“The American College of Osteopathic Obstetricians and Gynecologists is committed to women’s health through the Osteopathic and holistic practice of obstetrics and gynecology.”
Winter greetings to our ACOOG Family

Season’s Greetings to you and yours!

The ACOOG Fall Conference in Fort Worth, Texas was well-attended and featured interesting speakers. The Chili Cook-Off was a great social activity for the students and residents; as well as a fundraiser for MEFACOOG. Congratulations to Catherine Bernardini, DO for preparing the winning recipe. Her chili was gluten-free, spicy and delicious! Conference co-chairs, Joseph Bottalico, DO and Becky Graham, DO did an outstanding job. The National Student Society elected new officers. Kelsey Ulanowicz (WVSOM) will serve as President, Caitlin Marshall (Auburn-VCOM) will serve as Vice-President and Madison Buchanan (ACOM) will serve as Secretary-Treasurer. They are planning a webinar via Zoom to provide information to students; which will target relevant subjects according to their class year. Watch out for information coming soon.

The next major activities will take place in 2019 after the holidays; as we prepare to visit Washington D.C. for the ACOG-CLC (Congressional Leadership Conference). We will collaborate with ACOG members to review our health policy concerns and discuss them with elected governmental officials. That meeting will segue into” DO Day on the Hill”; which will be held on March 20, 2019.

Please make plans to join us for the 86th Annual Conference; which will be held March 24-29, 2019 at the Hilton Riverside in New Orleans, Louisiana. The group room block will close on February 29, 2019.

Have a safe and healthy holiday season!

KNOW THAT YOU CAN START LATE, LOOK DIFFERENT, BE UNCERTAIN AND STILL SUCCEED.

-Misty Copeland

Octavia M. Cannon, DO, FACOOG (Dist)
President 2018 - 2019
Message from the Executive Vice President

Michael J. Geria, DO, FACOOG, (Dist.)

Dear Colleagues,

Once again, it is hard to believe that winter is upon us. 2018 is quickly coming to a close. Our fall conference in Fort Worth was a huge success. Congratulations and thank you to program chairs, doctors Becky Graham and Joseph Bottalico. The Continuing Medical Education Committee under the leadership of Dr. Catherine Bernardini should once again be commended for all their efforts. Also, a special thank you to the ACOOG staff for all of their hard work. This year was especially trying with the loss of Helen Oberbeck from our staff.

While on the subject of ACOOG staff, I am pleased to announce that Mr. Andrew Crim has joined the ACOOG as Director Education & Professional Development. Andy comes to us from the University of North Texas with extensive experience in continuing medical education.

Andy will work collaboratively with the Continuing Medical Education Committee in setting strategic direction for development of all continuing professional development activities of the College, including CME, non-CME, live meetings, and online/digital products. He will be responsible for directing the effective and efficient planning, development, implementation and evaluation of educational programs and activities, providing valuable information needed to maintain our current accreditation and obtain additional accreditation required in today’s competitive CME arena.

The creation of this position is in alignment with our college’s strategic plan and sets our course into our future evolution in the world of continuing medical education.

The student program once again was outstanding. Dr. David Forstein returned this year to lead the program. Many programs directors once again helped with the mock interviews. I extend a thank you to all our members who helped make this annual event a great success. The student turnout continues to be strong and growing. This year was one of the largest groups of students ever. The goal is to keep our Osteopathic medical students engaged and involved in our organization. Their input is vital to the direction of our college.

The social events scheduled were a huge success. The chili cook-off, improv show at Four Day Weekend, and the Residency Fair were all well attended. Osteopathic student members and osteopathic residents in attendance made these events even more special. These events help demonstrate our close bonds of friendship and comradery which make our college even more special.

The transition to the single accreditation system is almost complete. Most of our residency and fellowship programs have achieved initial accreditation. The AOA continues to be a readily available resource for all residency programs making this transition.
Message from the President
(Continued from Page 2)

Our organization remains strong and financially stable. Membership continues to grow, and our strategic plan will carry us into the future with the potential for many positive changes. Changes in our bylaws to reflect those of the AOA are in the works.


In closing, from all of us at the ACOOG, I wish all of you and your families a safe and joyous Holiday Season as well as a prosperous New Year.

Sincerely,

Michael J. Geria, DO, MS, FACOOG(Dist) CS Executive Vice President

ACOOG Headquarters
Valerie Bakies Lile, CAE, FACOOG(Hon)
Executive Director
vbile@acoog.org

Andrew Crim, CHCP
Director of Education and Professional Development
acr@acoog.org

Jimmie L. Evans II
Accounting Manager
jevans@acoog.org

Nnamdi Ibegbu
Membership Coordinator
nibegbu@acoog.org

Martha Prud’homme
Program Manager
mprudhomme@acoog.org

817-377-0421 main
817-377-0439 fax
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(Continued on Page 6)
Overview
Mature oocyte cryopreservation provides an opportunity for women to extend their ability to reproduce by retrieving, freezing and storing oocytes for future use. Prior to 2013, the practice of cryogenic egg preservation was considered experimental. Advances in technology and the development of clinical guidelines have moved oocyte cryopreservation from experimental into mainstream medicine. Physicians need to be able to know when it is indicated, available techniques, patient perspectives, and legal and ethical implications relevant to the procedure. A recent study (Peterson, et al.) called the topic critical in consultations to assist patients in making more informed reproductive decisions, while another (Yu, et al.) identified gaps in knowledge and negative attitudes toward elective cryopreservation.

