

# Web conferencing brings the world to your computer

*State-of-the-art version of conference call offers many advantages*

## Tech Talk

By Ingrid E. Zimmer-Galler, MD

Most ophthalmologists agree that the Internet is a valuable resource for provider education. In addition to e-mail, physicians probably most frequently use the Internet to access information on diseases and medications. Increasingly they are also using it to access major medical journals and online continuing medical education programs.

Before the Internet revolution, continuing medical education largely required attendance at meetings, conferences, symposia, or review courses. Traveling to medical meetings involves time, money, and lost productivity, in addition to the usual travel hassles and inconveniences. Likewise, time and financial constraints may hinder participation at educational conferences by experts who ideally should share their ideas and experiences with their colleagues.

Clearly, there is a need to provide remote access to medical education. Such distance learning, or tele-education, is one method of providing timely instruction to a greater number of indi-

viduals more conveniently and possibly at greatly reduced expense. Most ophthalmologists are familiar with the various on-line CME programs that involve a slide presentation, didactic reading material, or even video clips usually followed by a short self-test. These on-demand educational presentations can be downloaded and viewed at the user's convenience.

However, such CME presentations have the major drawback of not offering real-time direct interaction between participants and educators. There is no forum for discussion. Similar limitations exist with CD-ROM computer-based instructional courses.

In recent years, educational Webcasts have gained popularity with the Internet being used as a portal to broadcast live events. Webcasts typically have involved live surgery demonstrations or have allowed remote access to major medical conferences. In general, such tele-educational events are fairly costly (requiring satellite links or high bandwidth telecommunications), difficult to organize, and not practical for integration into daily use by academic institutions or private practices.

However, today's technology allows simple and inexpensive alternatives. With commercially available Internet-enabled software, it is now possible to transmit medical information in real-time and interactively to a wide audience. Education can now be conducted in a virtual classroom with students and instructors participating at locations across the globe.

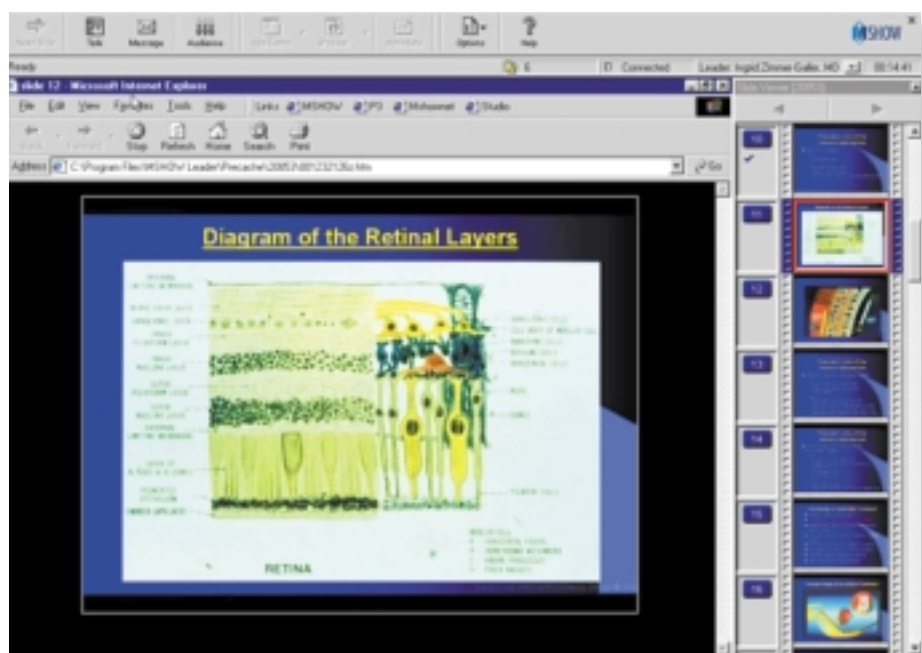
### Just like a lecture hall

This new medium is called Web conferencing. It is a state-of-the-art version of the tried-and-true phone conference call. Rather than just a telephone bridge to allow voice interaction between participants, Web conferencing is a powerful, live, online, multimedia-capable event. PowerPoint slide presentations, digital media, and high-quality images or video can be incorporated into Web conferences for all participants to see as if they were watching in a lecture hall.

The presentation is actually occurring live over the Internet from a remote location with each participant's computer acting as the lecture hall screen. The live audio is harmonized with the visual content. Seamless presentations with a highly effective and interactive delivery method result as the lecturer advances the appropriate visual content on each participant's computer screen (as if advancing a slide projector) synchronous with the voice presentation.

