



Slit lamp in your pocket

Bill Harvey tries out two new adaptors allowing slit-lamp photography using an iPhone

Last year I reported on the use of the adaptor for the Keeler hand-held slit lamp allowing iPhone photography through the eyepiece (*Optician* 16.12.11). Useful as this was I did wonder why such a simple adaptor had not been developed for a standard desktop slit lamp. Two such devices have now been launched; the iExaminer (UK distributor Grafton) and, in the US the EyePhotoDoc. Both, I would say, take some practice in positioning and then getting accurate detailed capture, but both, once that practice has been achieved, are incredibly useful and flexible. I use a slit lamp with an Oculus ImageCam 2 already fitted so image comparison between the systems was easy.

iExaminer

The iExaminer is essentially a red metal holder with a bracket that allows it to be clipped over one eyepiece so that the camera lens is coincident with the eyepiece (Figure 1). Attachment to the eyepiece was very easy but alignment so that the image through the eyepiece was central to the phone screen proved quite a fiddly task. Though an app is available to help assist with set up and with hints about photography, this app is surprisingly not yet available via the UK iStore and so you have to obtain it from an overseas source. I am assured that it will soon be directly available here.

EyePhotoDoc

I sent diameter details of my eyepiece to the Terry Eye Institute, where the initial design for the EyePhotoDoc hails from, as UK Haag-Streit style slit lamps are of different dimensions to those in the US. A specific size adaptor was duly sent with a metal holder that fits snugly over the eyepiece so that the camera is held in position (Figure 2). The fit was tight but once in position the camera alignment is good and stable so this adaptor proved the easier of the two to position. Sample images (Figure 3), and tips on set up and imaging are available on www.eyephotodoc.com.

Set-up

It may seem obvious but you must make sure that the slit-lamp eyepiece is



accurately focused prior to attachment of the unit – this should be checked at the highest magnification. When fitting the adaptors, make sure that the focusing is not accidentally moved. Even though iPhones have an autofocus, the eyepiece being out of focus will leave the slit lamp effectively decoupled and make imaging at high magnification in the central field difficult. Once in position, the microscope aperture stop means that the image shown on the screen is small and somewhat tricky to locate over a specific lesion (Figure 4 shows this when I used a small print target). It is possible to increase the onscreen field in the usual way with finger widening on the phone (Figure 5). But be warned, this significantly reduces the resolution and increases the noise on the subsequent image (Figure 6). To ensure best resolution, keep the capture image on minimal zoom and this can be enlarged later in the computer. Video capture of tear BUT (under fluorescein/cobalt blue/Wratten filter) was excellent as was capture of a contact lens movement. Still capture was good once the resolution issue

was resolved. Most important of all, I use an LED external light source for anterior imaging and such a backlighter is essential for most imaging via an iPhone. If your slit lamp has not got a backlighter, there are excellent directional LED sources that can be bulldog clipped to a slit lamp, available from domestic lighting stores.

Overall viewpoint

Video and still capture with the iPhone (4 or 4S) is easy and image manipulation, transfer (via iCloud within a practice or via safe mailing systems), enhancement and slideshow/powerpoint display for students and patients, and the use of photography apps (such as allowing slow motion display of video material) are all possible now with an investment of just tens of pounds. A gallery of images taken with the adaptors will appear in the coming weeks. ●

● Information on the iExaminer from www.graftonoptical.com. Information on the EyePhotoDoc from www.eyephotodoc.com. Thanks to both companies for loan of the adaptors for this trial