

硅油取出术后引起视网膜再脱离的危险因素研究进展

冉灵霞, 宿罡

(遵义医学院附属医院眼科, 贵州 遵义 563003)

摘要:硅油是玻璃体切除术中一种良好的填充物,然而硅油取出后 3.5% ~ 33% 的病人会再次发生视网膜脱离。引起再次视网膜脱离的危险因素可能有多种:硅油的种类、视网膜增殖性玻璃体视网膜病变(PVR)分级、残留玻璃体牵拉、硅油填充时间、巩膜环扎术或视网膜光凝术等,现对各种因素作一综述。

关键词:硅油;视网膜再脱离;增殖性玻璃体视网膜病变;巩膜环扎术;视网膜光凝

doi:10.3969/j.issn.1009-6469.2017.02.002

Research progress of recurrent retinal detachment after vitrectomy combined with silicone oil tamponade

RAN Lingxia, SU Gang

(Department of Ophthalmology, The Affiliated Hospital of Zunyi Medical College, Zunyi, Guizhou 563003)

Abstract: Silicone oil is a good filler in vitrectomy. However, 3.5% to 33% of patients have retinal detachment after removal of silicone oil. A lot of risk factors may cause recurrent retinal detachment; types of silicone oil, Proliferative vitreoretinopathy (PVR) classification, residual vitreous body traction, silicone oil filling time, scleral buckling and retinal photocoagulation.

Key words: Silicone oil; Recurrent retinal detachment; Proliferative vitreoretinopathy; Sclera buckling; Retinal photocoagulation

玻璃体切除术联合硅油填充可治疗视网膜脱离,硅油长期填充会产生各种并发症,一般需在视网膜复位稳定后取出。视网膜再脱离一般发生在取硅油后早期,视网膜再脱离率一般为 3.5% ~ 33.0%^[1-6],在取出硅油后 3 个月再脱的可能性不大^[7]。虽然硅油可引起白内障、青光眼、角膜变性等并发症^[8],但在视网膜脱离手术中仍是一种很好的填充物。了解并分析各项可能引起视网膜再脱离因素,可以降低视网膜再脱离风险,现对国内外硅油取出术后引起视网膜再脱的因素研究作一综述。

1 硅油的种类

传统硅油为聚二甲基硅氧烷(PDMS),因密度小于水玻璃体腔可能有空隙,炎症反应的房水促进再发增殖性玻璃体视网膜病变。传统硅油需保持俯卧位,对下方视网膜脱离效果不佳,重硅油是传统硅油基础上改变某基因或与其它物质混合后产生密度大于水的物质,可长期替代玻璃体,可仰卧且填充物位于下方。部分学者^[9-11]认为重硅油易导致眼内炎、高眼压、白内障形成、硅油乳化及取出硅油难度增加。研究表明重硅油对孔源性及牵拉性

伴增殖性玻璃体视网膜病变均有效,尽管重硅油易乳化,在相对安全及稳定的情况下尽可能保留长时间以保留视功能^[9]。目前广泛使用的有氟化石蜡与纯化硅油混合(Oxane HD)和30.5%的F6H8与硅油混合(Densiron-68)。Duan等^[10]研究表明重硅油比硅油填充效果更好。Wong等^[11]将Densiron-68和30.0%传统硅油混合后注入玻璃体腔同时发生在上方及下方的视网膜脱离,50只眼中48只达到解剖复位,12例取出后复发网脱。Tognetto等^[12]研究中Densiron-68填充的成功率填充3个月为45.8%,Sandner等^[13]取出硅油后成功率为92.3%,在Liu等^[14]的研究中,Densiron-68作为下方复杂视网膜脱离的填充物,21例眼中的19例眼(90.5%)达到解剖复位与之前研究吻合。Zenoni等^[15]对50个上下均发生视网膜脱离的病人行玻切术后填充70.0%的Densiron-68与30.0%的二甲基硅油,48例病人(96.0%)视网膜贴附,其中的12例病人(25.0%)在3个月后再发网脱,结论认为轻重硅油结合治疗视网膜脱离伴上下增殖性玻璃体视网膜病变(PVR)是有效的。比较传统硅油与重硅油,长期填充都会有并发症,将重硅油与传统硅油混合应用对视网膜复位率较高,有待进一步大样本临床研究。