The audio may be two-way with an integrated telephone-based bridge or may be one-way with streaming audio,

Figure 1



Browser view of leader controls including slide viewer, which has thumbnail images of all slides in the presentation.

which is heard through the computer's speakers. Streaming audio makes international participation more feasible without the expense of a lengthy long-distance phone call. Participants who are not connected by the telephone

Requirements include a Pentium-class computer, Microsoft Windows 95, 98, or NT, an Internet browser (Internet Explorer or Netscape Communicator), Internet access (with at least a modem speed of 28.8 kbps) and a streaming media player (such as Microsoft Media Player or RealPlayer, which can be downloaded for free). Higher bandwidth than a modem connection is recommended if high-resolution video clips are involved.

### Joining a Web conference

Usually an e-mail invitation to a Webcast will be sent, and the user only has to click on the URL listed in the invitation. Alternatively, users can log on to a Web conference through the Internet broadcasting company's home page.

Blank fields will request that they fill in their name and the conference identifier. The presentation content is then preloaded onto the computer to avoid later delays in downloading during the presentation itself.

A toll-free number is provided to allow each participant to join the conference. Once logged on, they can sit back and enjoy the presentation. The conference leader will automatically advance PowerPoint slides or any other media being presented on each participant's computer as appropriate during the presentation. Live discussions may be carried out over the telephone bridge or, as mentioned above, discussion may occur over the chat server.

The presenter or leader has full control over the Webcast. The leader decides when to advance visual media and which

**Information can be transmitted in real time and interactively to a large audience.**

bridge may still participate interactively through the use of a dedicated interactive chat messenger. By way of a chat server, participants may type in questions addressed either to the presenter or to any other logged-on participant.

Most Web conferencing companies also have a provision for real-time polling. This allows participants to answer multiple-choice questions or polls on their computer with the results of answers from all participants being displayed almost instantly.

### No special devices required

Web conferencing has no special hardware or software requirements. Anyone with a fairly standard computer setup and Internet access can be ready in minutes.

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**H. Jay Wisnicki, MD**, editor of Tech Talk, reviewed this column. He is the head of the ophthalmology de-

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## CONFERENCE Interaction is real-time

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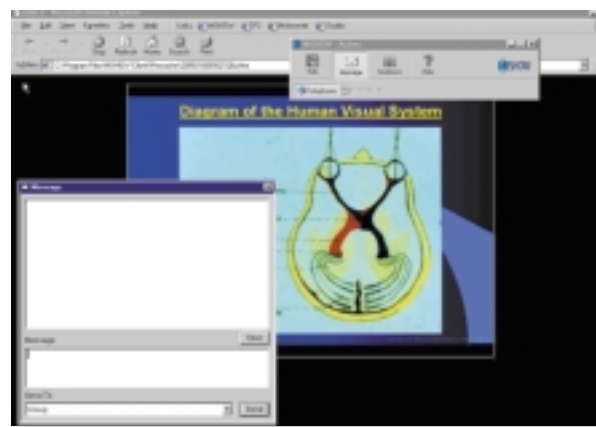
microphones (individual telephone connections) are open for live discussion or questions. The leader may also pass off the Webcast controls to any participant at any time during the conference.

### Setting up a conference

Setting up a Web conference is a relatively simple task requiring only that you submit billing information (this can be done online) and upload the visual content of your presentation 1 to 2 days prior to the actual event.

Web conferencing is remarkably inexpensive, with a cost of 25 to 60 cents per minute per participant. This equates to \$150 to \$360 for 10 participants for 1

Figure 2



Browser view of leader controls with message window for chat server open. (Graphics courtesy of Ingrid E. Zimmer-Galler, MD)

hour. This cost applies to the actual number of computer users logged on. In other words, if a presentation is being made to a

conference room or lecture hall full of participants through a single computer attached to a data projector, the cost applies only to the single computer that is actually logged on. A 1-hour presentation could be made to a conference room with hundreds of participants for well under \$100.

Rates vary according to options such as use of a toll-free telephone bridge versus only streaming audio. Uses of lengthy video clips incur additional expense. The cost without the telephone bridge is the same regardless of whether

participants are across town or in another country.

There are a number of commercially

available Internet broadcasting companies that provide very similar services. User-friendly companies that provide good service and support at fairly comparable prices include MShow.com, WebEx.com, and Raindance.com.

Web conferencing can enable inexpensive remote participation in educational conferences. The same technology can be used to present lectures at remote locations, saving travel expenses, time, and hassle.

Imagine the increased participation and interaction possible by allowing us to communicate and participate in educational forums from the office, a hotel, or even home!

Dr. Zimmer-Galler has no financial interest in any of the material presented.♠

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## VITRECTOMY Part of repertoire

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the settings described previously. Initially, this is a dry vitrectomy. There is no need for compartmentalization. In fact, a viscoelastic at this point would only lead to confusion in identifying the vitreous.

