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A DEVICE FOR THE ACCURATE LOCALIZATION OF
HOLES IN RETINAL DETACHMENTS

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THERE is no divergence of view as to the need of localizing accurately the hole or holes in a retinal detachment as a preliminary to the cautery puncture operation, and a number of means have been put forward to this end. The present device is not intended to be used in the place of such calculations, but as an adjunct to them. It consists of a gold stud which is inserted through the sclera at the spot which has been calculated, by whatever means, to correspond with the position of the retinal hole. The end of the stud is then identified by means of the ophthalmoscope, and the exact relationship of the retinal hole to it is seen, and the actual site for the cautery puncture is adjusted in the light of the information so obtained. The studs are made of gold, with a flat circular or oval base, and a stem of varying length; a small hole is made in the base, through which silk is threaded, otherwise the stud is likely to be lost. I have had some made with circular and some with oval bases; the idea of the latter was to indicate readily the position of the flattening of the apex of the stem, as explained later; this can also be indicated by the position of the hole in the base. I believe the circular base is the better. The base is 5 mm. across if circular, and 6 by 4 mm. if oval. The stem is of four lengths, 2, 4, 6, and 8 mm.; it is circular in section at its upper

part, and tapers slightly towards its attachment to the base of the stud, with the idea that when it is *in situ* the grip of the tissues on the slightly conical stem will tend to keep the base pressed home against the sclerotic. (Figs. 1 and 2.) The free end is flattened so as to be oval in section, rounded off, very smooth, and highly polished, all with a view of facilitating its insertion through a small linear incision and to prevent its doing damage to the retina when this membrane is pushed before it; it is exactly 1 mm. in width. (Figs. 1 and 2). Forceps, with a ribbed face and without a

FIG. 1.

FIG. 2.

catch, forms a convenient means for holding the stud by its base when inserting it.

Method of Use.—The point for the cautery puncture through the sclera is calculated and marked by whatever method the surgeon is in the habit of using. The studs are sterilized by boiling and, if it is evident that the retinal hole is well away from the choroid, a stud with a long stem is used; if, however, the detachment is a shallow one, one with a 2 or 4 mm. stem is chosen. An incision with a narrow bent needle, with a stop, is now made at the calculated spot, of such a size as will just admit the stem of the stud: the blade of the one I use is of 2mm. width and 2.5 mm. long, with a stop, and is made by Messrs. J. Weiss & Son. Before making the incision, and after sterilizing, the upper surface only of the blade is painted with an alcoholic solution of gentian violet and allowed to become quite dry; the object is to stain the edge of the cut so that the small incision is easily found again when the needle is withdrawn. At first I dipped the blade in the solution so that both its upper and under surfaces were covered by the stain; in this case, however, when the under surface came into contact with the soft tissues, as is inevitable, they became stained and so the distinctness of the small puncture was obscured. If, however, the upper surface alone is covered with stain, the soft tissues do not come into contact with it and a fine linear staining of the anterior edge of the incision in the sclerotic results, without confusing colouring of surrounding parts. The chosen stud is now inserted through the incision with a slight rocking movement, and is pushed right home; it is essential that its base should be flat against the sclera. The tissues which have been reflected to expose the sclerotic are now pulled into place, and the inside of the eye is examined with the ophthalmoscope: in order that the transparency of the cornea may be in nowise impaired, little cocaine should be used, and a receptacle containing warm normal saline and a small pipette should be kept at hand, for keeping the cornea moist throughout the operation. I have had no difficulty in identifying the position of the apex of the stud and its relationship to the hole or holes; no haemorrhage has occurred to obscure the view.

Examination may now reveal that the stud clearly is too far back, or not sufficiently far back, or that it is to one or other side of the hole, and the allowance to ensure that the hole of puncture shall exactly correspond with the retinal hole is then calculated; the knowledge that the breadth of the end of the stud is 1 mm. in width assists the calculation. Having thus determined the exact relationship of the true puncture point to the point of insertion of the stud, the soft tissues are again turned back so as to expose the sclera; everything is had in readiness, the stud removed, and the

puncture immediately proceeded with. When the stud is removed there is a small escape of vitreous, but it is inconsiderable in amount. It will be obvious that the small incision for the insertion of the stud will by no means always be included in the area of subsequent cautery puncture. Care must be taken that the base of the stud lies flat upon the sclera, else the stem will take an oblique direction and its summit will not correspond with the point of its entry through the sclerotic. At first I had a small keel attached to the outer side of the base as a means of gripping the stud for its introduction, but I found that this provided a point of leverage for the tissues, which pushed it sideways and so caused a deflection of the stem from the vertical to the sclerotic. With a view of rendering the apex conspicuous in contrast with the rest of the stem when seen with the ophthalmoscope it might be advantageous to have its tip silver-plated. It will be obvious that the object of this device is to locate the position of a hole with precision, and consequently it is of greater value in the case of retinal holes than in the case of oral tears, though I have found it valuable also in the latter. It is assumed that when the cautery puncture is made, the line along which the retinal hole falls back to come into contact with the outer coats, is a perpendicular to the sclerotic.

Before using the studs I had tried a sharp needle, with an appropriate curve, and a stop to prevent it from entering too far, made for me by Messrs. J. Weiss & Son; but apart from the difficulty of ophthalmoscope examination with the needle *in situ*, I found that it had the serious disadvantage that it was liable to make a fresh hole in the retina, whereas if the stud does not engage in the retinal hole it can be seen to push the retina before it somewhat like a tent pole, owing to its smooth rounded end, and if the right length of stud is chosen it does not lacerate this membrane.

I have especially to thank my friend Mr. Wilton Thew, for putting his skilful dental mechanic, Mr. W. D. Rogers, at my disposal; he has made and modified the experimental studs for me and has taken great care over them. They are now manufactured and supplied in sets of four by Messrs. Theodore Hamblin Ltd., of 15 Wigmore Street.