

Minimally invasive retinal detachment has better outcomes, clinical trial findings

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A minimally invasive treatment for retinal detachment gives patients sharper vision, less distortion and reduced side-effects, according to the findings of a randomized controlled trial performed at St. Michael's Hospital in Toronto.

The findings have been published in *Ophthalmology*, the journal of the American Academy of Ophthalmology.

"The most commonly offered treatment for a [retinal detachment](#) in North America is an operating room surgery called a vitrectomy. The results of this study clearly demonstrate that many retinal detachments will have better results for [patients](#) with an alternative minimally invasive office procedure," said co-principal investigator Dr. Rajeev H. Muni, a vitreoretinal surgeon at St. Michael's and researcher at the hospital's Li Ka Shing Knowledge Institute.

"Although the better vision with the minimally [invasive treatment](#) (called pneumatic retinopexy, or PnR) is the most important finding of the study—and it should change how most retina specialists treat simple retinal detachments—we cannot ignore that PnR is also significantly less expensive to perform than vitrectomy (PPV), and offers significant hope to patients with retinal detachments in developing countries who would otherwise not be able to access care," said Dr. Muni.

"There are many countries where patients simply don't get treated in time because they can't afford it. There are places where people with a detached retina just go blind."

Dr. Roxane J. Hillier, the trial's other co-principal investigator who is now based in the United Kingdom, said Europe has not yet fully embraced PnR primarily because of traditional practice patterns and misconceptions about the minimally invasive procedure.

"These findings cannot be ignored, by physicians and patients alike," said Dr. Hillier. "The next step is to educate surgeons worldwide about the 'art' of this elegant procedure, so that the excellent outcomes achieved in this trial can be replicated worldwide."

The trial involved 176 patients who were randomly assigned to either PnR or PPV after being diagnosed with a retinal detachment. The primary outcome being researched was [visual acuity](#) one year after treatment, as well as a metamorphopsia score for visual distortion, and anatomical success.

Patients who underwent PnR scored an average of 4.9 letters better on a standardized visual acuity test compared to those who had PPV, and had less visual distortion. A greater proportion of patients who had PnR achieved driving vision (20/40) in the affected eye (90.3 percent vs 75.3 percent). Although patients who had PPV [treatment](#) did have higher rates of primary anatomical success (93.2 percent versus 80.8 percent), patients who failed PnR still had very good visual outcomes, with secondary anatomical success being virtually identical between the groups.

Patients in the PnR group also reported quicker recoveries and better quality of life in the six months after being treated.

"One downside of PPV is that many patients will require a second operation, cataract surgery, within a year. This significantly delays visual recovery and can be avoided for the most part with PnR," said Dr. Hillier.

Dr. Paul E. Tornambe, past president of the American Society of Retina Specialists, congratulated Drs. Muni and Hillier and the rest of their team "for completing a well-conceived and well-done" prospective randomized clinical trial.

"It is rare to prove a procedure (in this case PnR)

not only results in better vision, is less invasive, restores the anatomy of the eye to its pre-detachment state, and avoids the operating room, but also costs significantly less than the more commonly used operation," said Dr. Tornambe.

Dr. Muni also highlighted that the trial was the first to demonstrate that PnR can minimize visual distortion following retinal detachment repair and potentially avoid the so-called "Picasso effect," which causes some patients to suffer significant impairments to their vision.

"It can be debilitating, patients can read the letters on the eye chart, but everything is warped," Dr. Muni said. "Many people end up learning to completely ignore the involved eye. The issue of distortion is very important for patients, and the fact that it can be minimized with PnR is likely related to the better quality of retinal reattachment obtained with the procedure."

Dr. Hillier and Dr. Muni also have ongoing studies trying to explain specifically why patients with PnR seem to have a better quality retinal reattachment, and they expect to present convincing data within the next year that compares the two treatments from an anatomical perspective at the microscopic level.

"Our group at St. Michael's is taking this work one step further and currently enrolling patients in another randomized controlled trial comparing the two treatments in more complex retinal detachments," said Dr. Muni.

More information: Roxane J. Hillier et al, The Pneumatic Retinopexy versus Vitrectomy for the Management of Primary Rhegmatogenous Retinal Detachment Outcomes Randomized Trial (PIVOT), *Ophthalmology* (2018). DOI: [10.1016/j.ophtha.2018.11.014](https://doi.org/10.1016/j.ophtha.2018.11.014)

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