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Sir,
Reversible tetracycline staining of adult dentition in the treatment of chronic blepharitis
Low-dose oral tetracycline is often used in the management of chronic blepharitis.¹ Tetracyclines are broad-spectrum antibiotics and one of their side effects is discolouration of teeth that occurs inevitably in children.² We report an adult patient who developed reversible brown discolouration on her normal dentition after taking oral tetracycline for blepharitis.

Case report

A 54-year-old lady suffered from blepharitis. Because of local allergic reactions, fusidic acid was withdrawn from treatment. She remained symptomatic despite lid scrubs. A course of oral tetracycline 250 mg four times/day was prescribed. After 4 weeks of treatment, she noticed brown discolouration of her incisor teeth (Figure 1, top). The staining was completely removed by abrasive cleansing by dental surgeon (Figure 1, bottom). Prior to this incidence, this patient had not had any regular check-up or cleansing by dentist for over a year.

Comment

Chronic blepharitis is frequently associated with sebaceous gland dysfunction, plugging and inflammation of the meibomian glands.³ Tetracyclines inhibit matrix metalloproteinase expression and bacterial lipase production, with a resultant change in the concentration of inflammatory free fatty acids in the tear film.^{1,4} Tetracycline is known to cause permanent discolouration during odontogenesis in children by the formation of insoluble tetracycline–calcium

Figure 1 Top: Brown discolouration of teeth after 1 month's oral tetracycline; bottom: brown staining completely removed after cleansing by dental surgeon.

orthophosphate complexes in the dentine and enamel which darken upon exposure to light.^{2,5} The relative lack of free calcium protects the erupted permanent adult dentition against tetracycline-induced tooth discolouration. However, minocycline, a tetracycline derivative, has been reported to stain adult dentition in 3–6% of patients taking a daily dose >100 mg for longer than 1 month.⁶ Owing to the full reversibility of discolouration in our patient, an 'extrinsic theory' could be one of the plausible mechanisms of staining. The theory states that minocycline is excreted in high concentration in saliva. The drug or its breakdown product forms insoluble salts by chelating with divalent metal ions in saliva and gingival fluid.⁷ An alternative mechanism is explained by the attachment of minocycline to the acquired pellicle's glycoproteins. This etches the enamel, and demineralization/remineralization cycles occur. It oxidizes to an insoluble black quinone on exposure to air or from bacterial degradation of the aromatic ring.⁸ Since these mechanisms of tooth staining involve excretion of concentrated minocycline in saliva and formation of insoluble black quinone from bacterial degradation of minocycline, dehydration, poor oral and dental hygiene may be risk factors for the staining. UV radiation is also a possible

aetiological factor as the upper incisors were most affected in our patient.⁵ When prescribing oral tetracycline for the treatment of blepharitis in adult patients, it is important to advise on oral hygiene measures and on avoidance of sunlight to minimize staining of teeth. Patients should also be reassured that the stain may be removed with abrasive cleansing by dental surgeon.

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increased bacterial cell counts,⁵ but there are no prospective studies of face-mask use and PIE. It would be surprising to find a greater effect from mask use in the prevention of PIE than pertains in general surgery, given that the majority of PIE organisms are presumed to originate from the patients' conjunctival flora.

Where the evidence for benefit is uncertain, it is appropriate to assess adverse effects. Theatre masks increase condensation on operating microscopes and may impair the surgeons' view. Masks may rub on the face, thus displacing facial skin squames onto the operative site. Unnecessary use is inconvenient, wasteful, and impairs communication. In the absence of direct evidence of harm, we consider it reasonable to continue our current practise of not wearing face-masks in theatre.

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Sir,
Risk factors for endophthalmitis: does non-wearing of face-masks increase relative risk?

As non-wearers of surgical masks, we were interested to read the editorial by Trivedi and Wilson¹ recommending the use of face-masks during cataract surgery. The immediate evidence for this recommendation was the multivariate analysis of retrospectively reported risk factors for postoperative infective endophthalmitis (PIE) from the British Ophthalmic Surveillance Unit, reported by Kamalarajah *et al.*²

The evidence for the use of face-masks in surgery generally is poor, with no effect on theatre air bacterial counts³ and no effect on wound infection rates in a major randomised controlled general surgical trial.⁴ Culture plates placed around the patient during cataract surgery without masks have been shown in one study to have

Sir,
Reply to: Risk factors for endophthalmitis: does non-wearing of face-masks increase relative risk?

We thank Leyland and colleagues for sharing their views on the use of face-masks during ophthalmic surgery. As stated in our editorial, the wearing of face-masks during an operation to prevent potential microbial contamination of the incision is a long-standing surgical tradition.¹ However, many well-meaning traditions have inconclusive evidence of benefit underlying them. It is proper to challenge those traditions and critically examine the scientific evidence for continuing them.

We recommended, in our editorial, the proper use of face-masks based on studies such as the prospective randomized study by Alwitary *et al.*,² which reported in the ophthalmic literature, significantly fewer bacterial counts from blood agar plates placed adjacent to the patient's head in the operating field when the surgeons