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By SUSAN BERGER

At 40, Jeff Gaynor barely resembled the young man who, in his early 20's, ran half-marathons and performed martial arts.

Mr. Gaynor, who lives in Champaign, Ill., was so sleep deprived from pain in his hip that he had not had one good night's sleep in seven years, he said. His body was so twisted and his gait so peculiar that children ran in the other direction when they saw him.

Unable to stand and barely able to walk, he resigned from his job as a mathematics professor at the University of Illinois. His young sons became accustomed to a father who could not run, play or even go to the mall without a lot of planning. He gained weight — 70 pounds — because although he was sedentary, he still ate like an athlete.

But Mr. Gaynor, now 45, has been able to resume some of his former activities because of a new surgical implant called the Birmingham Hip Resurfacing System, an alternative to total hip replacement.

The device was developed by Dr. Derek McMinn, a hip surgeon in Birmingham, England, and approved in May by the Food and Drug Administration for use in the United States.

Unlike hip replacement, in which the entire hip joint is replaced, hip resurfacing involves shaping and capping, with an implant, a few centimeters of bone within the hip joint. The implant, made from cobalt chrome, has the potential to last longer than traditional hip implants, experts say, making it an especially attractive option for younger, more active patients.

The technique also offers other advantages over the traditional hip replacements performed in the United States, the experts said. The resurfacing implant is larger than the femoral head used in total hip replacements, offering greater stability and reducing the risk of dislocation, the most common cause of hip replacement failures. It also offers greater range of motion after surgery.

"This is one of the major advances in orthopedics in recent years, at least in this country," said Dr. Robert Barrack, chief of staff for orthopedic surgery at Barnes-Jewish Hospital in St. Louis, who said he had no financial ties to the company making the implant.

Dr. Barrack, with Dr. McMinn at his side, performed the first Bir-



Top, Mark Murren for The New York Times

Jeff Gaynor, whose hip-resurfacing surgery has allowed him to take part in activities like jujitsu. X-rays show his hip before (left) and after.

mingham resurfacing in this country in June and said there was a great deal of enthusiasm about the device. "There were many patients leaving the country to have it done," Dr. Barrack said, "or having it done with devices that were not F.D.A.-approved, and that's not optimal."

Dr. McMinn said he had performed 2,763 hip resurfacing operations in England since developing the technique in 1997.

Dr. James C. Kudrna, a surgeon at Evanston Northwestern Healthcare in Illinois, said he was cautiously optimistic about the technique.

"You always need to be reasonably reserved about these devices because we don't have 50 years of follow-up," Dr. Kudrna said. "But we do have excellent 10-year follow-up. From what we have seen, we are certainly optimistic, but there will be no promises for decades and decades."

Both hip replacements and hip resurfacing require about a five- to six-inch incision, an hour of surgery and about six to eight weeks to return to normal activities. Patients can usually resume more vigorous sports and exercise in six to nine months, Dr. Kudrna said.

But, he said, the big difference between total hip replacement and hip resurfacing is that resurfacing conserves bone and has the potential to last longer.

"There is an identical healing period for both surgeries," Dr. Kudrna said. "The difference is that with resurfacing, there is a feeling that the hip is more natural. Patients feel like it's their own hip a bit quicker."

He added that hip resurfacing was not suitable for patients who were morbidly obese or who had childhood hip deformities, osteoporosis, cysts on the femur or an allergy to metal. Dr. Kudrna has no financial interest in the procedure, he said.

Dr. Steven Stuchin, director of orthopedic surgery at New York University Hospital for Joint Diseases, said one concern with the procedure was the possibility of a fracture of the neck of the hip bone, caused by increased force from the implant. When such a fracture occurs, a traditional hip replacement is done instead.

"Hip resurfacing is the right procedure for somebody, not the right procedure for everybody," Dr. Stuchin said.

Dr. Michael Goone, a 49-year-old dentist from Buffalo Grove, Ill., learned of the resurfacing technique from Dr. Kudrna.

Dr. Goone had suffered pain from osteoarthritis for almost 10 years. But he had reached a point where after a 45-minute commute to work, his hip would stiffen so badly that he could barely get out of his car. He had made an appointment to have a total hip replacement in June and was attending a preoperative class, when his surgeon, Dr. Kudrna, passed him a note about hip resurfacing.

"He said I was a good candidate and that the larger ball and socket were better for me, with lower risk of dislocation and greater range of motion than a conventional replacement," Dr. Goone said.

The resurfacing was performed on June 23, Dr. Goone said, and he is now walking one to two miles a day and riding for 10 minutes on a stationary bike with no pain.

Mr. Gaynor, the former math professor, learned about the procedure on Surfacehippy, an Internet forum devoted to hip resurfacing. At the time, the Birmingham technique was not yet approved in the United States.

Mr. Gaynor developed severe osteoarthritis of the right hip at 32, probably caused by a slight congenital hip deformity made worse by running, he was told.

The doctors he consulted said he was not a candidate for traditional hip replacement — he was too young and too active, and there was a chance he would have to repeat the surgery later on if the replacement did not last, risking unacceptable complications.

"They told me to hang on in grim determination as long as I possibly could," Mr. Gaynor said.

Desperate for another solution, he inquired about hip resurfacing. He underwent the procedure in England in 2001, with Dr. McMinn performing the surgery.

Since then, he said, he has resumed martial arts training, runs on an elliptical trainer and works out with weights. He is taking lessons in tango and swing dancing, and he often takes his sons horseback riding, kayaking and white-water rafting.

"It's very much like having your entire life handed back to you again," Mr. Gaynor said. "Before surgery I was handicapped, and people treated me very differently."