

Foot Pedal Nuance

BY LISA BROTHERS ARBISSER, MD; LUTHER L. FRY, MD; JAMES P. GILLS, MD;
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What methods do you use to control the foot pedal during phacoemulsification?

—Topic prepared by R. Bruce Wallace III, MD.

LISA BROTHERS ARBISSER, MD

Foot pedal (FP) nuance is underappreciated. Cataract surgery requires eye, hand, ear, and foot coordination.

For the novice, software-driven vibration (termed “detent”) can be added to proprioceptively define transitions between FP positions 1, 2, and 3. Additionally, the percentage of excursion between FP positions can be adjusted based on an ophthalmologist’s proclivities, which is helpful even for experienced cataract surgeons.

Inadvertent downshifting from FP 2 to FP 1 releases vacuum and interferes with the efficient chopping technique for nuclear disassembly. A heavy foot in FP 3 wastes energy, inviting complications. A light foot during a vitrectomy prevents the surgeon from achieving vacuum and removing prolapsed vitreous. FP 2 only achieves cutting, and FP 3 is required to initiate vacuum and affect vitreous removal. Inadvertently easing up into FP 0 invites collapse of the anterior chamber and promotes hypotony, fluctuations in pressure, and surge. The continuous-irrigation mode is a poor substitute for nuanced control of the FP. I prefer to enter an anterior chamber that was expanded with viscoelastic in FP 0 to keep patients from flinching under topical anesthesia. This technique facilitates visualization and protects Descemet membrane. When exiting the eye, especially in the presence of intraoperative floppy iris syndrome or a crowded anterior chamber, I remain in FP 0, or the iris follows and may prolapse.

I recommend surgeons practice using the FP with the phaco machine when a patient is not present. As they practice, they can watch the visual feedback from the phaco machine’s indicator as the FP is pressed and released. They can imagine different scenarios as they work. By adjusting the percentage of travel devoted to FP 1, 2, and 3, surgeons can master FP nuance.

LUTHER L. FRY, MD

I like the wireless foot control on Bausch + Lomb’s Stellaris Vision Enhancement System. For many years, I have placed the FPs on a surgical towel to help adjust

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—Brandon Rodriguez, MD

positions. The towel can also be used to clean up balanced salt solution that may spill. At my surgery center, I use computer-controlled voice activation to change the machine’s settings. I simply tell the scrub technician (computer) what settings I want.

JAMES P. GILLS, MD

I prefer to wear socks rather than shoes while operating the phaco pedal for cataract surgery, because I can feel subtle changes, which allows me to have better control of my procedures.

BRANDON RODRIGUEZ, MD

Improved tactile sensation and fluidity with the use of a phaco pedal are extremely important for anterior chamber stability and the prevention of complications related to surge. Mastering this simple yet vital component of phacoemulsification is essential for every cataract surgeon, especially young ophthalmologists.

Minimizing the layers between the foot and the pedal will increase the surgeon’s ability to feel the subtle changes, as the quadrants of epinucleus and nucleus come into contact with the phaco tip and are emulsified (transitioning from positions 2 to 3). This will also improve his or her ability to sense sudden surges in energy, as the need to break up dense nuclear fragments arises. Programming the pedal for the most important tasks (reflux, step up/down) will also help facilitate the transition between the different phases of surgery.



Figure 1. Dr. Wallace’s preferred minimal running shoe to wear while performing phacoemulsification.



Figure 2. A towel is placed under each FP so the surgeon can move them more easily.

In the future, an ergonomic pedal that is similar to the insole of a shoe would make it easier to control the pedal with minimal effort and reduce slippage when the surgeon rotates the pedal to the side during crucial moments such as reflux of a captured iris or posterior capsule. Until then, a simple flat pedal will suffice and make it all the more important for surgeons to find ways to improve the pedal’s tactile sensation to facilitate cataract surgery.

R. BRUCE WALLACE III, MD

Cataract surgery has evolved such that surgeons depend on their hands for surgical manipulation but also on their feet. Prior to phacoemulsification and the advent of the surgical microscope, movement of the feet was of no significance during cataract surgery. Sophisticated FPs for microscope control and phaco equipment require surgeons to respond—sometimes rapidly—to changes inside the eye. Some FPs are remote and allow the surgeon to modify the phaco parameters depending on the conditions of the nucleus. For years, I wore standard running shoes, but

I have found that newer footwear dubbed “minimal footwear,” thin shoes with minimal padding such as the New Balance Minimus (Figure 1), afford me better tactile sensation; I can respond faster to changes inside the eye. At my surgery center, we also place a surgical towel underneath the pedals to move them around more easily, an idea that I learned from Dr. Fry (Figure 2). When viewing surgical videos, we surgeons do not typically consider the importance of our ability to respond to surgical conditions with rapid foot as well as hand movements. ■

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