References
• Peterson, B. et al. Initiating patient discussions about oocyte cryopreservation: Attitudes of obstetrics and gynaecology resident physicians. Reproductive Biomedicine & Society Online, Volume 6, 72 – 79.
• L. Yu, B. Peterson, M.C. Inhorn, J.K. Boehm, P. Patrizio; Knowledge, attitudes, and intentions toward fertility awareness and oocyte cryopreservation among obstetrics and gynecology resident physicians, Human Reproduction, Volume 31, Issue 2, 1 February 2016, Pages 403–411

Instructions
1. Read this article
2. Log into your account at www.acoog.org
3. Click “Education” and “CME” and select this activity’s posttest/evaluation
4. Complete the posttest and evaluation

A score of 75% on the posttest is required to receive credit, and you will receive up to two opportunities to obtain a passing score. If you don’t achieve the minimum passing score in two attempts, credit cannot be awarded for this activity.

Your participation will be reported based on when you complete the activity. ACOOG reports credits on a quarterly basis.

Please contact ACOOG with questions. (cme@acoog.org)

Target Audience
This activity is designed for obstetricians and gynecologists.

Learning Objectives
To be a lifelong learner, physicians must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Those who participate in this activity will receive information and develop skills that should allow them to:
• Describe the different techniques used to cryopreserve oocytes
• Outline guideline-recommended medical indications for oocyte cryopreservation
• Identify important considerations for elective egg freezing

Fee
This activity is offered at no charge to ACOOG Members in good standing.

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Review Date: December 31, 2019
Faculty & Disclosures
This article was prepared by:
Allison Bloom, DO, MPH
Fellow, Reproductive, Endocrinology & Infertility (REI)
Drexel University College of Medicine

John Orris, DO, MBA, FACOOG (Dist)
Division Head of Reproductive Endocrinology
Main Line Health System
Bryn Mawr, PA
Dr. Orris has indicated he has no relevant conflict of interest to disclose.

Peer Reviewers
DeEtte Vasques, DO, FACOG, FACOOG
Editorial Committee Chair, ACOOG Newsletters
Gynecologic Oncologist
The Center for Cancer and Blood Disorders
Fort Worth, Texas
Dr. Vasques has indicated she has no relevant conflict of interest to disclose.

Michael J. Geria, DO, MS, FACOOG(Dist) CS
Executive Vice President, ACOOG
Director of Medical Education, Residency Program Director
Inspira Health Network
Vineland, NJ
Dr. Geria has indicated has no relevant conflict of interest to disclose.

Neither the ACOOG nor any staff members in a position to influence content have anything to disclose.

Competencies Supported
Osteopathic & ACGME Core Competencies
• Patient Care and Procedural Skills
• Medical Knowledge
• Interpersonal and Communication Skills
• Professionalism

Institute of Medicine Core Competencies
• Provide patient-centered care
• Work in interdisciplinary teams
• Employ evidence-based practice

CME Credit Designation
The American College of Osteopathic Obstetricians and Gynecologists is accredited by the American Osteopathic Association to provide osteopathic continuing medical education for physicians.

The American College of Osteopathic Obstetricians and Gynecologists designates this program for a maximum of 0.5 AOA Category 1-B credits and will report CME and specialty credits commensurate with the extent of the physician’s participation in this activity.

System Requirements
The posttest for this activity is designed to work on most popular web browsers. JavaScript and cookies need to be enabled in your browser in order for the activity to work properly. If you're experiencing technical issues, please update your browser, and clear your browsing history, cookies, and cache. This often solves most common technical issues.

Privacy Policy
This activity complies with ACOOG’s privacy policy (https://www.acoog.org/web/Online/Privacy_Policy.aspx)
Introduction

A women’s reproductive potential is limited by the number of remaining oocytes, or “ovarian reserve”. The rate of decline due to age, genetics, severe medical disorders or treatment may impact a woman’s perceived reproductive timeline. Mature oocyte cryopreservation provides an opportunity for women to extend their ability to reproduce by retrieving, freezing and storing oocytes for future use. Initially the practice of freezing eggs had been considered experimental; however, in 2013 the American Society of Reproductive Medicine (ASRM) lifted the experimental label as a result of more sophisticated cryopreservation techniques and the demonstration of improved clinical outcomes. In 2014 The American College of Obstetricians and Gynecologists’ Committee on Gynecologic Practice agreed with this statement based on the current available data and encouraged the use of the joint ASRM, Society of Assisted Reproductive Technology (SART) document; Mature Oocyte Cryopreservation, a guideline.

Cryopreservation Techniques

Assisted reproductive techniques, specifically cryopreservation and thawing, have greatly advanced over the past decade thus increasing the popularity of oocyte freezing. Cryopreservation is defined as the cooling of cells and tissues to sub-zero temperatures to cease all biologic activity and preserve them for future use. The major challenge to cryopreservation has been the ability to prevent the formation of intracellular ice crystals causing damage to the spindle apparatus. The use of cryoprotectants, glycerol and dimethyl sulfoxide, discovered in the mid 20th century assisted in decreasing intracellular damage but did not limit ice crystal formation, spindle apparatus damage or poor survival rate.

Despite this imperfect technology the first live birth from a frozen embryo was reported in 1984 and the first live birth from a frozen oocyte was reported in 1986. Over the last 10 years the slow-freezing technique which used low concentrations of cryoprotectants and small slow decreases in temperature has been predominately replaced by vitrification. Vitrification relies on high concentrations of cryoprotectants and rapidly cools, (1000 times faster) creating a glass-like state without ice crystal formation. This technique has been shown to reduce damage, increase an oocyte post thaw survival rate allowing more cryopreserved oocytes to be fertilized and increase the possibility of a patient undergoing an embryo transfer.

