Aesthesiometer probe tips

A photomicrographic examination

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A corneal aesthesiometer probe made of platinum wire previously described (Larson, 1970) was examined under a microscope after a long period of use to see if any change had taken place in the shape of the tip. Two nylon probes were also examined at the same time.

The photomicrographs (Figure), show two views of the platinum probe made from 0.127 mm. wire (*a*, *b*), one view of a 0.12 mm. nylon probe (*c*), and two photographs of the same view of a 0.08 mm. nylon probe with normal illumination (*d*) and cross-illumination (*e*).

FIGURE *Comparison of platinum and nylon probe tips.* $\times 32$

- (a) and (b) Platinum probe near the tip
- (c) 0.12 mm. nylon probe
- (d) and (e) 0.08 mm. nylon probe
- (e) 0.08 mm. probe lighted from the side

The life history of these probes is not fully known. The platinum probe has been in use for 3 years and must have been flame-sterilized several hundred times. The nylon probes are about 4 years old and have been used for research studies.

The pressure distribution in the corneal epithelium caused by the platinum probe can be predicted, because of the uniform, and known, curvature of the tip. Such a prediction is not possible for the nylon tips because the pressure distribution will depend on the angle of incidence of the tip. This is because of the sharp corner where the nylon has been cut. This consideration may be of practical importance and is at present under study.

The changes in the platinum tip due to flame-sterilization are seen to be insignificant. Barely visible in the photographs is a pattern of shallow pitting on the surface of the metal. No sharp edges have developed and the shape has remained the same.

The condition of the platinum tip, as shown, indicates that the deterioration of the tip shape with repeated sterilization is a very slow process. Until such a time as a reasonable life expectancy for such tips can be established, it is suggested that the tip be examined with a hand-held pocket microscope after every 100 sterilizations.

Experience has shown that this probe does not provoke any corneal injury or irritation and that it can be considered safe for use in corneal aesthesiometers, provided the above examination is regularly performed.

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References

LARSON, W. L. (1970) *Brit. J. Ophthal.*, **54**, 342