Minimally Invasive Techniques Performed at Munson Medical Center for Aortic, Mitral Valve Repair, Replacement

Since May 2012, some patients in need of aortic valve or mitral valve replacement have benefitted from minimally invasive procedures being performed at Munson Medical Center. Cardiothoracic surgeon Mack Stirling, MD, trained with Joseph Lamelas, MD, who pioneered the advanced technique at Mount Sinai Medical Center Heart Institute in Miami, Fla.

“Minimally invasive surgery is a new and evolving technique whose rate of use is increasing and we wanted to be a part of that,” Stirling said. “We knew it would help keep Munson at the forefront of new technology. The procedures take slightly longer because they are more difficult to perform than with an open sternotomy, but the outcomes have been equally good. Furthermore, patients recover more quickly and have less pain.”

Stirling said he believes the minimally invasive approaches are better for patients than traditional, fully open procedures. Early results show mortality is no worse and morbidity is less. To date, there have been no definitive studies to verify improved outcomes. “In general, these procedures have not been done much in the United States. It will take 15 years to get the numbers needed to do a real study,” Stirling said.

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The minimally invasive procedures are not an option for patients with a severely calcified ascending aorta or for patients who have had a prior heart surgery or a right thoracotomy. The surgery, for repair or replacement, is exactly the same as in regular open access surgery with respect to the valve surgery itself.

Aortic Valve Replacement: Two Approaches

Depending on the patient’s anatomy and other factors, two options for minimally invasive aortic valve replacement are available. (Patients who have had a prior AVR or coronary artery bypass graft or an ascending aortic aneurysm are not eligible).

The first approach is **parasternal**, requiring a 6-7 cm incision parallel to the clavicle, right of the breast bone midway between the clavicle and nipple, entering into the second or third intercostal space. (Traditional aortic valve replacement requires about a 25 cm incision.)

Candidates for this procedure must need only aortic valve replacement, with no secondary operations. They also must have adequate femoral artery and venous access to allow for cardiopulmonary bypass. “The parasternal approach is more complex and difficult, but it is easier on the patient,” Stirling said. “There are only two or three places in Michigan doing it right now.”

The second approach is **hemisternotomy**, which requires a 7 cm incision in the upper half of the sternum. Cannulation takes place directly through the incision and the technique can be used for most patients. The upper hemisternotomy is more commonly done in the United States than the parasternal approach and a few centers in Michigan are performing it.

Mitral Valve Repair or Replacement

Minimally invasive mitral valve surgery is an option for nearly all mitral valve repairs or replacements. This approach can potentially be combined with tricuspid valve repair or replacement as well. A small, 6-7 cm thoracotomy is made lateral to the right nipple with chest incision in the fourth or fifth intercostal space. This procedure also requires use of the femoral artery and vein to institute cardiopulmonary bypass.

Virtually all of Dr. Stirling’s isolated aortic and mitral valve operations have been performed minimally invasively since June 2012, without patient death or stroke. Reoperation for postoperative bleeding is rare, occurring in only one patient. Hospital stay is four to five days.

For questions or a consultation, contact Cardiothoracic Surgeons of Grand Traverse at (231) 935-5730.
Welcome to the 2014 edition of Cardiovascular Perspectives. The last year has brought many new and exciting additions to the cardiovascular services offered at the Webber Heart Center at Munson Medical Center. We continue to add cutting edge techniques and services to provide the highest quality cardiac care to patients in northern Michigan.

Our cardiac surgery program now provides valve replacement surgery via minimally invasive incisions resulting in improved cosmetic results and quicker recovery. We also have added new forms of cardiac support for patients suffering from extreme cardiogenic shock, including extracorporeal membrane oxygenation (ECMO), Impella percutaneous LV support, and paracorporeal ventricular assist devices (pVAD).

