

The Chicago Institute
for Fetal Health

Fetology Chicago: Practice and Discovery

*Sponsored by The Chicago Institute for Fetal Health at Ann & Robert H. Lurie Children's Hospital of Chicago and
Northwestern University Feinberg School of Medicine Office of Continuing Medical Education*

Hybrid Event | September 21, 2023

 Ann & Robert H. Lurie
Children's Hospital of Chicago®

M Northwestern Medicine®
Feinberg School of Medicine



Welcome to Fetology Chicago

Learning Objectives

- Discuss recent advancement in the treatment of common fetal conditions that are amenable to fetal surgery
- Describe the evidence that currently exists for the practice of fetal intervention
- Identify current knowledge gaps that limit broader application of fetal surgery
- Characterize innovative approaches currently used in the study of fetal intervention
- Review the indications, outcomes and future directions in congenital heart disease diagnosis and research
- Discuss the advances in diagnostics technology, including medical imaging for the fetus and genetic therapies

Accreditation Statement

The Northwestern University Feinberg School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit Designation Statement

The Northwestern University Feinberg School of Medicine designates this live activity for a maximum of *7.25 AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only credit commensurate with the extent of their participation in the activity.

Continuing Nursing Professional Development

Ann & Robert H. Lurie Children's Hospital of Chicago is approved as a provider of nursing continuing professional development by the Midwest Multistate Division, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation. This conference is jointly provided by Ann & Robert H. Lurie Children's Hospital of Chicago and Northwestern Memorial Hospital.

CME credits are not available for the Fetal Health Nursing Session, however all registrants are welcome to participate in that session.

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Program Agenda

7:30-7:35 a.m. Welcome Remarks Aimen Shaaban, MD

Fetal Cardiology

Moderator: Sheetal Patel, MD

7:35-8:00 a.m.	Natural and Unnatural History of Fetal Heart Disease	Karim Diab, MD
8:00-8:25 a.m.	Fetal Cardiac Interventions: Current State and Future Possibilities	Sheetal Patel, MD
8:25-8:50 a.m.	Delivery Room Planning and Neonatal Resuscitation Protocols in Complex CHD Lesions	Mary Donofrio, MD
8:50-9:00 a.m.	Q&A	

Fetal Urology

Moderators: Ed Gong, MD & Kavita Hodgkins, MD

9-9:40 a.m.	Differences of Sex Development/Intersex: What's New in Prenatal and Perinatal Care	Emilie Johnson, MD Courtney Finlayson, MD
9:40-10:00 a.m.	Genetics of CAKUT	Meredith Harris, MD
10:00-10:10 a.m.	Break	

Fetal Neuro-biology

Moderators: Robin Bowman, MD & Safwan Halabi, MD

10:10-10:30 a.m.	Clinical Case Review: Fetal Stroke and Intracranial Hemorrhage	Laura Vernon, MD
10:30-10:50 a.m.	Vascular Lesions in the Fetal Brain	Camilo Jaimes Cobos, MD
10:50-11:10 a.m.	Fetoscopic Spina Bifida Closure Outcomes	Robin Bowman, MD
11:10-11:15 a.m.	Break	

Complex Twins

Moderators: Janelle Bolden, MD & Xavier Pombar, DO

11:15-11:40 a.m.	Ultrasound-Guided High Intensity Focused Ultrasound for the Treatment of Early Gestation Twin-Twin Transfusion Syndrome	Christoph Lees, MD, FRCOG
11:40-11:55 a.m.	Placental Abnormalities in Monochorionic Pregnancies	Xavier Pombar, DO
11:55-12:15 p.m.	Panel Discussion	Janelle Bolden, Christoph Lees, Xavier Pombar
12:15-1:00 p.m.	Lunch	

Prenatal Cell and Gene Therapy

Moderators: Meghan Coghlan, MD & Aimen Shaaban, MD

1:00-1:25 p.m.	The CuRe Trial: Cellular Therapy for In Utero Repair of Myelomeningocele	Shinjiro Hirose, MD
1:25-1:50 p.m.	In Utero Gene Editing for Congenital Disease	William Peranteau, MD
1:50-2:15 p.m.	Cell Based Therapies for Congenital Disease - Past, Current and Future	Aimen Shaaban, MD
2:15-2:45 p.m.	Panel Q&A	Meghan Coghlan, MD
2:45-3:00 p.m.	Break	

