

Original Research Article

Risk of blood splashes in otorhinolaryngology surgery: do we really require protection?

Bikash Lal Shrestha*, Ram Chayya Man Amatya

Department of ENT-HNS, Dhulikhel Hospital, Kathmandu University Hospital, Kavre, Nepal

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***Correspondence:**

Dr. Bikash Lal Shrestha,

E-mail: bikashotology267602@gmail.com

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ABSTRACT

Background: Surgeons are particularly at risk from blood borne pathogens like hepatitis and HIV during interventions or surgeries. They do take precaution to avoid the needle stick injuries but few pay attention on blood or body fluid splashes into eye. The main aim of the study was to know the risk of blood splashes in glass, gown and mask during ENT –HNS (ear, nose and throat and head and neck surgery).

Methods: The prospective study conducted in Department of ENT-HNS of Dhulikhel Hospital, Kathmandu University Hospital from 1st July 2016 to 30th September 2016. All the elective cases were included for study. Surgery was performed by the single surgeon. The surgeon wore the glass and mask during the surgery. At the end of the surgery, the glass, mask and gown was inspected by the surgeon for any blood splashes and information was recorded.

Results: There were total 62 patients with male 30 and female 32. Regarding the age, most of the patients lie between 20-50 years. The amount of blood splatter in glass, mask and gown is most common in modified radical mastoidectomy surgery. Likewise, the blood splatter is most common in tonsillectomy in throat surgery and in head and neck surgery, the blood splatter is common in all head and neck surgery.

Conclusions: The blood splashes is high even in various ENT surgeries. So it is important to take precaution by surgeon like protective mask and glass worn during surgeries to protect from various blood-borne infection transmissions.

Keywords: Blood splashes, Glass, Gown, Mask, Surgery

INTRODUCTION

The developing countries healthcare workers are at risk of infection from blood-borne pathogens, mainly HIV(Human immune deficiency virus) and hepatitis because of the prevalence of such pathogens in poorer countries of the world.¹⁻⁴ Such infection may either transmit through percutaneous injuries or mucocutaneous exposure of blood or body fluids.⁵⁻⁹ Studies showed that the percutaneous injury has the highest risk of transmitting infective pathogens, however there is also

chance of transmission of infection via contact with skin or mucous membranes.¹⁰⁻¹²

The incidence of HIV transmission through accidental exposure is 0.5% for needle stick injury with percutaneous hollow-bore needles and 0.1% for exposure to mucous membrane.¹³ HIV contamination has also been reported in healthcare workers from bodily fluid splash to the eye.¹⁴

Surgeons are particularly at risk from blood borne pathogens like; hepatitis and HIV during interventions or

surgeries. They do take precaution to avoid the needle stick injuries but few pay attention on blood or body fluid splashes into eye.

Since this kind of study is not performed in developing countries like Nepal especially in ENT-HNS (ear, nose, throat and head and neck surgery). So we are performing this study with the aim to know the frequency of blood splashes in glass, mask and gown during ENT-HNS surgeries.

METHODS

This was the prospective, non-randomized study conducted in Department of ENT-HNS of Dhulikhel Hospital, Kathmandu University Hospital in 3 months period from 1st July 2016 to 30th September 2016.

All the elective cases were included for study. Surgery was performed by the single surgeon. The surgeon wore the glass and mask during the surgery. At the end of the surgery, the glass, mask and gown was inspected by the surgeon for any blood splashes and information was recorded.

For the statistical analysis Microsoft Office Excel 2007 was used.

RESULTS

There were total 62 patients with male 30 and female 32 as shown in Figure 1.

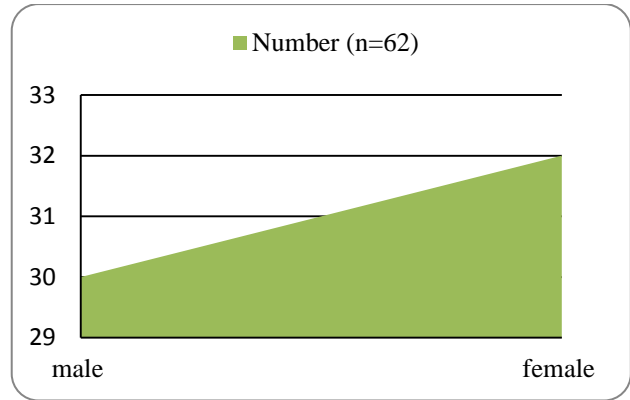


Figure 1: Gender distribution of patients (n=62).

The age wise distribution is shown in Figure 2 with most of the patients lie between 20-50 years.

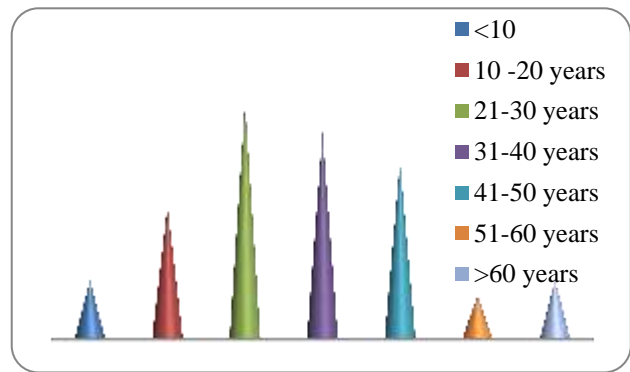


Figure 2: Age distribution of patients (n=62).