Cryopreserved vs. Fresh Oocytes

With the advent of oocyte vitrification, randomized controlled trials (RCT) and several observational studies have demonstrated similar pregnancy rates with IVF/ICSI cycles using cryopreserved/thawed oocytes vs. fresh oocytes in young infertile women or donor/recipients cycles. Additionally, a large systematic review of 5 RCT of autologous cycles by Cobo, et al. demonstrated a 93% survival rate of thawed oocytes and similar fertilization rate, availability of a good quality embryo and ongoing pregnancy rates. In contrast, a RCT by Forman et al. found a significantly lower fertilization rate (77.9 vs 90.5%) among vitrified oocytes. Despite a lower fertilization rate the aneuploidy and the ongoing pregnancy rate per embryo transferred was similar. In summary, the current data is positive regarding clinical outcomes, especially on-going pregnancy rates, but one must consider that the oocyte cryopreservation process may be less efficient. More studies are needed to help answer this question.

Additionally, there has been no demonstrated difference in pregnancy related complications,
delivery outcomes or congenital anomalies between fresh embryos, cryopreserved embryos or cryopreserved oocytes. Despite these findings there is still a paucity of long-term data on child development of those born from cryopreserved oocytes.

**Medical Indications for Oocyte Cryopreservation**

A woman’s pre-determined number of oocytes are present at birth but slowly decline with age. An exogenous insult or a genetic predisposition may accelerate the rate of programmed oocyte atresia, leading to premature ovarian insufficiency, resulting in a shortened reproductive lifespan. For post-pubertal women faced with the need for chemotherapy, oophorectomy, or radiation, mature oocyte cryopreservation offers the possibility of reproduction using their own genetic gametes post treatment. Genetic predispositions for premature ovarian failure such as Fragile X, Turner syndrome and deletions of the X chromosome may present an opportunity for fertility preservation at a young age. Additionally, carriers for BRCA who are at high risk for ovarian cancer and having not completed childbearing may consider oocyte cryopreservation prior to prophylactic salpingo-oophorectomy. Mature oocyte cryopreservation should be presented as an option to these women especially those post-pubertal women without a current partner or women who do not wish to create embryos with current partner/donor sperm. In some situations, women can choose to create both embryos with partner/donor sperm and cryopreserve oocytes for future insemination.

Additional considerations for cryopreservation of oocytes include the lack of sperm availability on retrieval day and for couples undergoing IVF who are uncomfortable cryopreserving embryos, due to personal or religious beliefs.

**Elective or “Social Egg Freezing”**

Women may choose to delay pregnancy for a variety of reasons; lack of a partner, pursuit of higher education, career goals and/or financial instability. Despite the advancements and improved success of egg freezing ASRM states there is “not yet sufficient data to recommend oocyte cryopreservation for the sole purpose of circumventing reproductive aging in healthy women”. The concern stems from the lack of data available on this population in regards to efficiency, safety, cost-effectiveness and emotional risk. A woman’s perception of elective oocyte cryopreservation may be a false sense of security perpetuating the ongoing delay of childbearing.

For women who choose to undergo egg freezing a thorough informed consent is essential! Women must be educated about the probability of success and understand that egg freezing does not guarantee a live birth. Once frozen a cryopreserved oocyte must survive the thaw, fertilize, develop into a good quality day 5 blastocyst, implant after transfer and continue to develop appropriately throughout the pregnancy. There are numerous milestones that must be met, thus, the potential for failure exists. Women should be counseled that oocyte cryopreservation should be thought of as emergency backup that could allow for a finite number of embryo transfers, which may or may not result in a child. Furthermore, women should be educated about increased risk of both maternal and neonatal morbidity associated with delaying childbearing. Advanced maternal age pregnancies have been associated with increased risk of preeclampsia, gestational diabetes, and cesarean section which may not be avoided despite the use of younger oocytes. The lack of long-term data available for children born from cryopreserved oocytes must also be communicated to the patient.

Finally, women should understand that this is a purely elective procedure and not without risk. Women should be informed about the risk of oocyte retrieval including bleeding, infection, damage to surrounding structures and side effects of medication including a low risk of ovarian hyperstimulation syndrome. Counseling must also include a discussion of alternative options including: ovarian tissue cryopreservation, embryo cryopreservation, natural conception or artificial reproductive technologies in the future, and the
use of donor egg/embryo or adoption if unable to conceive with her own oocytes.

**When to Freeze?**

Fecundity, one’s ability to conceive per cycle begins to decline around age 32 but a more rapid decline occurs after age 37\(^3\). The decreasing number of available oocytes and the increased rate of aneuploidy contributes to this decline. By the early 40s the rate of aneuploidy reaches approximately 85%\(^3\). Cryopreservation success follows a similar curve; therefore, the best estimated probability of a live birth is based on age at the time of oocyte retrieval and number of mature cryopreserved oocytes. Despite this known trend there is no consensus on the recommended age to consider egg freezing or how many mature oocytes are optimal to achieve one live birth. Doyle et al. analyzed a total of 1283 vitrified oocytes used in 128 IVF cycles and based on the determined oocyte efficiency (live birth rate per warmed oocyte), they predicted that in women less than 38 years old, 15-20 mature oocytes would result in the 75% probability of having one child. This number increased to 25-35 mature oocytes in women 38-40 years old to reach a 70% chance of one live birth\(^9\). Based on this data, one could conclude that the optimal time to freeze oocytes would be before 38 years of age yet this decision must be personalized.

The question then becomes twofold: is this timing cost effective and how many of these eggs may be abandoned if egg freezing was recommended at an early age to all women? Many of these young women will go on to conceive naturally and will not need to use their cryopreserved oocytes posing an ethical dilemma concerning the disposition of unused oocytes.

