Internal Limiting Membrane Peeling versus No Peeling for Idiopathic Full-Thickness Macular Hole: A Pragmatic Randomized Controlled Trial

Noemi Lois, Jennifer Burr, John Norrie, Luke Vale, Jonathan Cook, Alison McDonald, Charles Boachie, Laura Ternent, and Gladys McPherson, for the Full-thickness Macular Hole and Internal Limiting Membrane Peeling Study (FILMS) Group

PURPOSE. To determine whether internal limiting membrane (ILM) peeling is effective and cost effective compared with no peeling in patients with idiopathic stage 2 or 3 full-thickness macular hole (FTMH).

METHODS. This was a pragmatic multicenter randomized controlled trial. Eligible participants from nine centers were randomized to ILM peeling or no peeling (1:1 ratio) in addition to phacovitrectomy, including detachment and removal of the posterior hyaloid and gas tamponade. The primary outcome was distance visual acuity (VA) at 6 months after surgery. Secondary outcomes included hole closure, distance VA at other time points, near VA, contrast sensitivity, reading speed, reoperations, complications, resource use, and participant-reported health status, visual function, and costs.

RESULTS. Of 141 participants randomized in nine centers, 127 (90%) completed the 6-month follow-up. Nonstatistically significant differences in distance visual acuity at 6 months were found between groups (mean difference, 4.8; 95% confidence interval [CI], −0.3 to 9.8; P = 0.065). There was a significantly higher rate of hole closure in the ILM-peel group (56 [84%] vs. 31 [48%]) at 1 month (odds ratio [OR], 6.25; 95% CI, 2.64–14.73; P < 0.001) with fewer reoperations (8 [12%] vs. 31 [48%]) performed by 6 months (OR, 0.14; 95% CI, 0.05–0.34; P < 0.001). Peeling the ILM is likely to be cost effective.

CONCLUSIONS. There was no evidence of a difference in distance VA after the ILM peeling and no-ILM peeling techniques. An important benefit in favor of no ILM peeling was ruled out. Given the higher anatomic closure and lower reoperation rates in the ILM-peel group, ILM peeling seems to be the treatment of choice for idiopathic stage 2 to 3 FTMH. (Clinical Trials.gov number, NCT00286507.) (Invest Ophthalmol Vis Sci. 2011;52:1586–1592) DOI:10.1167/iovs.10-6287

A n idiopathic full-thickness macular hole (FTMH) represents a defect in the fovea—the area of maximum vision of the retina. If left untreated, it often leads to severe central visual loss. FTMH is common, with an estimated incidence of 7.8 persons/100,000 population per year. Macular hole surgery, first developed by Kelly and Wendell in 1991, represents one of the most common procedures performed by vitreoretinal surgeons.

Four stages of FTMH have been described. Randomized controlled clinical trials (RCTs) conducted in the 1990s showed that macular hole surgery was effective for stages 2, 3, and 4.

Peeling the internal limiting membrane (ILM) of the retina was introduced as an additional maneuver in macular hole surgery to improve anatomic and functional outcomes after surgery. Several observational studies suggested a benefit of peeling the ILM (reviewed by Abdelkader and Lois). Furthermore, recent data from two small RCTs undertaken in China and Denmark, which included 49 and 75 patients, respectively, suggested a potential beneficial effect of this operation.

The Full-thickness Macular Hole and Internal Limiting Membrane Peeling Study (FILMS), herein reported, was designed as a pragmatic RCT to test the hypothesis that surgical peeling of the ILM in surgery for idiopathic FTMH (stages 2 or 3), compared with surgery without peeling, improves vision, the likelihood of hole closure, and participant-reported health related quality of life and is cost effective. Pragmatic RCTs are intended to determine the effects of an intervention under the usual circumstances (i.e., normal clinical practice); as opposed to explanatory RCTs which are primarily designed to determine the effects of an intervention under ideal circumstances.

The advantage of a pragmatic design is that if the treatment is effective, it can be implemented in clinical practice.