2 视网膜 PVR 分级、残留玻璃体牵拉

既往研究认为 PVR 是硅油取出手术后发生视网膜再脱离 (RRD) 的主要原因。Unlü 等^[7] 研究认为再次网脱主要的因素是玻璃体基底部牵拉。Zenoni 等^[15] 研究中诊断出 PVR 的病人有 28.8% 视网膜取出硅油后再脱离, 虽然该研究中 C 级与 D 级无明显差别, 取出硅油后网脱风险随着最初 PVR 分级增加而增加。Avitabile 等^[16] 1993 年证实了再增殖引起的牵拉是术后视网膜再脱离的主因。PVRCP6 级或更高者都是取硅油后视网膜再脱明显的危险因素。在目前的研究中, PVR 取硅油后发生视网膜再脱率为 26.7%, 其中 15% 是增殖型糖尿病视网膜病变, 这些数据与之前的研究相吻合^[5]。Sheng 等^[17] 做了一项回顾性研究, 40 例病人下方视网膜脱离, PVR \geq C1 级, 所有病人行 20G 玻切术后填充气体或硅油, 未行巩膜扣带术, 87.5% 术后网膜贴附, 认为最主要引起视网膜再脱离的原因是反复的 PVR。残留的玻璃体是一个重要的危险因素, 硅油取出前能够对抗残余的牵引力, PVR 进一步增殖、牵拉, 硅油移除后再发网脱。因此对于 PVR 分级较高者应尽量切除基底部残余玻璃体预防视网膜再脱离。

3 硅油填充时间

多数学者认为硅油填充 3~6 个月即可取出, 但对于严重 PVR 多次手术、视网膜切开等具有视网膜脱离复发的高危病例, 硅油取出时间应推迟^[18]。在 Unlü 等^[7] 研究中, 硅油在眼内的平均时间 (9.6 ± 6.1) 个月, 在这些研究中硅油取出后视网膜再脱与硅油填充时间没有明显联系^[2-3, 19-22]。在玻切术和取硅油间隔最小 1 个月时间对再发网脱无明显影响^[5]。一部人发现短时间的填充视网膜贴附率低于长时间填充^[6, 23-24]。多数术者提倡及时取出硅油预防已发现的长时间填充硅油的并发症^[25]。硅油取出时间充满争议, Convers^[26] 认为 8 周为佳, Franks 等^[27] 则认为 12 周, Hoing 等^[28] 提倡 22 个月, Flaxel 等^[25] 的研究与其他研究证明硅油取出时间与再发网脱无相关性。Hooshang 等^[29] 也认为取出时间很重要。硅油填充后视网膜解剖及功能稳定多依靠临床表现和术者的感觉。Mete 等^[2] 研究结果平均硅油填充时间为 7 个月为佳, 取出硅油的时间需要进一步研究得出一个明确的指南。

4 联合巩膜环扎术或视网膜光凝术

360° 光凝明显降低孔源性再脱率, 甚至包括有危险因素的眼睛^[16]。因赤道部环扎可以减轻基底部残留玻璃体牵引力, 无环扎术和下方视网膜造口

可能易于再发网脱离^[5, 30]。有的学者认为在硅油取出术前的 360° 视网膜光凝能降低视网膜再脱率^[2, 4, 25], 在硅油取出前巩膜环扎术联合视网膜光凝是安全有益的, 360° 光凝能提高脉络膜视网膜再贴附率, 避免因残余玻璃体基底部牵拉引起的视网膜再脱^[20]。但也有研究认为通过彻底切除基底部玻璃体, 辅以激光光凝治疗和手术后严格的体位也能达到同样的效果^[31-32]。Sheng 等^[17] 对行玻切术填充硅油的 455 例病人 458 只眼纳入研究, 玻切术联合环扎术病人中发生 RRD 3.1%, 未行环扎术病人发生 RRD 10.0%。单纯 360° 视网膜激光光凝不能有效预防术后再发网脱, 但同时施行了巩膜环扎术 32 只眼中均未发生 RRD。Teke 等^[33] 将 894 例行玻璃体切除术联合硅油填充病人纳入研究, 13.2% 病人再脱离, 危险因素中包括未行巩膜环扎术。Solaiman 等^[34] 对 23 例病人进行前瞻性研究, 结果表明巩膜环扎术是有效的, 以上研究结果表明 360° 视网膜光凝联合巩膜环扎术对预防复杂性视网膜脱离硅油取出后视网膜再脱离有益。

综上所述, 玻璃体切除联合硅油填充术后再发网脱因素有多种, 以下因素也可增加视网膜再脱率: 高度近视、视网膜脱离手术数量^[5, 16]、人工晶体眼^[16] 等。临床工作中应尽量避免可能的因素预防再发网脱。术前准备及术中操作对视网膜再脱离率影响亦颇大。术前玻璃体呈星样浑浊、新生血管区域局部可注射抗血管内皮生长因子药物。糖尿病病人术前使用抗血管内皮生长因子药物有助于减少出血、提供更广阔的手术视野、减少眼内电凝、从而缩短手术时间及减少其他风险^[35]。术中玻璃体出血时注意维持眼内压, 去除血凝块时从周边如裹地毯样往牵拉中心进行减少对视网膜的牵拉^[36]。术后增殖不严重, 小范围的再脱离可首选巩膜环扎术或光凝封闭干性裂孔^[37]。对 PVR 分级较高者尽量切除玻璃体, 联合巩膜环扎术和视网膜光凝术都对预防视网膜再次脱离有一定作用。硅油填充时间需要进一步研究获得统一指南。