**Summary**

With ASRM’s lift of the experimental procedure label for mature oocyte cryopreservation, the practice of egg freezing has gained popularity and accessibility. The cost which averages around $10,000, not including storage fees or procedural related costs for use of oocytes, and the lack of guaranteed success does not deter women from considering egg freezing. Women often report that they view egg freezing as an insurance policy and they hope to conceive naturally in the future. While ASRM and ACOG do not recommend mature oocyte cryopreservation in young healthy women solely to extend their reproductive potential, the practice has become more commercialized and women are more educated about their options. General Gynecologists and Obstetricians will be an integral part of these conversations and the patient’s decision making. It is important that patient’s autonomy is respected and each patient is provided evidence based personalized counseling allowing her to make the best possible decision.

**References**

Abstract

Background: Pregnancy oversight and the childbirth process have been modernized with advances in medicine, which have diverged from the natural birthing process. Today many more women are opting for elective caesarean delivery (CD) to reduce the mental, physical, and painful burden of giving birth. In response to patient requests, cesarean delivery birthing procedures are now being performed around the world. In March 2017, the Centers for Disease Control (CDC) reported 32.0% of pregnancies were delivered via cesarean delivery in the U.S. Because cesarean delivery is effective at reducing the mental, physical (pelvic damage), and the painful burden of giving birth, many women prefer cesarean delivery. In the U.S. various forms of anesthesia are approved for cesarean delivery. Accepted forms include spinal anesthesia, spinal epidural, epidural block, and general anesthesia. Most commonly, regional anesthesia is used for planned cesarean delivery births, and general anesthesia is often used in emergent cesarean delivery or post-cesarean delivery.

Discussion: In cases of life threatening high-risk emergency, cesarean delivery is the standard treatment. In some emergency situations or when vaginal delivery is contraindicated, barriers exist towards administration of general or regional anesthesia. A review of the literature identifies historic reports of an alternative pain management, in such scenarios. Infiltrative anesthesia for cesarean delivery has been previously used in areas where health care funds, hospital resources, and staff are limited, typically in small hospitals and rural communities.

Conclusion: Cesarean delivery under infiltrative anesthesia may be seen as an antiquated method, but it is an important clinical option as it may still have some useful applications. Cesarean delivery under infiltrative anesthesia should be viewed as an alternative in specific situations and not simply a procedure of historic interest.

Keywords: anesthesia, cesarean delivery, cesarean delivery under local anesthesia, infiltration anesthesia, infiltration block, local anesthesia

Background

Pregnancy and childbirth management have been modernized with advances in medicine, often diverging from the natural birthing process. Today many more women around the world are opting for elective caesarean sections (CD). In March 2017, the Centers for Disease Control (CDC) reported 32.0% of pregnancies were delivered via cesarean delivery in the U.S. Because cesarean delivery is effective at reducing the mental, physical (pelvic damage), and the painful burden of giving birth, many women prefer cesarean delivery.

In the U.S. various forms of anesthesia are approved for cesarean delivery. Accepted forms include spinal anesthesia, spinal epidural, epidural block, and general anesthesia. Most commonly, regional anesthesia is used for planned cesarean delivery births, and general anesthesia is often used in emergent cesarean delivery or post-cesarean delivery.
delivery uterine closure and abdominal suturing. Regional anesthesia, spinal or epidural, allows the patient to remain conscious throughout the procedure. As with many other medical procedures, there are risks and benefits to each mode of anesthesia. Currently, many providers prefer the use of regional anesthesia because it allows the mother to remain awake throughout the procedure and is safer compared to general anesthesia.

The use of general anesthesia is more common in invasive procedures, mainly for patient comfort and compliance. However, many procedures are still performed using local anesthetic, which primarily functions by hyperpolarizing nerves to block signal transmission. The use of local anesthetic in cesarean delivery (infiltrative anesthesia) involves the anesthetic agent being applied to the subdermal layer, penetrating the various layers of fascia, muscle, and peritoneum, excluding the fatty tissue. Each subsequent layer must be infiltrated once the previous layer has been dissected. As previously known, the use of local anesthetic onset is much slower than that compared to general or spinal anesthesia. Lidocaine has shown to have the quickest infiltrative onset of 10 to 20 minutes, compared to other local agents. Compared to general and spinal anesthesia, 10 to 20 minutes is a very long time. However, when evaluating its use for cesarean section with limited resources; it serves as a very useful option, even though onset is longer. Various small incisions can be made to introduce infiltration to ensure adequate block prior to minimize onset time. In relation to the overall procedure, infiltration should be established as quickly as possible to proceed with the cesarean section; especially in emergent cases.

In addition to its use during a cesarean delivery, infiltrative anesthesia for postoperative cesarean care is associated with better outcomes for pain management. Infiltrating local anesthetic (Bupivacaine or ropivacaine) into the wound has been associated with significant lower opiate (morphine) medication consumption, along with decreased nausea. Recently, there has been a focus on evaluating the elective use of infiltrative anesthesia during cesarean delivery. Previously infiltrative anesthesia was only considered for use in rare sittings involving highrisk emergent cesarean delivery patients, in which general or regional anesthesia was not readily available or contraindicated – particularly in obese patients, patients who have difficult airway management, or severe coagulopathy. This article focuses on the rare use of infiltrative anesthesia for cesarean delivery: assessing the overall outcome of the procedure, in relation to mother and infant and postoperative pain management.

Discussions

In cases of life threatening or high-risk pregnancies, cesarean delivery is often the mode of delivery. However, in some highrisk and emergency situations, or in cases of patients with medical contraindications, cesarean delivery using regional or general anesthesia cannot be performed. Revisiting a method form the past provides an alternative in such scenarios. The use of infiltrative anesthesia for cesarean delivery has been utilized in areas where a provision of adequate patient care is strained by limited funds, resources and staff in small hospitals or rural communities. Meanwhile, in the past, clinicians have successfully used this technique simply because it was the least complicated, providing rapid anesthesia without modifying the maternal-fetal pathophysiology.

