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The use of silicone oil in pars plana vitrectomy for endophthalmitis

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4 **Letter to the editor on manuscript: Nagpal M, Jain P, Nagpal K. Pars plana**
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6 **vitrectomy with or without silicone oil endotamponade in surgical**
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8 **management of endophthalmitis. APJO 2012;1: 216-221.**
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14 EDITOR:

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16 We would like to commend Nagpal and colleagues for taking on such a unique and
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18 challenging study in their article entitled “Pars Plana Vitrectomy With or Without
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20 Silicone Oil Endotamponade in Surgical Management of Endophthalmitis.”
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26 Endophthalmitis remains a devastating and challenging complication of both
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28 intraocular surgery and penetrating trauma. The prognosis for visual recovery can
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30 be poor and is dependent on the presenting vision, infecting organism and other
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32 ocular co-morbidities.¹ Nagpal and colleagues performed a prospective surgical trial
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34 on eyes with postsurgical and traumatic endophthalmitis.² Eyes were randomized to
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36 either a limited pars plana vitrectomy (Group 1, n=65, (30 traumatic)) or a complete
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38 pars plana vitrectomy with silicone oil injection (Group 2, n=64, (38 traumatic)).
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41 Pars plana vitrectomy was performed using three 20-gauge sclerotomies and all
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43 eyes were given 1/10th the standard dose of intravitreal vancomycin (0.1 mg) and
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45 ceftazidime (0.225 mg) at the conclusion of the surgery in order to prevent toxicity³
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48 in Group 2. Functional and anatomical outcomes in addition for the need for future
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51 surgery for each group were compared.
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4 Nagpal and colleagues found that the improvement in post-operative visual acuity at
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7 the last follow-up visit was greater in Group 2 eyes compared to Group 1 eyes.

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9 Visual acuities in Group 2 improved in 87.5% of eyes and deteriorated in 1.5% of
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11 eyes compared to Group 1 in which only 55.4% improved and 16.9% deteriorated.

