

Improving Productivity in An ASC Setting

The CONSTELLATION® Vision System gives surgeons more control. Considering the challenges of owning an ASC, this system also delivers profitability.

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Being an owner of an ambulatory surgery center (ASC) adds a whole new dimension to being a retina specialist. On the one hand, operating in a facility that is dedicated to eyes allows a level of specialization not often possible in a hospital setting. On the other hand, however, we are responsible not only for achieving excellent outcomes and providing exceptional care, but also for doing so profitably. The cost of capital equipment, for example, literally comes out of our pockets. This is not to say that hospitals do not have to watch their bottom lines, but with more specialties under one roof in a hospital, there is some latitude on the overall balance sheet.

As ASC owners, we are responsible for the success of our businesses, but we also have more control over our workplace: how we operate, when we operate and the equipment we use. Although achieving the best possible outcomes while keeping patients safe and comfortable are top priorities, efficiency is an underlying goal. When we are efficient, our surgeries are performed in a timely manner, our patients are seen in a timely manner, and we get to go home in a timely manner.

As retina surgeons, however, we cannot equate

efficiency with speed. For us, efficiency is defined, first and foremost, as improved patient outcomes and second as increased profitability. It is essential to keep our priorities in this order at all times and in all decision-making processes. As our technology evolves, it contributes to our efficiency in what are still subjective and surgeon-dependent procedures by automating some tasks and giving us more control over others.

The CONSTELLATION® Vision System (Alcon Laboratories; Fort Worth, Texas) is an example of advanced technology designed to enable us to achieve good outcomes with excellent efficiency. As members of Alcon's retina advisory committee, we had the opportunity to test-drive the system and provide feedback during its development. We and the other committee members explained what we needed to do in the eye and what we needed to have happen in the OR and even outside the OR to ensure the best surgical outcomes possible. In other words, we were asking for a user-friendly, surgeon-driven vision system, not just a box.

In this article, we describe some of the key features of the new CONSTELLATION® Vision System and their impact on our surgeries.



Note the lack of clutter in this OR where the CONSTELLATION® Vision System is prepped for a patient. This reduces turnover time between cases and increases efficiency. The built-in laser reduces crowding at the head of the bed.

Inside the eye

One of the features surgeons discussed frequently when the CONSTELLATION® Vision System was introduced was its ultra-high cutting rate of 5000 cuts per minute (cpm). We have found that the ULTRAVIT® High Speed Vitrectomy Probe is an efficient cutter, in that it actually does perform at that level, not only for 20g surgery, but for 23g and 25g surgery, as well. That is a critical feature in terms of reducing the risk to the patient. The ultra-high speed minimizes traction and significantly reduces the risk of tearing the retina.

No less important when performing vitreoretinal surgery is maintaining fluidic stability, and the CONSTELLATION® Vision System addresses this elegantly.

When you are working inside the eye, you want your fluidics to be as surgeon-controlled as possible. With previous-generation vitrectomy machines, surgeons could control only two parameters: cutting rate and vacuum. With the

CONSTELLATION® Vision System, we now can control a third parameter, duty cycle, which is the percentage of time the cutter remains open in a given cut cycle, independent of vacuum and cutting rate. This technology combined with IOP control is second to none in allowing for fluidic stability.

Depending on our surgical goal, we can choose one of three duty cycles: port-biased open, port-biased closed or 50/50. Using the port-biased open setting, for example, we can remove core vitreous significantly faster than we could in the past because of duty cycle control achievable at an ultra-high cut rate. This means we can have both safety and speed. By shortening the time we are in the eye, we create a better experience for the patient. The eye is quieter and recovers faster. Using the port-biased closed setting, we can shave peripheral vitreous on the retinal surface with a significantly higher margin of safety. This minimizes the potential for a retinal break or hole when dissecting at the vitreous base.



Dr. Gupta prepares for his next patient. Note that all aspects of the machine and instruments are accessible by the surgeon and by the assistant, maximizing efficiency in the OR.