From Chin to Diaphragm

Moderator: Erin Rowell, MD & Amir Alhajjat, MD

3:00-3:25 p.m.	The Fetal Airway: Anomalies, Evaluation and Treatment	Jonathan Ida, MD
3:25-3:45 p.m.	Diagnosis and Risk Stratification of Fetal Thoracic Anomalies	Erin Rowell, MD
3:45-4:15 p.m.	Prenatal and Postnatal Advancements in CDH Care	Amir Alhajjat, MD & Meghan Coghlan, MD
4:15-4:20 p.m.	Main Session Closing Remarks	Aimen Shaaban, MD

Trauma Informed Care: The Unique Needs of Fetal Families

Moderator: Kristine Rimbo, MS, RNC-OB, NE-BC, C-EFM, FAWHONN

4:30-5:00 p.m.	Keynote: Traumatic Childbirth: The Ever-Widening Ripple Effect	Cheryl Tatano Beck, DNSc, CNM, FAAN
5:00-5:25 p.m.	Understanding the Care Journey and Needs of Advanced Fetal Care Center Patients	Stephanie Eyerly-Webb, PhD
5:25-5:50 p.m.	Person Centered Instrument	Abigail Wilpers, PhD, WHNP-BC
5:50-6:15 p.m.	Closing Session: Coming Full Circle: Supporting Patients and Families	Emilie Lamberg Jones, BSW, RN, C-EFM, CPLC
6:15-6:30 p.m.	Fetal Health Nursing Closing Remarks	Kristine Rimbo, MS, RNC-OB, NE-BC, C-EFM, FAWHONN

Thank You to Our Exhibitors

The conference organizers would like to thank the following exhibitors:

- GE HealthCare
- Philips

Speakers & Faculty

All presenters are on staff at Ann & Robert H. Lurie Children's Hospital of Chicago or faculty members at Northwestern University Feinberg School of Medicine unless noted.

Invited Speakers



Mary Donofrio, MD

Medical Director, Prenatal Cardiology Program
Co-Director, Cardiac Neurodevelopmental Outcome Program,
Advanced Imaging Cardiologist
Children's National



Christoph Lees, MD, FRCOG

Professor of Obstetrics,
Imperial College London
Head of Specialty Fetal Medicine, Honorary
Consultant in Obstetrics,
Imperial College Healthcare NHS Trust
Clinical Director for Fetal Medicine,
North West London ICS



Stephanie Eyerly-Webb, PhD

Scientific Investigator
Midwest Fetal Care Center
Children's Minnesota



William Peranteau, MD

Attending Surgeon in the Division of General,
Thoracic and Fetal Surgery,
Children's Hospital of Philadelphia
Adzick-McCausland Distinguished Chair in
Fetal and Pediatric Surgery,
Associate Professor of Surgery, Perelman School of
Medicine at the University of Pennsylvania



Shinjiro Hirose, MD, FACS

Vice Chair, Department of Surgery, UC Davis
Chief, Division of Pediatric General, Thoracic
and Fetal Surgery, Director of Pediatric Surgery,
Shriners Hospitals for Children - Northern
California, Medical Director of Pediatric Trauma,
Professor, Department of Surgery, UC Davis



Cheryl Tatano Beck, DNSc, CNM, FAAN

Board of Trustees Distinguished Professor,
Joint Appointment in School of Medicine
Department of Obstetrics & Gynecology,
University of Connecticut



Camilo Jaimes Cobos, MD

Service Chief Pediatric Neuroradiology,
Associate Chair for Imaging Sciences, Co-
Director Pediatric Imaging Research Center,
Massachusetts General Hospital
Assistant Professor of Radiology,
Harvard Medical School



Abigail Wilpers, PhD, WHNP-BC

Assistant Professor, Research Track
University of Pennsylvania School of Nursing
Children's Hospital of Philadelphia Research
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Faculty



