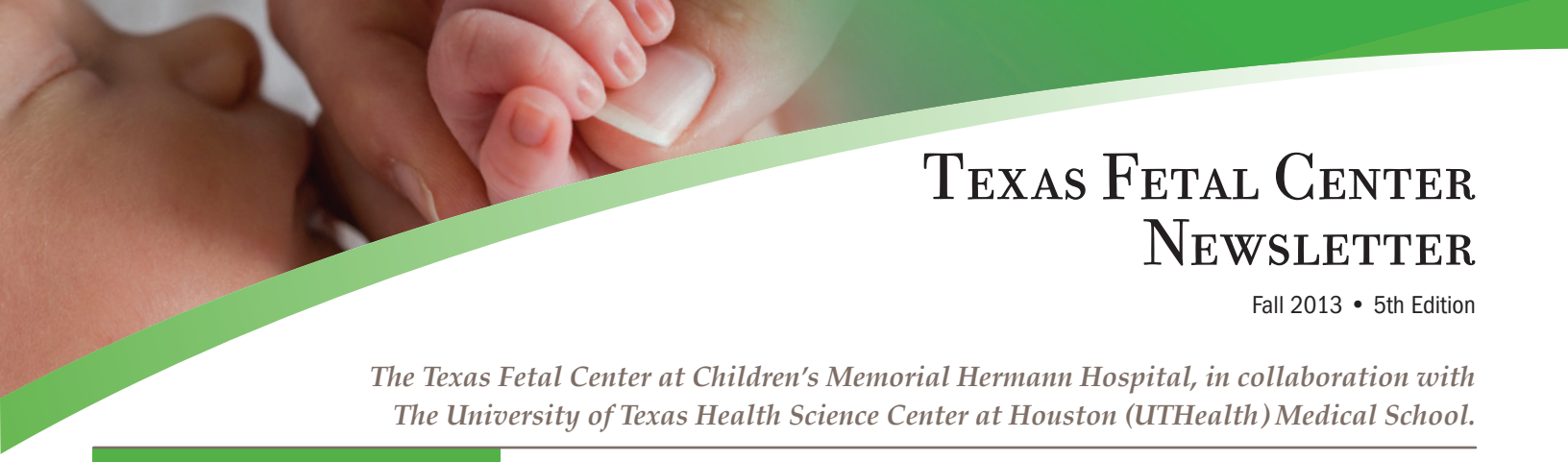


Texas Fetal Center Newsletter

Fall 2013 • 5th Edition

The Texas Fetal Center at Children's Memorial Hermann Hospital, in collaboration with The University of Texas Health Science Center at Houston (UTHealth) Medical School.

Contents

Ways to Give to the Texas Fetal Center

Help us continue to provide to the highest level of specialized care to both mothers and babies and support the groundbreaking work of the Texas Fetal Center.

For more information on how to support the Texas Fetal Center contact Randi Koenig, director of development at the Memorial Hermann Foundation, at 713.242.4643 or email Randi.Koenig@memorialhermann.org.

Stay Connected

Texas Fetal Center Reaches Milestone for Laser Ablation

The Texas Fetal Center reached a significant milestone in May, when physicians affiliated with the Center performed the 100th laser ablation to treat twin-to-twin transfusion syndrome (TTTS) since the Center opened in 2011.

"We are definitely one of the busier centers in the country," said Kenneth J. Moise Jr., M.D., co-director, Texas Fetal Center, and professor, department of Obstetrics, Gynecology and Reproductive Sciences and department of Pediatric Surgery at UTHealth Medical School. "Patients and referring physicians should be cognizant of experience, and how the expertise associated with higher volumes often leads to better outcomes for both mother and babies."

Dr. Moise added that while many of their patients come from Texas, physicians affiliated with the Texas Fetal Center often treat patients from surrounding states, having performed the ablation on patients from as far as North Dakota and Alaska. "We have four highly experienced surgeons on staff performing laser ablation to treat TTTS," said Dr. Moise. "We are diligent about structuring our time off to ensure that there are always two of us here at any time. We always 'leave the light on' at the Center for the patients."

One in five twin pregnancies results in identical twins, which carry a much higher risk of complications. One such complication is TTTS, which occurs when twins share one placenta with connecting vessels that allow unequal exchange of blood between the fetuses. The condition effects up to 15 percent of identical twins, and if left untreated, results in high mortality and morbidity for both fetuses.

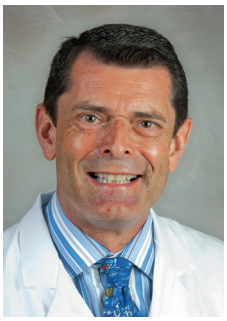
Laser ablation of the communicating vessels between the two fetuses is the recommended therapy for Stage II TTTS and more advanced stages, and can be performed between 16 and 26 weeks gestation. Survival of at least one twin is seen in approximately 90 percent of cases, with survival of both fetuses in 70 to 75 percent of cases. The average gestational age at delivery is 31 weeks.

continued

"In the past, serial amnioreduction was the recommended treatment," said Dr. Moise. "It made the mother much more comfortable, but it didn't fix the problem. Ultimately, the overall survival rate for babies with this technique is much lower than laser treatment." At press time, Dr. Moise and his colleagues at the Texas Fetal Center have performed more than 135 laser ablations to treat TTTS, with a 76 percent survival rate for both fetuses. Team members have performed more than 800 TTTS laser ablations combined throughout their careers.

