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(54) Title: SURGICAL MICROTOMES

(57) Abstract

Methods and apparatus are disclosed for removal of biological tissue slices or layers, preferably in the form of lamellar sections (4) of predetermined shape and thickness employing a reference member (12) that engages a target tissue site and cooperates with a cutter (14) in order to remove the tissue segment or lamella. The cutter can include a flexible cutting element such as a wire or band element that is brought into physical contact with a guiding edge (8) integrated with, or otherwise coupled to, the reference member. Alternatively, the cutter can include a stiff rigid blade element (14B) that is maintained in contact with the guiding edge. The cutter is drawn along a path defined by the guide edge through the tissue to sever, at least partially, a tissue section. In one particularly useful aspect of the invention, devices for keratectomy are disclosed employing an ocular reference member that engages the upper central region of the cornea and cooperates with a cutter to remove a lamellar segment from the cornea. Such lamellar resections are useful in preparing the cornea for further surgery (by mechanical or laser surgical techniques), or in performing refractive keratectomy directly upon the eye, or in treating (e.g., smoothing) the corneal surface to correct abnormalities, (e.g., to remove ulcerated tissue or otherwise improve the optical properties of the cornea).