We have expanded our electrophysiology program for ablation of atrial fibrillation with an additional electrophysiologist, Robert Kennedy, MD, as well as a new high tech mapping system which makes ablation of arrhythmias safer and more effective. Our structural heart team continues to perform catheter-based aortic valve replacement (TAVR) via all available approaches, including transfemoral, transapical, and direct aortic techniques. We also have added techniques to close perivalvular leaks around prosthetic heart valves without open surgery.

Our heart failure program continues to grow through our very successful Heart Failure Clinic. Patients with advanced or difficult-to-manage heart failure are experiencing great benefits through this program. Readmission rates for this group of very sick patients have been reduced by 50 percent. Through our model of “LVAD shared care,” patients living in northern Michigan with a left ventricular assist device (LVAD) are able to reduce the frequency of travel downstate to their implanting center. We have saved these patients a total of 23,000 miles of driving during the last 18 months, making life better for them and their families. The clinic also provides similar care for patients with pulmonary hypertension, allowing them to be evaluated and treated locally.

The interventional cardiology program continues to provide intracoronary brachytherapy to treat recurrent in stent restenosis. We remain the only program in Michigan to provide this service to treat this difficult problem and have received referrals from all over the state. Our interventional cardiologists continue to add new techniques, such as coronary atherectomy and chronic total occlusion PCI, allowing them to approach more complex coronary stenosis that previously had CABG as the only option.

We remain committed to offering our patients the opportunity to benefit from access to cardiovascular research protocols. We are currently involved in research trials involving bioabsorbable stents, vagal nerve stimulation for heart failure, and new ICDs that have the ability to detect myocardial ischemia and warn patients. Our research program has enrolled more than 800 patients and continues to be a very important part of our heart center.

Finally, we invite you to attend the second annual Cardiovascular Update for Primary Care Providers. We received a lot of great feedback last year and look forward to seeing you in October.

I hope you enjoy this edition of Cardiovascular Perspectives. Feel free to contact me with any questions or comments.

Sincerely,

Dino Recchia, MD, FACC
Chairman, Department of Cardiology
Medical Director, Webber Heart Center
drecchia@mhc.net
Catheter Ablation Continues to be a Successful Treatment for Atrial Fibrillation

The Goal is Curative

Atrial fibrillation is the most common sustained arrhythmia in people and increases with age to high frequency in those 70 and older. Patients with symptomatic, recurrent, drug refractory atrial fibrillation may benefit from ablation — a specialized catheter-based technique performed in the Electrophysiology Lab at Munson Medical Center by electrophysiologists Brian Jaffe, MD, FACC, and Robert Kennedy, MD.

“It is much more reasonable now to consider ablation as an earlier treatment option — either after a medication trial or as a first line therapy,” says cardiologist Robert Kennedy, MD.

The 2014 ACC/AHA updated guidelines for the management of A fib lists catheter ablation as a class 1 indication for symptomatic, episodic A fib after a failed medication trial, and a class 2a indication for symptomatic, episodic A fib even without a medication trial. “The target now is to treat this disease in early stages, with a goal of eliminating A fib for years to decades at an 80% success rate.” With other arrhythmias, like premature ventricular contractions and supraventricular tachycardia that are more anatomically localized, ablation can achieve permanent elimination of the rhythm 85-95% of the time.

Controlling Rate vs. Controlling Rhythm

The safety profile for ablation has seen much improvement in the last 10 years. Conservative studies show complications at 1-5% and some recent studies have shown less than 1% risk. Even so, the potential risk of stroke, heart attack, puncturing of the heart, pulmonary vein stenosis, or nerve injury to the lungs is a reality and should be considered.

For example, with no symptoms, rate controls very easily with medication therapy. With symptomatic atrial fibrillation, the medications used have considerable side effects and are generally only 40-50% effective while ablation can be up to 80% effective. That efficacy along with its safety should make this an option earlier in the disease process to make chances of successful treatment higher. The intention is to get people off of anti-arrhythmic medications and free of atrial fibrillation. Use of anticoagulant therapy is often maintained unless risk factors dictate that a patient can wean off of this as well.