METHODS

Study Design and Eligibility Criteria

The FILMS study was a multicenter pragmatic RCT. Patients were enrolled by local clinical investigators at nine centers: seven in the United Kingdom and two in the Republic of Ireland. Eligible participants were those with stage 2 or 3 idiopathic FTMH of ≤18 months’ duration and visual acuity (VA) ≤20/40 in the study eye. At each participating center, vitreoretinal surgeons followed their usual clinical practice (including slit lamp biomicroscopy, color and red-free photographs, optical coherence tomography [OCT], fluorescein angiography, and fundus autofluorescence [AF], as required) to stage the FTMH.
and to confirm eligibility. Individuals with stage 1 or 4 FTMH, those with idiopathic FTMH stages 2 to 3 of >18 months' duration with other causes of decreased vision, and those with FTMH related to high myopia or trauma were excluded. Individuals that did not understand English and/or were unable to give informed consent were also excluded. The study adhered to The Medical Research Council Good Clinical Practice Guidelines (1998) and the UK Data Protection Act of 1998. Approval was granted by the Multicenter Research Ethics Committee, local ethics committees, and local hospital trusts of each participating center, and participants' written informed consents were obtained before the initiation of the study. This study adheres to the tenets of the Declaration of Helsinki.

During the recruitment phase, two RCTs of ILM peeling versus no-ILM peeling presented their results. In light of this, an independent Data Monitoring Committee was established and reviewed the external and accumulating FILMS trial evidence and recommended continuing recruitment.

Meetings, involving all individuals participating in this RCT (including vitreoretinal surgeons, optometrists, and photographers, in addition to those responsible for the administration of the trial), were held before the initiation of the study to discuss the methodology of this RCT and the procedures for data collection.

**Study Treatment, Randomization, and Masking**

All participants underwent a combined phacoemulsification and pars plana vitrectomy, including detachment and removal of the posterior hyaloid, followed by a fluid-air exchange and air-gas (12% perfluoropropane (C₃F₈)) exchange. A central telephone IVR system at the trial office (Centre for Healthcare Randomized Trials [ChART], UK NIHR trials unit) was used to randomize participants 1:1 to the procedure alone or the procedure combined with ILM peeling. In the latter group, after the ILM was stained with trypan blue (0.15% trypan blue under air for 3 minutes), it was removed in an area ~1 to 2 disc diameters around the hole. Restaining with trypan blue was permitted at the discretion of the vitreoretinal surgeon. Each vitreoretinal surgeon judged whether the peeling of the ILM was complete, as defined by a removal of the ILM all around the hole within a minimal extension of 1 disc diameter centered on the center of the hole, or incomplete if otherwise. A minimization algorithm (according to Taves, with $P = 0.999$) was used that allocated treatment with respect to minimizing imbalance in trial center, distance vision in the study and fellow eye (20/40–20/160; 20/200–20/500; and <20/500), stage of the macular hole (2 or 3), duration of symptoms (~1 year; >1 year), and lens status (phakic, etc.).
aphakic, or pseudophakic). Participants were followed up at 1, 3, and 6 months after surgery.

Further surgical intervention was allowed in either group according to standard clinical practice if the macular hole remained open after surgery, including ILM peeling in participants initially randomized to no peel. All participants were instructed to posture face down for a period of 5 to 7 days after surgery and received a posturing chart to record the time postured.

Participants and optometrists who undertook the visual function evaluation of the participants were masked to the treatment allocation. Vitreoretinal surgeons, who evaluated the status of the macula hole before and after surgery, were unmasked.

**Outcomes**

The primary outcome was the mean difference between treatment groups in the Early Treatment Diabetic Retinopathy Study (ETDRS) distance VA score at 6 months. Secondary outcomes included ETDRS distance VA at 3 months, near VA (Bailey-Lovie) at 3 and 6 months, contrast sensitivity (Pelli-Robson) at 6 months, reading speed (MN-Read) at 6 months, anatomic closure of the macular hole at each time point (1, 3, and 6 months), participant-reported outcomes, as determined by the EQ-5D and VFQ-25 questionnaires, at 6 months, costs to the health service and the participant, incremental costs per quality adjusted life year (QALY), and adverse events.

Macular hole closure, complications, and further surgery were unmasked.

Vitreoretinal surgeons, who evaluated the status of the macula hole before and after surgery, were masked to the treatment allocation. Vitreoretinal surgeons followed their usual clinical practice around them were considered to be open). At each participating center, vitreoretinal surgeons followed their usual clinical practice (including slit lamp biomicroscopy, color and red-free photography, optical coherence tomography [OCT], fluorescein angiography, and fundus autofluorescence [AF], as required), to determine whether the macular hole was open or closed.