Aimen Shaaban, MD

Fetology Chicago Course Director
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Amir Alhajjat, MD

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**Anne Boat, MD**

Associate Chief Medical Officer,
Physician Engagement;
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**Janelle Bolden, MD**

Co-Director, Maternal-Fetal Medicine,
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Chief of Maternal Fetal Medicine,
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**Robin Bowman, MD**

Co-Director, Fetal Neurosurgery,
The Chicago Institute for Fetal Health
Director, Multidisciplinary Spina Bifida Center,
Lurie Children's
Associate Professor of Pediatric Neurological
Surgery, Northwestern University Feinberg
School of Medicine

**Kavita Hodgkins, MD**

Attending Physician, Nephrology, Urology,
Lurie Children's
Assistant Professor of Pediatrics,
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**Meghan Coghlan, MD**

Co-Director, Fetal Neonatology,
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Attending Physician, Neonatology,
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**Jonathan Ida, MD, MBA, FAACS, FAAP**

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Services, Department of Surgery,
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**Karim Diab, MD**

Director, Fetal Cardiac Research and Education
Program, Lurie Children's
Associate Professor of Pediatrics,
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Medicine, Elected Fellow of the American
College of Cardiology & American Society of
Echocardiography

**Emilie Johnson, MD, MPH, FACS**

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**Emilie Lamberg Jones, BSW, RN, C-EFM, CPLC**

Nurse Outreach Navigator,
The Chicago Institute for Fetal Health

**Ed Gong, MD**

Co-Director, Fetal Urology,
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Attending Physician, Urology,
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Assistant Professor of Urology,
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**Sheetal Patel, MD, FAAP, MSCl**

Co-Director, Fetal/Neonatal Cardiology,
The Chicago Institute for Fetal Health
Attending Physician, Cardiology,
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Assistant Professor of Pediatrics,
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**Safwan Halabi, MD**

Associate Chief Medical Informatics Officer; Vice Chair of Informatics, Medical Imaging; Director, Fetal Imaging; Attending Physician, Medical Imaging (Radiology), Lurie Children's Associate Professor of Radiology Northwestern University Feinberg School of Medicine

**Xavier Pombar, DO**

Maternal-Fetal Medicine, The Chicago Institute for Fetal Health, Attending Physician, Maternal-Fetal Medicine, Lurie Children's Associate Professor of Maternal-Fetal Medicine, Rush University Medical Center, Director of Maternal-Fetal Medicine, Silver Cross Hospital, New Lenox, Illinois

**Meredith Harris, MD**

Attending Physician, Nephrology (Kidney Diseases), Lurie Children's Assistant Professor of Pediatrics (Nephrology), Northwestern University Feinberg School of Medicine

**Kristine Rimbos, MS, RNC-OB, C-EFM, NE-BC, FAWHONN**

Director, Nursing
The Chicago Institute for Fetal Health

**Erin Rowell, MD**

Co-Director, Pediatric Surgery, The Chicago Institute for Fetal Health, Medical Director, Fertility & Hormone Preservation & Restoration Program; Associate Director, ECMO, Lurie Children's Associate Professor of Surgery (Pediatric Surgery) Northwestern University Feinberg School of Medicine

**Laura Vernon, MD**

Attending Physician, Neurology, Lurie Children's Assistant Professor of Pediatrics (Neurology and Epilepsy) Northwestern University Feinberg School of Medicine

Feinberg School of Medicine's CME Leadership, Review Committee, and Staff have no relevant financial relationships with ineligible companies to disclose.

Course Director's and Planning Committee Members Disclosure Information:

Aimen Shaaban, MD	Has no financial relationships to disclose.
Amir Alhajjat, MD	Has no financial relationships to disclose.
Anne Boat, MD	Has no financial relationships to disclose.
Janelle Bolden, MD	Has no financial relationships to disclose.
Robin Bowman, MD	Has no financial relationships to disclose.
Meghan Coghlan, MD	Has no financial relationships to disclose.
Ed Gong, MD	Has no financial relationships to disclose.
Safwan Halabi, MD	Has no financial relationships to disclose.
Sheetal Patel, MD, MSCI, FAAP	Has no financial relationships to disclose.
Xavier Pombar, DO	Has no financial relationships to disclose.
Erin Rowell, MD	Has no financial relationships to disclose.
Kristine Rimbos, MS, RNC-OB, C-EFM, NE-BC, FAWHONN	Has no financial relationships to disclose.
Chen Cheng	Has no financial relationships to disclose.
McKenzie Jones	Has no financial relationships to disclose.

