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The wired man

Brain implant gives Parkinson's victim a joyous new outlook on life

By Alexandra Paul

BRAIN surgery doesn't hurt. The body is wired with nerve endings, not the skull. Good thing, too. A patient has to be wide awake for this kind of operation.

Ian Yamron lay conscious as surgeons drilled small holes in his head, not once but twice; one for each of the implants deep in his skull.

The first surgery in early June lasted 10 hours. The second, about three weeks later, took eight.

Manitoba's creaking health-care system stalled him more than once. Altogether, Yamron had to put up with four cancellations -- lack of beds, MRI breakdowns, you name it.

Yamron had a list of medical complications from diabetes to a heart condition that were strikes against the surgery.

But even before the drill bit into his skull, Yamron knew what to expect if he didn't go through with it.

"I'm not afraid of the surgery," he said in June. "Based on what has taken place in the last year, I know where I'm going to be two years from now if I don't do it. I'll be in a wheelchair in a nursing home."

The self-described clown even cracked a joke about the operation with brain surgeon Dr. Robert Brownstone.

"I told Dr. Brownstone the first time on the table when he asks how I'm doing, I'm going to have an uncontrollable urge to say: Hickory, Dickory. . . Doc!"

Uttering nursery rhymes as a probe is poking down there is the equivalent of a doctor's worst nightmare -- it can mean the probe is making the patient literally crazy.

But surgeons need patients to be awake because their physical sensations, in response to the surgeon's manual probe, are the only way to pinpoint the exact spot to drop in the implant -- a set of four electrodes at the end of a hair-thin wire. It takes hours of careful prodding to find the right spot even with the aid of MRI images used like McNally road maps to navigate the brain.

Each touch of the filament, the width of a single human hair, causes a sudden reaction. A finger will twitch, a knee will jerk, the entire side of a body could shudder.

A hole no larger than an oversized postage stamp was drilled in a perfect square on the right side of Yamron's head, just above his ear.

Yamron describes the sounds of the surgery as "strange and amplified."

Cracking the skull was, "like tearing away chipboard. It was a crackling sound.

"The drilling of the holes was not a problem, but the breaking of the (brain) lining made a crunching sound. It was weird," Yamron says.

Brownstone used a 25-centimetre wand

to probe deep inside the brain to the thalamus, a grey oval-shaped mass four centimetres in diameter. It acts as a relay centre in the brain for body sensations.

Yamron didn't know what his body would do from one probe to the next as Brownstone touched his brain.

"All of a sudden, the whole left side of my face, and shoulder would get a shock. But it wasn't painful. They'd do it again and it would feel softer. They were finding the location they wanted and then they narrowed it down to the one that would give them the best results."

Brownstone found the spot and slid in the wire with the four electrodes lined up in a row.

"It sounded like a big canister clanking down there," Yamron says.

The electrodes are wired to a battery-powered stimulator that was later implanted under Yamron's collar bone.

Although it sounds simple, the surgery is not without risks. The wires can get infected and there's a three per cent risk of a massive stroke or even death. A year after surgery, there are some patients who lose parts of their vocabulary, unable to find the words to express their thoughts is an unexpected side-effect.

The surgery itself has an incongruous mechanistic quality that can strike a bizarre and humorous chord in the OR.

"One of the funniest things was when the surgery was all done. Rob says, " 'Ian, are you OK? We're done,' " Yamron says.

"The next thing I heard him saying: 'Screwdriver?' "

They had to unscrew the halo bracket from the table to free Yamron from his head-hold, and they needed a screwdriver to do it.

"That was funny," Yamron says.

Yamron got in the last word, cracking his joke about Hickory, Dickory Doc.

"Rob said he'd been expecting it all day," Yamron says.

Yamron pulled a stunt nobody expected the day after the first surgery.

Brownstone let him go home, but he didn't plan on resting.

That morning, for the first time in ages, Yamron tied his own shoelaces and he was elated.

"It boggles my mind. It changes so quickly," Yamron said.

Yamron's recovery immediately after surgery is a honeymoon that comes from stimulating the brain.

And it wears off after a few weeks, which is why the battery pack is implanted; to restore feeling and movement.

It was June 8, the date the local Parkinson's Foundation hosts an annual fundraiser golf tournament that Yamron never misses.

A community-booster, Yamron dedicates his time to promoting the organization and the temptation to turn up in a surprise appearance was too big to ignore.