**Sample Size and Statistical Analysis**

Assuming a common SD of 12 ETDRS points in the two randomized groups, to detect a 6-point ETDRS score difference (an effect size of 0.5) using a two-sample, two-sided t-test at a 5% level of significance and 80% power, it was estimated that 64 participants would be necessary in each group. This calculation was based on data from published studies.14,15

The statistical analysis was based on the intent-to-treat principle: participants grouped as randomized, irrespective of subsequent compliance. The primary outcome was compared between the two groups by using a linear regression model adjusted for the baseline score and minimization covariates. Statistical significance for the primary and secondary outcomes were based on two-sided tests with $2P \leq 0.05$ taken as the criterion for statistical significance. The principal analysis was based on available case data with no imputation of missing values. Sensitivity analyses of the primary and macular hole closure outcomes, which assessed the impact of missing data by imputing extreme values (lowest and highest/open and closed, respectively) were also undertaken. In addition, the primary outcome was analyzed according to the prespecified subgroups (lens status, duration, and stage of the macular hole) by including the corresponding interaction term(s) in the regression model, using stricter criteria for statistical significance ($2P \leq 0.01$). Macular hole closure, complications, and further surgery were

**Table 1. Baseline Characteristics**

<table>
<thead>
<tr>
<th>Participant Characteristic</th>
<th>Peel</th>
<th>No Peel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study eye, n/N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>40/71 (56)</td>
<td>38/66 (58)</td>
</tr>
<tr>
<td>Left</td>
<td>31/71 (44)</td>
<td>28/66 (42)</td>
</tr>
<tr>
<td>Sex, n/N (%) (female)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, median years (IQR)</td>
<td>70, 70.30 (5.72)</td>
<td>66, 70.58 (6.02)</td>
</tr>
<tr>
<td>Duration of symptoms, N, mean months (SD)</td>
<td>71, 7.0 (4.2)</td>
<td>66, 6.5 (4.0)</td>
</tr>
<tr>
<td>Status of lens, n/N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phakic</td>
<td>67/71 (94)</td>
<td>64/67 (96)</td>
</tr>
<tr>
<td>Grade nuclear standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>20/64 (31)</td>
<td>19/60 (32)</td>
</tr>
<tr>
<td>1 to &lt;3</td>
<td>44/64 (69)</td>
<td>41/60 (68)</td>
</tr>
<tr>
<td>3 or more</td>
<td>0/64 (0)</td>
<td>0/60 (0)</td>
</tr>
<tr>
<td>Grade PSC standard</td>
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<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>48/52 (92)</td>
<td>43/50 (86)</td>
</tr>
<tr>
<td>1 to &lt;3</td>
<td>4/52 (8)</td>
<td>6/50 (12)</td>
</tr>
<tr>
<td>3 or more</td>
<td>0/52 (0)</td>
<td>1/50 (2)</td>
</tr>
<tr>
<td>Grade cortical standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>34/53 (64)</td>
<td>35/49 (71)</td>
</tr>
<tr>
<td>1 to &lt;3</td>
<td>18/53 (34)</td>
<td>14/49 (29)</td>
</tr>
<tr>
<td>3 or more</td>
<td>1/53 (2)</td>
<td>0/49 (0)</td>
</tr>
<tr>
<td>Pseudophakic</td>
<td>4/71 (6)</td>
<td>3/67 (4)</td>
</tr>
<tr>
<td>Stage of macular hole, n/N (%) (clinical classification)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>29/71 (41)</td>
<td>25/66 (38)</td>
</tr>
<tr>
<td>III</td>
<td>42/71 (59)</td>
<td>41/66 (62)</td>
</tr>
<tr>
<td>EQ-5D, N, mean (SD)</td>
<td>65, 0.80 (0.21)</td>
<td>63, 0.88 (0.13)</td>
</tr>
<tr>
<td>VFQ-25, N, mean (SD)</td>
<td>66, 79.9 (15.5)</td>
<td>64, 80.3 (17.5)</td>
</tr>
<tr>
<td>Distance visual acuity (ETDRS) score, N, mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study eye</td>
<td>71, 48.1 (13.8)</td>
<td>66, 50.0 (10.6)</td>
</tr>
<tr>
<td>Fellow eye</td>
<td>71, 76.1 (13.5)</td>
<td>66, 75.7 (17.1)</td>
</tr>
<tr>
<td>Near visual acuity (Bailey-Lovie), N, mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study eye</td>
<td>67, 0.86 (0.30)</td>
<td>65, 0.81 (0.31)</td>
</tr>
<tr>
<td>Fellow eye</td>
<td>67, 0.32 (0.34)</td>
<td>64, 0.27 (0.32)</td>
</tr>
<tr>
<td>Contrast sensitivity (Pelli-Robson), N, mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study eye</td>
<td>66, 30.8 (5.0)</td>
<td>65, 30.8 (5.0)</td>
</tr>
<tr>
<td>Reading speed MN read, N, mean (SD)</td>
<td>68, 137.76 (55.7)</td>
<td>64, 138.6 (48.8)</td>
</tr>
<tr>
<td>Binocular</td>
<td>66, 174.4 (44.5)</td>
<td>63, 174.2 (45.1)</td>
</tr>
</tbody>
</table>