Table 1: Blood splatter in various ENT surgeries performed.

Surgeries performed	Number (%)	Blood splatter		
		Glass	Mask	Gown
Ear	16(25.8%)	3(18.7%)	4(25%)	4(25%)
Nose	20(32.2%)	3(20%)	10(50%)	8(40%)
Throat	14(22.5%)	8(57.1%)	10(71.4%)	10(71.4%)
Head and neck	12(19.3%)	11(91.6%)	12(100%)	12(100%)
Total	62(100%)	25(40.3%)	36(58.1%)	34(54.8%)

Table 2: Blood splatter in ear surgeries (n=16).

Type of Ear surgery	Number (%)	Blood splatter		
		Glass	Mask	Gown
Tympanoplasty	3	0	0	0
Modified radical mastoidectomy (MRM)	5	3	4	4
Myringoplasty	8	0	0	0
Total	16 (100%)	3(18.7%)	4(25%)	4(25%)

The Table 1 shows the blood splatter in different kind of ENT surgery performed and among them blood splatter is common in head and neck, throat and nasal surgeries in decreasing frequency.

Table 2 shows the types of ear surgery performed and the amount of blood splatter in glass, mask and gown. It shows most common in modified radical mastoidectomy surgery.

The Table 3 shows the most common blood splatter in nasal surgery is in septoplasty. Likewise blood splatter is most common in tonsillectomy in throat surgery as shown

in Table 4, and in head and neck surgery the blood splatter is common in all kind of head and neck surgery as shown in Table 5.

Table 3: Blood splatter in nasal surgeries (n=20).

Type of nasal surgery	Number (%)	Blood splatter		
		Glass	Mask	Gown
Septoplasty	11	3	8	8
Functional endoscopic sinus surgery (FESS)	7	0	0	0
Endoscopic sphenopalatine artery ligation (ESPAL)	2	0	2	0
Total	20(100%)	3(15%)	10(50%)	8(40%)

Table 4: Blood splatter in throat surgery (n=14).

Type of throat surgery	Number (%)	Blood splatter		
		Glass	Mask	Gown
Adenoidectomy	4	1	1	1
Tonsillectomy	9	7	9	9
Direct laryngoscopic biopsy	1	0	0	0
Total	14(100%)	8(57.1%)	10(71.4%)	10(71.4%)

Table 5: Blood splatter in head and neck surgeries (n=12).

Type of head and neck surgery	Number (%)	Blood splatter		
		Glass	Mask	Gown
Thyroidectomy	6	6	6	6
Tracheostomy	2	1	2	2
Parotidectomy	1	1	1	1
Submandibular gland excision	1	1	1	1
Excision of cervical lymph node	2	2	2	2
Total	12(100%)	11(91.6%)	12(100%)	12(100%)

DISCUSSION

The risk of transmission of infective microorganisms from one person to another is during coughing, talking and breathing. The risk is because of major source of microorganisms in human body. So, the health personal is always at risk while handling the patients. However protective measures like mask, glass is helpful in combating such problems during day to day clinical work, surgeries and also delivery.¹⁵

The study showed that the risk of HIV infection transmission following exposure of eye, nose or mouth is 0.1%. So, it is very important to take the precautonal practices.

Our study showed an overall 40.3% risk of blood splash on protective glass during surgery. This is similar with previous studies where blood splash contamination recorded on glass and protective eye shields has varied from 25–51%.^{16–18} Our study showed that the splash on mask and gown is about 58.1% and 54.8% respectively.

The ear surgery showed that MRM has more splashes on glass, gown and mask as compared to other ear surgery. It may be because we use drill in MRM which causes blood splashes more than in other ear surgery. In nasal surgery, septoplasty has more blood splashes than FESS and ESPAL. It may be because in latter two surgeries we use endoscope.

Likewise, in throat surgery tonsillectomy has 77.7% splashes in glass. Whereas in mask and gown it was 100% blood splashes. This is comparable with other studies which showed 76.9% blood splashes in glass.¹⁹ In head and neck surgery, the blood splashes is more than 90% in glass, mask and gown. Such high range of splashes is due to bleeding vessels during surgeries.

The surgeon was shown to be at risk of blood and body fluid splash to their eyes. In wearing protective glasses and an operating mask, two potential routes of viral transmission from patient to surgeon are avoided. Wearing regular spectacles somehow helps in protection but in limited manner. It has been shown by the study that

up to a 5% rate of contamination on the protective side of glasses and these side flaps are not present on regular, everyday spectacles.²⁰

Since the prevalence of HIV and hepatitis B, C is increasing, so there is always risk of transmission of disease in health personals. It is therefore necessary to take preventive practices from health personal side during handling of patients either during surgery or any other interventional procedure to avoid unnecessary contamination with blood or body fluids.

The main limitation of our study is time duration and sample size. Apart from that including assistant and scrub nurse exposure to blood splashes during surgery is also lacking.

CONCLUSION

Since the risk of blood splashes is high in different kinds of ENT surgeries, the operating surgeon must take necessary precaution in a form of protective mask and glass worn during surgeries to protect themselves from various blood borne infection transmission.

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Ethical approval: The study was approved by the institutional ethics committee

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