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### INTRAOPERATIVE CLOSURE OF LARGE FULL THICKNESS MACULAR HOLES WITH PERFLUOROCARBON LIQUID

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#### Introduction:

To report the role of perfluorocarbon liquid (PFCL) and passive extrusion for management of large full thickness macular hole (FTMH).

#### Materials and methods:

This is a retrospective review of 5 large FTMH cases that underwent intraoperative closure utilising perfluorocarbon liquid (PFCL) at the Manchester Royal Eye Hospital from June to September 2020 by two experienced surgeons. A standard pars plana vitrectomy with induction of posterior vitreous detachment was performed for all patients. After internal limiting membrane (ILM) peel, a bubble of perfluorocarbon liquid (PFCL) was injected over the posterior pole and passive extrusion of fluid was performed with a backflush instrument below the PFCL bubble, without touching the FTMH edges, until the FTMH centre was reached. Intraoperative optical coherence tomography (OCT) showed formation of an inner retina roof in all cases and confirmed intraoperative FTMH closure. Complete PFCL removal was performed after fluid-air exchange and gas tamponade was utilised in all cases.

#### Results:

Preoperative FTMH size ranged between 682um and 918um. FTMH closure was achieved in all eyes and visualised intraoperatively with OCT. After an average follow-up of 2 months, we found improvement in the mean BCVA and central scotoma.

#### Conclusions:

FTMH closure can be achieved intraoperatively with the use of PFCL and passive extrusion. The described surgical technique is a valid alternative for repair of large FTMH.

#### Sources:

1. Spiteri Cornish K, Lois N, Scott NW, et al. Vitrectomy with internal limiting membrane peeling versus no peeling for idiopathic full-thickness macular hole. *Ophthalmology* 2014; 121(3):649–655.
2. Wang Y, Xu Z, Zhao X, et al. Therapeutic effect of using autologous platelet concentrate in vitrectomy for macular hole: A Systematic Review and Meta-Analysis. *Retina* 2023; 1;43(11):1833-1841.
3. Michalewska Z, Michalewski J, Adelman RA, et al. Inverted internal limiting membrane flap technique for large macular holes. *Ophthalmology*. 2010 Oct;117(10):2018–2025.
4. Aurora A, Seth A, Sanduja N. Cabbage Leaf Inverted Flap ILM Peeling for Macular Hole: A Novel Technique. *Ophthalmic Surg Lasers Imaging Retina* 2017; 48(10):830–832.
5. Chen SN, Yang CM. Lens capsular flap transplantation in the management of refractory macular hole from multiple etiologies. *Retina* 2016; 36(1):163–170.
6. Grewal DS, Mahmoud TH. Autologous Neurosensory Retinal Free Flap for Closure of Refractory

Myopic Macular Holes. *JAMA Ophthalmol* 2016; 134(2):229–230.

7. Rizzo S, Caporossi T, Tartaro R, et al. A Human Amniotic Membrane Plug to Promote Retinal Breaks Repair and Recurrent Macular Hole Closure. *Retina* 2019; 39(Suppl. 1):S95–S103.

8. Mohammed OA, Pai A. New Surgical Technique for Management of Recurrent Macular Hole. *Middle East Afr J Ophthalmol*. 2017 Jan-Mar;24(1):61–63.

9. Peyman GA, Cheema RA, Conway MD. Closure of chronic macular holes using passive aspiration to the edges of the macular hole. *Ophthalmic Surg Lasers* 2001; 32:486–9.

10. Eyetube website, 2024, accessed 15th of November 2023, <<https://eyetube.net/videos/large-macular-hole-closure-using-pfcl>>

11. Hu Z, Gu X, Qian H, et al. Perfluorocarbon Liquid-Assisted Inverted Limiting Membrane Flap Technique Combined With Subretinal Fluid Drainage for Macular Hole Retinal Detachment in Highly Myopic Eyes. *Retina* 2022; 42(10):p 2008-2012.

12. Takahashi H Kishi S. Tomographic features of early macular hole closure after vitreous surgery. *Am J Ophthalmol* 2000; 130: 192–196

13. Chow DR, Chaudhary KM. Optical coherence tomography-based positioning regimen for macular hole surgery. *Retina* 2015; 35(5):899–907.