



**Supplementary Figure 1: Objective eye measurement in TED**

**a, b:** Estimating ocular ductions with corneal light reflex: The examiner shines a penlight on the patient's eyes and observes the light reflex on the cornea as the patient is instructed to look in 4 directions, up, down, right, and left (Courtesy of P Dolman).

**a.** Light reflexes on cornea (white arrows) as patient attempts upgaze. Right light reflex is midway between limbus and pupil edge, so eye is elevating  $30^\circ$ . Left eye reflex is inside pupil and upgaze limited to  $10^\circ$

**b.** Right eye looking up: Light reflects from the limbal edge meaning the patient has full duction of  $45^\circ$ . If upgaze is limited so that the light reflects from the pupil edge, the patient duction is restricted to  $15^\circ$  and if it is seen midway between the pupil edge and limbus, the duction is restricted to  $30^\circ$ .

**c.** Exophthalmometer allowing protrusion of eye to be measured through the prism (Courtesy P Dolman).

**d.** Swinging light test: Patient with right afferent pupillary defect. Penlight shone on left normal eye elicits a full bilateral pupillary constriction. Penlight shone on right eye with optic nerve conduction deficit elicits a lesser pupillary constriction, causing apparent relative dilatation of both pupils (courtesy of H Burch).

**Abbreviations:** TED: thyroid eye disease