"The recommendation is that once monochorionic twins have been identified, usually around 16 weeks gestation, an ultrasound should be performed every two weeks," said Dr. Moise. "However, recent research has shown that TTTS can present within a week of an ultrasound. Physicians need to be tuned in to the symptoms. We've come a long way in terms of quality outcomes for successfully treating these babies, but it all comes down to early detection."

Meet the Team



Michael Bebbington, M.D., M.H.Sc.
Director, Prenatal Diagnosis and Fetal Imaging, Texas Fetal Center
Professor, Department of Obstetrics, Gynecology and Reproductive Sciences and Department of Pediatric Surgery

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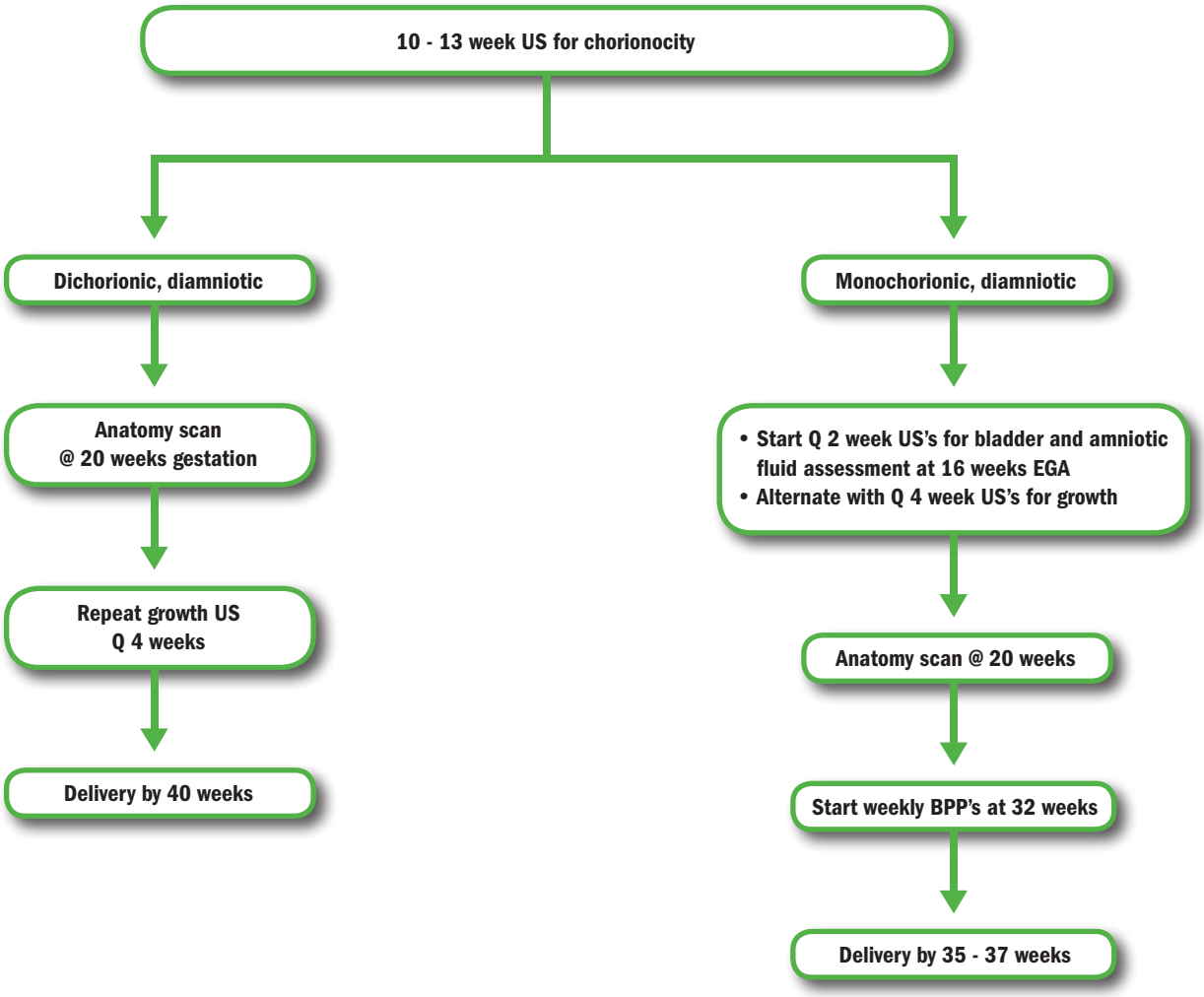
Kenneth J. Moise Jr., M.D.
Co-director, Texas Fetal Center
Professor, Department of Obstetrics, Gynecology and Reproductive Sciences and Department of Pediatric Surgery

Ramesha Papanna, M.D., M.P.H.
Assistant Professor, Department of Obstetrics, Gynecology and Reproductive Sciences

Surveillance of Monochorionic Twins

Chorionicity is a critical consideration in the management of twin pregnancies. According to the Society for Maternal-Fetal Medicine, all women with a twin pregnancy should be offered an ultrasound exam at 10 to 13 weeks gestation to assess viability, chorionicity, crown-rump length and nuchal translucency.*

Multiple Gestation Ultrasound Algorithm



** SMFM, Simpson LL. Am J Obstet Gynecol 2013;208:3-18.*

Texas Fetal Center Patient Story – Timely Diagnosis and Treatment for TTTS Saves Mother and Her Twins

Henry and Johanna Quezada-Ventura with their twin girls, Camilla Rose and Katherine Emelia.

