Practice of postoperative face-down positioning and its duration after silicone oil tamponade in vitreoretinal surgery: Results of a survey

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Abstract:

PURPOSE: This survey was conducted among practicing vitreoretinal (VR) surgeons to determine their practice of postoperative face-down positioning (FDP) of patients and its duration after silicone oil (SO) tamponade.

METHODS: A web-based SurveyMonkey platform (San Mateo, CA, USA) was used for this cross-sectional study. Up to 80 practicing VR surgeons in the Kingdom of Saudi Arabia (KSA) and Pakistan were contacted via SurveyMonkey link using WhatsApp and emails.

RESULTS: Of the 80 practicing VR surgeons, 71 responded to the survey. All VR surgeons in both countries use SO in their surgical practice. While operating on complicated retinal detachments (RDs) that include cases with advanced proliferative vitreoretinopathy, 75% of VR surgeons choose SO tamponade, while 9% of VR surgeons prefer gas tamponade. Up to 63% of VR surgeons advise FDP to their patients whenever they use SO as tamponade. When operating on complicated RDs with SO tamponade, 79% of VR surgeons advise postoperative FDP. Roughly half of the VR surgeons advise FDP for 6 to 10 days. The duration of postoperative FDP varies from 1 day to 21 days.

CONCLUSION: All VR surgeons use SO in their practice in KSA and Pakistan. While the vast majority of VR surgeons in both countries use SO as tamponade for complicated RDs, the practice of postoperative FDP and its duration appears to be quite variable. This highlights a lack of uniformity in postoperative care of these patients.

Keywords:

Face-down positioning, internal tamponade, long-standing gas, silicone oil, survey

Introduction

In current vitreoretinal (VR) surgical practice, silicone oil (SO) and long-standing gases are frequently used for surgical treatment of complicated retinal detachments (RDs). These tamponades are used as adjuncts after the retina has been surgically relieved of all traction forces over and under its surface. The tamponades stabilize the retina and their surface tension prevents the fluid from entering the subretinal space through the retinal break (s).[1-6]

Complications associated with the use of SO include emulsification and glaucoma. It needs to be removed in future with a second surgery with its inherent complications.[2] Further, there is a significant risk of re-detachment of the retina associated with its removal.[7,8] At present, the most valid justification of the use of SO as tamponade is the surgeon's preference. Its use is also justified in intellectually disabled patients, children, monocular patients, and patients who wish to do air travel soon after surgery. Its use allows clear visualization of the fundus during the early postoperative period. It is a useful tamponade for longer duration after 360° and inferior 180° retinectomies.[4,5] SO also reduces postoperative vitreous hemorrhage and prevents vascular proliferative factors to migrate anteriorly, thereby reducing the

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chances of the rubeosis of the iris and consequently neovascular glaucoma. SO also prevents phthisis bulbi.[2,9]

In practice, most of the patients are advised face-down positioning (FDP) for at least the first 24 h after SO injection. Some surgeons advise FDP for a much longer duration, up to 7–10 days. Patients are also advised to avoid sleeping on their back as this may cause SO to move anteriorly away from the retinal surface that may either cause shallowing of the anterior chamber (AC) or migration of SO into AC.[10]

Do these patients really need to be in FDP postoperatively, and if yes, for how long? This question is equally important for both VR surgeons and patients. The present survey, based on brief questions, was conducted among the practicing VR surgeons in the Kingdom of Saudi Arabia (KSA) and Pakistan. It encompasses advice given to patients for FDP and its duration after the use of SO by their VR surgeons. The survey also explores the practice of VR surgeons regarding the choice of tamponade. The outcomes of this survey are presented and discussed in this manuscript.

Methods

This cross-sectional study was conducted at the Department of Ophthalmology, King AbdulAziz Medical City, National Guard Health Affairs, Riyadh, KSA, affiliated with King Saud Bin AbdulAziz University of Health Sciences. The Institutional Review Board of King Abdullah International Medical Research Center, Riyadh, KSA, approved this study. The study adheres to the tenets of the Declaration of Helsinki.

A web-based SurveyMonkey platform (San Mateo, CA, USA) was used to formulate a questionnaire. The survey comprised questions regarding the practice of postoperative FDP and its duration after the use of SO as tamponade and the choice of tamponades used. The face validity of the questionnaire was established after prior discussion of content among the practicing VR surgeons within the authors' institution as well as with various national and international VR surgeons, both in academic and private practices. All VR surgeons in KSA and Pakistan were contacted via the WhatsApp platform and emails through corresponding secretaries of retina societies. The questionnaire for the survey was sent through SurveyMonkey link. Responses were directly received by SurveyMonkey. The confidentiality and anonymity of the responding VR surgeons is an integral part of the SurveyMonkey platform. It was, therefore, not possible to determine the country of origin of each responding VR surgeon.

