



Notable Grand Rounds
of the

**Michael & Marian Ilitch
Department of Surgery**

Wayne State University
School of Medicine

Detroit, Michigan, USA

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**THIS WOMAN'S WORK:
A SURGICAL CAREER AND JOURNEY**

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About Notable Grand Rounds

These assembled papers are edited transcripts of didactic lectures given by mainly senior residents, but also some distinguished attending and guests, at the Grand Rounds of the Michael and Marian Ilitch Department of Surgery at the Wayne State University School of Medicine.

Every week, approximately 50 faculty attending surgeons and surgical residents meet to conduct postmortems on cases that did not go well. That “Mortality and Morbidity” conference is followed immediately by Grand Rounds.

This collection is not intended as a scholarly journal, but in a significant way it is a peer reviewed publication by virtue of the fact that every presentation is examined in great detail by those 50 or so surgeons.

It serves to honor the presenters for their effort, to potentially serve as first draft for an article for submission to a medical journal, to let residents and potential residents see the high standard achieved by their peers and expected of them, and by no means least, to contribute to better patient care.

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This Woman's Work: A Surgical Career and Journey

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Editor's Note: This is an edited summary of a Grand Rounds talk given by Dr. Perrone on February 18, 2026 at the Ilitch Department of Surgery, Wayne State University School of Medicine.

Introduction

When invited to speak at Grand Rounds and asked to reflect on being a “woman in surgery,” I thought for a while about my career since leaving Detroit in 2013. I was struck by how nonlinear my own path has been and thought that may be a good topic for this audience. What appears in retrospect to be a coherent career in pediatric and fetal surgery was, in real time, far more circuitous—marked by detours, uncertainty, structural barriers, and deliberate choices about family and professional identity.

This manuscript reflects my personal journey and the lessons drawn from it. As noted in the original presentation, these reflections are not prescriptive guidelines but observations formed through experience. Although framed within the context of women in surgery, the principles discussed apply broadly to anyone navigating a surgical career.

From Pediatrics to Surgery

Like many medical students, I entered medical school with a clear identity in mind. I was “pedia-

trician-bound.” I had long loved working with children—babysitting, tutoring, volunteering—and admired my own pediatrician’s impact. Pediatrics felt like a natural extension of that affinity at the start.

The turning point came during my surgical rotation. Exposure to the operating room—its technical precision, immediacy, and responsibility—shifted my trajectory to a procedure based field. I had the opportunity to rotate with the pediatric surgery team and recognized that I did not have to choose between surgery and children. Pediatric surgery offered a synthesis of both passions and felt like the place I was meant to be.

This pivot underscores an early lesson: career identity is often provisional. Exposure matters. One rotation can redirect an entire professional arc.

Residency: Commitment and Convolution

Residency training at Wayne State provided a formative environment. What I imagined as a linear progression—from medical school to residency to fellowship—proved instead to resemble a tangled path rather than a straight line.

During residency, personal and institutional disruptions required recalibration. My husband’s orthopedic residency program closed during my intern year, necessitating geographic separation and subsequent relocations. Planned research years became geographically fragmented across multiple institutions and laboratories – something that wasn’t previously done by others and even advised against. However, it was the right choice for me.

In St. Louis, I initially joined a sepsis laboratory despite limited alignment with pediatric surgery as that was what was available in the time frame that I needed. After arriving in St. Louis, I found additional opportunities in a newly formed pedi-

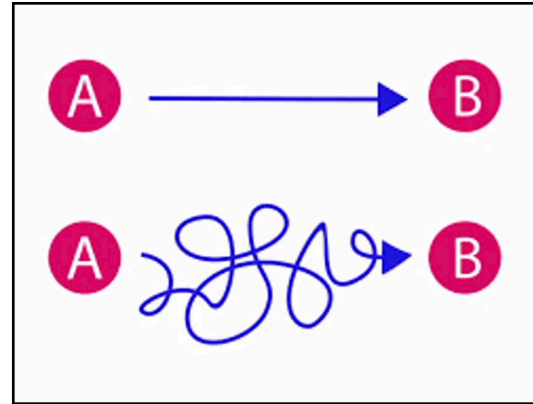


Fig. 1. Linear vs. nonlinear progression. *Source:* Perrone E.E.

atric surgery-laboratory ultimately working with a mentor who would shape my academic development and became a lifelong sponsor, advocate, and friend. In Baltimore, I leveraged prior lab experience to help establish an in vivo mouse model complementing their existing in vitro work on bile acids and intestinal physiology.