When Johanna Quezada-Ventura discovered she was pregnant with identical twins, she was both shocked and excited. As a mother of a 4-year-old daughter, she anticipated yet another uncomplicated pregnancy similar to her first, and didn't think too much about the risk factors associated with identical twins as explained by her OB/GYN.

"Early on, this pregnancy was much different though," said Quezada-Ventura, "I had severe morning sickness and at around 20 weeks other complications began to arise." She had shortness of breath, extreme tenderness in her abdomen, and her muscles were painfully sore. "I called my doctor, and she said it was probably associated with the ligaments stretching to accommodate the twins."

When her symptoms worsened after a few days, she went to the emergency room, where they ruled out appendicitis, gave her medication for gas, and recommended bed rest for the remainder of the weekend. "When I got home, my abdomen grew so large, so rapidly, that all of a sudden none of my maternity clothes fit. It was as if my clothes had gotten too small overnight."

Quezeda-Ventura's OB/GYN referred her to Jerrie Refuerzo, M.D., a maternal-fetal medicine specialist with expertise in critical care obstetrics, maternal medical conditions and first-trimester screening. "My abdominal pain was so severe I was crying to the sonographer," said Quezada-Ventura. "Dr. Refuerzo diagnosed twin-to-twin transfusion syndrome (TTTS), and we were immediately sent to the Texas Fetal Center at Children's Memorial Hermann Hospital in the Texas Medical Center for treatment."

TTTS is a rare complication of monochorionic twins in which they share one placental mass and connections exist between the circulations of the two fetuses within the placenta. These connections allow for the exchange of blood between the fetuses, and normally the exchange is balanced. But in up to 15 percent of cases, an imbalance develops, with one twin (the donor) becoming hypovolemic, while the other (the recipient) develops signs of volume overload and hypertension. The end result can be cardiac failure for one or both of the twins.

"Everything happened so fast after Dr. Refuerzo's diagnosis," said Quezada-Ventura. "I immediately left her office for Dr. Moise's office, and his coordinator Jessica checked me in over the phone in the car on my way to the Medical Center." Kenneth Moise Jr., M.D., is an internationally renowned specialist in the treatment of severe TTTS, and has extensive experience in open fetal surgery and other fetoscopic-based fetal interventions. He is co-director of the Texas Fetal Center at Children's Memorial Hermann Hospital, concurrent with his position as professor, department of Obstetrics, Gynecology and Reproductive Sciences at UTHealth Medical School.

"Dr. Moise explained the TTTS diagnosis very thoroughly to me and my husband, and he was clear how important it was to stop the blood sharing," said Quezada-Ventura. "In order to give both babies the best chance at survival, he recommended laser ablation, and he made sure we understood all the risks." She was admitted to the hospital on the spot and prepared for surgery at 5:30 a.m. the following day.

"Laser ablation of the communicating vessels between the two fetuses is the optimal therapy for TTTS," said Dr. Moise, who completed Quezada-Ventura's surgery in approximately two hours. During the procedure, a fetoscope is inserted into the sac of the recipient twin and the placental surface is evaluated for vascular connections. A diode laser is used to coagulate the blood in any connecting vessels, separating the placental circulations and stopping the transfusion process.

"We connect the dots across the entire placenta so that any smaller vessels that aren't visible are coagulated shut, ensuring there is no more blood sharing," added Dr. Moise, who together with his team has performed more than 800 laser ablations for TTTS.

He is considered one of the region's preeminent specialists in the procedure, along with his partners Anthony Johnson, D.O., Michael Bebbington, M.D., M.H.Sc., and Ramesha Papanna, M.D., M.P.H.

During Quezada-Ventura's ablation, Dr. Moise removed almost 2 liters of fluid from the recipient baby's amniotic sac and coagulated shut seven vessels on the placenta. The first 24 hours after the ablation are considered critical, and mother and babies all came through successfully. "The first day after the surgery is a big day, as is day number seven. By day 28, any complications or risks from the surgery seem to go away," said Dr. Moise.

Quezada-Ventura was released after 24 hours and was scheduled for weekly sonograms with Dr. Moise for the duration of her pregnancy. She was advised that she would be admitted to the hospital at 28 weeks gestation barring any other complications, as the twins were also considered high risk for cord entanglement and needed to be closely monitored.

Admitted at 27 weeks for contractions, Quezada-Ventura went into preterm labor at 28 weeks, five days gestation, when Camilla Rose (2 lbs., 14 oz.) and Katherine Emelia (2 lbs., 13 oz.) were born via cesarean section. The twins, who spent several weeks in the NICU and are now in intermediate care, have experienced no complications and are considered "feeders and growers." Quezada-Ventura was released four days after their birth and the twins are expected to be discharged close to their October 2 due date. "I am so grateful for Dr. Refuerzo's timely diagnosis and to Dr. Moise and his team for saving our daughters' lives," she said. "If it weren't for them, the twins wouldn't be here."

Dr. Moise added that the outcome for Quezada-Ventura and her twins was optimal thanks to early intervention, and he expects mother and babies to suffer no long-term repercussions from their ordeal. "Although 76 percent of the mothers we treat take home both babies, sometimes the diagnosis is too late for treatment and it's simply tragic," said Dr. Moise. "Early detection is crucial to the successful treatment of TTTS. Once identified at around 16 weeks, identical twins should have an ultrasound every two weeks, and physicians should know the warning signs (see below) and take them very seriously."

