Navilas® 577 laser system for retinal laser photocoagulation

TECHNOLOGY

The Navilas® 577 laser system is a device developed by OD-OS GmbH and distributed by Instinctive Limited for treating patients who require retinal laser photocoagulation.

The technology is intended for use in the treatment of clinically significant diabetic macular oedema, proliferative diabetic retinopathy, sub-retinal neovascularisation, central and branch retinal vein occlusion, lattice degeneration and retinal tears and detachments.

The Navilas® 577 laser system consists of three components: a 577nm photocoagulating and microsecond pulsed subthreshold laser, a fundus camera (including fluorescein angiography, infrared & true-colour imaging in real-time for enhanced visibility), and a retinal eye tracking system that detects inadvertent eye movements and adjusts the laser for precise single spot and evenly spaced grids. Patients place their chin and forehead on the metal frame attached to the Navilas® 577 laser system and the device navigated laser uses a camera with eye tracking capabilities to give image stabilisation and automated laser positioning for treatment delivery. The device generates a report containing the relevant laser parameters, treatment plan and post treatment image, which can be used for follow-up decision making or standardising treatment regimens.

The Navilas® 577 laser system is CE marked, with an expected NHS launch in June 2016.

POTENTIAL FOR IMPACT

Laser photocoagulation surgery is used to treat a number of eye diseases and has become widely used in recent decades. During the procedure, a laser is used to finely cauterise ocular blood vessels to attempt to bring about various therapeutic benefits. The surgery is used in the treatment of diabetic retinopathy and age related macular degeneration, having
been proven to lower the risk of severe vision loss from these diseases. Other eye diseases treated by this method include retinal ischemia, neovascularisation of the choroid or retina, glaucoma, and a complication of cataract surgery known as posterior capsular opacification. Side effects and complications of laser photocoagulation are not infrequent although they are rarely severe. They include loss of peripheral vision, worsening visual acuity, reduced night vision, and haemorrhaging in the eye.

The company claim that because the Navilas® 577 laser system can combine fluorescein angiography, optical coherence tomography (OCT) and other image modalities, treatment planning is facilitated as laser therapy delivery is more precise. The Navilas® 577 laser system can provide a precise treatment plan using the diagnostic image, to target the areas needed. It thus facilitates standardised treatment, monitoring and follow-up procedures. Moreover, the company claim that this device is safer, more accurate and less painful for patients when performing focal/grid laser treatments than conventional lasers and could reduce the level of patient discomfort and improve compliance.

It is also claimed that using navigated photocoagulation rather than conventional laser treatment leads to a reduction in the number of anti-vascular endothelial growth factor (VEGF) injections. Intra-ocular anti-VEGF injections are usually given at an advanced stage when vision is threatened. This technology may also save NHS costs by reducing the amount of anti-VEGF injections patients require as well as significantly reducing outpatient follow-up visits.

If effective, the Navilas® 577 laser system is predicted to have an impact on the following domains of the NHS Outcomes Framework (www.england.nhs.uk/resources/resources-for-ccgs/out-frwrk):

Domain 1 Preventing people from dying prematurely;
Domain 2 Enhancing quality of life for people with long-term conditions.

**EVIDENCE**

**PUBLISHED PAPERS**


**COMPLETED UNPUBLISHED STUDIES**

TrialRegister.nl. Navilas™ laser versus classic frequency doubled Nd-YAG (532 nm) laser therapy for diabetic macular edema. A randomized study analyzing the effect on central visual function.
The Navilas® 577 laser system is a device used for treating disease affecting the retina in the eye resulting from nerve damage. This technology combines information about diseased areas with laser therapy to allow a pre-planned, computer-guided and digitally documented treatment to be performed by the eye specialist. This technology uses “retina navigation” to help surgeons deliver highly accurate laser treatment. The company who makes this device claim that the Navilas® 577 laser system is safer, more accurate and less painful for patients than conventional lasers.