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Sir,

We read with interest King and colleagues' article on *in situ* degradation of 11–0 polyester Mersilene suture, but question their conclusion that whilst there is no clinical evidence of biodegradation, electron microscopic evidence of slow biodegradation of the suture material is seen from 22 months post-operatively.¹

Both the electron micrographs in their article show circumferential marks on the suture material adjacent to the knot, from buried sites, that should therefore be least subject to biodegradation. Clinically evident biodegradation of nylon corneal sutures occurs mostly on the surface of the globe. What do these marks represent?

It is likely that these are compression marks due to sharp angulation of suture materials adjacent to knots. These marks are present immediately after knot-tying using Mersilene material, but not nylon. Fig. 1 shows a 2/1/1 reef knot tied with 10–0 Mersilene removed immediately after tying and turning on a porcine corneal cataract section. Compression marks occur where the suture material has to turn sharply.

Mersilene corneal sutures are undoubtedly much safer to leave unremoved compared with nylon ones,² but King's data confirm that even Mersilene may not be safe if left unremoved. Eighteen sets of sutures in 231 eyes (7.8%) had become loose prior to

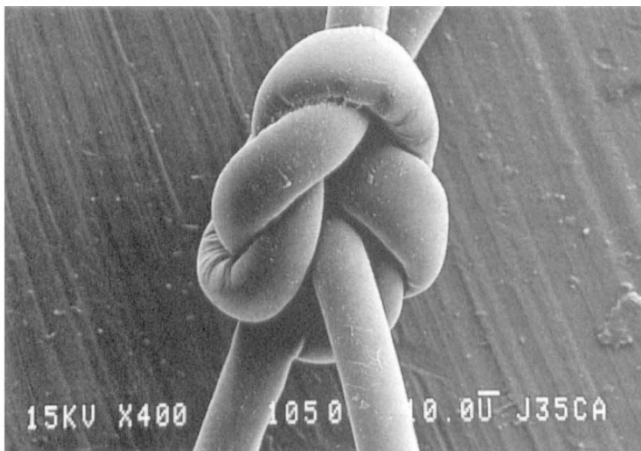


Fig. 1. Electron micrograph of a 2/1/1 reef knot tied with 10–0 Mersilene removed immediately after tying and turning on a porcine corneal cataract section. Compression marks occur where the suture material has to turn sharply.

discharge from clinic, necessitating removal (follow-up 2–20 months). In addition, of 107 eyes of patients invited for examination, 7 sutures (6.5%) had to be removed because of loosening. Six of the 7 eyes (85.7%) were asymptomatic, which is comforting to the patient, but provides less warning that they are at risk of infective keratitis. Data on infection would be welcome.

The natural history of extracapsular cataract extraction is a trend towards against-the-rule surgically induced astigmatism,³ which may be enhanced by early removal of sutures. The longevity of Mersilene will allow *later* removal of sutures, but this should be performed routinely none-the-less. Currently, only sutureless and scleral section surgery with sutures covered by conjunctiva allow early safe discharge of cataract patients within days.

Christopher Liu
Christopher Hammond
Richard Bowman
Anthanasios Vakalis
Wood Yee Chan

Cambridge and Hong Kong

Correspondence to:
Christopher Liu
West Norwich Hospital
Bowthorpe Road
Norwich NR2 3TU
UK

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Sir,

We are pleased to have the opportunity to clarify some of the points raised by Liu and colleagues in their letter. We agree that compression marks occur immediately on tying Mersilene (polyester) sutures as demonstrated by their electron micrograph. However, our comments in the original article were directed at the grooves highlighted in the magnified image. These show lamination of the suture structure rather than compression in the inferior limb leaving the knot and are distinct from the compression grooves. This form of surface change has been reported by other authors, notably Dvorak,¹ who describes surface degradation with lamination of polyester sutures left in dog muscle for 210 days. He found, as we also did, that these changes were more common around areas of mechanical stress and

postulated that mechanical stress allows enzymatic degradation of the ester substance. In no case did he find complete failure of the material and he found the durability of polyester to be much greater than that of other synthetic fibres such as nylon.

Most of the morbidity associated with nylon sutures is due to broken suture ends.² We found evidence of loosening in 6.5% of our discharged patients but we did not encounter a broken suture or any form of bacterial keratitis. There must be a small theoretical risk of suture abscess from any suture left *in situ*, but we are unaware of any study comparing the risk of this with the small risk of introducing infection or wound dehiscence by suture removal.

Undoubtedly the trend in this country is to sutureless and scleral section surgery; however, for the foreseeable future a substantial number of large-incision procedures will be taking place. Our findings should also continue to apply to penetrating keratoplasty where the long survival of Mersilene sutures will still be needed. Subconjunctival sutures and scleral tunnel surgery are not as safe as implied by Liu *et al.*: Nirankari *et al.*³ have described the morbidity from broken subconjunctival nylon sutures and Omeroad *et al.*⁴ have described cases of bacterial keratitis from scleral tunnel techniques.

We believe that Mersilene undergoes minimal

surface degradation which has not affected suture performance during many years of follow-up and that it is reasonable to leave these sutures *in situ*.

A. J. King
J. S. Deane
J. H. Sandford-Smith

Department of Ophthalmology
University of Leicester School of Medicine
Clinical Sciences Building
Leicester Royal Infirmary
PO Box 65
Leicester LE2 7LX
UK

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