Twin-twin transfusion syndrome (TTTS) is a disease that affects 15 percent of identical twins that share a common placenta (monochorionic). Identical twins are far more likely than fraternal twins to develop life-threatening complications for both babies and mother. Among the risks they face are TTTS, which can be deadly if not diagnosed and treated early. Symptoms OB/GYN's should be familiar with include:

- Rapid weight gain
- Clothes suddenly not fitting
- Extreme pelvic pressure
- Sudden growth in girth
- Shortness of breath

The affiliated specialists at the Texas Fetal Center at Children's Memorial Hermann Hospital are committed to providing the highest quality care for the most complicated cases. Imaging, fetal testing and sub-specialty appointments are all arranged by the Center, through a single phone call. A transfer of obstetrical care may be arranged at a physician's request.

When a patient is referred, the Center's affiliated physicians and coordinators work diligently to walk referring physicians through the process and keep them informed of the patient's status every step of the way. For more information or for a patient referral, contact us at:

Phone: 832.325.7288
Toll free: 1.888.818.4818
Fax: 713.383.1464
Email: Texasfetalcenter@uth.tmc.edu

Texas Fetal Center: Research And Education

Ongoing Research Projects

- Ramesha Papanna, M.D., assistant professor at UTHealth Medical School, is beginning to establish his laboratory to study the various factors associated with preterm premature rupture of the membranes and premature labor after fetal intervention. He has recently submitted an application for a Society for Maternal-Fetal Medicine (SMFM)/American Gynecological and Obstetrical Society (AGOS) training grant to support his investigation.

- Dr. Papanna is in the early planning stages of a multi-center randomized trial to study the use of vaginal progesterone to prevent preterm labor after laser therapy for twin-twin transfusion syndrome.

- Kenneth Moise Jr., M.D., is collaborating with Kuojen Tsao, M.D., UTHealth department of Pediatric Surgery, Stephen Fletcher, D.O., and David Sandberg, M.D., UTHealth department of Pediatric Neurosurgery, and Russell Stewart, Ph.D., of the University of Utah, to study the use of underwater glue to patch fetal myelomeningocele (MMC). Early results for ovine experiments indicate that a laser activated version of the glue can be used to successfully attach the patch to the fetus. Additional experiments are planned for the fall of this year.

- Pedro Argoti, M.D., a second-year fetal intervention fellow at UTHealth Medical School, has collaborated with Judith Smith, Pharm.D., to complete a study of the maternal pharmacokinetics of a remifentanil infusion in pregnant women undergoing fetal intervention procedures. Using data from this unique investigation, Dr. Argoti is beginning to evaluate the fetal levels of remifentanil in an in vitro placental model.

- Anthony Johnson, D.O., has enrolled the first patient from UTHealth Medical School in an international randomized clinical trial to study the role of laser therapy vs. conservative management for stage 1 twin-twin transfusion syndrome.

In Print and Publication

Argoti PS, Bebbington M, Johnson A, Moise Jr. KJ. Sonographic capture of acute exsanguination in a case of developing monochorionic co-twin demise. Ultrasound Obstet Gynecol 2013;42:119-20.

Moise Jr. KJ, Bebbington MW, Johnson A, Walker M, Johnson M. The benefit of laser therapy for severe twin-twin transfusion: which metaanalysis do you pick? Am J Obstet Gynecol 2013;209:158-9.

Papanna R, Mann LK, Moise KY, Johnson A, Moise Jr. KJ. Absorbable gelatin plug does not prevent iatrogenic preterm premature rupture of the membranes after fetoscopic laser surgery for twin-twin transfusion syndrome. Ultrasound Obstet Gynecol. (Epub ahead of print 4/18/2013)

Papanna R, Bebbington M, Moise Jr. KJ. Novel findings of an iatrogenic fetal membrane defect after previous fetoscopy for twin-twin transfusion. Ultrasound Obstet Gynecol 2013;42:118-9.

Argoti PS, Bebbington M, Adler M, Johnson A, Moise Jr. KJ. Serial intrauterine transfusions for a hydropic fetus with severe anemia and thrombocytopenia caused by parvovirus: Lessons learned. Am J Perinatol (in press).

Hui L, Wick HC, Moise Jr. KJ, Johnson A, Luks F, Haeri S, Johnson KL, Bianchi DW. Global gene expression analysis of amniotic fluid cell-free RNA from recipient twins with twin-twin transfusion syndrome. Prenat Diagn 2013; 33:873-83.

Argoti PS, Bebbington MW, Johnson A, Moise Jr. KJ. Indirect pump: unique presentation of a monochorionic-triamniotic triplet gestation complicated by TRAP sequence and successfully managed with radiofrequency ablation of the acardiac fetus. Ultrasound Obstet Gynecol 2013;42:115-7.

Connell JP, Augustini E, Moise Jr. KJ, Johnson A, Jacot JG. Formation of gap junctions in amniotic fluid-derived stem cells induced by transmembrane co-culture with neonatal rat cardiomyocytes. J Cell Mol Med 2013;17:774-81.

Bebbington MW. Fetal therapy: the need for well designed collaborative research trials. Ultrasound Obstet Gynecol 2013;42:1-3.

Papanna R, Block-Abraham D, Buhimschi IA, Bebbington MW, Garcia E, Khalek N, Harman C, Johnson A, Baschat A, Moise Jr. KJ. Risk factors associated with preterm delivery after fetoscopic laser surgery for twin-twin transfusion syndrome. Ultrasound Obstet Gynecol (in press).