Rather than a liability, this fragmentation broadened my research exposure and reinforced the importance of initiative and persistence. Not taking the first “no” proved consequential and successful in the long run.

Motherhood During Surgical Training

Another defining decision in my career involved the timing of building a family. I chose to start having children during my research years as that was the more “accepted” timing at that time – it also aligned with my personal timeline of readiness. However, I knew that I wanted to have more children if possible and, with institutional support to extend training by six months, was able to have my 2nd child during my clinical years. This required explicit conversations with leadership and willingness to accept deviation from the standard timeline of training. It also allowed me to have 6 months between residency and fellowship – this is when our 3rd child was born!

The old cultural narratives surrounding pregnancy in surgery—stories of women returning to trauma call days after delivery or never being present at home with their children—are not sustainable models. There are countless ways to combine surgical training with parenthood. My personal path required negotiation, planning, and advocacy. The lesson was clear: trust yourself and do what is best for your personal family. Respectfully advocate for structural flexibility when needed as the traditional template does not fit every life.

Fellowship: Geographic Dislocation and Work–Life Integration

Matching into pediatric surgery fellowship in California represented both achievement and upheaval. With three young children and an established support network in Michigan, relocation introduced logistical and emotional strain. The concept of “work–life balance” proved insufficient. Balance implies static equilibrium and surgical life is rarely static. A more accurate framework that I live by is work–life integration—intentional adaptation of professional and personal roles over time.

In order to make my dream of becoming a pediatric surgeon true, my husband’s career as an orthopedic trauma surgeon had to adapt. He could not find a job in California and, instead, worked part-time in Detroit and commuted across the country each month while extended family support rotated in. These arrangements were unconventional but functional. Importantly, they required reframing adversity as a shared project rather than individual burden.

Professional stressors compounded personal strain. My fellowship was a new program that had faculty turnover and subsequent program instability. At one point, I was even offered assistance in transferring programs if desired. Instead of taking up that offer, I chose to stay

which required both resilience and active engagement in institutional improvement. The experience reinforced another principle in my career: success and opportunities for improvement often coexist. Progress requires enduring institutional imperfection while contributing to its evolution.

Early Faculty Years and Imposter Syndrome

Upon joining the University of Michigan as a pediatric and fetal surgeon, I encountered imposter syndrome—a pervasive sense of being an outsider despite objective qualifications. This phenomenon is well-documented in surgical and academic medicine. The internal narrative of inadequacy can often coexist with high performance. For me, counteracting imposter syndrome required clarity of purpose.

Identifying one’s “why”—the motivation behind your daily work—became central. For me, that “why” crystallized around my work as a fetal surgeon - expanding fetal diagnosis and intervention for congenital anomalies, particularly congenital diaphragmatic hernia (CDH).

Congenital Diaphragmatic Hernia: From Counseling to Intervention

CDH is characterized by a diaphragmatic defect leading to pulmonary hypoplasia and pulmonary hypertension. Incidence approximates 1 in 2,500 live births, with left-sided defects comprising approximately 80% of cases. Prenatal prognostication relies heavily on observed-to-expected lung-to-head ratio (o/e LHR) with values <25% defining severe disease and correlating with lower survival.

In collaboration with the CDH Study Group, I was part of a team that analyzed contemporary multicenter data (584 patients) demonstrating improved survival relative to earlier reports, although severe CDH remains associated with sub-

stantial mortality and extra-corporeal life support (ECLS) utilization. This research laid groundwork for more accurate prenatal counseling and ignited my passion to bring a procedure aimed at improving survival to Michigan.