The questionnaire for the survey comprised the following 5 questions:

1. In approximately what percentage of patients do you use SO as tamponade in retinal surgery?
2. What is your tamponade of choice in complicated RDs that include advanced proliferative vitreoretinopathy (PVR)?
3. Do you put patients after SO injection in FDP in the postoperative period?
4. Which patients after SO injection in retinal surgeries do you think should go in FDP in the postoperative period?
5. If postoperative FDP is advised, for how many days?

The sample size was calculated by SurveyMonkey sample calculator formula. For a population size of 80 practicing VR surgeons, it was 67, with a confidence level of 95% and 5% margin of error. All the responses were complete responses and were, therefore, included in the analysis. The responses were analyzed by SurveyMonkey system to formulate the charts and percentages.

Results

Of the 80 practicing VR surgeons, 71 (89%) surgeons responded to the survey. All responding surgeons use SO in their practice. Up to 65% of the responding surgeons use SO as tamponade in 26% to 100% of cases, while 35% of VR surgeons use SO in 1% to 25% of cases [Figure 1].

Fifty-three of 71 VR surgeons (75%) use SO as tamponade in retinal surgery for complicated RDs that include cases with advanced PVR. Eleven percent of VR surgeons use heavy SO (HSO), 9% use long-standing gas, and 3% use perfluorocarbon liquid (PFCL) as temporary tamponade in stated clinical situation [Figure 2].

Following surgery for complicated RDs with SO injection, 56 of 71 VR surgeons (79%) advise FDP to their patients. Nine of 71 VR surgeons (13%) do not advise FDP to their patients while the remaining 6 of 71 (8%) VR surgeons decide about the need of FDP on a case-to-case basis [Figure 3].

Forty-five of 71 (63%) VR surgeons advise FDP to their patients whenever they use SO, 8 of 71 (11%) VR surgeons only advise FDP for aphakic eyes with inferior iridectomy

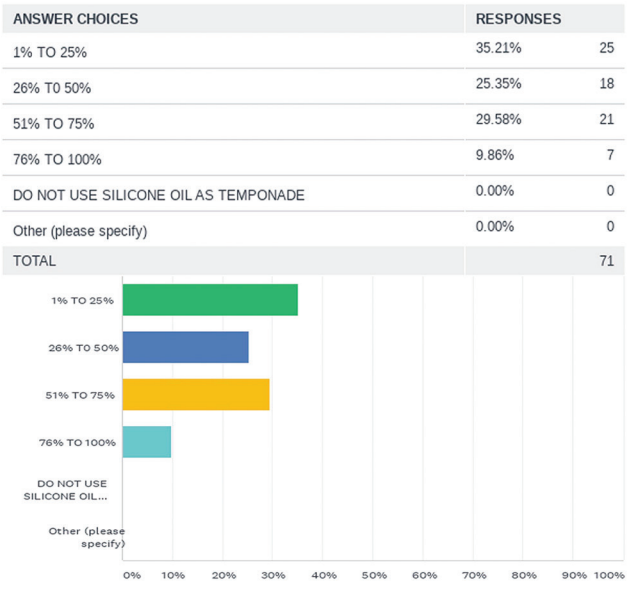

Figure 1: Survey response to: In approximately what percentage of patients do you use silicone oil as tamponade in retinal surgery?

including those with AC intraocular lens implant, and interestingly, 2 of 71 (3%) VR surgeons restrict FDP to pseudophakic patients with a posterior chamber intraocular lens implant. Sixteen of 71 (23%) VR surgeons have various other reasons to advise FDP to their patients that include complete or incomplete SO fill and inferior RDs and in cases of inferior retinectomies [Figure 4].

Among those VR surgeons who advise FDP after surgery in complicated RDs with SO tamponade, roughly half (33 of 71, 47%) advise FDP for 6 days to 10 days postoperatively. The rest of the VR surgeons advise their patients to maintain FDP for a duration varying from 1 day to as long as 21 days [Figure 5].

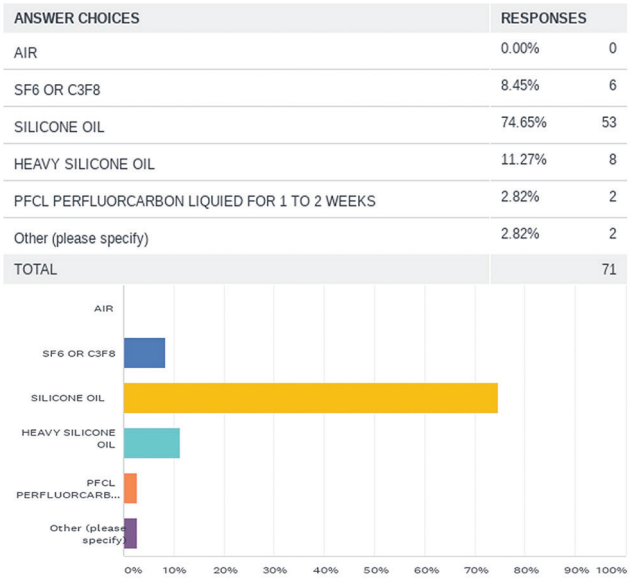

Figure 2: Survey response to: What is your tamponade of choice in complicated retinal detachments that include advanced proliferative vitreoretinopathy?

