PathFinder is a new neurosurgical robot incorporated in clinical trials in Nottingham. It is a collaboration between Prosurgics Limited and the University of Nottingham. PathFinder can be used as a frameless system. A small camera mounted on the robot's arm searches for fiducial skin markers that are positioned on the patient's head. It then compares the marker positions to those on the pre-operative CT scan. It thus performs an intelligent and flexible map-reading exercise of the patient's head automatically.

The first stage of the trial aimed to compare the accuracy with traditional stereotactic frame, with PathFinder moving a cannula to a position above the required target. It then locks its arm providing a rigid platform for the surgeon to insert instruments accurately into the brain.

We have successfully tested the first stage on over 20 patients with informed consent. The PathFinder now routinely acquires its target with millimetre accuracy. In the second stage of the trial which we are continuing now the PathFinder will perform the actual biopsy using dedicated interchangeable tools attached to the end of its arm. In the third stage PathFinder will be used in a wide range of surgical procedures exploiting its ability to rapidly drive to a large number of multiple targets within the brain through a single burr hole.

This may be used in procedures requiring high spatial accuracy such as instillation of chemotherapeutic or radiotherapeutic agents and gene therapy.

References: