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Blood splash and tonsillectomy: an underestimated hazard to the otolaryngologist

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Abstract

Mucocutaneous exposure is an important route of transmission of hepatitis viruses and HIV in healthcare workers. Few data exist in the literature on the risk of transconjunctival exposure during many surgical procedures. We investigated the use of eye protection during tonsillectomy and measured the incidence of potential eye splash. No otolaryngologist surveyed routinely used eye protection during tonsillectomy. Splash events occurred in 23 out of 103 tonsillectomies. In all cases the surgeon was unaware of the splash. Splash events were significantly more likely to occur during adult tonsillectomy ($p<0.05$). We strongly advise the routine use of eye protection during tonsillectomy.

Key words: Tonsillectomy; Infection Control

Introduction

Transconjunctival exposure is a potential route of transmission for hepatitis viruses and the human immunodeficiency virus in health care workers.[1] The Centre for Disease Control (CDC) strongly recommends the use of goggles during any procedure that may result in the eyes being splashed by body fluids. The use of this simple barrier method reduces the risk of potential transconjunctival infection to zero.[2,3]

In recent times the use of protective eye wear has become standard in many surgical specialities.[4,5] However, there is little information in the world literature detailing the risk to the otolaryngologist who is bombarded on a daily basis by blood, saliva, secretions and bone dust. We noted that apart from procedures in which a drill is used our colleagues seldom wore eye protection.

We designed a study to investigate the use of and need for eye protection during one of the commonest procedures we perform, tonsillectomy.

Materials and methods

Study one

A telephone poll of consultant otolaryngologist and otolaryngologists in training was performed. Both groups were asked:

(1) Do you routinely wear eye protection during tonsillectomy?

(2) Do you consider there is a potential for eye blood splash during tonsillectomy?

Study two

All surgeons performing tonsillectomy on our service over a six-month period were requested to wear a standard pair of clean eye goggles during surgery. Tonsillectomy was carried out by blunt dissection. Haemostasis was obtained using bismuth subgalate, bipolar diathermy and ties where required. After each tonsillectomy the surgeon recorded whether he was aware of any eye splash during the procedure. Macroscopic splash events were then recorded according to number and size, by examining the goggles at the end of the procedure. An eye splash was defined as a droplet of material found on the lens of the goggles at the end of the procedure. The size of the eye splash was measured using callipers.

Results

Study one

Nineteen consultant otolaryngologists and 21 trainees were questioned. Apart from spectacles none routinely wore eye protection during tonsillectomy. All considered the potential for blood splash during tonsillectomy to be minimal.

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TABLE I
SIZE AND NUMBER OF DROPLETS PRODUCED FROM SPLASH EVENTS

Droplet size	<1 mm	1–3 mm	>3 mm
Number	82	16	0

Study two

The incidence of eye splash was recorded for 103 tonsillectomies. Forty-six patients were under 15 years of age (paediatric tonsillectomy) and 57 patients were 15 years of age or older (adult tonsillectomy). Splash events occurred during five paediatric tonsillectomies and 18 adult tonsillectomies. In total, splash events occurred during 22 per cent (23/103) of tonsillectomies. Splash events were significantly more likely to occur during adult tonsillectomy ($p<0.05$, Fisher exact). A total of 98 droplets were measured (Table I). Surgeons were unaware of splashes in all cases.

Discussion

Worldwide the seroprevalence of blood-borne diseases such as hepatitis B, hepatitis C and HIV is increasing.[6] The lifetime cumulative seroconversion risks for surgeons may be high. Investigators have estimated the lifetime risk of HIV infection in surgeons to range between 0.5 per cent and 10 per cent depending on seroprevalence where they practice.[7,8] Seroconversion has serious implications not only for the surgeon's career but also for the surgeon's family. Currently, in the Republic of Ireland there is no official framework or support set-up for doctors who become seropositive. Surgeons who become seropositive during their practice have to stop performing invasive procedures, and where this is not possible retraining is advocated.[9]

This study clearly demonstrates the potential for unrecognized transconjunctival contamination during tonsillectomy. One surgical study demonstrated splashes on the inner aspect of the lenses in a number of cases.[10] However, the use of goggles reduces the risk to zero. Discomfort is often given as a reason for not wearing goggles. We found that with time the surgeons became used to the goggles and did not find them to be a great encumbrance. We strongly urge all otolaryngologists to become more aware of this potential hazard. We further advise the routine use of eye protection for all procedures, not only tonsillectomy.

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