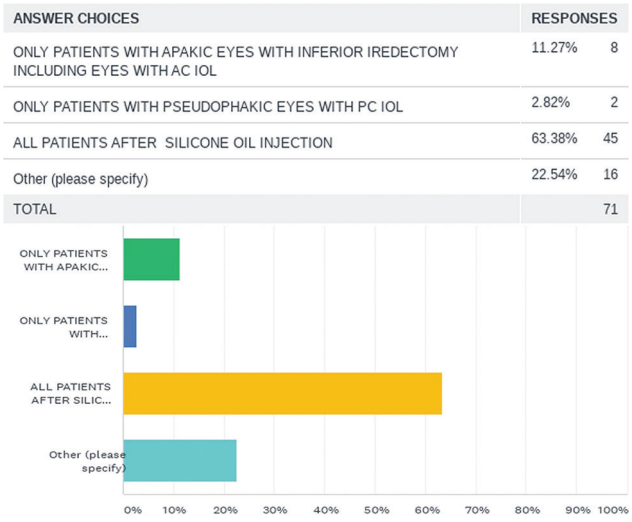

Figure 4: Survey response to: Which patients after silicone oil injection in retinal surgeries do you think should go in face-down positioning in the postoperative period?

Discussion

The choice of tamponade varies among the VR surgeons. VR surgeons in the United States prefer to use gas as tamponade whereas European VR surgeons prefer to use SO more frequently.[11] According to this survey, all the VR surgeons use SO as tamponade in their surgical practice [Figure 1], and that SO is the tamponade of choice among majority (75%) of VR surgeons in KSA and Pakistan in their surgeries for complicated RDs [Figure 2]. Only 9% of responding VR surgeons use long-standing gas under similar situations. According to this survey, 11% of VR surgeons prefer to use HSO in complicated RDs. Of note, the HSO study did not show any functional and anatomical difference between the use of standard SO and HSO.[12,13] Up to 3% of VR surgeons use PFCL in complicated RDs. It is used as a temporary tamponade for 1 to 2 weeks

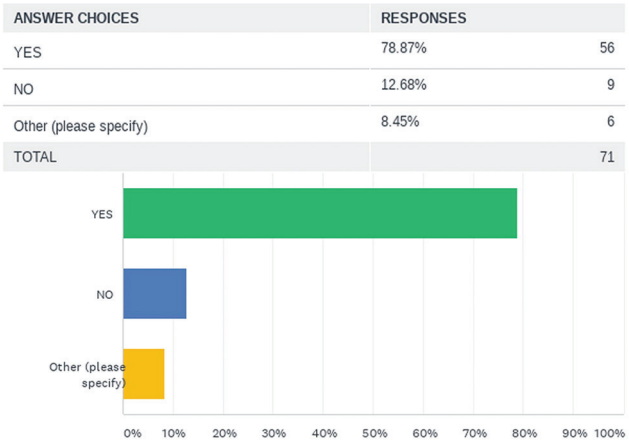

Figure 3: Survey response to: Do you put patients after silicone oil injection in face-down positioning in the postoperative period?

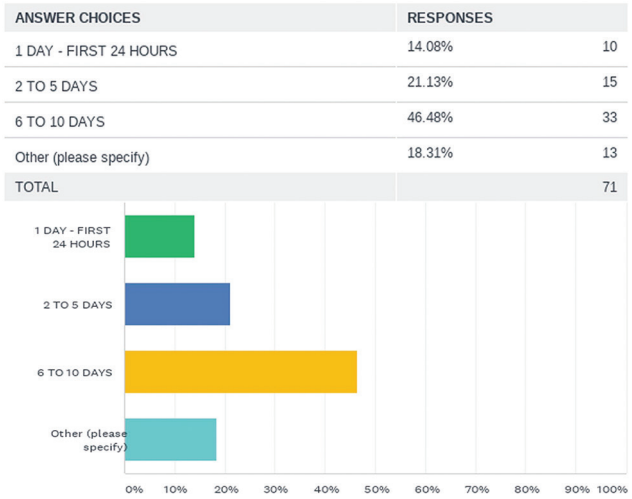

Figure 5: Survey response to: If postoperative face-down positioning is advised, for how many days?

followed by gas or SO replacement in complicated RDs with inferior breaks.[14-18] Around 3% of the VR surgeons decide about the selection of tamponade during their surgeries [Figure 2].

