



Ellen Wright of Smiths Cove, Digby County, sits with her husband John during a news conference at the Queen Elizabeth Health Sciences Centre in Halifax on Thursday announcing a new virtual brain surgery tool. Mrs. Wright is the first patient to have her brain mapped using the technology so doctors could better prepare for her procedure using a simulator.

(Photos by CHRISTIAN LAFORCE / Staff)

# Practice makes perfect

## Virtual reality tool gives surgeons dry run before performing brain tumour surgery

By JEFFREY SIMPSON  
Staff Reporter

**B**EFORE ELLEN WRIGHT went under the knife for brain surgery earlier this week, she had an unusual question for her doctor.

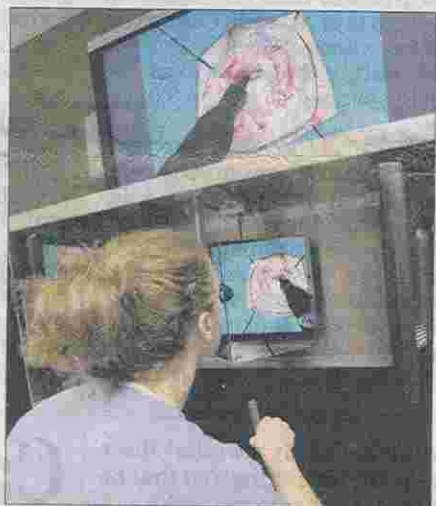
"Did I make it?" asked the 48-year-old from Smiths Cove, Digby County.

Using a revolutionary virtual reality system developed in Halifax — likened to a flight simulator for surgeons — doctors practised the tricky procedure several times before removing a tumour dangerously close to a part of her brain that controls speech.

So Ms. Wright became the first patient in the world to have the reassurance of knowing her surgeon was as prepared as possible before cutting open the front of her skull, having removed the tumour from a three-dimensional virtual replica of her brain beforehand.

"It seems to have worked well on me, so hopefully someone else can benefit from it," Ms. Wright said Thursday, two days after the procedure.

She said she felt no worse for wear other than a half-shaved head and a row of stitches stretching almost temple to



Chief neurosurgery resident Dr. Ciara Harragher shows a brain surgery simulator that maps a patient's brain before surgery.

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temple. "I'd been stressed for quite a while about it," she said. "I didn't want to have it done at first. It was very nerve-wracking."

The \$10-million project to develop the simulator will allow surgeons to rehearse complicated procedures ahead of time in hopes of avoiding any mistakes.

"This is a big breakthrough," Dr. David Clarke, the Halifax neurosurgeon who operated on Ms. Wright, said after demonstrating how the system works at the Queen Elizabeth II Health Sciences Centre in Halifax on Thursday.

The neurological simulator, which uses an MRI to take pictures of the brain, will be used to train the next generation of doctors, who will gain experience before entering the operating room.

In the simulation, doctors use the same surgical tools they use in the operating room and can actually feel the pulsating parts of the brain as they make contact and then feel the tumour move as they start to take it out.

Since it's specific to the patient being operated on, it should make brain surgery even safer, Dr. Clarke said.

"The rates of complications, in general, are not high, but — and this is a big but — they do occur and some are preventable.

And when they do occur, because they're dealing with the brain, they can have lifelong consequences."

Dr. Clarke said he practised on Ms. Wright's virtual brain all Monday afternoon before doing it for real the next day.

"We have a reset button. We can do this as many times as it takes to get it right before the actual surgery."

Asked if he made any mistakes in the dry run, he said: "We used it as a training tool, which means, yes, there were certain things that had to be dealt with and it gave an opportunity to talk about those things, correct them and then be prepared for them when we went for the actual surgery."

The extra practice made the real surgery much easier, he said.

"This is not to say I couldn't have done the surgery successfully without this technology," he said.

"But there certainly was an element of confidence of knowing what to expect when you're going in there."

The system is the first in the world and Dr. Clarke expects it to be used in other countries within three to five years.

Dr. Ryan D'Arcy, another project member from the National Research Council, said there will be seven prototypes of the system across Canada within 18 months.

"The time frame is very aggressive."

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