

Atrial Fibrillation: Saying Goodbye to Blood Thinners

Only a third of patients who have atrial fibrillation (AF)—one of the most common arrhythmias—consider it to be a serious health problem, according to a 2009 survey conducted by the American Heart Association. However, because the disorder can cause blood to stagnate and clot, it significantly elevates the risk of stroke.

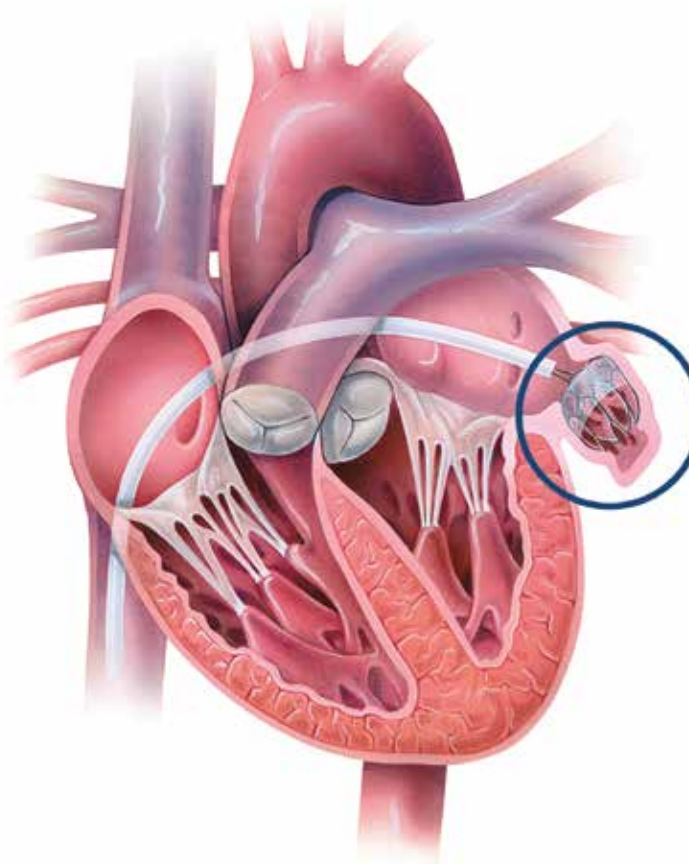
To combat this possibility, those with AF are often prescribed blood thinners, but patient misconceptions about the risks associated with their condition lead many to eschew these lifesaving drugs. Other patients can't take blood thinners at all due to inherent problems with clotting or other risk factors, such as a history of falls.

"It's striking that of all AF patients who should be on anti-coagulation therapy, only half are actually taking blood thinners," says **Hugh Calkins**, director of Johns Hopkins' Cardiac Arrhythmia Service.

There are, however, nonpharmacologic options that can also significantly reduce an AF patient's risk of stroke. Decades ago, cardiac surgeons found that if they closed off the left atrial appendage (LAA)—a windsock-shaped outpouching in the muscle wall of the left atrium that collects blood and drains into the heart—by stapling, tying and other means, patient stroke risk shrank to baseline.

More recently, Calkins explains, three cardiac implant devices have come on the market that offer safer and more reliable means to achieve the same goal, with each option offering distinct benefits and drawbacks. To make the best recommendations for treatment with these devices, Johns Hopkins initiated the Left Atrial Appendage Occlusion Program to help evaluate which option is optimal for each patient. Although many institutions offer at least one of these options, he adds, Johns Hopkins is one of only a few that offer all three.

The first of these implantable devices, the WATCHMAN, is the only one that's currently FDA-approved for LAA occlusion. Shaped like a small umbrella, it's delivered via catheter to block the opening to the LAA. However, this device is only suitable for patients whose LAA is a certain size and shape, Calkins says. In addition, patients



Johns Hopkins Left Atrial Appendage Occlusion Program

- 1** Data show that more than 90 percent of clots found in the left atrium are formed in the LAA.
- 2** Oral anti-coagulation is the gold standard for stroke prevention in AF patients who are at increased stroke risk.
- 3** However, many patients are not willing or able to take blood-thinning medication due to risk of bleeding, risk of falls and/or patient preference.
- 4** Lapses or cessation of anti-coagulant medication greatly increase the likelihood of stroke during the period of time a patient is not adequately anti-coagulated.
- 5** Johns Hopkins now has new options for stroke prevention in AF patients at increased risk of stroke who are unable to take anti-coagulation medication.

must take blood thinners for several weeks after surgery, a disqualifier for those with clotting problems and other risks.