A few seconds later, a 23-gauge cannula is placed into the anterior chamber through the temporal stab incision (Figure 3 on Page 10). The infusion bottle is at a height of 15 cm. This technique is an effort to minimize hydration and further prolapse of vitreous. The suction cutter is held motionless, and after several minutes an adequate anterior vitrectomy will have been achieved. The anterior segment is cleaned and the procedure completed as described previously.

### Dislocation of lens fragments

The dislocation of lens fragments associated with vitreous prolapse is associated with a different set of concerns and techniques.

In general, the dislocation of lens fragments into the vitreous cavity is accompanied by a large break in the posterior lens capsule and a significant prolapse of vitreous. Chasing after posteriorly dislocated lens fragments with a suction cutter entails a significant risk for retinal damage, including giant retinal tears.<sup>5</sup> Lens loops, forceps, cryoprobes, and phacoemulsification tips should not be used in the vitreous.

In this situation, a pars plana approach maximizes the opportunity to remove the dislocated lens fragments and relieve any vitreous incarceration in the wound.<sup>6</sup> The following procedure uses a combined anterior and posterior approach.

If the phacoemulsification incision is not self sealing, it should be closed. It is

always desirable to have a closed-system vitrectomy to maintain constant IOP and minimize irrigation through the eye. Because vitreous hydration is not a concern, a 21-gauge infusion cannula is placed through the temporal corneal stab incision, and the bottle height is placed at 20 cm.

A 20-gauge MVR knife is placed through the sclera 3 mm posterior to the limbus in the inferotemporal quadrant. It is important to visualize the knife in the vitreous cavity. A suction cutter with the port fully opened is placed through the sclerotomy into the vitreous cavity.

Using a cutting rate of 500 to 600 cpm and a suction pressure of 150 mm Hg, an anterior vitrectomy is performed (Figure 4 on Page 10). Through this entrance site, the suction cutter can be maneuvered into any position behind the posterior capsule to remove dislocated lens fragments.

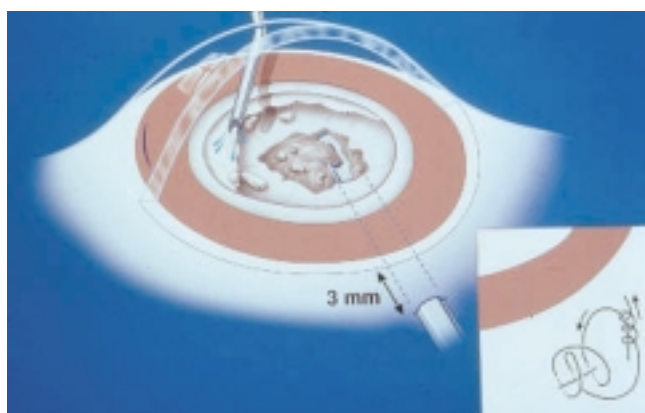
If there is a large rupture in the posterior capsule, the probe can also be angulated into the anterior chamber to remove any vitreous adhesions. If this maneuver does not remove all vitreous in the anterior segment, then the suction cutter can be removed and placed into the anterior chamber through the phaco incision (Figure 3 on Page 10).

The sclerotomy site is closed (Figure 5). The infusion cannula is removed and acetylcholine instilled to ensure that the pupil is round. An anterior chamber lens can then be placed.

Since anterior vitrectomy increases the risk for cystoid macular edema, glaucoma, and endophthalmitis, I recommend the following prophylactic

procedures. One ml of 40 mg of triamcinolone should be infused posteriorly into the sub-Tenon's space. One-half ml of dexamethasone should be injected subconjunctivally, as well as subconjunctival vancomycin and gentamicin;

Figure 5



Insert: modified figure-of-eight sclerotomy closure. (Illustrations courtesy of Brian Berger, MD)

250 mg of acetazolamide should be given intravenously.

Anterior vitrectomy techniques for other clinical situations are available.<sup>7</sup>

A number of published series have shown that, with modern anterior vitrectomy techniques and phacoemulsification cataract surgery, the visual results and postoperative complications in eyes with ruptured posterior capsules and/or vitreous loss are comparable to those in patients with uncomplicated cataract surgery.<sup>4,8,9</sup> Other series have shown that the delayed removal of retained lens material by an experienced retinal surgeon results in satisfactory vision with minimal long-term complications in most cases.<sup>10,11</sup>

Controlled studies have shown that aphakic and pseudophakic eyes with cystoid macular edema associated with vitreous adhesions to the anterior segment have a reduction of macular edema and improved acuity following anterior vitrectomy.<sup>1,2</sup>

Anterior vitrectomy should be part of the surgical repertoire of modern comprehensive ophthalmologists.

Dr. Berger gratefully acknowledges the advice of Lisa Arbisser, MD.♠

See [www.ophtalmologytimes.com](http://www.ophtalmologytimes.com) for this and other archived articles.

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