SIMPLE CORNEAL LAMELLOTOME FOR KERATOPLASTY*†

BY

J. G. LOUW, P. L. M. LE ROUX, AND E. F. RHATEGAN

Department of Ophthalmology, Groote Schuur Hospital, Cape Town, South Africa

The cutting of corneal lamellae for keratoplasty of a given thickness is laborious and by no means easy in the absence of abundant experience. Some devices for such procedures, such as Bock's corneal knife, do not permit of sufficient accuracy, and the electric keratotome of Castroviejo is a very costly instrument. The simple and inexpensive device described below enables one to obtain a corneal lamella of any desired thickness, with a reasonable assurance of uniformity throughout.

Instrument

This keratome, which may be more precisely termed a lamellotome, consists of two concentric discs of perspex (Fig. 1, A and B), each 0-5 cm. thick and 6 cm. in diameter, which can rotate one upon the other on a screw (A). The lower disc (A) contains twelve circular recesses, four of diameter 8-35 mm., four of diameter 7-25 mm., and four of diameter 6-15 mm. In each group of four, the depths of these recesses are 0-05, 0-1, 0-2, and 0-3 mm. respectively.

The upper disc (B) contains three cylindrical holes of diameters 8-35, 7-25, and 6-15 mm. respectively, so positioned that they coincide simultaneously with the recesses of equivalent diameter in the lower plate. Three cylindrical pegs (Fig. 1 B, and Fig. 2) fit fairly snugly into the recesses on

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† Address for reprints: as above.
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the lower disc, thereby locking the two discs together. The pegs have a thin central core bored out (Fig. 2, c), which ensures the escape of imprisoned air as the plunger is pressed home. The discs are further clamped together by a nut and washer (Fig. 2, d, e).

The slight steps in Disc A ensure that a gap of thickness "t" remains between the two discs when they are clamped together. This enables a thin razor blade to be inserted in the slight interspace (Fig. 2, t). The whole device is shown assembled in Fig. 3.

Method of Use

A disc of whole-thickness cornea of requisite diameter is trephined from the donor eye—in this case either 6, 7, or 8 mm. (The additional diameter of the recess has been calculated to allow for the flattening of a corneal disc when a segment of a spherical curve is compressed into approximately a plane). The two discs are clamped together by the nut and washer and the two pegs not required for the operation are inserted into their recesses for added stability. The disc of cornea is inserted, external surface downwards, into its recess and the peg pressed down upon it to flatten it. A thin razor blade, wetted with an admixture of non-greasy lubricant and saline, is inserted into the space between the discs and, with a gentle sawing movement, it is passed through the corneal disc. The thickness of the cut lamella will now correspond to the depth of the recess in which it has been placed.

By this method it is easy to cut lamellae of varying thickness from the same cornea, right down to Descemet's membrane. In this instance the 0.05 mm. thickness is probably a refinement hardly ever necessary, and it is of course possible to devise discs of larger diameter.

The instrument can be sterilized in the same way as others of like material.

The lamellotome was designed in the Department of Ophthalmology of the University of Cape Town, in the Groote Schuur Hospital, and the original design modified and the technical work ably executed by the Department of Medical Physics.
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J G Louw, P L Le Roux and E F Rhategan

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