Catheter Ablation

During the procedure, a catheter is positioned inside the heart near the pulmonary veins. Radio energy applied to the tip of the catheter cauterizes the tissue around each pulmonary vein, which, in effect, short-circuits abnormal electrical signals from the pulmonary vein that can trigger atrial fibrillation. Kennedy and Jaffe use Cardiac CT images and either of two types of 3d navigation and visualization technologies to guide precise catheter movements. Similar to GPS tracking, electrode patches on the patient’s body detect the EP catheter within the patient’s heart, allowing real-time 3D imaging of multiple catheters at a time. This saves the patient from a significant X-ray dose, and allows efficient three dimensional ablation.

“We can use the catheter like a paint brush to create a 3D model, and then use the 3D image to guide delivery of a series of low voltage radio frequency burns,” says Brian Jaffe, MD, FACC. Point-by-point ablation creates lesions encircling the pulmonary veins. “When we complete the circle with the last lesion, the A fib is gone, and the heart rhythm is normal.”

Candidates for A Fib Ablation

Evaluation by the primary care physician is the first step. The best success rates are with patients with documented paroxysmal symptoms, such as palpitations and fatigue, before they become permanent.

Treatment should be customized to the patient. Options range from medication therapies to several surgical approaches. Patients who opt for ablation prepare for the procedure with a course of anticoagulants; a set of CT scans of the left atrium and pulmonary veins are taken prior to surgery. The procedure is done under general anesthesia and requires a one-night hospital stay.

For more information or a consultation, contact Kennedy or Jaffe at Traverse Heart & Vascular, 1-800-637-4033 or via email at bjaffe@mhc.net or rkennedy@mhc.net.
Munson Medical Center offers transcatheter aortic valve replacement (TAVR) for patients suffering from severe, symptomatic native aortic valve stenosis. Without replacement of the aortic valve, this disease is life-threatening. Previous studies have shown that 50 percent of patients will not survive more than an average of two years after the onset of symptoms.

In September 2012, Munson’s Structural Heart Clinic began offering TAVR for aortic stenosis patients who were not candidates for open heart surgery. This less invasive technique typically requires a shorter hospital stay and patients experience a quicker recovery period of one to two weeks.

The Edwards SAPIEN transcatheter heart valve was originally approved by the Food and Drug Administration for the treatment of patients suffering from severe aortic valve stenosis who had been determined by two cardiac surgeons to be inoperable for open aortic valve replacement. That approval has been expanded to include patients who are candidates for high risk open heart surgery.

The balloon-expandable valve is delivered via a catheter-based approach without a median sternotomy or the use of cardiopulmonary bypass. It is the only TAVR therapy approved for commercial use in the country and Munson Medical Center is one of a select number of sites currently offering this technology.

In the last year the structural heart team also began performing TAVR via direct apical and direct aortic approaches, in addition to transfemoral. These new routes involve very small chest wall incisions to deliver the transcatheter aortic valves and do not require sternotomy. “These alternative access points have opened this procedure up to patients with peripheral vascular disease or just small peripheral arteries. They have been well tolerated and really help us to treat more patients who otherwise would not be candidates,” says Nicklaus K. Slocum, MD, who is medical director of the Structural Heart Clinic and one of the physicians performing the procedure.

The structural heart clinic has seen 181 referrals and performed 28 TAVR procedures at Munson Medical Center. Many patients have been evaluated and ultimately underwent open surgical valve replacement as well.

The Structural Heart Clinic brings together a team of physicians, nurses, and specialized staff who work collaboratively to determine a patient’s eligibility for TAVR or the best plan of care for those with structural heart disease. Cardiologists and cardiothoracic surgeons provide comprehensive patient treatment options for aortic stenosis, mitral disease, perivalvular leaks, Patent Foramen Ovale (PFO), and Atrial Septal Defect (ASD).
Advanced Heart Failure Clinic Offered at Munson Now in its Second Year

About five million people in the United States have heart failure. In December 2012, Munson Medical Center began offering a clinic for patients suffering from heart failure.