Speakers, Moderators and Panelists' Disclosure Information (in order of appearance):	
Aimen Shaaban, MD	Has no financial relationships to disclose.
Sheetal Patel, MD, MSCI, FAAP	Has no financial relationships to disclose.
Karim Diab, MD	Has no financial relationships to disclose.
Mary Donofrio, MD	Has no financial relationships to disclose.
Ed Gong, MD	Has no financial relationships to disclose.
Kavita Hodgkins, MD	Has no financial relationships to disclose.
Emilie Johnson, MD, MPH, FACS	Has no financial relationships to disclose.
Courtney Finalyson, MD*	Consulting Fee, Eton Pharmaceuticals; Consulting Fee, Adrenas Therapeutics
Meredith Harris, MD	Has no financial relationships to disclose.
Robin Bowman, MD	Has no financial relationships to disclose.
Safwan Halabi, MD	Has no financial relationships to disclose.
Laura Vernon, MD	Has no financial relationships to disclose.
Camilo Jaimes Cobos, MD	Has no financial relationships to disclose.
Janelle Bolden, MD	Has no financial relationships to disclose.
Xavier Pombar, DO	Has no financial relationships to disclose.
Christoph Lees, MD, FRCOG*	Research Support Grant, Samsung Honoraria, Samsung Honoraria, GE Research Support Grant, Canon
Meghan Coghlan, MD	Has no financial relationships to disclose.
Shinjiro Hirose, MD	Has no financial relationships to disclose.
William Peranteau, MD	Has no financial relationships to disclose.
Erin Rowell, MD	Has no financial relationships to disclose.
Amir Alhajjat, MD	Has no financial relationships to disclose.
Jonathan Ida, MD, MBA, FACS, FAPP	Has no financial relationships to disclose.
Kristine Rimbois, MS, RNC-OB, C-EFM, NE-BC, FAWHONN	Has no financial relationships to disclose.
Cheryl Tatano Beck, DNSc, CNM, FAAAN	Has no financial relationships to disclose.
Stephanie Eyerly-Webb, PhD	Has no financial relationships to disclose.
Abigail Wilpers, PhD, WHNP-BC	Has no financial relationships to disclose.
Emilie Lamberg Jones, BSW, RN, C-EFM, CPLC	Has no financial relationships to disclose.

**All the relevant financial relationships for these individuals have been mitigated.*

This activity is being sponsored by The Chicago Institute for Fetal Health and Feinberg School of Medicine. The medical school has no significant relationship with the commercial companies whose products or services are being discussed in this educational activity. This activity's planners, faculty, presenters, authors and content reviewers have indicated that they have no conflicts of interest.

Credit Information

CME Certificates

In order to obtain your AMA PRA Category 1 Credits™ certificate, at the completion of this activity please follow these steps:

- Sign in to Northwestern University Feinberg School of Medicine's Office of CME's website (cme.northwestern.edu) by using the email address and password used to register for this activity.
 - If this is your first time logging onto Northwestern University CME's portal, choose "Sign In with Email and Password" and then "Forgot Your Password?" An email will be sent to you with instructions on how to reset your password.
- After you have entered your password, click on "My CME" on the top right hand side of the homepage.
- Click on "Evaluation & Certificate". Choose the activity for which you wish to evaluate and claim credit. You will be asked to enter the number of credits you are claiming, which should reflect the extent to which you participated in the activity.
- Upon completion of the evaluation form, your certificate will auto-generate. Please print or save a copy for your records. All credits, including MOC points, received from participation in Northwestern University CME activities will be reflected on your transcript, which can be found under "My CME" then click "Transcript."

You must fill out an evaluation to receive a certificate. The evaluation will no longer be available after 10/25/2023.

