



Intraocular Gases and Oil

Vitrectomy surgery for certain conditions, such as retinal detachment and macular hole, may require the use of substances inside the eye that help press the retina against the wall of the eye so the retina can heal properly. For this purpose, the fluid and vitreous jelly of the eye can be replaced with one of the following substances: sterile air, specialized expanding gases, or silicone oil. Each of these substances has certain particular qualities, and your doctor will determine which one is most beneficial in your case.

The use of these agents might require that you position your head in a specific manner after the procedure (sometimes even face down) for a determined period of time - sometimes even up to two weeks after surgery. The duration of head positioning will be determined by your doctor during and after the surgery and discussed with you.

Air

Air is the shortest-acting agent that is used for the above purpose. Air is absorbed by the eye within a week, so it is used only when the retina needs to be supported internally for a few days. Air in the eye will severely limit vision as long as the bubble remains in the line of sight. As the air absorbs, the bubble will shrink and depending on how well the retina is functioning, you will be able to see more and more around the bubble until it is completely gone. While the eye is filled with air, you will not be able to fly or climb to high altitudes because air expands at low atmospheric pressures. Because the air is absorbed over time by the eye, a second surgery is not needed to remove the bubble.

Gas

Two types of gas are commonly used in the eye. One is an intermediate-acting gas that is absorbed by the eye within 2 to 4 weeks. The other is a long-acting gas that is absorbed by the eye within 6 to 8 weeks. These agents are used when the retina needs to be supported internally for a variable length of time. Like air, gas in the eye will severely limit vision as long as the bubble remains in the line of sight. As the gas absorbs, the bubble will shrink and depending on how well the retina is functioning, you will be able to see more and more around the bubble until it is completely gone. While the eye is filled with gas, you will not be able to fly or climb to high altitudes because air expands at low atmospheric pressures. Because the gas is absorbed over time by the eye, a second surgery is not needed to remove the bubble.

Oil

Silicone oil can also be used to fill the eye and support the retina after vitrectomy surgery. Silicone oil does not interfere with vision as much as air and gas, and depending on how well the retina is functioning, limited to significant vision may be possible through an oil bubble. The oil is clear and inert, and unlike air and gas, silicone oil is not absorbed by the eye. It can remain in the eye for months or sometimes years to provide long-term support for the retina after surgery. Since oil is not absorbed by the eye, a second surgery will be necessary to remove the bubble in the future.