Patients with advanced heart failure constitute a growing patient population in northern Michigan. These patients are at risk for frequent decompensations that negatively impact quality of life and often lead to frequent ER visits and hospitalizations. In late 2012, a multidisciplinary approach for patients suffering from advanced heart failure became available within the Webber Heart Center. The Munson Heart Failure Clinic brings together a board certified heart failure cardiologist, a dedicated nurse practitioner, and an experienced nurse coordinator specializing in the diagnosis and management of patients with advanced heart failure. The multidisciplinary team also includes a pharmacist, dietician, social worker, exercise specialist, and palliative care consultant as needed.

Munson’s heart failure clinic team provides a comprehensive disease management program that delivers individualized, state of the art care for each patient frequently resulting in a marked improvement in quality of life and less hospital admissions. Patients in the Heart Failure Clinic also have access to Munson’s outpatient cardiac rehabilitation program, and nutrition and medication education for further support of symptom management.

“Heart failure will not go away,” said Dino Recchia, MD, FACC, director of the Heart Failure Clinic, “but by seeing patients in the clinic, we can manage the condition, increase lifespan, and help patients remain active for as long as possible.”

Patients with advanced heart failure have been shown to enjoy improved quality of life and survival when managed in a comprehensive disease management program that delivers individualized care. The heart failure team reviews the patient’s case in detail and develops a personalized treatment plan based on their specific needs. To date, 184 patients are managed through the Munson Heart Failure Clinic.

With the advances in mechanical circulatory support and cardiac transplantation, there is an increasing population of patients who may be candidates for these forms of therapy. “The Heart Failure Clinic works closely with both the Spectrum Health and the University of Michigan mechanical circulatory support and transplant teams to facilitate patient evaluation locally in order to foster efficient and appropriate referrals,” Recchia said. “We also provide local follow up care in a ‘shared care’ model in order to minimize patient travel and improve outcomes.” To date, we have saved patients with heart failure and related conditions over 36,000 miles of driving by offering services locally when they previously had to travel to either Ann Arbor or Grand Rapids.

The Heart Failure Clinic team also has expertise in the evaluation and management of patients with pulmonary hypertension. “We have developed a strong partnership with the pulmonary hypertension program at the University of Michigan and, working together, we can provide the highest level of care for this condition close to home.” Recchia said.

Munson Heart Failure Clinic Facts

- Heart failure is the number one reason for hospital admission in patients 65 and older; it affects nearly five million Americans.
- The Munson Heart Failure Clinic uses a multidisciplinary approach to care.
- The clinic is actively following 184 patients since opening in December 2012.
- Patients in the clinic have very poor heart function with just 22 percent of their blood leaving the heart with each beat; an average heart ejects 55 percent or more of the blood with each beat.
- Patients are seen on average once every three weeks, with frequent phone contact between visits.
- The average 30-day readmission for clinic patients is just 9 percent, compared to 24 percent nationally for heart failure patients.

If you have a patient who would benefit from participation in the clinic, contact the Heart Failure Clinic team at (231) 392-0600.
Munson Medical Center is the Only Hospital in Michigan Offering Intracoronary Brachytherapy for Restenosis

The Webber Heart Center in Traverse City continues to offer brachytherapy as a treatment option for patients with recurrent restenosis.

Most heart centers stopped offering brachytherapy in recent years as drug-eluting stent use proliferated and the problem of restenosis lessened. A collaborative effort between interventional cardiology and radiation oncology has continued to offer intracoronary brachytherapy for select cases of recurrent restenosis not amenable to other percutaneous techniques. Munson is now the only hospital in Michigan performing intracoronary brachytherapy for patients with recurring coronary artery blockage.