参考文献

- [1] RIPANDELLI G, ROSSI T, SCARINCI F, et al. Encircling scleral buckling with inferior indentation for recurrent retinal detachment in highly myopic eyes [J]. *Retina* (Philadelphia, Pa), 2015, 35 (3): 416-422.
- [2] METE M, PAROLINI B, MAGGIO E, et al. 1000 cSt silicone oil vs heavy silicone oil as intraocular tamponade in retinal detachment associated to myopic macular hole [J]. *Albrecht von Graefes Archiv für klinische und experimentelle Ophthalmologie*, 2011, 249

- (6):821-826.
- [3] BASSAT IB, DESATNIK H, ALHALEL A, et al. Reduced rate of retinal detachment following silicone oil removal [J]. *Retina (Philadelphia, Pa)*, 2000, 20(6):597-603.
- [4] FALKNER-RADLER CI, SMRETSCHNIG E, GRAF A, et al. Outcome after silicone oil removal and simultaneous 360° endolaser treatment [J]. *Acta Ophthalmol*, 2011, 89(1):e46-e51.
- [5] CHOUDHARY MM, CHOUDHARY MM, SAEED MU, et al. Removal of silicone oil: prognostic factors and incidence of retinal redetachment [J]. *Retina (Philadelphia, Pa)*, 2012, 32(10):2034-2038.
- [6] SCHOLDA C, EGGER S, LAKITS A, et al. Retinal detachment after silicone oil removal [J]. *Acta Ophthalmol Scand*, 2000, 78(2):182-186.
- [7] UNLÜ N, KOCAOĞLAN H, ACAR MA, et al. Outcome of complex retinal detachment surgery after silicone oil removal [J]. *Int Ophthalmol*, 2004, 25(1):33-36.
- [8] LESNONI G, ROSSI T, NISTRI A, et al. Long-term prognosis after removal of silicone oil [J]. *Eur J Ophthalmol*, 2000, 10(1):60-65.
- [9] THELEN T, TILANUS MA, KLEVERING BJ. Intraocular inflammation following endotamponade with high-density silicone oil [J]. *Albrecht Von Graefes Archiv Fur Klinische Und Experimentelle Ophthalmologie*, 2004, 242(7):617-620.
- [10] DUAN A, SHE H, QI Y. Complications after heavy silicone oil tamponade in complicated retinal detachment [J]. *Retina (Philadelphia, Pa)*, 2011, 31(3):547-552.
- [11] WONG D, KUMAR I, QUAH SA, et al. Comparison of postoperative intraocular pressure in patients with Densiron-68 vs conventional silicone oil: a case-control study [J]. *Eye (Lond)*, 2009, 23(1):190-194.
- [12] TOGNETTO D, MINUTOLA D, SANGUINETTI G, et al. Anatomical and functional outcomes after heavy silicone oil tamponade in vitreoretinal surgery for complicated retinal detachment: a pilot study [J]. *Ophthalmology*, 2005, 112(9):1574.
- [13] SANDNER D, ENGELMANN K. First experiences with high-density silicone oil (Densiron) as an intraocular tamponade in complex retinal detachment [J]. *Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie*, 2006, 244(5):609-619.
- [14] LIU F, LI H, FENG L, et al. Anatomical and functional outcomes after Densiron 68 heavy silicone oil tamponade for complicated retinal detachment in Chinese eyes [J]. *Int J Ophthalmol*, 2014, 7(3):469-473.
- [15] ZENONI S, COMI N, FONTANA P, et al. The combined use of heavy and light silicone oil in the treatment of complicated retinal detachment with 360° retinal breaks: tamponade effect or filling effect [J]. *Ann Acad Med Singap*, 2012, 41(10):440-443.
- [16] AVITABILE T, LONGO A, LENTINI G, et al. Retinal detachment after silicone oil removal is prevented by 360 degrees laser treatment [J]. *Br J Ophthalmol*, 2008, 92(11):1479-1482.
- [17] SHENG Y, SUN W, MO B, et al. Non-buckled vitrectomy for retinal detachment with inferior breaks and proliferative vitreoretinopathy [J]. *Int J Ophthalmol*, 2012, 5(5):591-595.