14,15

**Notes**

1. The statistical analysis was based on the intent-to-treat principle: participants grouped as randomized, irrespective of subsequent compliance.
2. The primary outcome was compared between the two groups by using a linear regression model adjusted for the baseline score and minimization covariates.
3. Statistical significance for the primary and secondary outcomes were based on two-sided tests with $2P \leq 0.05$ taken as the criterion for statistical significance.
4. The principal analysis was based on available case data with no imputation of missing values.
5. Sensitivity analyses of the primary and macular hole closure outcomes, which assessed the impact of missing data by imputing extreme values (lowest and highest/open and closed, respectively) were also undertaken.
6. In addition, the primary outcome was analyzed according to the prespecified subgroups (lens status, duration, and stage of the macular hole) by including the corresponding interaction term(s) in the regression model, using stricter criteria for statistical significance ($2P \leq 0.01$). Macular hole closure, complications, and further surgery were
analyzed by using a logistic regression model with adjustment for the minimization covariates (except study center). Analyses of health-related quality of life measures (EQ-5D and VFQ-25) and secondary measures of visual function (contrast sensitivity, reading speed, and distance and near visual acuity) were undertaken by using linear regression adjusted for baseline score, in addition to the minimization variables (except study center). A mean difference was reported for a continuous outcome and an odds ratio (OR) for a binary outcome. The corresponding confidence interval (CI) and P value are reported.

Economic Evaluation
A cost per participant for each arm of the trial was calculated, based on the use of primary and secondary care services. Resource utilization per participant was estimated using patient questionnaires and information recorded in the 3- and 6-month case report forms. Unit costs/prices were obtained by using information from the National Health Service, published estimates for health care services and/or interventions, and study-specific estimates. QALYs were calculated from responses to the EQ-5D using the area under the curve method with EQ-5D responses valued using U.K. population tariffs. Point estimates for mean costs and mean QALYs were derived for both the ILM-peel and no-ILM-peel groups. The mean difference in costs and QALY were estimated using analysis of covariance adjusting for minimization factors and baseline EQ-5D for QALYs. These data were subsequently used to estimate an incremental cost per QALY gained.

The results were presented as point estimates of mean incremental costs, QALYS, and incremental cost per QALY. Measures of variance for these outcomes were estimated by bootstrapping costs, QALYs, and incremental cost per QALY. The incremental cost effectiveness data obtained by the bootstrapping exercise were presented in terms of cost effectiveness acceptability curves (CEACs).

Other Methodological Aspects
Further details of the methodology used in FILMS have been published elsewhere. As stated in the published protocol, in addition to the above, color photographs and red-free images were obtained in all participating centers at each time point (baseline, 1, 3, and 6 months) and evaluated, in a masked fashion and using a computer program, to objectively determine the size of the hole before surgery and the status of the hole after surgery. These data, not presented here, will form part of a separate study in which the effect of the size of the macular hole on outcomes after surgery is evaluated. Furthermore, a 24-month follow-up evaluation will be conducted.

RESULTS

Study Participants
Between July 1, 2005, and January 31, 2009, 217 patients were approached; of these, 76 were ineligible (n = 44) or declined (n = 32) taking part in the study. One hundred forty-one agreed to take part, and were randomized (see CONSORT diagram; Fig. 1). Of these, three were later identified as stage 4 FTMH and therefore were regarded as postrandomization exclusions and were not included in the analyses. Randomized treatment groups were generally well balanced with respect to baseline characteristics with the exception of their sex and EQ-5D scores (Table 1).