Our current advancements in pain management and invasive operative procedures have distorted our view of the effectiveness of infiltrative anesthesia, which is now considered to be regressive. However, evidence suggests that it may still be a life-saving option for high-risk pregnant women and their offspring. A few fetal highrisk cases include fetal asphyxia, prematurity, maternal diabetes, and Rh-immunization. The procedure became a standard of practice in regions of Africa, specifically Nigeria, as well as cases being reported in India (1996) and the United Kingdom (1999). In contrast, the use of infiltrative anesthesia for

(Continued on Page 14)
cesarean delivery is seldom seen in modern day American healthcare practices.

**Description of procedure and medications**

Cesarean delivery must be performed in a delicate manner, keeping in mind that the mother is fully awake throughout the procedure, and it has been suggested that a professional support person be present in order to prevent patient distress. Table 1 outlines the potential anesthetic agents which can be used; however, Lidocaine is considered the medication of choice, because it has a rapid onset with the fewest neonatal neurobehavioral side effects. Table 2 demonstrates the stepwise procedure of infiltrative anesthesia induction during cesarean delivery. Initial placement of local anesthesia is performed using the common wheel pattern at the umbilicus. Anesthesia is infiltrated through each peritoneal layer prior to incision;

**Table 1** Recommended Maximum Dosages for Local Anesthetic Agents

<table>
<thead>
<tr>
<th>Agent used</th>
<th>Epinephrine</th>
<th>Percentage</th>
<th>Maximum dose*†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prilocaine</td>
<td>Without</td>
<td>0.5</td>
<td>80mL (400mg)</td>
</tr>
<tr>
<td>Prilocaine</td>
<td>With</td>
<td>0.5</td>
<td>120mL (400mg)</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>Without</td>
<td>0.5</td>
<td>40mL (200mg)</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>With</td>
<td>0.5</td>
<td>80mL (400mg)</td>
</tr>
<tr>
<td>Lidocaine†</td>
<td>Without</td>
<td>0.5</td>
<td>40mL (200mg)</td>
</tr>
<tr>
<td>Lidocaine‡</td>
<td>With</td>
<td>0.5</td>
<td>100mL (500mg)</td>
</tr>
</tbody>
</table>

*Total dose per infiltration should not exceed 500mg

†Epinephrine must be used in a dilution of 1:200,000 or greater. Side effects may include pallor, sweating, tachycardia, hypertension, and ventricular arrhythmias including ventricular fibrillation. Advantages of using a vasoconstrictor include prolongation of local anesthetic effect, decreased speed of absorption, and decreased systemic absorption and toxicity.

‡Lidocaine is recommended because of its rapid onset (10 to 20 minutes) and least effect on neonatal neurobehavioral reflexes.

Although 10mcg of fentanyl intravenously may be delivered for additional pain relief, in addition to Entonox delivered via face mask.

Unlike standard delivery by cesarean delivery, there are surgical limitations depending on the clinical setting and obstetrical conditions. Even though the procedure may be started using infiltrative anesthesia, completion of the procedure during an emergent delivery may result in use of general anesthesia for uterine closure and abdominal suturing.

In certain settings there is a concern for maintaining hydration and fluid status, along with establishment of an intravenous line to deliver systemic medication. In emergency scenarios, it can be difficult to establish normal intravenous access, due to various circumstances – venous collapse, brittle veins, obesity, edema, intravenous infiltration. An alternative, mainly used in children, who can be applied in adults, is rapid establishment of intraosseous infusion (IO). Intraosseous access

**Table 2** Local Infiltration Anesthesia for Cesarean delivery

<table>
<thead>
<tr>
<th>S. no</th>
<th>Step-wise procedure of infiltrative anesthesia induction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Professional support personnel with patient</td>
</tr>
<tr>
<td>2</td>
<td>Skin Infiltration with lidocaine 0.5%</td>
</tr>
<tr>
<td>3</td>
<td>Intracutaneous injection in the midline from the umbilicus to the symphysis pubis</td>
</tr>
<tr>
<td>4</td>
<td>PSubcutaneous injection lidocaine 0.5%</td>
</tr>
<tr>
<td>5</td>
<td>Incision down to rectus fascia</td>
</tr>
<tr>
<td>6</td>
<td>Rectus fascia blockade lidocaine 0.5%</td>
</tr>
<tr>
<td>7</td>
<td>Parietal peritoneal infiltration and incision lidocaine 0.5%</td>
</tr>
<tr>
<td>8</td>
<td>Visceral peritoneal infiltration and incision lidocaine 0.5%</td>
</tr>
<tr>
<td>9</td>
<td>Broad ligament lidocaine 0.5%</td>
</tr>
<tr>
<td>10</td>
<td>Paracervical injection lidocaine 0.5%</td>
</tr>
<tr>
<td>11</td>
<td>Uterine incision and delivery</td>
</tr>
</tbody>
</table>

(Continued on Page 15)
quickly allows for rapid fluid resuscitation and medication delivery through direct injection into the bone marrow. Intraosseous access provides a more stable, non-collapsible entry point into the venous system; however, precaution should be taken to evaluate the injection site to prevent fluid accumulation in the leg cavity, resulting in compartment syndrome. In addition, intraosseous access allows for ease of pain management techniques when regional or general anesthesia cannot be initiated; particularly in this presentation for infiltration anesthesia cesarean delivery.

