Who Really Needs Ultrasound?

There are numerous clinical applications of ocular ultrasound. However, many clinicians complete their training with minimal exposure to echography beyond that for biometry and do not appreciate the value of this technology in their practices. The occasional patient in the general eye practice who is perceived to need an imaging study is referred for computerized tomography (CT) or magnetic resonance imaging (MRI) scanning, which are readily accessible in developed countries. The potpourri of diagnostic imaging modalities with insurance coverage is potentially subject to overuse. It is tempting to order MRI scans for headaches, CT scans for pains around the eye, and carotid Doppler duplex scanning for vision disturbances. In many cases, a careful history and physical examination combined with the use of ultrasound can correctly diagnose the problem without the need for more expensive studies.

The general ophthalmologist sees patients on a daily basis who have symptoms related to the eyes or paraocular structures that can be clarified by the use of ultrasound. Common complaints encountered in the clinic include pain in and around the eye; double vision; various forms of flashes, floaters, and geometric shapes such as curves, shadows, and scotomata; bulging eyes; and lumps and bumps around the eyes. Also, ocular examination may reveal problems of which the patient may not be aware, such as iris and posterior segment lesions, elevated optic nerve heads, proptosis, and subtle ptosis.

This book utilizes both B and A-scan images. Most practitioners are familiar with the B-scan which is basically an acoustic section through the eye. The A-scan is based on the same principles of sound reflection as the B-scan but displays the image as a series of vertical lines which can add significant diagnostic information in the evaluation of ocular and orbital pathological conditions. The following are A- and B-scan images of a normal eye (Fig. 1). The principles of these different modalities are discussed further in Part II.

![B-scan initial signal from probe (first arrow), vitreous cavity (second arrow), and retinochoroid layer (third arrow). Bottom: A-scan initial signal (first arrow), vitreous cavity (second arrow), and retinochoroid layer (third arrow).](image-url)