The second device, the AtriClip, is implanted using minimally invasive techniques. Surgeons place this bobby pin-shaped clip at the base of the LAA, preventing blood from entering. Although no blood thinners are required after the procedure, Calkins notes, the minimally invasive approach disqualifies some patients who've had previous cardiac surgery, due to scar tissue that can hinder implantation.

The third device, the LARIAT, is a catheter-implanted suture delivery loop that ties off the LAA. Although this procedure also doesn't require postoperative blood thinners, it's not suitable for patients whose LAAs are very large or in certain positions.

The only way to determine whether an AF patient is eligible for one of these devices is to come to Johns Hopkins for an appointment, says Calkins. There, he adds, a multidisciplinary team—including imaging experts, electrophysiologists, interventional cardiologists, cardiac surgeons and others—will examine the patient and determine the best options.

Once one of the devices is in place, Calkins notes, no permanent use of blood thinners is necessary ever again to treat the consequences of AF: "We're proud to offer these very liberating options for our patients." ■

Information: 443-287-3471

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To reduce stroke risk in certain patients with atrial fibrillation, members of the Johns Hopkins Cardiac Arrhythmia Service implant the latest crop of left atrial appendage occlusion devices, an alternative to using blood thinners. From left, Kaushik Mandal, director of the Robotic Cardiac Surgery and Minimally Invasive Arrhythmia Surgery Program; Ronald Berger, co-director of cardiac electrophysiology; and Hugh Calkins, director of the Cardiac Arrhythmia Service. Not pictured is Jon Resar, director of interventional cardiology.

A New Way into the Brain

The traditional way to reach a deep-seated lesion within the brain is through an open craniotomy. While this route is effective at accomplishing the primary goal of accessing the tumor, it's littered with collateral damage, says Johns Hopkins neurosurgeon **Kaisorn Chaichana**.

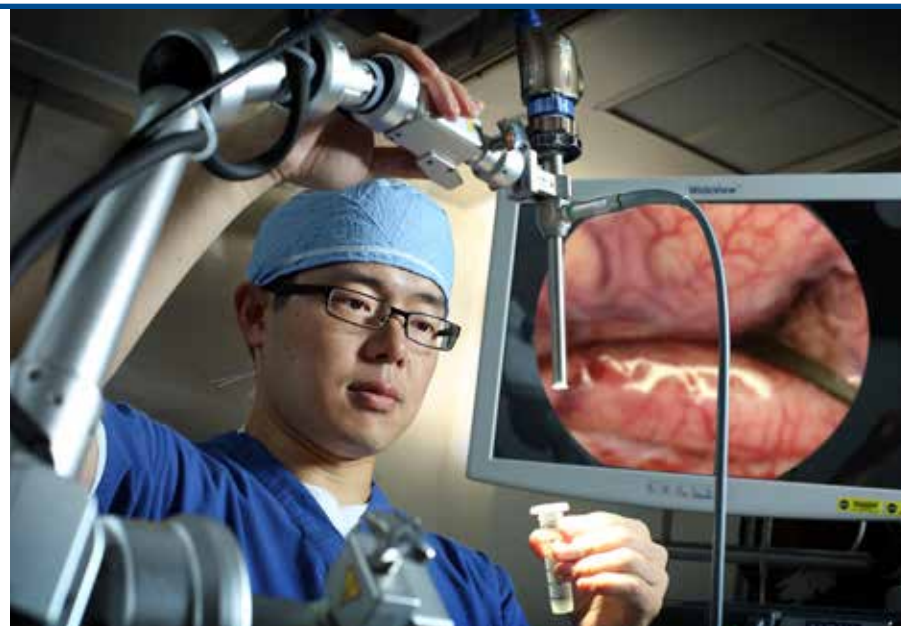
"It usually requires a big incision, a big opening in the skull, a big opening in the dura," he says. "As we dissect downward, we're compromising the white matter the whole time." The end result, he adds, is substantial blood loss, long hospital stays, long recovery times and an increased risk of damage to brain structures, which can cause neurological deficits.

Enter the minimally invasive tubular retractor, a device that Chaichana has recently incorporated into many of the procedures he's performed to help mitigate these issues. With a tubular diameter slightly less than a nickel, this retractor allows for less invasive brain surgery by using an obturator with an atraumatic tip to push white matter away instead of cutting it.

During procedures that use this device, Chaichana and his colleagues typically rely on MRI with diffusion tensor imaging data gathered before surgery to guide an interoperative navigation system. Using these data to pinpoint the location of a lesion, the surgeons make a small opening about the size of a silver dollar through the scalp, skull and dura. They then insert the tubular retractor between white matter tracts directly over the tumor.

