The Advent of Chandelier Illumination in Vitreoretinal Surgery

A panel of surgeons has divergent views on when and how to use these devices.

BY ROHIT ROSS LAKHANPAL, MD, FACS; AND THE VIT-BUCKLE SOCIETY

Chandelier illumination use has steadily increased in the past 5 years due to increased availability, improved technology, brighter lighting systems, and ease of use. Several companies have invested time and money in the research and development of these systems to assist vitreoretinal surgeons. With these trends in mind, we decided to explore the use of these systems.

Our esteemed panel consists of Vit-Buckle Society Executive Board members Derek Kunimoto, MD, JD; Rohit Ross Lakhanpal, MD, FACS; Audina Berrocal, MD; Charles W. Mango, MD; Andrew Moshfeghi, MD, MBA; John Kitchens, MD; and VBS members Jonathan Prenner, MD; Brandon Busbee, MD; Charles Wykoff, MD, PhD; and Jorge A. Fortun, MD.

All were posed the following questions:

1) Do you use chandelier systems?

2) If so, what systems (Alcon, Synergetics, etc.) and how often (ie, only for bimanual surgery, only for certain complex indications, or routinely)?

3) What pearls can you offer the reader about the use of these systems?

Let's see what they had to say.

Dr. Kunimoto: I don't use chandeliers. For complex bimanual work in the posterior pole, I use an illuminated pick and forceps. For work in the far periphery, I use an endoillumination probe and either forceps or the vitrectomy tip, with an assistant depressing manually under BIOM wide-field viewing.

Dr. Lakhanpal: I use chandelier illumination for particularly challenging cases only (ie, proliferative vitreoretinopathy, giant retinal tears, intraocular foreign bodies, tractional retinal detachment) in which bimanual instrumentation is often necessary. This may comprise only 20 to 25% of cases. Thus, in my opinion, chandeliers are unnecessary for 75% of my cases.

Dr. Berrocal: I do use chandelier systems. I like the Alcon chandelier particularly for proliferative vitreoretinopathy cases for which I would like to use a bimanual technique. Otherwise I feel I can do most work with the Constellation (Alcon) light pipe. With either the BIOM or the AVI (Volk) I like to depress while in the eye to look at periphery. We work with fellows, so I am usually not operating alone.

> "I would only consider using a chandelier in diabetic tractional detachments, and I am in the 'no-chandelier' category for the majority of these cases."
> – Charles W. Mango, MD

Dr. Mango: I would only consider using a chandelier in diabetic tractional detachments, and I am in the "no-chandelier" category for the majority of these cases. I find it far easier to visualize and initiate a dissection plane using a handheld light pipe's focal illumination compared with a chandelier's diffuse global illumination. If I feel that I am unable to safely proceed without bimanual dissection (a minority of diabetic traction detachments),

then I put in a chandelier at the 12 o'clock position attached to a xenon light source. I am currently using Alcon's latest model.

Dr. Moshfeghi: I do not use chandeliers. I depress for myself under BIOM visualization and find the extra step unnecessary.

Dr. Kitchens: I use chandeliers occasionally. I usually use them to enhance my videos in good cases, for bad diabetics, and to do needle drainage under the BIOM. I have used all sorts over the last couple of years. Here are my favorites:

1) ***Alcon 25-gauge chandelier*** (earlier and latest versions). I like these because they fit into the standard 25-gauge cannula. The newer version is much better at giving a wider field of light. The flexible/bendable cable allows you to tape the cable to the nose and bend the fiber in such a way as to direct the light (and keep the part of the fiber inside the eye away from the lens in phakic patients). The ideal cases for this chandelier include any case that requires global light (if you want good video) and buckles for which it is advantageous to direct the light to show drainage (almost using the chandelier as a mini light pipe).

2) ***Synergetics 29-gauge dual chandelier.*** These are a bit trickier to put in the eye and take a little longer to make operational. They also require 2 entry sites. The other downside to this chandelier is that the fibers outside the eye are not flexible (a little tougher to direct using the external fiber alone). The upsides to this chandelier include a smaller wound, better global lighting due to dual fibers in different locations, and that the fibers can be extended into the eye farther, which is useful with macular work. Types of cases I use them on include bad diabetic tractional retinal detachments that will require macular work using bimanual surgery and anything I want diffuse illumination for.

3) ***Synergetics High Flow Infusing Chandelier.*** Illuminated infusing instruments are a bit of a compromise in the lighting department but are great for some cases where you just need a little extra light. I use them for trauma cases, some PVR, buckles that I want to drain externally under the BIOM and add some infusion (very bullous detachments that I worry about getting hypotonous during the drain) and if I need just that little bit of extra light.

Dr. Prenner: I use chandeliers for difficult diabetic tractional retinal detachment when I dissect bimanually with the Alcon 23-gauge curved scissors and DSP end-grasping forceps. This is my fastball for these cases, and I use both the Alcon and Synergetics light. I prefer the Synergetics chandelier. I also examine the retinal periphery under the microscope with the wide-angle viewing system without the aid of the chandelier.

> "The chandelier is my only light source. I do all of my work including depression under the scope with no assistant."
> – Brandon Busbee, MD

Dr. Busbee: I am a routine user of chandeliers. The Synergetics product, in my opinion, is the best light source in retina. They have a 25-gauge 1-step and 2-step chandelier. In addition, there is a dual 29- gauge chandelier that has the advantage of a significantly smaller trochar and diffuse light that eliminates the shadowing effect of a single chandelier system. You will not miss an occult tear on a macular pucker surgery, and there is no need to waste 5 minutes with the indirect light source. To be clear about my technique, the chandelier is my only light source. I do all of my work including depression under the scope with no assistant.

Dr. Wykoff: In certain cases I love using a chandelier. Both the Alcon and Synergetics lights have worked well for me, but I mostly use the Alcon 25-gauge chandelier. I like to use it for bimanual cases, most commonly tractional retinal detachments when I use forceps and scissors or the cutter together.

In all honestly, I try not to use a chandelier as it just adds another step. When I want to use "a little" bimanual, I use a lighted pick. This is usually enough. If not, for example if I feel like there is still too much traction being exerted on the retina that is often thin and atrophic in complex tractional retinal detachments, then I put in a chandelier.

Regarding how I visualize the far periphery, during vitrectomy for retinal detachment repair I routinely shave the vitreous base while depressing to visualize out to the ora serrata under the BIOM 360º. In macular cases such as epiretinal membranes and macular holes, I examine the retinal periphery with an indirect ophthalmoscope at the end of the case and before fluid-air exchange.

Dr. Fortun: I use the Alcon 25-gauge chandelier. I use it mostly for bimanual cases (PVR, tractional retinal detachment) when I need to use forceps and cutter/scissors (oth-

erwise I use lighted pick for bimanual). Another scenario in which I use a chandelier is for a primary vitrectomy in rhegmatogenous retinal detachment when I need to perform a good peripheral shave (and my assistant's depression is suboptimal) so I can depress for myself. ■

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