The key to allowing duty cycle control is the novel vitreous cutter design of the ULTRAVIT® probe. Spring-driven cutters are limited by the spring constant and venting time of the system. As the cutter speed increases, the venting time decreases and the probe remains in a closed position longer (decreased duty cycle), decreasing the flow rate at ultra-high cut rates.

The ULTRAVIT® cutter has a dual pneumatic drive, whereby one air line is dedicated to opening the cutter and one is dedicated to closing the cutter. There is no spring in the ULTRAVIT® probe, enabling us, for the first time, to control duty cycle.

While duty cycle controls how fluid exits the eye, another new feature of the CONSTELLATION® Vision System — integrated pressurized infusion with IOP Compensation — controls how fluid enters the eye, again contributing to fluidic stability.

According to the 2008 Preferences and Trends survey by the American Society of Retina Specialists, most surgeons (45%) set their infusion

pressures in the 31mm Hg to 40mm Hg range (© Mitra RA, Pollack JS: ASRS Preferences & Trends Survey 2008), pressures that are higher than we would think are healthy for the eye.

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The IOP Compensation component of the CONSTELLATION® Vision System constantly monitors infusion pressure and adjusts for external factors, such as the pressure in the air above the BSS® Sterile Irrigating Solution (Alcon Laboratories; Fort Worth, Texas) and the pressure drop across

Proper Staff Assignment for Better Patient Care and ROI

Staffing can account for as much as 70% of an ASC's overhead. So it should come as no surprise that efficiency and profitability in an ASC depend upon proper staffing. If we can manage staffing properly, not only will we do things more efficiently, but we will do things more profitably. Simply put, if we allow our nurses to do nursing tasks and our techs to do tech tasks, everybody will be better off. Patients will benefit, and the ASC will be more profitable. This is not a matter of firing or hiring people. The key is proper task assignment to match a person's skill set. The CONSTELLATION® Vision System allows us to do that.

For example, having a nurse stand next to a laser, waiting to be instructed to increase or decrease the power is not efficient use of the nurse's skills. In fact, no one should have to stand next to a laser, waiting for a surgeon to tell him to turn a knob this way or that way. It makes much more sense to have the surgeon control laser power with a foot pedal. That frees the nurse to handle proper nursing tasks, to take better care of our patients and make our patients happier and safer.

the 84 inches of infusion line at any given moment. For the first time, we know actual intraocular pressures as opposed to estimated IOPs. This is possible because the system solves Ohm's law (pressure = flow x resistance) by directly measuring flow and resistance through the infusion line and cannula, using internal, noninvasive flow sensors. Being able to maintain IOPs at set levels throughout surgery is another important feature of the CONSTELLATION® Vision System.

OR setup and turnover

From a practice management standpoint, OR setup and turnover are critical factors that ultimately affect the reproducibility of surgery for doctors and patients. Surgeons want to enter the OR confident that everything will function as expected. What's more, consistency will ensure the best outcomes for patients.

The V-LOCITY® Efficiency Components of the CONSTELLATION® Vision System automate certain tasks and add a measure of confidence with ENGAUGE® RFID (radio frequency identification device). This feature minimizes the potential for errors during OR setup and turnover and allows for more efficient use of nurses and scrub techs. (See "Proper Staff Assignment for Better Patient Care and ROI.")

Whenever we can lessen variability in our instrumentation, we reduce stress on the surgeon and avoid a negative experience for the patient. For example, with the CONSTELLATION® Vision System, the pack is scanned, and the machine automatically recognizes the selected gauge, then normalizes the output and illuminates the receptacles where connections are to be

made. If a probe is placed incorrectly, the machine recognizes the error and an orange light appears.

Turnover is faster because the machine can be primed with the push of a button, and the articulating tray arm moves around the machine to any position necessary with one hand, which optimizes set-up and transfer to the patient. Thanks to these features combined with the improved surgeon-control options, many tasks that we had to do with the help of a circulator nurse can be done by the scrub tech independently or by the surgeon using the foot pedal.