Once the obturator is in place, the surgeons can remove an inner metal insert, leaving behind an inner clear sheath. The surgery is performed with an exoscope—a small camera that hovers over the surgical field—and tools to go within the device. Using this protocol, Chaichana and his colleagues can resect entire tumors with minimal disruption to the surrounding brain structures.

This approach is particularly valuable for tumors in eloquent locations, Chaichana says. Treating these tumors using traditional surgical methods would increase the result in motor, language or visual field deficits because of the large dissection of the



Sparing patients open craniotomies, neurosurgeon Kaisorn Chaichana uses the minimally invasive tubular retractor to reach deep-seated lesions within the brain.

critical brain matter. However, in the 30 cases he's already treated using this device over the past year, these functions have been largely preserved. These patients have also had shorter surgeries, significantly less blood loss, shorter hospital stays and quicker recoveries, he adds.

Because of its host of benefits, Chaichana says, he expects that use of this device will grow throughout this field over time.

"With this approach, we can offer patients the same great results as an open resection," he says, "while also giving them a much greater chance of preserving their neurological function and quality of life." ■

Information: 410-955-6406
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OTOLARYNGOLOGY

Completely Scarless Thyroidectomies

There's no question that thyroidectomies can save function and lives. This technique has a long, safe history of removing both benign masses that threaten voice and breathing, and cancerous tumors whose spread can turn deadly. However, traditional thyroidectomies through a transcervical approach can come with an unwanted addition that sometimes makes patients think twice about moving forward: a large, highly visible scar at the front of the neck.

That's why Johns Hopkins recently began offering a new procedure for thyroidectomies and parathyroidectomies in select patients that allows resection with no visible scarring, say head and neck surgeons **Jonathon Russell** and **Ralph Tufano**. The team is routinely offering this surgery to appropriate patients.



Patients show no scarring after the procedure.

"People don't want this operation to define their lives," says Russell, who joined Johns Hopkins' Department of Otolaryngology–Head and Neck Surgery faculty in July 2016. "We have the opportunity to intervene and take care of these patients without the average person knowing that they had surgery at all."

Tufano explains that scarless thyroidectomies, performed through a transoral approach, got their start in Southeast Asia, where neck scarring is often stigmatized. "It's an anathema," he says, "so patients can be reluctant to have thyroid or parathyroid tumors removed—even if it's lifesaving."

Surgeons there have worked for decades on developing approaches that minimize scarring. One such approach is transaxial, through the armpit. While this technique leaves a scar that's not as visible, Tufano says, the path surgeons must take increases the risk of side effects. Another technique that minimizes visible scarring involves using an approach similar to a face-lift. But because this technique can only access one side of the thyroid, it can be significantly more invasive than a traditional thyroidectomy if patients need the entire gland removed.

Nearly a decade ago, Tufano fortuitously met a German colleague who had begun studying a transoral technique. Soon after, Tufano and other Johns Hopkins colleagues began the first cadaveric studies of this in the U.S. Through an incision in front of the mandible but behind the lip, they journey through the



Ralph Tufano



Jonathon Russell

soft tissues of the neck, inflating it with carbon dioxide to create a working space. Once the thyroid is exposed, they then insert endoscopic or robotic instrumentation to perform the thyroidectomy.

Russell notes that efforts of surgeons thus far have shown there's no difference in the safety profile of this procedure compared with transcervical thyroidectomies. And once the oral incision heals, he adds, no visible scar remains.

Patients must be appropriately selected, but they are usually candidates if they have a nodule smaller than 4 centimeters and sometimes if larger.

"This really gets us excited," Tufano says, "about moving forward, evaluating our results and refining our approach." ■

Information: 443-997-6467
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S2-alar-iliac Technique Revolutionizes Spinal Deformity Surgery

While many surgeons do not relish complicated revision surgeries for spinal deformity, **Khaled Kebaish**, director of the Spine Fellowship Program in the Johns Hopkins Department of Orthopaedic Surgery, welcomes the challenge. “I find revision surgery more interesting,” he says. “It’s not routine. There is a lot of planning you have to put into it. You have to think outside the box. Every case is different.”

In one such case, Kebaish performed a patient’s 40th spine surgery. “She had 39 surgeries elsewhere and was referred to us,” he explains. “The main reason she had so many procedures is that they did not achieve good enough fixation in the pelvis. She could have been saved so many surgeries by simply having had this new, simple S2AI technique.”

The revolutionary S2-alar-iliac (S2AI) technique was pioneered by Kebaish and **Paul Sponseller**, director of pediatric orthopaedic surgery at Johns Hopkins. The pelvic fixation technique involves advancing the screw through the ala, thereby providing more purchase across the sacroiliac joint and into the ilium. “Rather than just holding onto the sacrum, you now have a stable anchor in the ilium,” Kebaish explains.