Bebbington MW. Selective reduction in multiple pregnancies. Clin Obstet Gynecol (in press).

Chaoui R, Gardiner H. Perinatal cardiology 2013. Semin Fetal Neonatal Med (Epub ahead of print 7/1/2013).

Gardiner H, Chaoui R. The fetal three-vessel and tracheal view revisited. Semin Fetal Neonatal Med (Epub ahead of print 3/2/2013).

Taylor-Clarke MC, Matsui H, Roughton M, Wimalasundera RC, Gardiner HM. Ventricular strain changes in monochorionic twins with and without twin to twin Transfusion syndrome. Am J Obstet Gynecol 2013;208:462e1-6.

Gardiner HM, Kovacevic A, van der Heijden LB, Pfeiffer PW, Franklin RC, Gibbs JL, Averiss IE, LaRovere JM. Prenatal screening for major congenital heart disease: assessing performance by combining national cardiac audit with maternity data. Heart (in press).

Gardiner HM. Commentary on: Zidere V, Pushparajah K, Allan LD, Simpson JM. Three-dimensional fetal echocardiography for prediction of the postnatal surgical approach in double outlet right ventricle: a pilot study. Ultrasound Obstet Gynecol (in press).

Presentations at National and International Meetings

Several members presented abstracts at the 23rd World Congress on Ultrasound in Obstetrics and Gynecology meeting scheduled for October, 2013, in Sydney, Australia.

- Bebbington MW, Tian ZY, Rychik J. Left heart geometry and function in congenital diaphragmatic hernia (CDH).

- Gardiner HM, Kovacevic A, van der Heijden LB, Pfeiffer PW, Franklin RC, Gibbs JL, LaRovere JM. Assessing hospital and lesion-specific screening performance for major congenital heart disease.

Several members of the Center have submitted abstracts for consideration for presentation at the 34th Annual Meeting of the Society for Maternal-Fetal Medicine (SMFM) scheduled for February, 2014 in New Orleans:

- Argoti PS, Tabbah SM, Thung S, Papanna R, Moise Jr. KJ. Circulating cell free fetal (ccff) DNA for RHD typing to determine the need of RhD immunoglobulin (IgG). Is this cost-effective?

continued

Texas Fetal Center: Research And Education *continued*

- Argoti PS, Garcia EI, Coffer L, Giezentanner A, Johnson A, Smith JA, Moise Jr. KJ. Pharmacokinetic profile of remifentanil in patients undergoing laser therapy for twin-to-twin transfusion Syndrome (TTTS).

- Papanna R, Mann LK, Baschat AR, Garcia E, Moise K, Bebbington MW, Snowise S, Khalek N, Moise Jr. KJ, Johnson A. Preoperative cervical length below the 20th percentile is an independent indicator of spontaneous preterm birth after fetoscopic laser surgery for twin-twin transfusion syndrome.

- Papanna R, Mann LK, Tseng, SCG, Stewart RJ, Kaur S, Swindle M, Pedro A, Garcia E, Tatevian N, Buhimschi IA, Kyriakides T, Moise Jr. KJ. Cryopreserved human amniotic membrane with underwater adhesive coacerviates to seal and promote healing of iatrogenic fetal membrane defect site in a swine model.

- Papanna R, Mann LK, Garcia E, Ward A, Boring N, Bebbington MW, Khalek N, Harman C, Johnson A, Moise Jr. KJ, Baschat A. Preterm delivery after fetoscopic laser surgery for twin-twin transfusion syndrome: Etiology and risk factors.

- Papanna R, Mann LK, Bebbington MW, Johnson A, Garcia E, Moise Jr. KJ, Buhimschi CB, Buhimschi IA. Amnioinfusion induced amniotic membrane apoptosis and autophagy: Novel insights into the mechanisms of preterm premature rupture of membranes after fetoscopic laser surgery for twin-twin transfusion syndrome.

Invitations:

- Kenneth Moise Jr., M.D., was invited as a participant in a workshop on Autosomal Recessive Kidney Disease sponsored by the Polycystic Kidney Disease Foundation held in May, 2013, in Washington, D.C.

- Michael Bebbington, M.D., chaired a Fetal Therapy Workshop at the 23rd World Congress of Ultrasound in Obstetrics and Gynecology held in October, 2013, in Sydney, Australia. He also presented a lecture entitled: The aftermath of the MOMS trial: Current status on open fetal surgery for myelomeningocele.

- Helena Gardiner, M.D., chaired a session entitled Cardiac function in assessment and prediction of disease at the 23rd World Congress of Ultrasound in Obstetrics and Gynecology held in October, 2013, in Sydney, Australia. She also presented a lecture entitled Cardiac therapy in utero.