Yamron loves practical jokes, especially if he's playing them.

So instead of resting, the man and his entire family raced down the highway to Breezy Bend golf course on the outskirts of Winnipeg.

The clubhouse was packed with people lining the walls when Yamron made walked in.

Their reaction was stunning.

"Most of my patients were there," Yamron's neurologist Doug Hobson recalled. Hobson had been in the OR 24 hours earlier with Yamron and neurosurgeon Rob Brownstone.

"Then I saw this man in a straw hat coming toward me," Hobson said. "I was thinking this guy looks like Ian but it can't be. He's in the hospital. Maybe it's his brother."

"He had to come up to me and say "It's Ian."

Hobson couldn't believe his eyes. "(He) did a double take," Yamron chortled.

When Wayne Buchannan, vice president of the local Parkinsons Foundation, saw Yamron, his eyes welled up with tears.

Parkinson's patients weep easily, a side effect of medication that alters their brain chemistry. The tears that day, however, weren't just pills.

Buchannan saw Yamron walking: No cane. No shuffle. His hands were steady. No tremors.

Every Parkinson's patient in the room saw themselves in Yamron and his seemingly miraculous recovery hit them hard.

"I cried," Buchannan said. "The man is amazing. To see him is just great. One day I'll be there."

Yamron's own family was awed by the honeymoon effects.

Daughter Brenlea Biggs couldn't resist teasing her dad. "You hear it's brain surgery and you think he's going to be down and out.

She shook her head and chuckled.

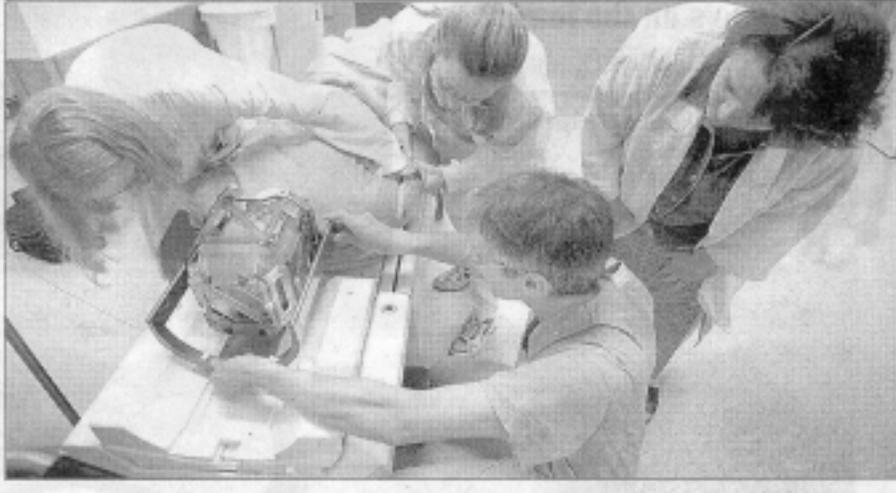
"We were more down and out when we had our babies," Biggs said, nodding to her sister.

Four weeks after the second surgery, Ian Yamron returned to Dr. Hobson's office, "tickled pink" to be there.

Even though his tremor had returned, and many of the Parkinson's symptoms had returned, the self-described "clown" knew that his battery pack, implanted under his collar, was about to be juiced up.



Yamron is anxious as he arrives at the Health Sciences Centre in June.



Yamron is lowered on to a table for a series of MRI scans to map his brain for surgery.



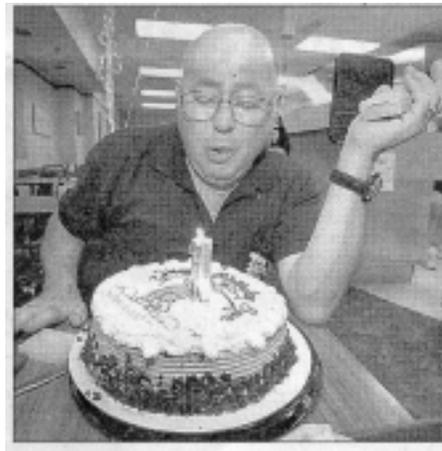
Yamron lies exhausted after surgery, through which he remained conscious.



Brownstone (left) tests Yamron's fine motor control.