Administration of general anesthesia for uterine repair and closure if needed and able.

Currently intraosseous access is established using the EZIntraosseous drill and line placement. Depending on hospital protocol, certification verification, and training, EZ-intraosseous placement can promptly be established within a matter of minutes. For novice physicians and residents, training programs are available to familiarize and practice the protocol. Standard training for EZ-intraosseous access is estimated to take 2 hours, consisting of a lecture supplemented with hands-on training and multiple practice attempts. Even though some hospitals and institutions mandate a thorough intraosseous access training protocol, it is highly recommended for beginners to familiarize themselves with the equipment, procedure, and practice.

Positive aspects of infiltration anesthesia for cesarean delivery

The benefits for use of infiltration anesthesia vary from patient to patient. One of the primary advantages of infiltration anesthesia stems from its safer use in relation to patient respiratory status: unlike general anesthesia, the use of infiltration anesthesia does not cause severe respiratory compromise. In comparison, the pulmonary risks and post-operative respiratory function complications are well known with use of general anesthetic, while the use of regional block is circumstantial and unpredictable in some cases. Another major concern is the risk of intra and post-operative bleeding. The use of infiltration anesthesia reduces the risk of bleeding in cesarean delivery and provides better surgical outcomes. Not only are there fewer bleeding complications, but a study performed in Nigeria — which relied on the practice of infiltration anesthesia for cesarean delivery, due to financial and regional constraints — has substantiated the belief that infiltration anesthesia in cesarean delivery provides more precise blood pressure control and fewer procedural blood pressure fluctuations. The study also affirmed lower maternal and perinatal mortality and moibdity rates in women affected by eclampsia. Aside from the procedural concerns, infiltration anesthesia can easily be manipulated for patients with structural complications: a successful cesarean delivery case using infiltration anesthesia in a patient with severe congenital kyphoscoliosis, pelvic tilt, and dislocated hip, with paraplegia from T10-L1 has been reported.

Negative aspects of infiltration anesthesia for cesarean delivery

In evaluation of the risks and benefits, the major drawbacks of using infiltration anesthesia seem minimal compared to those of general and regional anesthesia. The use of infiltration anesthesia has not shown to be as effective in patients who are obese and/or uncooperative. The use of infiltration anesthesia helps block the pain; however, the patient is still able to feel pressure, discomfort, and proprioception related to the procedure, preventing its use when patients are overly anxious or are unable to tolerate. In addition, this local method may limit the surgical procedure, as no packs or retractors should be used, reinforcing the importance of gentleness and avoiding sudden movement. Another aspect in which infiltration anesthesia has not shown to be beneficial is in multiparous women who have undergone previous or multiple cesarean procedures, resulting in dense fibrous tissue and adhesions preventing the infiltration of the anesthetic agent.

Local anesthesia alternatives

Many cultures hold faith to the natural birthing process and ultimately desire vaginal delivery.
However, with various complications interrupting the normal birthing process, many patients are referred for cesarean delivery. Alternatives to anesthesiabased cesarean delivery are being evaluated, particularly the use of acupuncture. A Chinese study investigated the use of acupuncture anesthesia compared to epidural anesthesia and local anesthesia in cesarean delivery. Results demonstrated the blood pressure, pulse rate, and respiration remained uninterrupted during the operation; in addition, blood loss was less so than with the use of epidural or local anesthesia, affirming safe use for mother and fetus.

**Conclusion**

Cesarean delivery under infiltrative anesthesia may be seen as an old outdated method, but it is important not to forget methods we once used in the past, as they may still have some applications (Table 3). As indicated in the discussion, this method of pain management is a viable option when resources, equipment, medication, and personnel are limited — in addition to patient relevant contraindications for regional and general anesthesia. Cesarean delivery under infiltrative anesthesia should be viewed as a safe alternative option, rather than an outdated method for both mother and fetus.

**Acknowledgements**

The authors would like to thank Ms. Judith Wilkinson, Medical Librarian at Lincoln Medical and Mental Health Center Science Library for providing the reference articles.

**Conflicts of interest**

The Authors did not report any potential conflicts of interest.

**References**


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UNINTENDED PREGNANCY WITH IMPLANTABLE SUBDERMAL CONTRACEPTIVE DEVICE (NEXPLANON): A CASE REPORT

Takeko Takeshige, DO, FACOOG


Abstract

Background: In 2006, Implanon (68 mg), a synthetic subcutaneous progestin etonogestrel eluting capsule, was approved for use in the U.S. to provide long-acting reversible contraception (LARC). The next generation LARC, Nexplanon (68 mg), a progestin-only etonogestrel subdermal implant, was available in 2001. Currently, Nexplanon is advertised to provide 99% effective contraception, up to 4 years. Removal of the capsule will revert back to normal menstruation and fertility. Unlike Implanon, cases of unintended uterine pregnancy with proper and successful insertion have not been reported using Nexplanon.

Case: A 24-year-old female, G2P1001, with obstetrical history of one spontaneous vaginal delivery (2015), and gynecological history of low grade squamous intraepithelial lesion (LSIL) on Pap smear (2014), was found to have an intrauterine pregnancy while using Nexplanon. Initially, urine pregnancy testing assured that she was not pregnant before placement of the Nexplanon. Nexplanon was inserted ~2 months post-partum after the birth of her first child. 17 months post-Nexplanon insertion, patient experienced irregular spotting, cramping, and reported positive home pregnancy test. Transvaginal ultrasound confirmed an intrauterine pregnancy at 9 weeks and 3 days. The Nexplanon implant was removed intact. Routine prenatal care was initiated and no issues were identified.

