Pachymetry made easy

The new Reichert hand-held pachymeter is designed to be easy to use. **Bill Harvey** tried it out on a group of colleagues and students

The measurement of corneal thickness to help qualify a tonometry reading is an increasingly important skill in any assessment of potential glaucoma or ocular hypertension. There have been great strides in the design of pachymeters, moving from the slit-lamp mirror Goldmann design, through larger desk-top ultrasound devices to the current crop of 'pen-like' hand-held devices. Several years ago we reviewed the newest version of the Tono-Pen tonometer from Reichert (*Optician* 10.08.07). I particularly liked the shape of the handle which made alignment with the central cornea easy to control (Figure 1).

Reichert has recently launched the iPac Pachymeter (Figure 2) which has the same ergonomically satisfying design and so I tried it out on a group of unsuspecting teachers and students on a recent course.

Figure 1 The Tono-Pen tonometer

Figure 2 The iPac: similar ergonomically satisfying shape

Portable and versatile

The iPac pachymeter weighs just 100g (it is rechargeable so no need for heavy batteries) and this, together with the design, makes it the easiest to handle hand-held pachymeter I have used. It can be used in any position, including supine, so it is very portable and versatile. A small colour LED display sits aside a small blue joystick which allows one-digit control by simple movement in four cardinal positions or simply by pressing it. The version I used charged directly via a USB input connected to the mains adaptor, but a charging cradle is also available. I would recommend getting this to ensure the unit is kept safe and fully charged between patients. The instrument automatically shuts off after one minute of inactivity and one full charge should easily last a full day of testing.

Patients are prepared the usual way with a topical anaesthetic and the tip of the unit must be sterilised before each application. I used a simple alcohol wipe each time, rinsed this with a squirt of saline from a minim and air dried. The unit is activated by a push of the joystick. The eye to be measured is specified by sideways movement of the joystick and then a second depression reveals three asterisks on screen which let you know you are ready to measure.

It is easy to hold the probe to the front of the eye using just one hand and steadying on the nose with the third digit (Figures 3 and 4). I am very right handed so used the left to steady the patient and their lids.

Unlike many techniques (ophthalmoscopy for instance) it was easier to stay in position and move directly across to the fellow eye. This also made the measurements very quick. Always make sure the patient has something of interest to look at and to keep both of their eyes open throughout the test.

The instrument takes 25 readings in very rapid succession upon touching the cornea. It then displays the averaged reading and, below that, the standard deviation and the IOP adjustment. In very few cases was I unable to take the full 25 readings, and then the average displayed was obviously from the reduced number taken. None of the patients felt the technique was particularly troublesome for them and the measurement takes just a couple of seconds for each eye. The standard deviation would indicate any unreliable outlier reading but I found this to be around 1.0-3.0 in most cases. If the deviation rises over 10, the display turns orange to indicate further readings should be taken. I never experienced this on the 30 or so patients I measured.

IOP correction

Several of my colleagues had thicknesses in excess of 600 microns and the unit indicated that IOP readings should be reduced by 3-4mmHg. Similarly I had one colleague with a thickness of just 480 microns and obviously her tonometry readings needed to be increased by a couple of units. Tonometry without a thickness measurement might not be the best defining deciding factor for a referral. And with the new iPac there is no excuse for any practitioner to claim that corneal thickness measurement is tricky.

Figure 3 One hand easily aligns the instrument, the other steadies the patient

Figure 4 Third digit rests on the nose for stability

● Thanks to Carleton for loan of the instrument. Further more details on the iPac call Carleton on 01494 775811