Educational Events

Management of Diabetes in Pregnancy:
An Update for the Busy Clinician

Dr. Sean Blackwell and Dr. Baha Sibai co-directed the Management of Diabetes in Pregnancy: An Update for the Busy Clinician educational symposium on Saturday, November 9 at The Brown Foundation Institute of Molecular Medicine for the Prevention of Human Disease in Houston. Maternal-fetal medicine specialists at UTHealth Medical School discussed the current clinical guidelines and best practices for the treatment and care of diabetes in pregnancy, including how to:

- Counsel patients on the ideal components of a diabetic diet and identify and utilize strategies for optimal glucose control and targets for women with Type I and Type II diabetes during pregnancy
- Implement the current recommendations for screening, diagnosis and treatment options for gestational diabetes
- Identify patients at highest risk for diabetic embryopathy by recognizing the mechanisms that lead to the abnormal fetal development and perform appropriate studies to make the diagnosis
- Implement the current guidelines and recommendations for the timing and mode of delivery in women with gestational and pre-gestational diabetes, including the role of cesarean delivery without labor attempt
- Examine the guidelines and recommendations for intrapartum and postpartum management of women with gestational and pre-gestational diabetes
- Counsel patients on the long-term consequences related to fetal programming and the increased risk of childhood obesity in children born from mothers' with gestational and pre-gestational diabetes
- Understand the risk factors, frequency and management of medical emergencies with gestational and pre-gestational diabetes

To view the presentations provided at the event, visit childrens.memorialhermann.org/cme.

SAVE THE DATE

4th Annual Texas Two-Step Conference: Medicolegal Issues in OB/GYN
Friday, February 28 - Saturday, March 1, 2014 · Hotel Sorella, CITY CENTRE, Houston, TX

Co-directed by Sean Blackwell, M.D., and Baha Sibai, M.D.

Obstetrics and Gynecology is one of the highest at risk specialties for legal litigation. The two-day conference will include lectures from experts in Obstetrics and Gynecology providing current perspectives, guidelines and best practices for significant health care liability concerns in OB/GYN. The conference will also include lectures from a medical malpractice attorney and a health care risk management expert.

For more information, email Maria.S.Keefer@uth.tmc.edu or call 713.500.5850.

If you would like to receive communication about future education events, email texasfetalcenter@memorialhermann.org

Updates and News

Dr. Gardiner training an ultrasound sonographer

Congenital Heart Defect Screening Program

Helena Gardiner, M.D., co-director, Fetal Cardiology Program at the Texas Fetal Center, recently launched phase one of the Congenital Heart Defect Screening Program. The Program is an active hands-on training and education outreach program aimed at improving the skills and confidence of ultrasound sonographers in the detection of major congenital heart defects (CHD) during pregnancy.

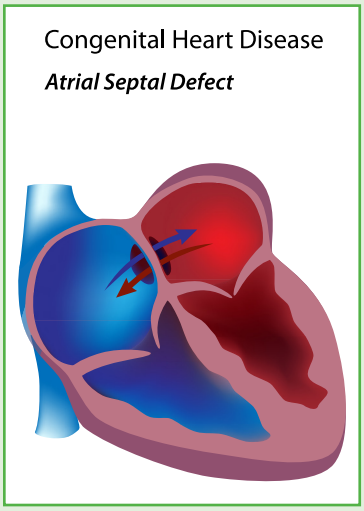
Phase one of the Program aims to train the team of sonographers affiliated with Children's Memorial Hermann Hospital and those located at the nine surrounding Memorial Hermann Health System community campuses. "We recognize that every sonographer is different. By spending time with sonographers and assessing their needs, we're able to provide them with individual training to boost their confidence and improve their detection skills," says Dr. Gardiner, "Fetal cardiology is a rapidly evolving field and with continuing advances in ultrasound technology and ongoing research, new discoveries are frequently found."

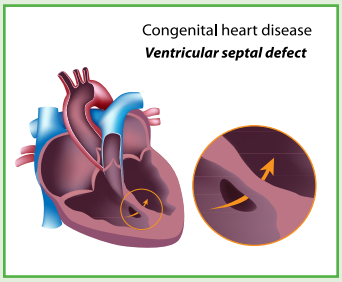
The overall goal of the educational screening program is to improve the early detection rate of heart defects through education and training. As the confidence and detection skills of sonographers and technicians continue to improve, they can serve as mentors to others in their field, thus further emphasizing the importance of education and training.

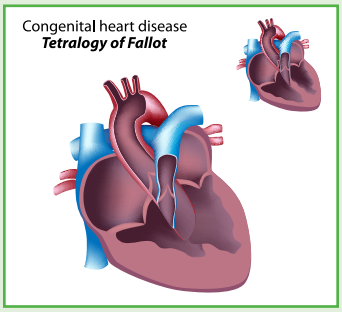
Phase two of the Congenital Heart Defect Screening Program will include:

- Hands-on training (provided by a trained TXTT sonographer) for ultrasound sonographers in the Houston area and surrounding communities
- Continuing education opportunities, including in-person lectures, workshops and online courses

If you are interested in participating in an in-person training session, or for more information about the Program, contact Ian Averiss at 832.325.7288.







A congenital heart defect (CHD) is an abnormality that is present at birth in any part of the heart. Major heart defects are those that require surgery before a child reaches the first birthday.

Congenital heart defects are:

- The most common type of birth defect
- The leading cause of infant deaths in the United States
- Present in one out of every 125 babies born each year in the United States

Comprehensive Educational Program is Key to the Success of the Fetal Spina Bifida Program

The Fetal Surgery for Spina Bifida Program at the Texas Fetal Center, established in 2011, continues to evaluate and care for patients across the state of Texas and throughout the United State. The goal of the Program is to educate all patients during the evaluation process to help them fully comprehend the condition as well as the associated surgical and nonsurgical risks for both mother and baby.