“Brachytherapy is a well-established treatment for in-stent restenosis,” said Interventional Cardiologist Steven Mast, MD, FACC. “There are a limited number of stents, usually two, that can be placed in the exact same spot. Present stent technology is very good – with the new drug-eluting stents, 90 - 95 percent of patients can expect good long-term results. The question is, what can we do for the 5 - 10 percent who experience restenosis?”

Restenosis is due to fibrous tissue growth at the site of treatment and cannot be prevented effectively with anticoagulants. Patients with in-stent restenosis have three options: bypass surgery, repeat stenting, or brachytherapy. Radiation therapy aimed at restenosis has two purposes: to treat the restenosis itself by killing the cells that have re-occluded the stent, and to prevent further restenosis by inhibiting tissue growth.

Intracoronary radiation is administered during a special heart catheterization procedure and delivered by a catheter designed to apply radiation to a localized area. “This is a very effective therapy and represents true collaboration between the interventional cardiologists and radiation oncologists,” Mast said.

The interventional cardiologist begins by using balloons or cutting balloons to get the best angioplasty in the stent to alleviate the blockage. The radiation oncologist, using a Novoste™ Beta-Cath system, helps place the brachytherapy catheter, and then prepares the radiation source. “The cardiologist advances the catheter and the radiation oncologist tells us how long it should sit there,” Mast said.

Patients who undergo brachytherapy require a minimum one year of dual antiplatelet therapy of aspirin and Plavix followed by lifelong therapy with aspirin.

All of the interventional cardiologists at Munson Medical Center perform coronary brachytherapy.

Munson Medical Center Interventional Cardiologists

Todd R. Adams, DO
John N. Beattie, MD, FACC
Daniel L. Bonifacio, DO, FACC
Kevin J. Clayton, DO, FACC
Roberto A. Corpus, MD, FACC, FSCAI
Mark A. Elliott, MD, FACC
James M. Fox, MD, FACC
Steven T. Mast, MD, FACC
John E. Raftery, MD, FACC
Nicklaus K. Slocum, MD

For more information, contact any member of the interventional cardiology team at 1-800-637-4033.

Cardiovascular Research

Cardiovascular Research at Munson Medical Center brings the newest and most promising research trials to our community with cutting-edge therapies otherwise not available to patients. Previously, this type of research was available only at larger hospitals and university-based medical centers.

Munson has been involved in Cardiovascular Research since 2007, and has participated in more than 20 industry or government sponsored studies, and has enrolled almost 800 people from all over northern Michigan.

The Cardiovascular Research team includes physicians from multiple specialties, including interventional cardiology, electrophysiology, vascular surgery, cardiothoracic surgery, and radiology. Our research team also has dedicated certified clinical research nurses and a local Institutional Review Board.

For a complete list of current studies, go to munsonhealthcare.org/cardiovascularresearch.

For more information, to make a referral, or review a current list of studies, contact Jan Boettcher, RN, CCRC, cardiovascular research coordinator, at (231) 935-6746.
Meet the Webber Heart Center Team

The Webber Heart Center team provides preventative, interventional, and ongoing comprehensive care for patients with cardiac conditions.

Cardiothoracic Surgeons of Grand Traverse
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David K. Macintosh, DO, FACC
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Anthony B. Ochoa, MD, FACC
John E. Raftery, MD, FACC
Dino Recchia, MD, FACC
Michael E. Schulte, MD, FACC
Nicklaus K. Slocum, MD
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John A. Varner, DO

Webber Heart Center Partners:
Great Lakes Heart Center of Alpena
(989) 356-0141
Sanjeev Arora, MD, FACC
Abraham Salacata, MD, FACC
Christopher Walls, MD, FACP

How to Refer Patients
To refer patients for consultation, specialized care, or for a physician consult, please contact a physician at the numbers noted here. For 24/7 hospital transfers, please call 1-800-468-6766.

Traverse Heart & Vascular clinic locations:
Alpena, Cadillac, Charlevoix, Frankfort, Gaylord, Grayling, Kalkaska, Manistee, Prudenville, Sault Ste. Marie, and Traverse City