PreView System Directions For Use -

Modern refractive procedures hinge upon accurate alignment and centration of both corneal and lens parameters. It has long been established that the human eye will cyclorotate when the patient is translated from the upright position to supine. Accurate and reproducible preoperative reference marks either on the corneal epithelium or conjunctiva are necessary for the precise correction of astigmatism whether utilizing corneal relaxing incisions (Astigmatic Keratotomy) or Toric IOL's. These marks are also very helpful for the centration of the capsulorhexis and lens implant.

The Mastel PreView System consists of a pair of green fixation light based magnifiers utilizing 2X magnification that simply makes the job of marking far easier to visualize. Having the patient looking at the fixation light with the operative eye, while importantly covering the fellow eye so they do not cross fixate, aligns them to your stereo field of vision. Although centration has always had disparate theories, either entrance pupil or visual axis normally, most would agree that a reference to the undilated pupil within a system that eliminates potential misalignment of the virtual image of the pupil is the right approach. Interestingly, all ophthalmic diagnostic equipment agrees with centration using the patient's visual axis through the use of a fixation light for centration.

Using the Fixation Glasses-

The first step is to become familiar with the optics. These magnifiers have independent adjustment up to 3 diopters, individually using small knobs on each bow, to allow the user to compensate for monovision and/or working distance. It is recommended that you start with having both lenses in the most advanced positions, i.e, greatest separation between the two optics on each side, and begin there. It is best to find an object to view and place it on a table or counter so it remains stationary and then move your head to find the focus position. At this point the user should make adjustments of each lens individually to sharpen the focus in that position with only the eye open on the adjustment side of the equation.

After you are familiar with the use of the optics, which require some orientation, begin to observe some of your patients to see how the green light reflex varies relative to the pupil (known as angle kappa). Generally speaking you will observe fairly significant displacement from the center of the pupil in approximately 20% of your patients, commonly infero-nasally which is referred to as a 'positive angle kappa'. This corneal light reflex is the only reference that does not change upon dilation-using this as the premarking centration reference point is consistent with manual keratometers, auto refractors, topographers and so forth.

Once you are comfortable with the fixation glasses, you can select your premarking instrument. Many surgeons simply use a pen and place dots at the limbus. This is simply not precise and the marks tend to wash off or bleed to a large degree making accuracy to within a few degrees out of reason. Mastel offers two versions of corneal epithelium

based premarkers, the Bakewell BubbleLevel and the Davis Plumbob. Either one may be employed with the fixation glasses.

Depending upon individual experience and personal comfort level with trying new things, the surgeon is well advised to practice with both the glasses and marker prior to surgery to get used to the combination of items. We recommend not even marking but acting as if you were on several eyes with the intent of learning to control patient/surgeon variables. It will be a short and simple learning curve if you follow these general guidelines.

First, make sure the head of the patient is relatively upright and that you are facing them squarely. If possible, the ideal scenario is for you and your patient to be standing or have the patient sitting up in a chair that is high enough that you do not need to be a contortionist to get to a position to mark. In other words, be comfortable. If the patient is forced to look up and over at you, such as on the edge of the gurney in a half upright position, you are not going to be accurate in the real world. Importantly, Mastel markers have always featured ultra fine marking edges that cut through the epithelium and when used correctly, allow marking well in advance of the procedure by as much as half an hour.

It is fine to have the patient look up or down for you with their head but sideways to you will decrease accuracy. Also, bear in mind that if the cornea is not in a good position with respect to the eyelids, simply asking the patient to tilt their head up or down a bit can help you a lot in terms of positioning the eye.

It is generally not necessary to use ink on our markers and one only needs to dry with spears in surgery to draw the moisture out of the impressions as necessary. However, ink can be employed if so desired and we have recommendations for using ink with our markers available.

Avoid Cross Fixation-

It is critical that you use sleight of hand to ensure that the fellow eye does not participate in the process of premarking. You must eclipse it with your approach and it is easy to do so. Strong ocular dominance does occur in a high percentage of patients and the nondominant eye simply follows along. This can create a large error in position if allowed to occur.

Please observe the video on our website to get an idea of how this can be done and then find your own best-fit approach. Generally speaking, if you are right handed and only wish to mark with your right hand on either eye, adjustments need to be made.

For instance, when marking a right eye, simply reach across the face diagonally with your hand with your palm facing the left eye and use your thumb or index finger to lift and control the upper lid. Holding the marker in your right hand in the appropriate manner allows the pinkie to be used to steady your hand on the cheekbone, normally a bit

temporal, to allow working room and visualization. You then need to be able to retract the lower lid with either your fourth finger or a combination of your pinkie and fourth finger. The patient will never mind you touching them with your hands and fingers and in fact this can be quite reassuring.

If you are timid at this point your patient will become nervous and can make things difficult. This is not difficult. Also, we recommend premarking some patients that are not going to have astigmatic procedures just to learn how to get the marks done handily and then find the marks and then get oriented in the surgical field as if you would in the future. The last thing the transitioning surgeon wants to have happen is to get into the OR and have the marks invisible or in the wrong position. It is also quite useful to begin marking on patients in this manner but using the exact approach you are planning for an upcoming surgery so you have seen it all when you are actually doing the case.

Missing the Mark-

Never mark a second time should you mismark. Get it right the first time. One caveat is that by not using ink in the initial approach, you could potentially use ink and remark. Avoid confusion because "To err in haste is to repent in leisure" as Dr. Leo Bores always opined. The Preview System, properly employed, makes this process simple and effective.

When marking the left eye, it would be ideal to switch hands on the marker if you are reasonably ambidextrous. Everything is just opposite in this case. If not, then you must come up with your own way of holding your hands to eclipse the right eye or have an assistant hold their hand over the right eye. One could also put a patch in place but normally speaking this all becomes overkill and you can handle it yourself with simple technique. Also, it is easy to rest your right pinkie on the bridge of the nose when marking left eyes with right hands. Left handed surgeons would simply be opposite here. This makes you steady at the same time positioning your hand to eclipse the fellow eye.

The rule of thumb is that if you can see the fellow eye they can see you and that constitutes the problem.

Make sure the eye is numb-

Ensure ophthetic is in place or you will have a problem. Nervous patients, particularly younger patients, may flinch if they see the marking instrument you are using coming right at them. By first having them look at the green light between your eyes you are taking their focus off your hands. Keep in mind that you can bring the marker up from below or from the side at this point and they will most likely not even see the device.

Speak to your patient while doing this to let them know everything is going just fine as this will carry into the OR. As you place the marker to the eye you do not need to press hard-this is disturbing to the patient and does nothing to help the epithelial impression work. Be positive with your physical contact by coming near to the cornea first, followed

by making sure all things are lined up and the eye lids are clear, then touch the cornea gently, but fairly firmly. Avoid allowing the patient to move at this time thereby causing an abrasion. Let the patient know that the light will move a little bit as you begin marking and not to worry about it but just keep looking straight ahead in the same direction and not to try and follow the green light anymore or they may fight you.

While we will refer the user to the video on our website to observe the entire process being performed clinically along with surgical video of these marks, slight undulation along the directions of the marking fins over a few seconds of marker application will result in beautiful, long lasting epithelial marks that will give you the confidence you need to position things in surgery each and every time. The key to good marks is proper orientation and alignment to begin with and a good sharp marking instrument that cleanly divides the epithelium to provide marks that last.

Thank You.