“This technique is more biomechanically stable than the old

iliac technique,” says Kebaish. “From start to finish, it is easier. Easy to connect. Easy to teach. It uses only one rod and no connectors. It is a much simpler way to reduce the deformity, correct the deformity, and then connect everything together. Additionally, we reduced the costs by using fewer implants and minimizing operative time.”

Most importantly, complication rates are low with the S2AI technique. In a two-year follow-up study of more than 300 patients, Kebaish and colleagues found that “the revision rate was almost nonexistent, very low, especially revision related to the S2AI or the pelvic fixation, which in some studies was as much as 20 to 30 percent with the previous technique.”

The Johns Hopkins technique not only makes pelvic fixation easier, but it also turns some “hopeless” cases into surgical candidates. Kebaish describes one such patient. “She had surgery elsewhere, and she was bent over, basically closer to the ground than upright. I did an osteotomy at L5, which you couldn’t do effectively using the old technique. I reshaped the spine and straightened her spine using this technique. Today, I saw her, and she was crying and said, ‘I’m just so happy.’

“She had been told she wasn’t a candidate for surgery. She came to Johns Hopkins, and we did the surgery.



Khaled Kebaish shows an approach to spine surgery.

I think that without this technique, we couldn’t have achieved the same outcome,” he says.

With the development of this technique, Kebaish and Sponseller have provided an elegant solution to a highly complex problem. Kebaish has taught surgeons across the country and around the world how best to use the S2AI technique. ■

Information: 443-997-2663
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Benefits of S2-alar-iliac (S2AI) Technique

- Provides a stable anchor into the ilium.
- Uses only one rod and no connectors.
- Reduces costs with fewer implants and shorter operating time.
- Results in lower complication rates.
- Turns some “hopeless” cases into surgical candidates.



SURGERY

One Historic HIV Organ Transplant, Numerous Team Members

In March 2016, Johns Hopkins surgeons performed the first organ transplants in the U.S. from a deceased donor with HIV to patients with HIV.

Liver transplant surgeon **Andrew Cameron** and kidney transplant surgeon **Niraj Desai** say the surgeries are nearly the same as for any other transplants. The difference is at the microscopic level—particularly in ensuring that a more virulent strain of HIV is not introduced to recipients.

Infectious disease physicians play a significant preoperative role in vetting the donor organ for level of disease. Postoperatively, pharmacists aim to avoid known medication interactions. Because HIV medicines can interfere with the immunosuppressants required after an organ transplant, patients’ drug levels are monitored closely.

Specialists from many disciplines played a role in the transplants from a deceased donor with HIV to a patient with HIV. They also take part in every transplant at the Johns Hopkins Comprehensive Transplant Center. All transplants

are multidisciplinary endeavors, involving more than a dozen specialized team members.

Thanks to the complex nature of care, Cameron says the first-in-the-U.S. operations have been a great success, as have been the several HIV-positive transplants that have taken place since.

The Research Road to Transplant

The HIV-positive transplant would not have been possible without decades of dedication from Johns Hopkins clinician-researchers. Over the last 10 years, they have conducted national studies evaluating patients with HIV who had organ transplants.

“The patients did very well,” says Cameron, “and the outcomes were indistinguishable from patients without the disease.”

In 2013, transplant surgeon **Dorry Segev** championed the passage of the HIV Organ Policy Equity Act, which permits people with HIV to donate organs. Soon after, Johns Hopkins gained approval from the United Network for Organ

Sharing to perform HIV-positive to HIV-positive organ transplants.

“We are looking at the long-term outcomes, and if they are positive, eventually we hope to do a lot of transplants for the HIV-positive population,” says Cameron. “And because we have access to a pool of organs we previously didn’t use, the wait time for these organs went from years to weeks.” A study published in the *American Journal of Transplantation* in March 2011 showed that the pool of potential organ donors for HIV patients increased to as many as 600 per year conservatively.

The center is currently taking referrals for patients with HIV who need an organ transplant. With clinics available in the Greater Maryland and Washington, D.C., area, it is easier than ever to access Johns Hopkins care for organ transplantation. ■

Information: 410-614-5700
International inquiries: 1-410-502-7683

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cmenet@jhmi.edu

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High-Value Health Care Symposium Oct. 9

The inaugural national research and education symposium of the High Value Practice Academic Alliance will be held Oct. 9 in Baltimore, featuring the innovative work of 50-plus academic medical centers, and include 100-plus poster and podium presentations of projects that have safely reduced unnecessary health care practice.

Learn more and register at bit.ly/hvpaa17.

PhysicianUpdate

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PhysicianUpdate

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