Below (left) Yamron touches one of the 'control' wires protruding from his head before undergoing a procedure to bury them in his scalp. Right, he celebrates his first 'rebirthday'.



"I'm so bloody excited," he said. "My last birthday was Dec. 5. But I'm going to have a new birthday and it's going to be July 26," Yamron said.

There are two batteries in his chest pack-- one with enough power to run a watch for a year and the other slightly stronger; about equal to a AA battery for a tape recorder.

The batteries have a lifetime of five years; then a new pack is implanted.

Hobson's wife, Parkinson's nurse Shawn Hobson, fine-tuned the batteries to give Yamron back his honeymoon feeling.

It can take 40 hours to adjust the battery pack to the right voltage and it took Hobson two days to get the basics right.

Then, the day after Yamron's new birthday, Hobson handed her patient his remote control to turn on and off.

Yamron's wife Fraydel's features split into a genuine smile. What she said next collapsed the room into laughter.

"Is there one more? We have a habit of losing things."

Each battery pack costs \$9,000.

Her next line was even better. "If he misbehaves, I know what to do!"

This fall, Ian and Fraydel took his bionic parts on tour.

The couple booked their first holiday in years, a three-week bus tour of the Maritime provinces.

In Halifax, the Yamrons planned a get-together with his surgeon, Rob Brownstone, who had moved out there in August.

The world isn't perfect for Yamron, but it's a lot better.

He still loses his balance, but now he can catch himself. Before, he would just fall over.

He still takes medication, but not nearly as much of it.

And for the first time in a long time, the ritual response he gives when somebody greets him has a ring of truth.

Should you go to his eatery, Nathan Detroit's, under the famous intersection at Portage and Main in Winnipeg, you might run into him.

Ask him how he's doing.

"I'm fantastic," he'll tell you. "But I'm getting better." ♦

If you run out of 'oil' your 'motor' starts to shake

ADOLF Hitler, Francisco Franco, Mao Tse-tung, Pope John Paul II, Yammmer Arafat, Janet Reno, Muhammad Ali and Michael J. Fox are or were all victims of Parkinson's disease.

If everyone, lived to 150, we'd all get it. ,

That's because the progressive neurological disorder is the result of an accelerated suicide of a type of black-coloured nerve cells deep in the brain, called cells of nigra, which die off naturally as we age.

The cells lubricate the parts of the brain that keep us moving so as they die, we slow down.

Parkinson's, which strikes about one per cent of the population or 1,500 people in Manitoba, freezes its victims, affecting mobility and motor skills. Even facial expressions get wooden. The massive nigra die-off is responsible for the hallmark tremor that affects 70 per cent of Parkinson's sufferers.

Symptoms

Cells of nigra line a pair of crescent-shaped pans deep in the brain beneath two regions critical to mobility called the thalamus and globus pallidus. Without nigra, the body can't produce dopamine, a neurotransmitter picked up by the thalamus

and globus pallidus to keep us moving. "It's like oil in a motor," said neurologist Dr. Doug Hobson. "If your motor runs out of oil, it would slow down and shake. That's the problem in Parkinson's. The dopamine is like the oil in a motor."

When symptoms get severe, doctors prescribe levodopa, which the brain converts to dopamine. But eventually, conventional prescriptions wear off and they also pack peculiar and disturbing side effects, like the writhing and twitching that plagues Parkinson's patients.

In later stages, tremors are more pronounced and agility is replaced by rigidity. Sufferers move around with a slow shuffle and stooped posture. They take rapid steps to keep from falling forward. Depression strikes up to 40 per cent of sufferers. More controversial is the link with dementia. Up to 10 per cent are thought to be afflicted.

There are four kinds of surgery, including the thalamotomy that Michael J. Fox had performed. But all are considered last resorts and are performed on only 10 per cent of Parkinson's patients.

Irreversible

Thalamotomy and pallidotomy, which are still considered experimental even though they've been around for 40 years, both stop tremors by destroying cells in either the thalamus, the part of the brain that pushes you to move, or in the adjacent globus pallidus. Heating the cells or freezing them stops the jerky movements but the surgeries are irreversible.

A third kind, deep-brain stimulation, sees surgeons place electrodes in the thalamus or globus pallidus and connect them to a pacemaker implant that runs a current of electricity straight to the brain to stop the tremors. It does not kill brain tissue. It short circuits the faulty electrical conduit caused by errant cells.

