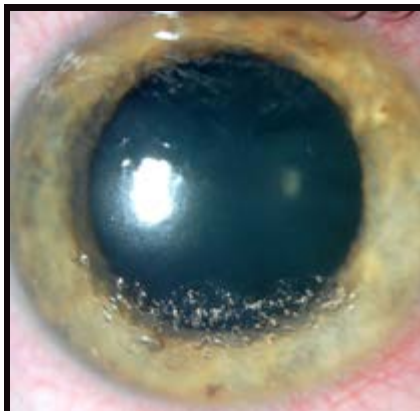
Dr. Rapuano: I use a 5-mm diameter diamond burr. I think it's important that you don't use one of those really small burrs—they don't give a nice smooth, even polishing.

I also agree with removing essentially all the epithelium. I learned the hard way years ago: The erosion had been on the inferior third of the cornea for the last five times, so I would treat only the lower third. That would be great initially, but then they'd get an erosion somewhere else. Now if anything is remotely loose, I'll take off. It's amazing how even though the erosion has only been in the inferior third, 90 percent of the cornea is loose.

PTK or Diamond Burr First? **Dr. Rapuano:** Do you ever do excimer laser PTK before a diamond burr?

Dr. Ewald: I really like diamond burr. There aren't many times I would do PTK first, unless, perhaps, it was something localized in the visual axis, and I knew it didn't go to the periphery.

Dr. Tu: For me, it's about 50-50, and



POSTOP. Eye immediately after treatment with anterior stromal puncture.

some of it has to do with patient acceptance. Sometimes, when you describe the burr, patients say, "I don't want any part of it. Laser, sure, why not?" If the problem is entirely in the central 6 or 7 mm, I think it's perfectly reasonable to do PTK as the first procedure if the patient wants it. But if the disease extends to the periphery, I recommend diamond burr because PTK usually won't reach that area.

PTK Details. **Dr. Rapuano:** So when you do PTK, you first remove all the loose epithelium, and then you treat with the laser. How many microns do you treat?

Dr. Tu: As few as possible—maybe 10 or 12 μm , just to give a little roughening of Bowman's.

Dr. Ewald: I agree with taking as little as I can. I try to make the spot size as big as it goes, and then I have the tech who is with me count down the microns. So, it's usually five, 10, and then I stop.

Dr. Rapuano: I do the same thing except I go 5 μm . I set the laser to 6 Hz because—for the Visx, at least—the preset default is 10 Hz. And if the treatment area is bigger than 6.5 mm, which is the biggest diameter the Visx PTK will go, I'll usually take a little sponge, mask the central 6.5 mm, and treat around it. I don't want to double-do any area.

Debridement. **Dr. Rapuano:** Do you think that simple, regular epithelial debridement on its own—all the way to limbus—is worth doing in a patient with recurrent erosions?

Dr. Tu: Yes, I do. If a patient has a history of recurrent erosion and comes back healed, but the epithelium is all loose, I think it is helpful to take off everything that is not at least partway attached and allow it to regrow. But that's usually a situation where I'll put them in a contact lens for several weeks afterward.

Dr. Ewald: It's better than doing nothing, but I think that using the diamond burr really gets some of that reduplication of the basement membrane. If I were just doing only an epithelial removal, I would worry that I might not be getting all of that extra second layer.

Dr. Rapuano: I started out using epithelial debridement because that's the way I was taught 25 years ago: recurrent erosion, epithelial debridement. I did that for years but was rather unhappy with the results—I had about 50 percent of people coming back, and that wasn't good enough.

So then I talked to Peter Laibson, who recommended diamond burr—I'd never even heard of it before. Once I started doing it, the results were much, much better. Basically, I don't do epithelial debridement alone anymore—if I'm going to take off all the epithelium, I'll also do the diamond burr. I don't think it causes more pain or slows down the healing. It may increase the haze a little bit, but in my hands at least, the success rate increased dramatically to around 90 percent success for diamond burr and PTK—and anterior stromal puncture for that matter. ■

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