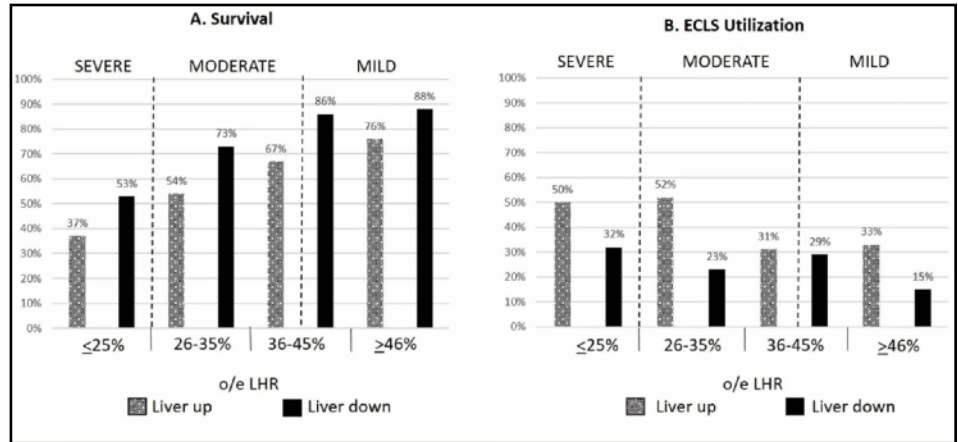


Fig. 2. CDH Study Group data demonstrating survival and ECLS utilization by o/e LHR category (2020 CDHSG data, 584 LCDH patients; Perrone et al., J Perinatology, 2022).

Fetal Endoscopic Tracheal Occlusion (FETO)

FETO is predicated on the physiologic observation that fetal lung fluid accumulation promotes pulmonary growth when egress is obstructed. By endoscopically placing a balloon within the fetal trachea between 27w0d and 29w6d gestation, intrapulmonary pressure increases, stimulating fetal lung expansion.

The balloon (approximately 0.6–0.9 cc inflation volume) is placed fetoscopically while using ultrasound guidance. The procedure requires multi-disciplinary coordination, strict maternal proximity to hospital facilities, and readiness for emergent removal should preterm labor occur.

Balloon removal occurs electively after 5–6 weeks or more urgently if clinically indicated.

Clinical trials have demonstrated improved survival in the most severe CDH cohorts and current research efforts aim to clarify morbidity outcomes and refine inclusion criteria.

Establishing a FETO program required navigating regulatory

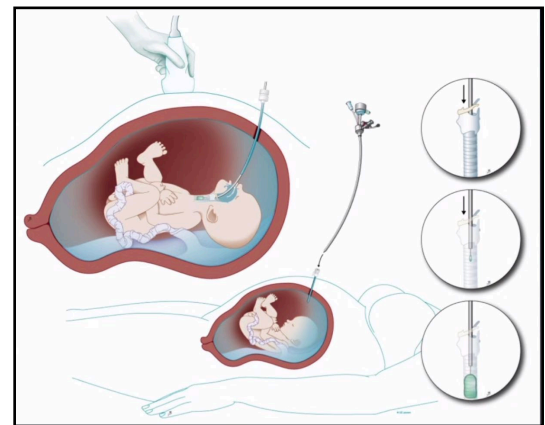


Fig. 3 Fetal endoscopic tracheal occlusion for congenital diaphragmatic hernia, Sourcee: Perrone EE, Deprest JA. Fetal endoscopic tracheal occlusion for congenital diaphragmatic hernia: a narrative review of the history, current practice, and future directions. *Transl Pediatr.* 2021 May;10(5):1448-1460. doi: 10.21037/tp-20-130. PMID: 34189104; PMCID: PMC8192998.



