

Assessment of Surgical Gloves integrity in Selected Dental Practices in Riyadh, Saudi Arabia

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Introduction

During oral maxillofacial surgery (OMFS), surgeons and other health care workers are at higher risk of contracting blood-borne disease compared to the general public. (Lazenby et al., 2011) This high risk could be partially explained by higher level of gloves perforation reported in OMFS. (Kuroyanagi et al., 2012) The US Food and Drug Administration (FDA) requires that perforation in surgical gloves using water leakage test must not exceed 1.5%. (FDA, 2006)

The assessment of surgical gloves in dental practices in Riyadh, Saudi Arabia has not been reported in the literature. Therefore, the aim of this study is to assess the integrity of sterile surgical gloves before and after oral and maxillofacial surgery, and periodontal surgery, in selected dental departments in Riyadh, Saudi Arabia.

Materials and Methods

In this cross-sectional study, a total of 627 surgical gloves were conveniently collected from three dental departments. These are OMFS at King Saud Medical City (Ministry of Health), OMFS at King Abdulaziz Medical City (National Guard Health Services) and Periodontal clinics at King Saud University-College of Dentistry (Ministry of Higher Education).

Assessment of the presence of perforation has been determined using water inflation technique (WIT) recommended by FDA. (FDA, 2006) (Figure 1). Presence of holes in each glove has been assessed visually. A total of 500 new surgical gloves collected from each facility made up the control group used to assess the single blind inter-examiner validity test.

Data were entered and analyzed using SPSS. Two sample t-test was used to assess whether the dental procedure significantly increases the perforation rate in surgical gloves ($\alpha=0.05$). In addition, the effect of differences in dental procedure was carried out using One-way Analysis of Variance.

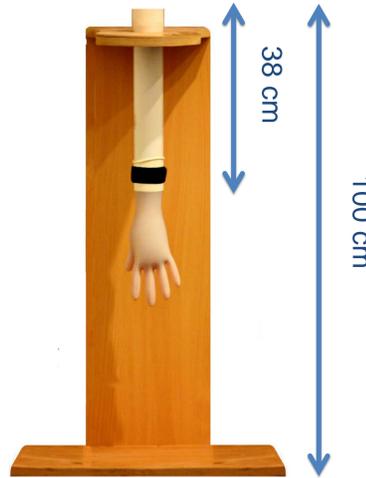
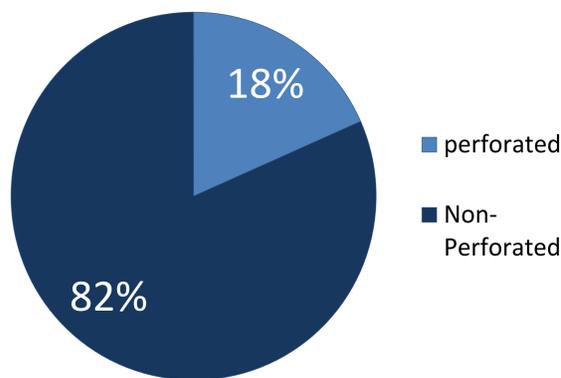
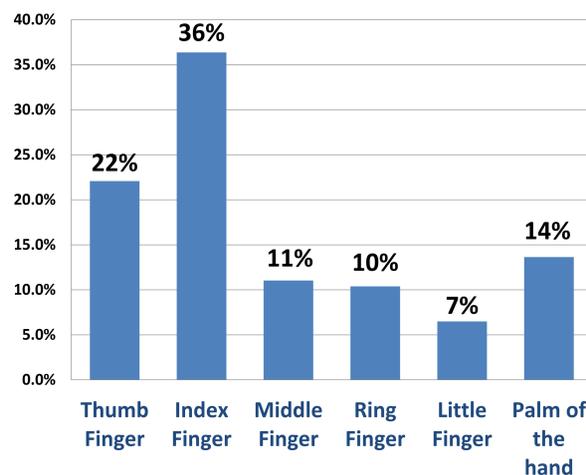


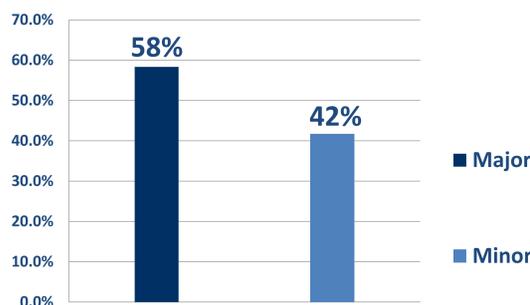
Fig 1. Water Infiltration device



Graph 1. Overall Surgical Gloves Perforation Rate



Graph 2. Location of gloves perforation



Graph 3. Distribution of perforation among major and minor surgical procedures.

Results

The Perforation rate among used surgical gloves was 18.3% (115/627). (Graph 1) The most common site for perforation was the index finger (36.4%) followed by the thumb (22.1%) and the palm (13.6%). (Graph 2) The perforation rate was significantly higher in major procedures (58%) as compared to minor procedures (42%) within the overall perforation rate ($P<0.05$). (Graph 3) The perforation rate of surgical gloves between the used brands was greatest in Unimed Orthopedic Latex Surgical Gloves (42.9%) followed by Unimed Latex Surgical Gloves (34.6%) and Medik Latex Surgical Gloves (30%). The duration showed to have a significant effect on the perforation rate when correlated with the severity of the surgical procedure ($P<0.05$). 500 unused surgical gloves from all manufacture revealed a perforation rate of 0 %.

Conclusions

1. About one out of every five surgical gloves were perforated after clinical use.
2. The majority of gloves perforation were in invasive procedures.

Clinical implications :

Oral and Maxillofacial surgeons should be aware that there is a high chance of transmitting infections from / to patients during surgical procedures especially those involving invasive procedures.

Surgeons are advised to frequently observe the integrity of gloves as they perform surgical procedures. In addition, surgeons may consider double gloving and /or frequent replacement of worn gloves especially for high risk patients and during long procedures.

Acknowledgment

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