The surgery was pioneered by Dr. Alim Benabid, a neurologist in Grenoble, France, where former Winnipeg neurosurgeon Dr. Rob Brownstone travelled as part of his

training before he attempted implants. The procedure is now being tried with other disorders, including to ease movement distortions of dystonia, as well as conditions that mimic Parkinson's and even for pain.

The fourth and most controversial surgery involves the experimental implanting of fetal tissue in the brain.

Nobody knows what causes Parkinson's, let alone its cure. About 16 per cent of cases have a genetic link.

Boxers like Muhammad Ali have a form of Parkinson's called the punch-drunk syndrome that is thought to be triggered by blows in the head.

Environment

Environment is another factor linked to Parkinson's.

University of Manitoba food scientist Michael Eskin, who studied Parkinson's, noted that the environmental link emerged with the death of a young graduate student at UCLA 15 years ago.

"He was a 21-year-old student and he died of Parkinson's," said Eskin. The autopsy revealed the student had almost no nigra cells left.

Normally, Parkinson's is thought of as an old person's disease, striking most after age 60, with notable exceptions like Fox, who was diagnosed at age 30. It turned out the student was synthesizing heroin in a university lab and a byproduct of his illicit cookbook was a chemical called MPTP. MPTP is known to have the potential to trigger Parkinson's.

"Suddenly, the whole Parkinson's field blew wide open," Eskin recalled.

In Manitoba it fuelled a study on potatoes.

It turned out the way industrial pollutants tinker with chemical functions in the humble spud is virtually the same way enzyme functions are distorted in the brains of Parkinson's patients. ♦

Future uncertain in city for deep-brain surgery

By Alexandra Paul

THE future of implant surgery that gave Parkinson's patient Ian Yamron his life back is now uncertain in Winnipeg.

Dr. Rob Brownstone, the surgeon who performed the deep-brain stimulation surgery, has moved to Halifax, and exacting new international standards for the operation may mean larger centres than Manitoba will be taking over the surgery - at least for now.

The Winnipeg Regional Health Authority is building up the province's drained neurosciences program and the future is wide open for potential growth, doctors said.

Recruited

Neurosurgeons Dr. Tony Kaufmann and Dr. Michael West were recruited this summer. Neither does the kind of implant surgery that Yamron received, but West has an interest in surgeries like it that rely on MRI images and special frames called stereotaxic halos that make implant surgery possible.

West, raised in Winnipeg, returned in September from the Cleveland Clinic, World renowned for its doctors. His expertise in neurovascular surgery for stroke victims is to be put to use in the OR.

Another specialist is to be recruited to work with new equipment that does nonsurgical angioplasty inside the brain, treating trauma and emergencies like aneurysms (blood bubbles) now treated with standard surgery. The new procedures call for a multi-million dollar investment at Health Sciences Centre that also includes more clinic and office space, 10 new beds, and a step-down unit for patients, said Winnipeg Regional Health Authority chief medical officer Dr. Brock Wright.

Kaufmann is here part-time until the new

year when he moves permanently from Calgary. Part of his duties include building up a team for a new centre in cranial nerve disorders.

Specialists currently in the city, as well as doctors to be recruited in neurosurgery and orthopedic surgery, are to form another centre, this time for complex spinal surgery. New radiation oncology equipment, to be on line early in the next year, will allow doctors to treat some of those related brain injuries and diseases without surgery.

The new recruits replenish the number of surgeons to the province's quota of seven. For some months, a shortage dropped the ranks to five neurosurgeons, compelling doctors who stayed here to double up on work, said Dr. Luis Oppenheimer, head of surgery for the Winnipeg Regional Health Authority.

Oppenheimer praised Brownstone, who performed Yamron's surgery and did implant surgery on two other non-Parkinson's patients this summer, saying he hopes he returns here.

Pioneer

Outside the OR, Brownstone remains a rising star on the roster at the University of Manitoba's Spinal Cord Research Centre, where his work made him a pioneer in the new frontier of transgenic mice and movement disorders such as Lou Gehrig's disease.

The extra OR work was what did him in here, a close colleague said.

"In order to maintain his research career he felt he had to leave. In Winnipeg he couldn't get enough time to do his research. There weren't enough neurosurgeons (for) the OR," said the centre's founder Dr. Larry Jordan.

Some day, Brownstone wants to come back home to Winnipeg, several doctors said. ♦