Fig. 4. Implantable balloon system and syringe apparatus (27w0d–29w6d placement window)

approval, institutional alignment, and building multidisciplinary infrastructure. It represented a shift from participant to leader—another inflection point in my professional identity.

Lessons Synthesized

The closing framework of the presentation distilled experience into four principles:

1. **Trust your gut**—you know yourself best. Career paths need not conform to templated models.
2. **You will have success and failure**—pick yourself up. Resilience is iterative and learned.
3. **Be respectful but do not wait for permission**. Leadership often begins with initiative rather than invitation.
4. **Build your team**. No surgical career is constructed alone. Family, friends, mentors, partners, trainees, and institutional allies form the scaffolding of every career. Find your team and use them wisely!

Conclusion

In retrospect, I would not alter the nonlinear aspects of my journey. The geographic relocations, research pivots, pregnancy during training, fellowship instability, imposter syndrome, and program-building challenges each contributed to my professional maturation and built the person I am today.

For trainees—especially those contemplating pediatric or fetal surgery—the key message is not that the path is easy but that the path IS navigable. It will not be straight and it may require structural negotiation and personal sacrifice. However, passion, clarity of purpose, and intentional team-building can sustain both career and life.

Surgical identity is not fixed at matriculation. It evolves and adapts. The task is not to eliminate uncertainty, but to move through it deliberately.

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Addendum

Technical Foundations and Clinical Expansion in Congenital Diaphragmatic Hernia

Although this Grand Rounds focused on career trajectory, congenital diaphragmatic hernia (CDH) has become central to my professional identity. For that reason, a deeper discussion of disease stratification, physiologic rationale, and evolving intervention is warranted.

Risk Stratification in CDH

Prenatal evaluation of CDH requires careful assessment of both anatomic and physiologic severity. The observed-to-expected lung-to-head ratio (o/e LHR) remains the most widely used quantitative metric. This calculation standardizes the non-affected lung area to head circumference ratio, allowing comparison across gestational ages.

Severity categories commonly include:

- **Severe:** o/e LHR $\leq 25\%$
- **Moderate:** 26–35% (also extended to 36–45% with “liver up” in the chest)
- **Mild:** $\geq 46\%$ (also 36–45% with “liver down” in the abdomen)

Liver position (“liver up” vs. “liver down”) further modifies risk, as intrathoracic liver herniation correlates with greater pulmonary compromise.

The contemporary CDH Study Group (CDHSG) data (Fig. 2) presented demonstrate stratified survival and extracorporeal life support (ECLS) utilization by severity class.

These data reflect important progress relative to earlier European series; however, survival in the severe cohort remains limited. It is within this population that fetal intervention has emerged as a potential strategy.

Physiologic Rationale for FETO

The conceptual basis of fetal endoscopic tracheal occlusion (FETO) derives from clinical observations in a separate fetal anomaly - congenital high airway obstruction syndrome (CHAOS), in which intrinsic airway blockage results in markedly enlarged, fluid-filled lungs. The physiologic principle is relatively straightforward: fetal lungs continuously produce fluid. When egress through the trachea is obstructed, intrapulmonary pressure increases, promoting lung expansion and growth.

FETO adapts this phenomenon therapeutically. A detachable balloon is placed endoscopically within the fetal trachea at 27–29+6 weeks’ gestation, maintained for approximately five to six weeks, and subsequently removed to allow lung maturation prior to delivery. (Fig. 3)

The collaboration with Jan Deprest, MD, PhD— one of the pioneers in fetal surgery for CDH — provided both academic grounding and historical context for implementing the procedure in the United States.

Operative Technique and Procedural Considerations

Balloon System and Placement Window

The implantable balloon is a small detachable device, inflated with approximately 0.6–0.9 cc of saline. Placement occurs between 27w0d and 29w6d gestation. (Fig. 4) The procedure is performed under maternal regional anesthesia with fetal anesthesia administered directly. Ultrasound guidance is essential for safe entry into the amniotic cavity and navigation toward the fetal mouth.

