

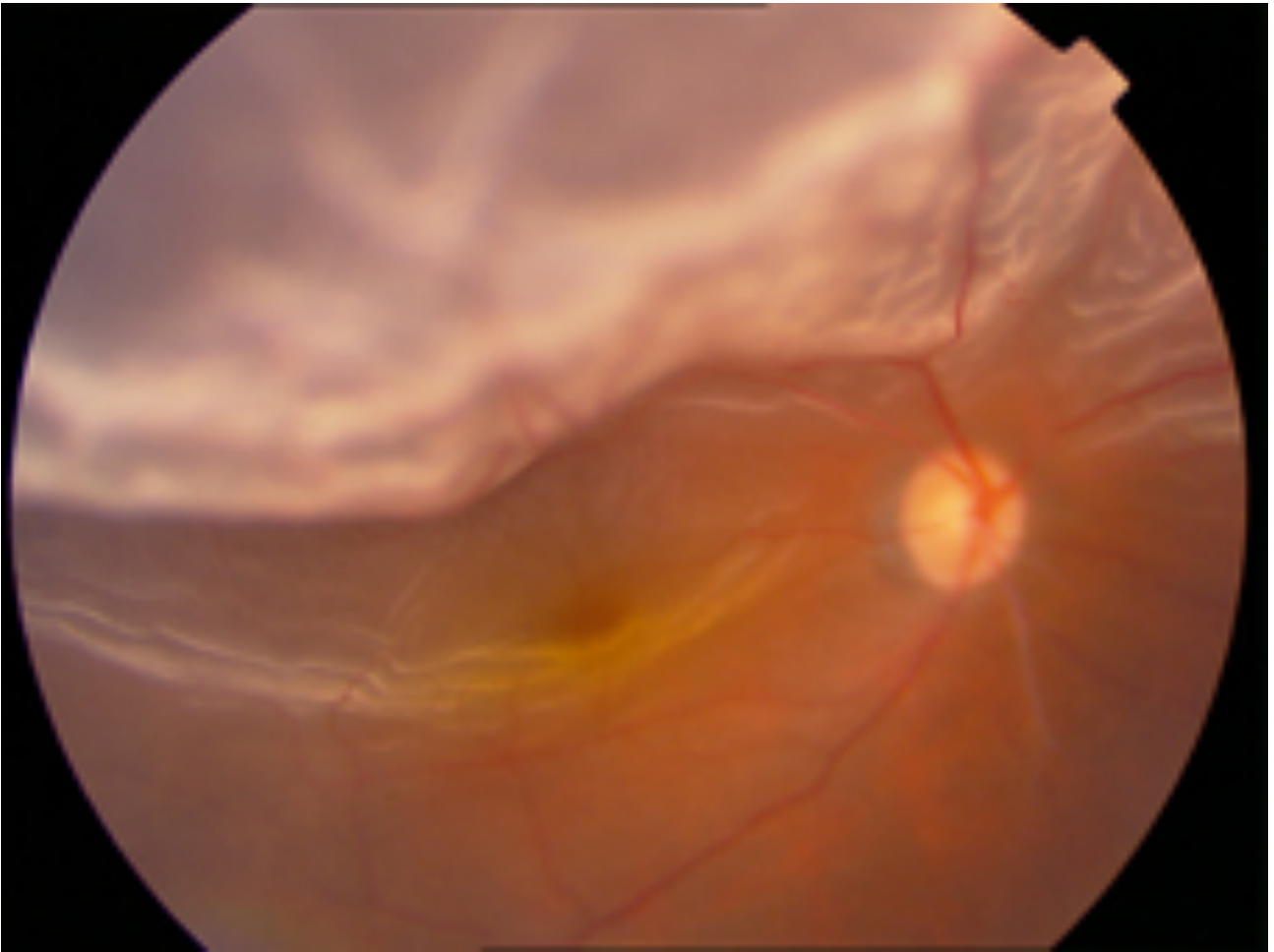
Scleral Buckles for Sutureless Retinal Detachment Surgery

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Technology description

This invention features a set of sutureless scleral buckles and encircling band for use in connection with retinal detachment surgery. These explants are particularly configured so as to allow anchoring on eye globe without any suture.

The retina is a thin sheet of light sensitive nerve tissue lining the inside of the eye which functions like the film of camera. Retinal detachment (RD) occurs when the retina separates from the back wall of the eye and is usually caused by break in the retina. RD is one of the major human eye diseases which can lead to severe visual impairment or even blindness unless it is treated surgically. Scleral buckling surgery is one of the most commonly performed operations to treat RD. In the surgery, silicone rubber explants are sewed externally on to the eye wall (sclera) overlying the retinal tear. The explants indent the sclera against the retina and close retinal tear by relieving the force tracking on the tear.



An image of Retinal Detachment

These explants are known as scleral buckles and they have a variety of sizes and shapes to treat different size of retinal breaks. Usually, a long silicone strip known as encircling band is also sutured and tightened onto the globe to further relieve forces pulling the retina up. To complete the surgery, cryotherapy is applied externally to achieve a permanent adhesion between the retina and underlying tissue, to prevent the retina from re-detachment.

Although scleral buckling surgery is effective, it is also notorious to be a skill demanding surgery with potential major complication. The buckle and encircling band are sutured onto the sclera with fine needle and the suture depth is aimed at half thickness of the very thin sclera (0.5 - 1 mm only). If the placement of needle is too deep, the sclera will be accidentally perforated. Perforation of sclera may damage the underlying tissue, leading to bleeding or retinal hole formation, which makes the surgery fails. However, if the placement of needle is too shallow, the buckle or encircling band could be loosened or even exposed out form the eye after the surgery. Loosen or exposed buckle lead to failed surgery, infection and pain. If scleral buckling surgery can be performed without any suturing, the risk is much reduced and the successful rate is increased. This invention is a new design of a surgical product for performing scleral buckle surgery without using any suture.

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