While there is abundant literature regarding postoperative FDP with long-standing gases in VR surgery,[19-22] there is a paucity of guidelines and documentation about postoperative FDP following the use of SO as tamponade. In practice, VR surgeons advise postoperative FDP to their patients after the use of SO to prevent possible complications related to SO. These complications may include migration of SO into the AC with consequent rise in intraocular pressure (IOP), band keratopathy, corneal decompensation, pupil block glaucoma, formation of epiretinal membranes, and macular folds.[2,9] In fact, very little is known about the best positioning of the patient after pars plana vitrectomy with internal tamponade. This has been studied in several randomized controlled trials and retrospective studies when long-standing gases were used as tamponade,[23-27] but for SO tamponade, the literature is very scanty.

During the process of SO injection, VR surgeons monitor the IOP with digital palpation with a goal IOP of around 10 mmHg at the end of the case.[26] According to Zivojnovic,[2] who is one of the pioneers of SO use in VR surgeries, no special positioning is required after SO injection in the eyes with a physiological IOP at the end of the case. Accordingly, all phakic and pseudophakic patients with posterior chamber intraocular lens were nursed in face-up positioning (FUP) and not in FDP in the reported largest single-person series of retinectomies performed for advanced PVRs with the use of SO.[5]

Contrary to this, majority (63%) of VR surgeons in this survey advise FDP to their patients whenever they use SO as tamponade, while 37% of VR surgeons do not follow this practice. In complicated RDs, including cases of advanced PVR, 79% of the VR surgeons advise FDP to their patients following SO injection, while 13% of VR surgeons do not [Figures 3 and 4]. Instead, the latter group suggests 45° head-up position for the initial few days after surgery. The remaining 8% of VR surgeons decide about the FDP on a case-to-case basis. Hence, the results of this survey suggest that postoperative FDP advised to patients is a surgeon driven rather than an evidence-based practice.

The present survey also highlights a complete lack of uniformity in practice regarding the duration of postoperative FDP [Figure 5]. Based on this survey, around 50% of patients are advised FDP for 6 to 10 days after surgery, while others are advised FDP for as less as 1 day and as long as 21 days. FDP is a challenging task for any patient. In fact, FDP is practically not possible in intellectually disabled patients and in children. In addition, it can be very cumbersome for elderly patients, patients with cervical spondylosis, patients with cardiovascular disease, patients with pulmonary and/or bronchial disease, and obese patients. Importantly, clinical complications such as thrombophlebitis, pulmonary embolism, and ulnar nerve palsies may develop after a long period of FDP.[28-30]

Keeping the patient in FDP or FUP has to be based on scientific grounds and not on merely on surgeons' practice. Same is the case for duration of keeping the patient head down or otherwise. FDP is an ordeal and is not a pleasant position to be in for the patients. It is not a physiological position and is cumbersome as well as stressful. In fact, it is a major source of discomfort for almost all patients. In line with lack of clear guidelines in literature, every VR surgeon practices the postoperative positioning of the patients and decides for duration of that positioning according to his own understanding.

This survey highlights variation in postoperative FDP and its duration in complex VR cases among VR surgeons in KSA and Pakistan. This underscores the importance of developing uniform guidelines. While this survey is limited to two countries, the authors believe that it may represent the overall pattern of varied practice of postoperative FDP of patients with siliconized eyes across the world.

Limitations

This survey is limited to only two countries, namely KSA and Pakistan. Responses were received by SurveyMonkey that maintains the confidentiality of responders, and hence, it is not possible to determine the country of origin of each responding VR surgeon. It is a brief survey as number of questions were limited to 5 only. A lengthy survey with more specific questions could have been more informative. Duration of responding surgeon's surgical experience was not taken into account. However, strengths of this study include a high response rate (almost 90%), which is rare for surveys, generalizability given that the survey comprised VR surgeons from two different countries, the use of a novel digital platform like WhatsApp along with emails to disseminate the survey, and the use of a validated platform such as SurveyMonkey to conduct the survey.

Conclusion

SO is tamponade of choice in retinal surgeries for VR surgeons of KSA and Pakistan unlike the practice of VR surgeons in the USA who use long-standing gases more often. Although no special positioning is needed in postoperative period after SO tamponade, 63% of surgeons in KSA and Pakistan put their patients in FDP whenever they use SO. As many as 79% of surgeons in these two countries put their patients in FDP after the use of SO in complicated RDs. There is a complete lack of uniformity in practice among retinal surgeons for duration of FDP that varies from 1 day to up to 21 days depending on the surgeon's practice. This practice lacks scientific evidence, and further research on FDP or FUP postoperative positions would be of great benefit to patients all around the world.

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Conflicts of interest

There are no conflicts of interest.

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