- [18] 杨海军, 汪枫桦, 易敬林, 等. 改良两切口 23G 经结膜免缝合玻璃体切割系统硅油取出术的观察 [J]. *国际眼科杂志*, 2015, 15(1):72-75.
- [19] NAGPAL MP, VIDEKAR RP, NAGPAL KM. Factors having implications on re-retinal detachments after silicone oil removal [J]. *Indian J Ophthalmol*, 2012, 60(6):517-520.
- [20] TAVARES RL, NÓBREGA MJ, NÓBREGA FA J, et al. Timing and outcomes after silicone oil removal in proliferative vitreoretinopathy: a retrospective clinical series [J]. *International Journal of Retina and Vitreous*, 2015, 1:2.
- [21] JONAS JB, KNORR HL, RANK RM, et al. Retinal redetachment after removal of intraocular silicone oil tamponade [J]. *Br J Ophthalmol*, 2001, 85(10):1203-1207.
- [22] MONDAL S, HUSSAIN N, NATARAJAN S. Retinal redetachment after silicone oil removal in proliferative vitreoretinopathy: a prognostic factor analysis [J]. *Am J Ophthalmol*, 2008, 146(1):145.
- [23] TAN HS, DELL'OMO R, MURA M. Silicone oil removal after rhegmatogenous retinal detachment: comparing techniques [J]. *Eye (Lond)*, 2011, 26(3):444-447.
- [24] SCHOLDA C, EGGER S, LAKITS A, et al. Retinal detachment after silicone oil removal [J]. *Acta Ophthalmol Scand*, 2000, 78(2):182-186.
- [25] FLAXEL CJ, MITCHELL SM, AYLWARD GW. Visual outcome after silicone oil removal and recurrent retinal detachment repair [J]. *Eye (Lond)*, 2000, 14(Pt 6):834-838.
- [26] GONVERS M. Temporary use of intraocular silicone oil in the treatment of detachment with massive periretinal proliferation: preliminary report [J]. *Ophthalmologica*, 1982, 184(4):210-218.
- [27] FRANKS W A, LEAVER PK. Removal of silicone oil: rewards and penalties [J]. *Eye (Lond)*, 1991, 5(Pt 3):333-337.
- [28] HOING C, KAMPIK A, HEIDENKUMRNER HP. Possibilities of silicone oil removal after complex vitreoretinal surgery [J]. *Fortschr Ophthalmol*, 1991, 88(6):593-597.
- [29] HOOSHANG F, HODJAT JK, ALI A, et al. Rhegmatogenous retinal detachment after LASIK for myopia. [J]. *Journal of Refractive Surgery*, 2006(5):448-452.
- [30] 孟自军, 高永峰, 王艳婷. 硅油取出手术后视网膜再脱离的发生原因和影响因素 [J]. *中华眼底病杂志*, 2013, 29(5):499-504.
- [31] SHARMA A, GRIGORPOULOS V, WILLIAMSON TH. Management of primary rhegmatogenous retinal detachment with inferior breaks [J]. *Br J Ophthalmol*, 2004, 88(11):1372-1375.
- [32] SCHMIDT JC, RODRIGUES EB, HOERLE S, et al. Primary vitrectomy in complicated rhegmatogenous retinal detachment—a survey of 205 eyes [J]. *Ophthalmologica*, 2003, 217(6):387-392.
- [33] TEKE MY, BALIKOGLU-YILMAZ M, YUKSEKKAYA P, et al. Surgical outcomes and incidence of retinal redetachment in cases with complicated retinal detachment after silicone oil removal: univariate and multiple risk factors analysis [J]. *Retina (Philadelphia, Pa)*, 2014, 34(10):1926-1938.
- [34] SOLAIMAN KA, DABOUR SA. Supplemental scleral buckling for inferior retinal detachment in silicone oil-filled eyes [J]. *Retina (Philadelphia, Pa)*, 2014, 34(6):1076-1082.
- [35] ZHAO LQ, ZHU H, ZHAO PQ, et al. A systematic review and meta-analysis of clinical outcomes of vitrectomy with or without intravitreal bevacizumab pretreatment for severe diabetic retinopathy [J]. *British Journal of Ophthalmology*, 2011, 95(9):1216-1222.
- [36] SHARMA T, FONG A, LAI TY, et al. Surgical treatment for diabetic vitreoretinal diseases: a review [J]. *Clin Experiment Ophthalmol*, 2016, 44(4):340-354.
- [37] 谢欣, 陈芝清, 翁燕, 等. 硅油填充术后视网膜再脱离的分析和处理 [J]. *浙江大学学报(医学版)*, 2003, 32(2):159-161.