



# ELIMINATING GRAY AREAS

## Refining the Approach to Hip Preservation

John Clohisy, the Daniel C. and Betty B. Viehmann Distinguished Professor of Orthopaedic Surgery, is co-chief of the Adult Reconstruction Service in the Department of Orthopaedic Surgery.

**Over the past decade, hip preservation surgical techniques** have advanced, but challenges in accurate diagnosis, most effective treatments and understanding of the underlying science remain, says **John Clohisy**, the Daniel C. and Betty B. Viehmann Distinguished Professor of Orthopaedic Surgery and co-chief of adult reconstructive surgery at Barnes-Jewish Hospital.

Indiana resident Jennifer Neff was treated elsewhere in 2006 for persistent hip pain, undergoing an arthroscopic procedure to repair her torn acetabular labrum. But failure to diagnose and treat the underlying, causal acetabular dysplasia meant that relief was short-lived. When Clohisy saw Neff, who was 29 at the time, they determined that the appropriate treatment was a repeat hip arthroscopy

to again repair the labrum but with the added component of an open periacetabular osteotomy (PAO) to correct the underlying deformity. Pain-free since recovery, Neff says her movement and exercise are no longer limited. She now considers the possibility of never needing a hip replacement, and almost certainly not until her 50s.

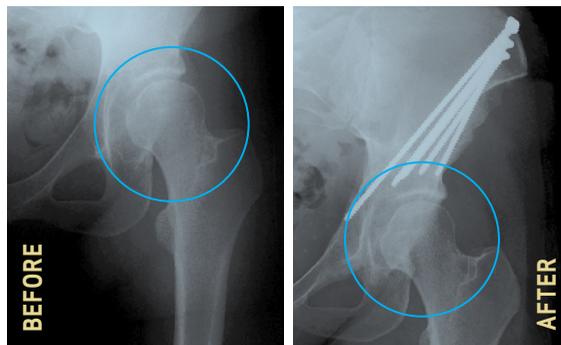
While some patients are undertreated, the opposite scenario also occurs. Clohisy recalls another patient who underwent surgery elsewhere for an impingement deformity. When the socket was cut down too aggressively, the result was an unstable hip. Revising the first procedure, Clohisy had to reposition the patient's hip socket with a PAO to stabilize the joint.

## ELIMINATING GRAY AREAS continued

These two cases highlight some of the challenges of contemporary hip preservation surgery including diagnosis, treatment decision-making and surgical technique. “We have diagnoses of dysplasia, impingement and a combination of the two, with overlap,” Clohisy says. “And we have developed the techniques of arthroscopy, limited open procedures and open procedures such as surgical dislocation of the hip and osteotomy. But the sticking point is determining the exact diagnoses and the best surgical technique for each patient. Is it better to use an arthroscopic approach or an open surgical technique? There are definite gray areas, and we continue to refine our treatment algorithms for these patients. At our center, we have a busy hip arthroscopy practice, yet we often prefer to treat more severe cases with open procedures so that we can fully correct the underlying deformity. That can’t be done arthroscopically for more complex disease patterns.”

Preoperative and three-year post-operative X-ray of a mildly dysplastic hip that failed arthroscopic treatment, yet had an excellent clinical result with a periacetabular osteotomy.

IMAGES COURTESY OF JOHN CLOHISY



A second principal, **Perry Schoenecker**, professor of orthopaedic surgery and chief of pediatric orthopaedic surgery at St. Louis Children’s Hospital and Shriners Hospital for Children — St. Louis has partnered with Clohisy on many of the more complex joint-preserving surgeries. “We have a very synergistic relationship,” Schoenecker says. “When things get difficult, the combination sees us through.”

Clinical impressions have begun to offer some strong clues for choosing wisely among the options to determine candidates for hip preservation surgery. “We know that at 40 or 50 years of age, hip replacement gives excellent pain relief, and the longevity of

replacements is better than it was in the past,” Clohisy says. So hip replacement has to be considered as an option for many of the patients seeking joint preservation surgery.

“In patients ages 35 and older, we have to be very careful with joint preservation,” Clohisy adds. Beyond that age, often there is more pathology than is apparent, even on X-ray or magnetic resonance arthrogram. “If we see any joint-space narrowing, there may be too much arthritis for the hip to respond well to preservation techniques,” he says.

Relatively healthy hip cartilage appears to be a prerequisite for the success of these procedures. It also seems that in cases of mild to moderate arthritis, hip impingement disease produces more aggressive arthritis than dysplasia, with less predictable results for preservation surgery. Gender also plays a role. Males, especially those with impingement disorders, can suffer more advanced arthritis than imaging reveals. Females with dysplasia problems respond best to preservation surgery, Clohisy says.

