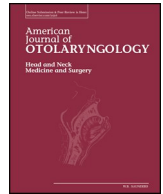




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0.5% povidone iodine irrigation in otorhinolaryngology surgical practice during COVID 19 pandemic[☆]



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Introduction

The world, at present, is facing a terrible health havoc created by the COVID 19 pandemic. It has taken away the toll of lives since its outbreak in Wuhan. Several doctors, nurses and others health care workers caring for COVID-19 patients are infected with the disease and are dying from the virus. During the unlock phase, the routine medical services are resuming back along with the surgical elective procedures with due safety measures. We, otorhinolaryngologists are the hardest hit medical specialities amongst all and the area we deal with as specialists makes us most vulnerable to contract the disease. Most of the otorhinolaryngologic procedures are aerosol producing. The oropharynx and nasopharynx are the target sites of SARS CoV2 with the result that saliva contains a high viral load of COVID 19 with up to 1.2×10^8 infective copies/per ml [1]. Even a few microliters of saliva contamination of surfaces or instruments may carry many thousands of infectious viral particles. Though asymptomatic, the viral shedding initial phase of COVID 19 is highly infectious [2]. In a recent study by Frazier et al. [3] it has been shown that 2 of 3 postmortem dissections SARS-CoV-2 was identified in 5 of 8 middle ear spaces and mastoid cavities using reverse transcriptase–polymerase chain reaction [4]. Viruses, including other coronaviruses, have been isolated from the middle ear space in children with acute otitis media [5] and in children undergoing tympanostomy tube placement for chronic otitis media with effusion [6].

We use 0.5% povidone iodine (PVP-I) as gargles and nasal drops for healthcare workers as well as the patients [7] attending the office consultations as a precautionary and safety measure during the COVID pandemic. This helps to minimise the risk of spread of the disease to the health care workers in addition to the recommended PPE (gloves, masks, cap, face shield, gowns) during management of COVID-19 patients. There has been considerable past evidence of benefit of the use of PVP-I solution against SARS Cov and MERS [8,9]. In-vitro study by Eggers et al. on the virucidal activity of PVP-I against MERS-CoV showed that the lowest concentration of PVP-I to be effective was 1% when used for 30 s under “dirty” conditions, leading to a reduction of viral activity of $\geq 99.99\%$; but not effective at 0.1% [8] According to

the study Eggers et al. [9], 0.23% PVP-I and may provide a protective oropharyngeal hygiene measure for individuals at high risk of exposure to oral and respiratory pathogens. In a study by Bidra et al. [10], the authors tested SARS CoV 2 virus stock against oral antiseptic solutions consisting of PVP-I at diluted concentrations of 0.5%, 1% and 1.5%. Ethanol (70%) was tested in parallel as a positive control. PVP-I oral antiseptics at all tested concentrations completely inactivated SARS-CoV-2 within 15 s of contact. The 70% ethanol control group was able to inactivate the virus at 30 s of contact.

PVP-I is being extensively used all over the world as a handwashing agent (7.5%), for pre-procedural skin antiseptics [11] (10%), in ophthalmic surgery [12] (diluted to 5%) and in oral surgery (10%). Along with the office based consultations and endoscopic procedures, safety during surgical procedures is also important as the nasal, oropharyngeal, nasopharyngeal and middle ear mucosa may be carrying the SARS CoV 2. There is substantial evidence of the presence of the SARS CoV 2 in the saliva, nasopharynx [1,2], middle ear and mastoid [3]. In order to prevent the intraoperative transmission of the Sars CoV 2 we propose the use of 0.5% PVP-I as irrigation fluid during surgical procedures. This may possibly reduce the probable viral load in asymptomatic patients (irrespective of the COVID status).

Almost all Otorhinolaryngologic surgeries require an ample amount of irrigation. Irrigation with normal saline is either during drilling (mastoidectomies -microscopic or endoscopic, endo endonasal endoscopic Dacryocystorhinostomy), for cleaning lens and for hemostasis (FESS), for cooling the lens and clearing debris (endoscopic ear surgery), as suction irrigation system in microdebrider FESS, as a conduction medium to form plasma field (coblation tonsillectomies) and head and neck surgeries. In order to achieve virucidal action of 0.5% PVP-I, the irrigation fluid should be in contact with the tissues for 15 s [10].

Preparation of 0.5% PVP-I irrigation:

1. Add 25 ml of 10% PVP –I to 500 ml Normal Saline to make it into 0.5% PVP-I irrigation solution.

Potential uses of 0.5% PVP-I

[☆] This study was not financially supported from external sources.

1. virucidal action during COVID pandemic
2. additional bactericidal effect may be beneficial in cholesteatoma surgery
3. fungicidal effect in fungal sinusitis
4. In addition to the irrigation fluid, 0.5% soaked gauze pieces can be used for mopping.
5. This solution can also be used for washing of instruments.

Advantages of 0.5% PVP-I:

1. light coloured
2. 0.5% PVP-I is easy to prepare and is inexpensive
3. No reported allergies
4. Though not proved, it probably reduces the viral titres of SARS CoV 2
5. does not stain the tissues

Conclusion

Amidst the deadly menace, we are extrapolating the in vitro efficacy of very economical PVP-I and apply it for in vivo use as an irrigation fluid to reduce the viral load in oropharyngeal, nasal cavities, and middle ear and mastoid.

CRediT authorship contribution statement

Dr. Mubarak M. Khan: conceptualisation, study design, manuscript drafting, data analysis.

Dr. Sapna Ramkrishna Parab: study design, manuscript drafting, data analysis.

Declaration of competing interest

None.

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