Nursing Contact Hours

In order to obtain nursing contact hours, you must attend the entire session and complete and submit an evaluation form by October 25, 2023. After that date, the evaluation will be closed and participants will not be able to claim credit. Please use the QR code to complete the evaluation.

Please note: Only nursing contact hours are awarded for the Nursing Session of Fetology. No CME credit will be issued.



American Board of Surgeons (ABS) Statement

American Board of Surgery Continuous Certification and Self-Assessment Program[s] Successful completion of this CME activity, which includes participation in the evaluation component, enables the learner to earn credit toward the CME and Self-Assessment requirement(s) of the American Board of Surgery's Continuous Certification program. It is the CME activity provider's responsibility to submit learner completion information to ACCME for the purpose of granting ABS Credit.

ABS CME credits will be submitted to the boards within 3 months of the conclusion of the activity.

About Us

The Chicago Institute for Fetal Health is a leader in the research and care of pregnant women with fetal conditions. As one of only a few comprehensive fetal centers in the country, the Institute offers prenatal counseling, care and intervention, if needed. Our specialists performed more than 3,000 consultations last year for all types of fetal conditions with expectant parents from across the country. No patient was turned away.

CONDITIONS WE TREAT

Our team is dedicated to providing comprehensive innovative fetal and maternal care that is at the forefront of fetal medicine. Through the use of cutting-edge diagnostics and advanced fetal interventions, we are able to offer care for the full spectrum of fetal conditions and are often able to provide new hope to mothers and families.

Some of the conditions our team treats include:

- Abdominal wall defects
- Amniotic band syndrome
- Bladder outlet obstruction (BOO)
- Congenital airway obstruction
- Congenital diaphragmatic hernia (CDH)
- Congenital heart defects
- Congenital pulmonary airway malformation (CPAM/CCAM)
- Esophageal or intestinal atresias
- Fetal chylothorax
- Fetal lymphatic malformations
- Fetal teratomas and other masses or tumors
- Myelomeningocele (MMC), or open spina bifida
- Selective growth restriction in a twin pregnancy
- Twin-reversed arterial perfusion (TRAP) sequence
- Twin-twin transfusion syndrome (TTTS)



PROVIDING PERSONALIZED TREATMENT OPTIONS

The care team at The Chicago Institute for Fetal Health is committed to making the most accurate diagnosis and finding individualized solutions for the care of our patients. Each patient has a unique situation that may require a prenatal intervention.

Our team offers a comprehensive range of fetal surgical interventions, including:

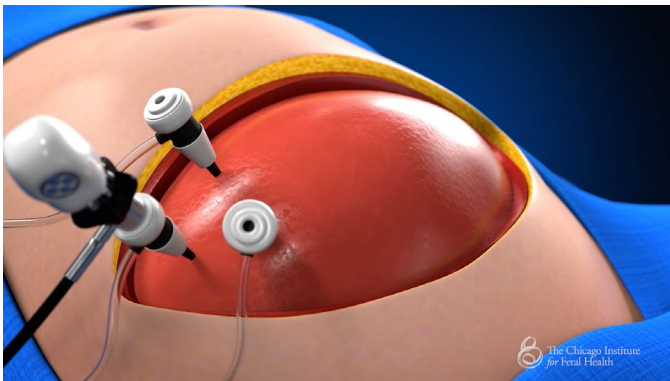
- Selective fetoscopic laser procedures for twin-twin transfusion syndrome
- Open and fetoscopic surgery for MMC/spina bifida
- Radiofrequency ablation for TRAP
- Fetoscopic endoluminal tracheal occlusion (FETO) for severe congenital diaphragmatic hernia (CDH)
- Thoraco- and vesico-amniotic shunting procedures
- Percutaneous amniotomies or placement of an amniopore
- Amniocentesis and amnioreduction
- Ex utero intrapartum treatment procedures
 - EXIT-to-airway
 - EXIT-to-resection
 - EXIT-to-ECMO
- Open fetal surgery for rare life-threatening fetal conditions



Learn more: [LurieChildrens.org/FetalHealth](https://www.LurieChildrens.org/FetalHealth)

FETOSCOPIC PROCEDURE FOR OPEN SPINA BIFIDA REPAIR

The Chicago Institute for Fetal Health offers a fetoscopic option for fetal spina bifida repair in addition to open repair. Performed through minimal access ports, fetoscopic repair reduces risks for the mother and the baby while preserving the option for a vaginal delivery. This approach requires an entirely different technical proficiency and instrumentation from open repair. The port access and spinal repair are illustrated in an educational video created by Dr. Aimen Shaaban and Dr. Robin Bowman, featured on YouTube.