Fetoscopic entry requires identification of anatomic landmarks—uvula, vocal cords, trachea, and carina. Misplacement into the esophagus must be avoided. Confirmation of tracheal positioning precedes balloon deployment.

Risk Profile

The uterus does not tolerate instrumentation passively. Preterm labor, premature rupture of membranes, and dislodgement of the balloon are recognized risks, along with others. Patients must remain within close geographic proximity to the treating center, typically within 30 minutes and weekly surveillance is standard.

The most acute hazard is delivery of a fetus with an occlusive balloon in situ. Neonatal airway obstruction would be fatal without immediate removal capability. For that reason, 24/7 institutional readiness is required and patients carry clear identification indicating tracheal occlusion.

Balloon Removal

Removal ideally occurs electively at five to six weeks post-placement. However, unplanned removal is common due to preterm contractions or membrane complications. The removal procedure mirrors placement but requires careful visualization and deflation of the balloon before extraction. Successful elective removal represents a critical milestone in each case.

Radiographic Evidence of Lung Growth

Magnetic resonance imaging (MRI) provides objective assessment of prenatal lung volume pre- and post-occlusion. While not all fetuses demonstrate robust response—“responders” and “non-responders” are recognized—aggregate data support meaningful volumetric improvement in appropriately selected severe CDH cases.

Regulatory and Programmatic Development

Establishing a FETO program in the United States requires navigating regulatory frameworks analogous to major federal grant submissions. The investigational device exemption (IDE) process involves extensive documentation, multidisciplinary alignment, and institutional review.

Our institutional approval coincided with the onset of the COVID-19 pandemic, necessitating temporary suspension and later re-initiation of enrollment. The first enrolled patient marked not simply a procedural milestone, but a transition in my professional identity—from participant in multicenter research to program builder.

Approximately twenty centers in the United States currently offer FETO within structured protocols. Ongoing expansion of inclusion criteria seeks to determine whether morbidity endpoints—beyond survival—are improved in both severe and moderate CDH populations.

Leadership, Identity, and Institutional Integration

Parallel to clinical and academic expansion, leadership roles emerged—within institutional committees, professional societies, and state-level surgical organizations. Each role required adaptation of surgical skills—decisiveness, preparation, accountability—to non-operative domains.

Imposter syndrome resurfaced periodically, particularly in my early faculty years. However, repeated engagement with complex problems, suc-

successful patient outcomes, and growing mentorship responsibilities gradually recalibrated my internal narrative.

The evolution from trainee to attending to leader does not occur abruptly. It is iterative and often uncomfortable although rewarding.

Team Architecture

No element of this journey occurred in isolation. Family, friends, mentors, research collaborators, clinical partners, nursing staff, maternal–fetal medicine colleagues, and institutional administrators collectively enabled each advancement.

The principle “Build YOUR team” is not rhetorical. It is structural. Complex fetal programs require synchronized multidisciplinary participation. Likewise, complex careers require durable personal infrastructure.

Reframing the Question

When asked whether I would change any aspect of the journey, my answer remains no. The non-linear path—geographic disruption, pregnancy during training, fellowship instability, regulatory complexity, and academic risk—formed the substrate for my own personal resilience and innovation.

For trainees, particularly those considering pediatric or fetal surgery, the more important reframing is this:

- Do not expect linearity.
- Do not wait for institutional invitation to pursue meaningful change.
- Identify a domain or research question worthy of sustained commitment.
- Construct support deliberately rather than assuming it will appear.

The path may not resemble the one initially imagined. That does not diminish its legitimacy. In many cases, it strengthens it.

Closing Perspective

“This Woman’s Work” was intended as a reflection on women in surgery, but ultimately it is about agency in surgical life. The profession is demanding. It is also expansive enough to accommodate variation—if one is willing to articulate needs, assume risk, and persist through uncertainty.

The trajectory from pediatric-leaning medical student to fetal surgeon was neither inevitable nor smooth. It was built incrementally—through decisions made in imperfect circumstances.

That, perhaps, is the most durable lesson of all.

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