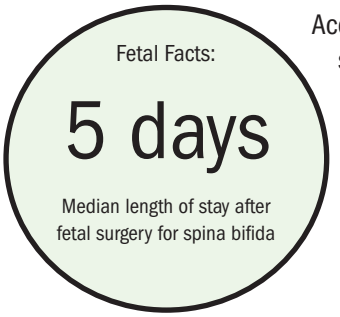
When referred to the Texas Fetal Center with a fetal diagnosis of spina bifida, all patients are asked to review the Center's comprehensive spina bifida and fetal surgery educational video prior to their initial consultation. The educational video provides families with an overview of the condition, the history of the MOMs trial and inclusion criteria, as well as an overview of the surgical repair.

Once patients arrive at the Center for their initial consultation, they are provided with a comprehensive screening program to determine their candidacy for fetal surgery. Qualified patients are evaluated and counseled by a multidisciplinary team of spina bifida and affiliated fetal surgery experts. A series of advanced fetal imaging tests is also performed, including fetal ultrasound, fetal magnetic resonance imaging (MRI) and fetal echocardiography.

Over a span of two to three days, patients and their families meet with all affiliated members of the care team, including:

- Child Life Experts
- Fetal surgeons
- Genetic counselors
- Maternal-fetal medicine specialists
- Neonatologists
- Obstetric and fetal anesthesiologists
- Pediatric neurosurgeons
- Pediatric spina bifida specialists
- Social workers
- Texas Fetal Center nurse coordinators

This thorough patient consultation process has been a key component to the growth of the Spina Bifida program. "We realized very early on that when we meet patients for the first time, they typically have had very little to no education provided about spina bifida," says KuoJen Tsao, M.D., co-director of the Texas Fetal Center. "We do not expect families to make a truly informed decision about a very serious condition and high-risk surgical operation if they do not have a full understanding of the disease."



According to Texas Fetal Center's data, the ratio of patients evaluated to those that undergo fetal surgery is approximately 5 to 1. "We meet and evaluate more patients than those that undergo surgery," says Dr. Tsao. "Many patients will not qualify for a variety of reasons; however we do have a proportion of patients that turn down the surgical procedure after going through the evaluations and educational program. After learning what life may be like for their family and their child born with spina bifida, they tell us 'This isn't so bad. We can handle this situation without the risks of fetal surgery.' When that happens, we know we've done our best to educate the family and provide them with all of their options so they can make the best decision for their family."

For more information about spina bifida and the fetal surgery program, please visit us at texasfetalcenter.org/spina-bifida.
To refer a patient, call toll free 1.888.818.4818.

Texas Fetal Center welcomes Ramesha Papanna, M.D., M.P.H., to the team of physicians and researchers

Ramesha Papanna, M.D., M.P.H., joined the Texas Fetal Center and the division of Maternal-Fetal Medicine at UTHealth Medical School in July as an assistant professor. Dr. Papanna is an internationally recognized physician for his research and presentations about improving outcomes following fetal intervention and investigating methods for the prevention of preterm delivery.

Dr. Papanna received his medical degree in India and relocated to Houston where he received his master's in public health from UTHealth Medical School. He completed his residency training at Rochester General Hospital with a research focus in the diagnosis of preeclampsia. He completed a fetal intervention fellowship at Baylor College of Medicine in Houston, under the direction of Kenneth Moise Jr., M.D., and Anthony Johnson, D.O., and recently completed a maternal-fetal medicine fellowship at Yale University focusing on fetal membrane biology for the prevention of preterm, premature rupture of the membranes after fetal surgery.

Dr. Papanna has published over 24 peer-reviewed articles in leading scientific journals and has written four chapters related to fetal intervention. He serves as a reviewer for national publications including *Obstetrics and Gynecology, American Journal of Obstetrics and Gynecology*, *American Journal of Perinatology, Reproductive Sciences, Archives of Gynecology and Obstetrics, Pediatric Research, Ultrasound in Obstetrics and Gynecology* and *Annals of Clinical and Laboratory Science*. He is also an active member of the American College of Obstetricians and Gynecologists, International Fetal Medicine and Surgery Society, American Institute of Ultrasound in Medicine and the Society for Maternal-Fetal Medicine.

Dr. Papanna's specialty interests include prevention of preterm delivery after fetal intervention and surgery. He is currently involved in multiple research studies, including:

- NIH-funded research investigating sealing of iatrogenic defects at fetoscopy using a decellularized amniotic membrane patch secured by underwater glue, in collaboration with Russell J Stewart, Ph.D., from the University of Utah and Scheffer C.G. Tseng, M.D., Ph.D., from Ocular Surface Center, P.A. in Miami.

- Dr. Papanna is beginning to establish his laboratory to study the various factors associated with preterm premature rupture of the membranes and premature labor after fetal intervention. He has recently submitted an application for the Society for Maternal-Fetal Medicine (SMFM)/American Gynecological and Obstetrical Society (AGOS) training grant to support his investigation.

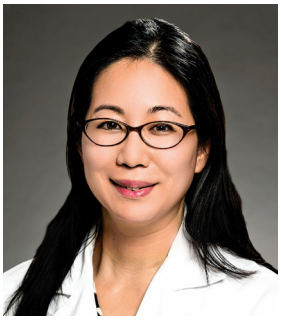
- Dr. Papanna is in the early planning stages of a multi-center randomized trial to study the use of vaginal progesterone to prevent preterm labor after laser therapy for twin-twin transfusion syndrome.

Dedicated Fetal Echocardiography Technician
David Boudreaux, R.D.M.S.