But more scientific information is needed, “including basic research to understand the cellular and molecular events that mediate osteoarthritis, translational research to bring that science to the clinic and a higher level of evidence in our clinical research,” Clohisy says. The chance to address those questions and advance the emerging field prompted Clohisy to found Washington University’s Center for Adolescent and Young Adult Hip Disorders.

From the center, Clohisy administers the nine-center Academic Network of Conservational Hip Outcomes Research (ANCHOR) study group. To date, the group has enrolled more than 1,200 patients undergoing hip preservation procedures. Specific patient cohorts will be followed over time to determine predictors of treatment success and failure and to delineate which conditions respond well to arthroscopic techniques and which require open surgery. Schoenecker notes that Clohisy’s vision for the study and advancement of surgical care of hip deformity has been instrumental in the early success of ANCHOR.

Center member **Linda Sandell, PhD**, the Mildred B. Simon Research Professor of Orthopaedic Surgery and professor of cell biology and physiology, studies the mechanisms that mediate joint deterioration. Her goal: to see if, in addition to correcting a joint's mechanics, medical science can rectify the fundamental biology of the joint when it has gone awry.

Another problem the field confronts is educating established surgeons who, in the past, received no formal training in preservation techniques. Clohisy and Schoenecker address the issue by inviting colleagues to visit and to observe clinics and surgical procedures. They also recommend that guests visit other surgeons with active hip preservation practices to gain a broad perspective on hip preservation surgery. Nevertheless, obtaining skills in this evolving field is quite challenging, and both surgeons emphasize that competence in this area is only achieved with a very significant effort including self-education, cadaver work and surgeon visits.

**“By combining our skills and efforts we can provide state-of-the-art hip surgery for all age patients.” — Perry Schoenecker**

As for educating trainees, Clohisy notes, “At Washington University we work to expose residents and fellows to all of the applicable techniques, the full spectrum of indications and the evaluation of a broad range of patients.” For current fellow Jeffrey Krempec, the experience has convinced him to make hip preservation part of his practice. “This is not something a surgeon can dabble in. Mastery requires training, and I would not have had the background and tools required if I had not chosen this opportunity to see an enormous volume of a variety of problems.”

Krempec says another advantage of his training is that it comes from a team. In fact, Clohisy and Schoenecker have been careful to build a diverse and comprehensive team. “Pre-arthritis hip disease might be seen by pediatric orthopaedic surgeons, sports medicine physicians, adult reconstructive specialists,



John Clohisy left, and Perry Schoenecker, right, with Reinhold Ganz, MD, professor emeritus, University of Bern, Switzerland. Ganz was a visiting professor at Washington University School of Medicine in April.

According to Clohisy, “It was an extraordinary experience to have

Professor Ganz as a guest in our orthopaedic department. Over the past two decades, he has been the international leader in hip preservation surgery, and his work has provided the foundation for many aspects of our hip preservation clinical practice and research programs. His visit allowed time for meaningful interaction with our faculty, fellows and residents. His mastery of hip preservation concepts, attention to detail, and rigorous, thoughtful approach to complex clinical problems was truly remarkable. He left us with a sense of renewed interest and enthusiasm for pursuing the future challenges in hip preservation surgery.”

Ganz also noted the nature of this visit: “To be a visiting professor allows a special view behind the curtain of a department. I had a look behind several curtains during my orthopaedic life, but I was never so contented as with my visit to Dr. Clohisy's group. It started with an outstanding and very professional organization of my short trip, but what impressed me the most was the quality and sincerity of the discussions about joint preserving surgery; it includes the way the young coworkers presented their cases, the vast majority being very complex hip problems of an age group in which the limitations of artificial replacement are not disputable. The next aspect was the clear concept about how these rather new ideas have to be consolidated by applying a comprehensive management and teaching including strict quality control. All in all, my visit was very encouraging, and I left St. Louis with many new ideas.”

trauma surgeons or psychiatry colleagues,” Clohisy points out. “And the treatment group has to include imaging experts and physical therapists, because these components of patient care are so important.”

According to **Heidi Prather**, associate professor of orthopaedic surgery, when Clohisy invited participation of multiple disciplines in the center, it was not just lip service. Prather, a non-operative physiatrist, sees all patients, even those referred directly to one of the surgeons and those with undiagnosed hip pain. “There's a lot of back and forth in the clinic we share once a month. We take great care to be specific about a patient's history and physical exam, being sure that what we're seeing on an image is really the problem.”

Together, the team addresses current challenges in hip preservation surgery, refining diagnostic skills and disease staging tools to make appropriate treatment decisions and advance techniques, all with the goal of prolonging the natural life of the hip whenever possible. “We've learned that there are huge advantages to preserving the joint,” Clohisy says. “Now we have to address these more practical questions of patient selection for surgery, surgical treatment algorithms and surgical education.” □