Surgical Details and Intraoperative Complications
Table 2 summarises details of the surgery and intraoperative complications. More participants in the no-ILM-peel group had surgery performed under general anesthesia. On average, the surgery took longer if the ILM was peeled than if it was not removed (72.6 vs. 62.6 minutes). In the ILM-peel group, the ILM was completely removed in 64 of 67 participants who underwent surgery; in three participants the ILM was not removed; in one participant it was unknown whether surgery had been performed (Fig. 1). Four participants in the no-ILM-peel group underwent ILM peeling and represented protocol deviations, but they were retained in the analyses. No statistically significant differences in the number of intraoperative complications were found between groups (38 [57%] vs. 28 [42%]; OR, 1.73; 95% CI, 0.86–3.50; P = 0.160). In both groups, the most common intraoperative complication was the occurrence of retinal tears.

Primary and Secondary Outcomes
No statistically significant differences in distance visual acuity at 6 months (primary outcome) were detected between groups (OR, 4.8; 95% CI, 0.3–9.8; P = 0.063; Table 3). The result was not sensitive to missing data based on the sensitivity analyses (results not shown). However, an adjusted mean difference of 5 ETDRS letters was observed in favor of the ILM-peel group. None of the subgroup analyses of the primary outcome were found to be statistically significant (data not shown). No statistically significant differences were observed in other functional outcomes at any of the time points studied between groups (Table 3). At the 1-month follow-up visit, macular hole closure was observed in 56 (84%) participants in the ILM-peel group compared with 31 (48%) in the no-ILM-peel group; this difference was statistically significant (OR, 6.23; 95% CI, 2.01–19.30; P < 0.001). No statistically significant difference in rates of hole closure between the ILM-peel and no-ILM-peel groups was observed at 3 and 6 months. The sensitivity analysis results for macular hole closure did not change the findings. A post hoc subgroup analysis of macular hole closure by stage of the hole showed no significant difference (OR, 0.46; 95% CI, 0.04–4.99; P = 0.400). No statistically significant differences in responses to the EQ-5D and VFQ-25 scores were observed between groups.

Postoperative Complications
No statistically significant differences in the number of complications after initial surgery were found between groups (21
Rhegmatogenous retinal detachment occurred in 5% and 3% of cases in the ILM-peel and no-ILM-peel groups, respectively. Postoperative complications are summarized in Table 4. Eight (12%) patients in the ILM-peel group compared with 31 (48%) in the no-ILM-peel group required at least one further surgery (OR, 0.14; 95% CI, 0.05–0.34; P = 0.001; Table 4). This difference was driven by 25 (38%) participants in the no-ILM-peel group undergoing peeling of the ILM within the follow-up period. There was one reopening of the macular hole in the no-ILM-peel group and none in the ILM-peel group.

**Economic Evaluation**

The economic analysis revealed that the mean cost of care was £2550 in the ILM-peel group and £2974 in the no-ILM-peel group (difference, £424; 95% CI, 1045 to 182). The main determinant of this difference in mean costs appeared to be the increased need for subsequent surgery in the no-ILM-peel group. The mean unadjusted QALY scores for each group were 0.413 in the ILM-peel group and 0.438 in the no-ILM-peel group (difference, 0.025; 95% CI, 0.024 to 0.045). The difference in QALYS adjusted for baseline EQ-5D scores and other minimization factors was 0.002 (95% CI, −0.01 to 0.013). The difference in costs and effects was not statistically significant at the 5% level. However, based on the bootstrapped estimates of cost effectiveness, it is probable that ILM peeling would be cost effective at typical threshold values for society’s willingness to pay for a QALY (90% chance of being considered cost effective when society’s willingness to pay for a QALY is £20,000).

**DISCUSSION**

FILMS found no evidence of a difference between groups in distance visual acuity. The observed difference, which favored ILM peeling, however, was possibly of a clinically relevant magnitude (5 ETDRS letters). Furthermore, an important benefit in favor of no-ILM peeling was ruled out. This, together with the higher rates of macular hole closure and the corresponding fewer reoperations needed in the ILM-peel group suggests that ILM peeling is the treatment of choice for patients with stage 2 to 3 FTMH.
Participants randomized to the no-ILM peel group underwent ILM peeling if the macular hole remained open; this most likely explains the lack of difference in macular hole closure rates at 3 and 6 months. The difference in the number of reoperations was the main driver of the difference in cost between the two procedures. Indeed, the results suggest that there is a more than 90% chance that ILM peeling is less costly than the no-peeling technique. Importantly, data from this study support a lack of a deleterious effect of ILM peeling in visual function, one of the main concerns raised about performing ILM peeling.21 The functional and anatomic outcomes achieved in FILMS are consistent with those from two recently published smaller trials comparing macular hole surgery with or without ILM peeling.10,11 The benefit of ILM peeling has also been suggested by the results of one other RCT very recently completed, which included only participants (n = 80) with large holes (>400 µm) and which has been published to date only in abstract form (Tadayoni R, et al. IOVS 2009;50:ARVO E-Abstract 5206).