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Auto gas fill

Another task that has been streamlined in the CONSTELLATION® Vision System is gas-air exchange. This task used to require an experienced scrub tech and an experienced circulator nurse who would do a careful dance, avoiding contamination and calculating the proper gas dilution. The auto



Dr. Gupta performs surgery mostly utilizing the foot pedal of the CONSTELLATION® Vision System. The surgeon-controlled features of the system enhance efficiency and safety.

gas fill feature in the CONSTELLATION® Vision System makes this previously stressful and potentially dangerous task safer and easier.

The auto gas fill begins with a specifically designed syringe. The machine will purge and fill the syringe with undiluted C3F8/SF6 gas automatically. This task can now be performed in a sterile environment by the scrub tech alone.

At the touch of a toe

Although it may look the same as it did in the previous-generation machine, the foot pedal on the CONSTELLATION® Vision System is now a more powerful and versatile link between surgeon and machine, allowing us to control several functions.

You can use the foot control to quickly toggle from air to fluid and back again. You also can use it to adjust IOP. For example, if you have a spot that's bleeding in a retina that you just peeled, you can quickly raise the IOP with a click on the upper right side of the foot pedal.

This surgeon-based control system streamlines your surgery, allowing you to make adjustments on the fly, rather than wait for a nurse to do them for you.

User-friendly laser features

The laser is a modular design built into the console with dual output ports to accommodate the

Twin Dual Port Light System

The CONSTELLATION® Vision System's dual xenon light source was engineered to remain more consistent with significantly less degradation over the first 200 hours of use. The twin dual port design is helpful when you want to use multiple probes for focused or diffuse lighting.

Another nice feature is the ENGAUGE® RFID probe technology. The RFID tag recognizes gauge size and probe type and then adjusts light intensity for that specific probe type to a preset default level of 8 to 10 lumens at the tip.

Mastering Inventory Management: A Look at the Future

As vitreoretinal surgical techniques have become more sophisticated, inventory management has become more challenging, whether we operate in an ambulatory surgery center or a hospital. A wide array of choices — from gauge to lasers and light probes — means that we must be more vigilant. Having too much inventory for too long can be almost as objectionable as running out of supplies.

Previous-generation machines have been “boxes” that allowed us to operate well inside the eye. Now, for the first time, we have a system that also improves efficiency inside and outside the OR. The CONSTELLATION® Vision System with ENGAUGE® RFID technology provides end-of-case metrics at the push of a button. This feature has utility today to help us manage our inventory, and it has great potential for e-connectivity and electronic communication in the future.

Simply put, the system knows what you use for each case. This information could be transmitted to a third party or directly to the manufacturer to provide just-in-time delivery. This would be an enormous advantage in the field and a great cost savings: Proper equipment delivered promptly.

As the CONSTELLATION® Vision System evolves, not only will safety be enhanced, as we discussed previously, but also efficiency. This translates to our original definition of efficiency: To provide the best possible outcomes while maximizing profitability. This is another example of how the CONSTELLATION® Vision System has been designed with the needs of the patient, the surgeon and the facility in mind, whether that facility is an ASC or a hospital.

endoprobe and the indirect laser without needing to switch. Several straight and directional probes are currently available, and others are in the design stage. The indirect delivery system is comfortably balanced and lighter in weight than previous systems. The controls are operated via touch screen and integrated into the CONSTELLATION® screen.

Power settings can be changed and ready/standby controlled from the laser foot switch.

Universal goals

As surgeons, we need to be careful to not equate efficiency with speed. Although being able to accomplish certain tasks faster does improve efficiency, the first rule of efficiency is safety. As ASC owners, we must also consider return on investment and profitability. Are safety and profitability compatible? We believe they are. The CONSTELLATION® Vision System provides a great deal of safety and a great deal of efficiency in time and personnel saved. For us, it has been a wise investment.

You can improve patient care and be profitable at the same time. And what entity that delivers health care would not want to be more efficient, provide better patient care and be more

profitable? These are universal goals, whether you are a retina surgeon or an orthopedic surgeon, and whether you practice in an ASC or in a hospital.

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