Conclusion: Newer LARCs provide an alternative to lifestyle adaptive contraception, with ease of use and compliance. Although LARCs prove to be more effective, known factors linked to human error during placement, cytochrome P450 induction, and BMI, have shown to decrease their efficacy, leading to failed contraception.

Keywords: Etonogestrel releasing implant; Implantable subdermal contraceptive; LARC; Nexplanon; Progestin-only hormone implant; Unintended pregnancy

Abbreviations:
LARC: Long-Acting Reversible Contraception; SARC: Short-Acting Reversible Contraceptives; OCPs: Oral Contraceptive Pills; DMPA: Depot Medroxyprogesterone Acetate; MSD: Merck Sharp & Dohme; HPO: Hypothalamic Pituitary Ovarian; BMI: Body Mass Index; LSIL: Low Grade Squamous Intraepithelial Lesion; AED: Antiepileptic Medication

Introduction

Implanon, an Etonogestrel capsule, containing 68 mg of the synthetic progestin etonogestrel implant, was first introduced in Indonesia in 1998 and approved for use in the U.S. in 2006, as a subcutaneous hormone eluting capsule providing (Continued on Page 19)
long-acting reversible contraception (LARC)\(^{[1-4]}\). Prior to the use of Implanon, short-acting reversible contraceptives (SARC) such as oral contraceptive pills (OCPs), birth control vaginal rings (example Nuvaring), transdermal contraceptive patches, depot medroxyprogesterone acetate (DMPA) injections (Depo-Provera) were prescribed \(^{[5]}\). A recent study performed in 2016 compared SARC and LARC, affirming that LARC use provides superior contraception compared to SARC \(^{[6,7]}\). The LARC capsule is inserted by a nurse or physician, with an applicator, into the patient’s nondominant upper arm \(^{[8]}\). The implant manufacturer, Merck Sharp & Dohme (MSD) stated that Implanon had shown to be more than 99% effective in clinical trials, and asserted that there is no contraceptive that is 100% effective \(^{[9]}\). The mechanism of action of Implanon relies on the suppression of ovulation through hypothalamic pituitary ovarian (HPO) axis dysregulation and promotes thickening of the cervical mucus preventing fertilization \(^{[10]}\).

Between 1999 and 2011, over 1.4 million women used Implanon \(^{[1,2]}\). An Australian study, published in 2005, found the Implanon failure rate to be 1 in 1000 \(^{[11]}\). This is the only comprehensive study of Implanon failure published \(^{[11]}\).

The next generation of Implanon, Nexplanon, approved in 2006, is inserted in the non-dominant upper arm \(^{[8]}\). Nexplanon implants are reported to provide contraception for up to 4 years \(^{[8]}\). If Nexplanon is implanted during the first 5 days of menstruation, it is immediately effective \(^{12,13}\). However, if the capsule is implanted outside those 5 days, this contraceptive method will not be effective for one week and bridging contraception is required \(^{12,13}\). Removal of the capsule will allow the menstrual cycle to resume normally \(^{12,13}\). It has not previously been reported to be associated with an unintended uterine pregnancy with proper and successful insertion.

Contraindications for the implant include; known or suspected breast cancer, personal history of breast cancer, other progestin-sensitive cancer and allergies to the components of Nexplanon \(^{12,13}\). Side effects of Nexplanon include; irregular menses, headache, vaginitis, breast pain, weight gain, acne, abdominal pain, and pharyngitis \(^{12,13}\). Although Nexplanon is used to prevent pregnancy, if the implant fails, there is an increased risk for ectopic pregnancy \(^{12}\). We present the first case of intrauterine pregnancy while using Nexplanon \(^{14}\).

### Case Report

This patient is a 24-year-old female, G2P1001, with past medical history of asthma controlled with albuterol, asthmatic bronchitis treated with amoxicillin, and iron deficiency anemia was found to have an intrauterine pregnancy while using Nexplanon. Obstetrical history is significant for one spontaneous vaginal delivery in 2015, and gynecological history includes low grade squamous intraepithelial lesion (LSIL) on pap smear in 2014, with no further abnormal pap smears. She had used Nexplanon before her first pregnancy with minimal side effects. Her body mass index (BMI) was 25.95 kg/m\(^2\). Vital signs were within normal limits throughout the course of treatment.

The patient requested Nexplanon for contraception after the birth of her first child. Nexplanon was inserted, as per manufacturer’s instructions, approximately 2 months postpartum in the upper, non-dominant arm (left arm) and verified by palpation. Urine pregnancy testing assured that she was not pregnant before placement of the Nexplanon. The expiration date was 2/2018. The patient returned 1 month later for a Nexplanon check presenting no new complaints. At that time, her method of contraception was condoms and the patient was breastfeeding.

The patient returned to the clinic 16 months later, 17 months post Nexplanon insertion, because she was experiencing irregular spotting, cramping, and a positive home pregnancy test. The patient could not recall her last menstrual period. In the clinic, the patient’s β-hCG was 121,584 mIU/ml. The
transvaginal ultrasound confirmed an intrauterine pregnancy at 9 weeks and 3 days, with good fetal movement and good fetal heart motion (Figure 1). This was not a planned pregnancy, but the patient wished to continue to term. The Nexplanon implant was removed intact. Routine prenatal care was initiated and no issues were identified at the time of this case report.

Discussion and Conclusion

The case above describes a woman of reproductive age using Nexplanon as a LARC, which failed to provide contraception leading to IUP. Implanon, having been available since 1998, has reported hundreds of cases of unplanned pregnancy [8,9]. The newer generation, Nexplanon which was used in this case, has been available since 2001, has not yet reported any cases of unplanned pregnancy. The manufacturer of Implanon and Nexplanon claim these are 99% effective; however, effectiveness can be reduced by factors such as improper insertion, device damage, drug interactions with Cytochrome P40 3A4 (CYP) inducers, and weight/BMI [9,12,13,16].