Rates of primary hole closure (the closure of the hole with a single surgery) of 84% and 48% achieved in the ILM-peel and no-ILM-peel groups at 1 month, respectively, in FILMS may seem lower than those reported in a previously published no-ILM-peel group at 1 month, respectively, in FILMS may have had enough power to rule out a clinically significant difference in favor of peeling for the primary outcome. From the anatomic results in FILMS is comparable to those obtained in one of the recently published RCTs with inclusion criteria, definition for hole closure, and surgical protocol similar to those of FILMS, in which macular hole closure at 3 months was achieved in 44% and 89% in the no-ILM-peel group and in the trypan blue-assisted ILM group, respectively.10,11 Thus, it is likely that these lower rates of closure are representative of those in real clinical practice.

Cataract surgery was performed in FILMS at the time of the macular hole repair. The surgery avoided progression of preexisting cataracts, which would have acted as a possible confounder in the evaluation of the functional results. Furthermore, as complications reasonably accredited to the combined procedure seemed to be few and had no deleterious effects on vision (Table 4), phacovitrectomy for FTMH appears to be a reasonable and convenient option for patients and may be a more efficient use of resources. FILMS represents the largest RCT that has been conducted to date to address the value of ILM peeling in surgery for idiopathic FTMH and is the only one that has included an evaluation of the quality of life and cost effectiveness of the interventions used. Although large for the field of ophthalmology and specifically for macular hole, this trial may not have had enough power to rule out a clinically significant difference in favor of peeling for the primary outcome. From a purely scientific viewpoint, the high rate of reinterventions and large proportion of participants in the no-ILM-peel group who subsequently underwent ILM peeling complicates the interpretation of the results. However, it is entirely consistent with clinical practice and naturally follows from the intent-to-treat philosophy as a comparison of two intervention pathways.

FILMS randomized 141 participants (90% completed the 6-month follow-up) in nine centers in the United Kingdom and Eire. The study was intentionally designed as a pragmatic, as opposed to a more explanatory, trial thereby increasing the external validity (generalizability) of its findings by reflecting decision-making in clinical practice. Vitreoretinal surgeons determined the diagnosis and staging of FTMH and its status after surgery and the need for further surgery based on their routine clinical practice. Participating surgeons used their routine techniques to induce a posterior hyaloid detachment, to peel the ILM (with the exception of the use of trypan blue to stain the ILM), and to achieve an adequate gas exchange.

In conclusion, data from FILMS suggest that ILM peeling is a safe, clinically superior, more cost-effective approach than no ILM peeling to treat patients with idiopathic stage 2 or 3 FTMH and thus may be considered the treatment of choice for patients with this common vitreoretinal disease.

Acknowledgments

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References


APPENDIX

FILMS Study Group

Clinical Investigators: Hatem Atta, Stephen Beatty, Catherine Cleary, Andrew Dick, John Ellis, John Forrester, Carl Groeneveld, Richard Haynes, Henrich Heimann, Muhammad Irfan Khan, Dara Kilmartin, Noemi Lois, John Murdoch, Asif Orakzai, CK Patel, Ian Pearce, Tarik Saddik, David Steel, and David Wong

Optometrists and Local Co-ordinators: Charles Cottrill, Cherry Daly, Laura Duncan, Karon McEwing, Sarah Muir, Anita Murphy, Stan Keys, Lynda Lindsell, and Valerie Tompkin

Photographers: Terri Ainley, Victor Beatty, Gillian Benner son, Anne Bolton, Jon Brett, Alison Farrow, Ronnie Jackson, Tony Johnston, Marie Kinsella, Stephen Neilson, Hugh Nolan, Sarah Stanley, and Jim Talbot

Medical Imaging: Ayyakkawnu Manivannan

Data Monitoring Committee: Gordon Murray (Chair), Bill Aylward, and Tom Williamson