THE BIONIC SURGEON

New robotics technology can enhance skill in retinal surgery.
Roibeard O’hEineachain reports

The new PRECEYES Surgical System can significantly improve the accuracy and precision in the performance of retinal procedures, according to Marc de Smet MD, PhD, Lausanne, Switzerland.

"For us as surgeons, robotics are best used as an assistant type of device. It is not meant to replace us, but rather to assist in carrying out precision tasks that are difficult or novel, or which go beyond our human capabilities," he told the 15th EURETINA Congress in Nice, France.

The robotics system uses the point of insertion into the eye as the point of reference for the motions of the instruments. The device has a pen-like interface through which the surgeon controls the robotic manipulator that controls the instruments inside the eye with up to 10.0μm precision.

"One of the nice features is that, as you manipulate the interface, the tip of the pen translates exactly to the tip of the instrument inside the eye. When you are peeling a membrane you can define your plane so you don’t end up hitting the surface below," explained Prof de Smet, who is Chief Medical Officer for the Preceyes company.

Moreover, the PRECEYES Surgical System further facilitates retinal surgery by keeping track of the precise position within the eye where the surgery is taking place. Therefore, when exchanging instruments the surgeon can quickly return to the site of surgery, he said. "For a robotic system to be efficient it should be intuitive. In other words, you shouldn’t have to spend your time remembering the sequence of events programmed to occur with the device," he added.

IMPROVED PERFORMANCE

He noted that in a study comparing surgeons with and without the PRECEYES Surgical System, performing procedures with automated assistance increased surgeons’ accuracy in all three major axes, but most notably so in depth.

Improvements were up to 68-fold in accuracy and 12.5-fold in precision in a fully automated mode, and up to 3.5-fold in an assisted mode. The maximum deviations were also significantly reduced when using the robotic system.

In addition, the PRECEYES Surgical System doesn’t take up much space. It can therefore be easily and conveniently combined with non-robotic surgery, without the need to move the patient mid-procedure.

Some of the future challenges include the development of more advanced and automated functionalities. Developing new manoeuvres using the surgical robot involves the translation of surgical manoeuvres into independent engineering steps, which then can be computerised.

"The new functionalities will be adaptable to surgeons’ preferences. And since you can record the motions you make during surgery, it can help you find the best way to do a procedure, optimising your surgical skills or developing new ones," Prof de Smet added.

Marc de Smet: marcedesmet@preceyes.nl

For more information on the system visit: www.preceyes.nl
Saturday 10 September
Morning Symposia
10.00 – 11.00
Alcon Satellite Meeting
Sponsored by Alcon
Allergan Satellite Meeting
Sponsored by Allergan
Spark Therapeutics Satellite Meeting
Sponsored by Spark Therapeutics

Saturday 10 September
Lunchtime Symposia
Boxed Lunch Included
13.00 – 14.00
Novartis Satellite Meeting
Sponsored by Novartis
Bayer Symposium III
Sponsored by Bayer
DORC Satellite Meeting
Sponsored by DORC
Second Sight Medical Products Satellite Meeting
Sponsored by Second Sight
Théa Satellite Meeting
Sponsored by Théa

Saturday 10 September
Lunchtime Symposia
Boxed Lunch Included
13.00 – 14.00
Topcon Satellite Meeting
Sponsored by Topcon
The Future of Retina Technology is Approaching
Moderator: Y. Le Mer FRANCE
Sponsored by BAUSCH+LOMB
Quantel Medical Satellite Meeting
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