Spina Bifida Surgery in Utero | The Chicago Institute for Fetal Health at Lurie Children's

Since November 2021, The Chicago Institute for Fetal Health has performed 35 fetoscopic prenatal repairs for myelomeningocele (MMC). This eliminates a large hysterotomy alleviating the need for a cesarean delivery and concerns for uterine rupture in subsequent pregnancies. Fetoscopic prenatal repair has resulted in noteworthy gains for pregnant patients undergoing fetal spina bifida repair and a vaginal delivery rate of 67%. Early results suggest similar or better outcomes compared to open surgery.

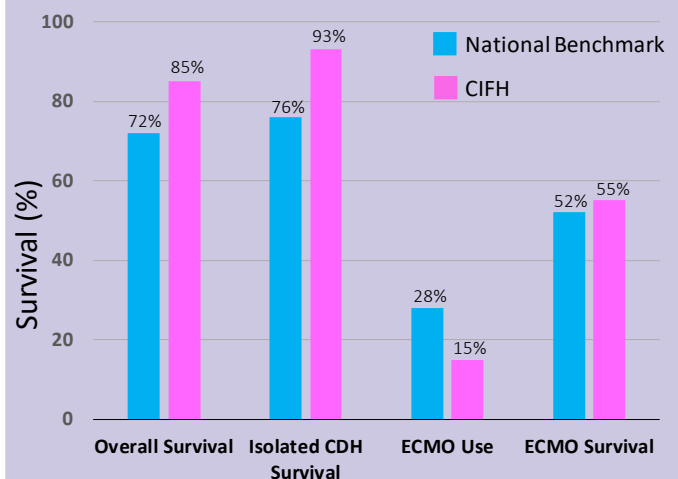
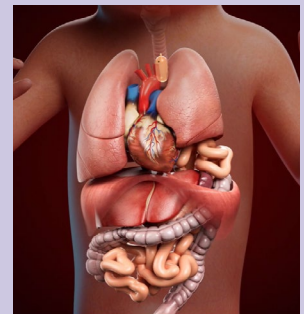
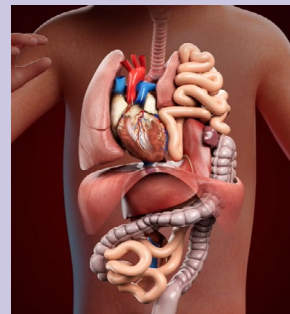


FETOSCOPIC ENDOLUMINAL TRACHEAL OCCLUSION

The Chicago Institute for Fetal Health currently offers Fetoscopic Endoluminal Tracheal Occlusion (FETO) for patients affected by severe life-threatening congenital diaphragmatic hernia (CDH). The two-step approach involves placing a balloon in the fetus' airway at 28 to 30 weeks gestation to create a blockage that promotes lung growth through accumulation of lung fluid. Later the balloon is removed at 34 weeks gestation and the pregnancy allowed to progress toward delivery at term.



The animated video, directed by Dr. Aimen Shaaban, illustrates how surgically placing the balloon allows fluid build-up to accelerate lung growth and compress organs below the diaphragm.



Gupta, V. S., Harting, M. T., Lally, P. A., Miller, C. C., Hirsch, R. B., Davis, C. F., Dassinger, M. S., Buchmiller, T. L., Van Meurs, K. P., Yoder, B. A., Stewart, M. J., Gamp; Lally, K. P. (2023). Mortality in congenital diaphragmatic hernia: A multicenter registry study of over 5000 patients over 25 years. *Annals of Surgery*, 277, 520–527. <https://doi.org/10.1097/SLA.0000000000005113>



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for Fetal Health