David Boudreaux, R.D.C.S., is a trained ultrasonographer with special expertise in fetal imaging who brings more than eight years of experience in noninvasive cardiology to our Fetal Cardiology Program. He works closely with the team of fetal cardiologists to perform fetal echocardiograms.

Fetal Cardiology Nurse Coordinator
Beth Gould, R.N.

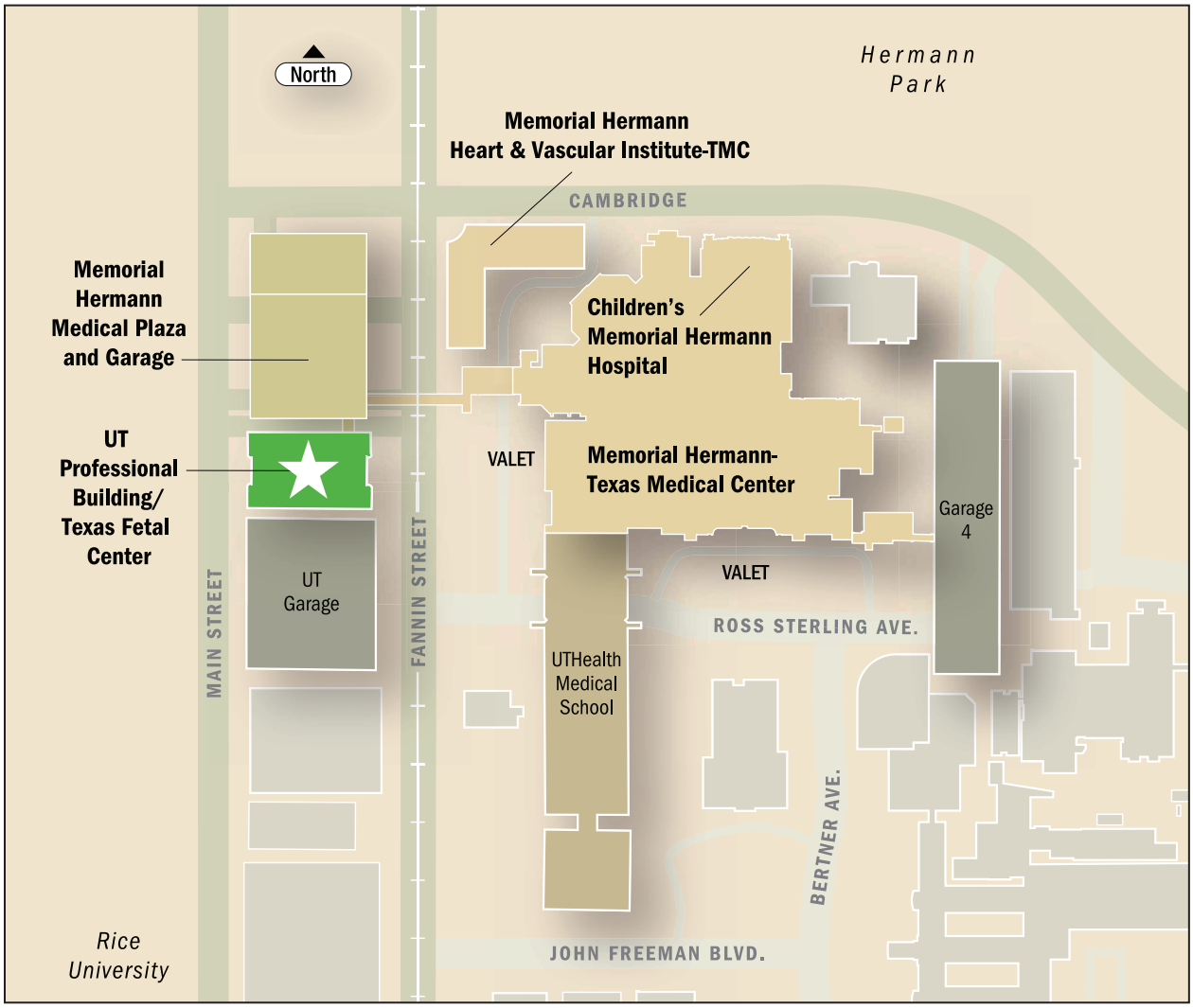
Beth Gould, R.N., is a clinical nurse coordinator at the Texas Fetal Center with experience in pediatric cardiovascular surgery. She graduated from Cedarville University with a bachelor's in nursing. Prior to joining the Texas Fetal Center, she worked as the nurse coordinator for the Pediatric Cardiovascular Surgery team at Children's Memorial Hermann Hospital and previously at the Pediatric Intensive Care Unit at Kentucky Children's Hospital. She brings her experience and knowledge of congenital heart disease to the Texas Fetal Center and has a passion for caring for and educating patients and families who have been diagnosed with a congenital heart defect. Each year, Gould has been invited to participate in a mission trip to Nicaragua to assist in pediatric open heart surgeries. She has been able to participate in multiple mission trips including almost 40 surgeries.



Fetal MRI Specialist
Jennifer Johnston, M.D.

Jennifer Johnston, M.D., is an assistant professor in the department of Diagnostic and Interventional Imaging at UTHealth Medical School. She is a specialty trained pediatric radiologist with a sub-specialty in fetal MRI. She received her medical degree at Vanderbilt University School of Medicine and went on to complete her residency in diagnostic radiology at Tulane University School of Medicine and a fellowship in pediatric radiology at Cincinnati Children's Hospital Medical Center.

Contacts



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