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14 These visual acuity findings seemed to correlate with the higher rate of additional
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16 surgery (41.5% versus 7.8%) and postoperative retinal detachment (25.5% versus
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18 6.2%) in Group 1 eyes compared to Group 2 eyes. The retinal detachment rate, as
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20 expected, was highest in Group 1's traumatic endophthalmitis eyes, reaching 40%
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22 compared to 11.5% in Group 2's traumatic endophthalmitis eyes.
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29 This study by Nagpal and colleagues present interesting challenges and attempts to
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31 study a surgical technique to improve the visual outcome in some of the most
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33 severely infected and traumatized eyes. Even though silicone oil has been primarily
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35 used by retinal surgeons as an intraocular tamponade in eyes requiring closure of
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37 retinal breaks and/or in proliferative vitreoretinopathy⁴, the authors appear to
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39 expand silicone oils use as a prophylactic measure against retinal detachments and
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41 additional procedures. It is well known that retinal detachments and/or additional
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43 procedures are associated with worse visual outcomes in eyes with
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45 endophthalmitis.⁵ The authors have reported that silicone oil decreased the
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47 incidence of retinal detachments and/or additional procedures and increased the
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49 chance of visual acuity improvement in such eyes.
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4 The pars plana vitrectomy procedure performed by the authors in Group 1 eyes
5 included clearing of the central vitreous and no induction of a posterior vitreous
6 detachment. This technique is most similar to the vitrectomy procedure performed
7 in the Endophthalmitis Vitrectomy Study.⁶ Group 2 eyes had a much more
8 aggressive vitrectomy procedure with a complete vitrectomy, induction of a
9 posterior vitreous detachment at high vacuum, and peripheral shaving of the
10 vitreous base as close to the ora serrata as possible. In Group 2 the retinal periphery
11 was carefully examined and all breaks were treated with cryotherapy, followed by a
12 complete air-fluid exchange and insertion of silicone oil. The vitrectomy technique
13 with silicone oil injection used for Group 2 eyes would be considered by most retinal
14 surgeons overly aggressive and potentially not necessary in some eyes. The authors
15 seem to caution the reader about the limitations of their study and responsibly omit
16 any statement to recommend this as a treatment for all such eyes.
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39 The population studied by Nagpal and colleagues must be taken into account when
40 interpreting their result. Based on the poor presenting visions (>80%, vision \leq CF),
41 etiological mechanisms (trauma), extended timing to surgery (mean 15-18 days),
42 and microbiological data (85% gram negative and fungi), the population studied by
43 the authors would be expected to have the poorest prognosis. The much more
44 aggressive vitrectomy procedure performed in Group 2 eyes may be expected to be
45 most beneficial for eyes with the poorest potential, similar to those studied by the
46 authors. Even though visual acuity improved postoperatively in over 80% of eyes in
47 Group 2 and in 50% of eyes in Group 1, only 26% of these eyes in both groups had a
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4 post operative visual acuity of 6/60 (20/200, snellen) or better and only about 15%
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7 had a post operative visual acuity of 6/18 (20/63, snellen) or better vision.
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11 Compounding the interpretation of the results includes the possibility that Group 1
12 eyes may have been undertreated with intravitreal antibiotics and in some cases
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14 under vitrectomized. Since both Group 1 and Group 2 had 1/10th the standard dose
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16 of intravitreal antibiotics injected at the conclusion of the surgery, the silicone oil
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18 filled eye in Group 2 would have a much higher antibiotics fluid concentration
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20 compared to the fluid filled eye in Group 1. This would insure an adequate
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22 bactericidal antibiotic concentration in Group 2 eyes compared to Group 1 eyes. In
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24 addition, 55% of the positive cultures in Group 1 were fungi (22/64, 34% eyes).
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28 This would be expected to carry a much poorer prognosis especially in the setting of
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30 a limited vitrectomy with no intravitreal antifungal antibiotics. Even though Group 2
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32 also had a significant number of fungi isolated, a more complete vitrectomy may
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34 have been able to eradicate the infection without antifungal antibiotics.
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44 In summary, the authors have taken on a daunting task in studying such a complex
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46 group of eyes. We agree with the authors that many factors, including the causative
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48 organism, may have influenced the results and many factors were beyond the scope
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50 of their study. In addition, we agree that further research in this area should include
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52 long-term observation of such cases with respect to long-term silicone oil
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54 management and possible removal. Future studies will hopefully clarify which cases
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56 warrant a limited versus a complete vitrectomy with silicone oil. Retinal surgeons
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4 should continue to use all the tools in their armamentarium, no matter how
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6 aggressive, to manage such eyes and not be discouraged from making intraoperative
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8 decisions or performing staged procedures, as long as it is in the best interest of the
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10 patient long-term.
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24 New York Medical College.
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29 References:

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33
34 1. Kresloff MS, Castellarin AA, Zarbin MA. Endophthalmitis. *Surv Ophthalmol* 1998;
35
36 43(3): 193-224.
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41 2. Nagpal M, Jain P, Nagpal K. Pars plana vitrectomy with or without silicone oil
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43 endotamponade in surgical management of endophthalmitis.
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46 *Asia Pac J Ophthalmol* 2012;1: 216-221.
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51 3. Hegazy HM, Kivilcim M, Peyman GA, Unal MH, Liang C, Molinari LC, Kazi AA.
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53 Evaluation of toxicity of intravitreal ceftazidime, vancomycin, and ganciclovir in a
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55 silicone oil-filled eye. *Retina*. 1999;19:553-7.
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4. Vitrectomy with silicone oil or sulfur hexafluoride gas in eyes with severe proliferative vitreoretinopathy: results of a randomized clinical trial. Silicone Study Report 1. *Arch Ophthalmol* 1992; 110: 770-9.

5. Doft BM, Kelsey SF, Wisniewski SR. Retinal detachment in the Endophthalmitis Vitrectomy Study. *Arch Ophthalmol* 2000; 118(12): 1661-1665.

6. Endophthalmitis Vitrectomy Study Group: Results of the Endophthalmitis Vitrectomy Study: a randomized trial of immediate vitrectomy and of intravenous antibiotics for the treatment of postoperative bacterial endophthalmitis. *Arch Ophthalmol* 113: 1479, 1995.