Figure 1: Transvaginal ultrasound on 7/7/17 showed IUP at 9 3/7wks by CRL of 2.62 cm, with EDD of 2/6/18.

The largest contributing factor to contraceptive failure results from improper capsule insertion [17]. The effectiveness relies on correct subdermal capsule by a nurse or physician and proper post-insertion care [1,12,13]. The device is placed in the patient’s non-dominant arm, and may remain for up to 4 years [12,13]. Correct insertion procedures are required for maximum efficacy. Therefore, it is critical that medical professionals be thoroughly trained to insert the device; ensuring the cartridge is loaded prior to application and unloaded after injection, then verified by palpation [12,13]. After repeated failures, a study evaluated the causes of 200 contraceptive failures in 20,486 Australian women [17]. 84 of the 200 pregnancies were attributed to improper placement secondary to inadequate insertion training, in which the rod remained in the applicator or the rod falling out of the applicator, never actually being delivered [17]. Further, the Australian study shows 46/200 women were pregnant prior to implantation [17]. As Merck has proclaimed previously, precise implantation during the menstrual cycle is crucial; the study showed 19/200 failures were due to untimely insertions [12,13,17].

It is just as important to maintain the integrity of the implanted capsule as it is to properly insert the contraceptive device. Damage to the capsule itself should be thoroughly evaluated during implantation and removal [18]. Cases have been reported of mispositioning, migration, and damage to the capsule, altering the efficacy of the device [18]. It is suspected that capsule damage can change the overall surface area, resulting in either too much, or too little progestin being released [18]. The suspicion for failure due to misplacement and structural integrity in this patient is unlikely due to complete intact removal of the device from the original insertion site.

Another factor in LARC failure is drug-drug interactions. Estrogen and progesterone are metabolized by the hepatic enzyme CYP450 3A4 (CYP) system [10,11]. CYP450 3A4 inducers have shown to decrease the efficacy of implanted LARCs, particularly, the use of antiepileptic
medication (AED)\textsuperscript{[19,20].} Common hepatic enzyme AED inducers include phenytoin, phenobarbital, oxcarbazepine, topiramate, and carbamazepine \textsuperscript{[19,21,22].} Nonnucleoside reverse transcriptase inhibitors (efavirenz) and antituberculosis medications (isoniazid) also have CYP induction properties \textsuperscript{[23,24].} These medications induce the CYP450 3A4 system to accelerate the metabolism of estrogen and progestin; thereby decreasing the available serum concentration of progestin \textsuperscript{[19,21,22].} In regards to this patient, concomitant drug use was not a factor in contraceptive failure, however, it should not be excluded from possible causes of LARC failure.

As with many other medications, a patient’s body weight and BMI should be taken into consideration when initiating therapy or dosing. The current available LARC have one fixed dosing for all patients. Recent LARC failures have been attributed to a patient’s BMI \textsuperscript{[25-27].} The increased cell density requires a greater concentration of progesterone to be effective and is inversely related to the patient’s body weight \textsuperscript{[12,25-27].} Nexplanon product information includes a disclaimer outlining decreased LARC efficacy in overweight women \textsuperscript{[12,16].} However, Merck has not performed specific studies in women who weighed above 130\% of their ideal body weight to determine effectiveness in overweight women \textsuperscript{[12].} It is also expected that progestin concentrations will decrease over time with use, combined with obesity, resulting in a significantly lower concentration of progestin in these women \textsuperscript{[12].} In this case, the patient presented had a BMI of 25.95 kg/m\textsuperscript{2} (normal 18.5-24.9, overweight 25-29.9). Since the patient’s BMI calculates to the lower limit of overweight, it is unlikely that BMI significantly affected LARC efficacy.

As stated by the product label, removal of the capsule will return the body back to normal menstrual homeostasis, allowing for pregnancy \textsuperscript{[12,13].} In patients using Implanon, return to a normal menstrual cyclical is expected within 30 months of implant removal \textsuperscript{[16,28].} It is suspected that this patient had recommenced ovulation, likely due to subtherapeutic concentrations of progestin, inadequate for effective contraception; leading to conception despite her amenorrhea and LARC use.

In the case of contraceptive failure, it is crucial to thoroughly evaluate the progression of zygote implantation and maturation, just like any other pregnancy. Serious complications such as ectopic pregnancy have been linked to contraceptive therapy. Progestin-only contraceptive products, including LARC, have an established increased relative-risk for ectopic pregnancy, if fertilization does occur \textsuperscript{[12,13,29].} The pathophysiology is thought to be related to decreased smooth muscle contraction of fallopian tubes \textsuperscript{[13,29].} Fortunately, in our case the pregnancy was an ultrasound confirmed intra-uterine pregnancy, and Nexplanon was removed at 9 weeks gestation.

It is important to take into consideration the multitude of factors that influence the effectiveness of the treatment - prior to, and during use. It may be beneficial to regularly screen for progestin levels to ensure they are within therapeutic range. Furthermore, routine evaluation of the integrity, location, and positioning of the implant would promote optimal functioning.

New questions have been raised recently to investigate if other factors such as alcohol, thyroid hormone, liver disease, and immunological reaction to the implant have the capacity to affect contraceptive efficacy. It is crucial to evaluate which additional factors can alter contraceptive efficacy, not only to reassure the patient, but also to prevent the stress of an unplanned pregnancy.

Acknowledgment

The authors would like to thank Ms. Judith Wilkinson, Medical Librarian at Lincoln Medical and Mental Health Center Science Library for providing the reference articles

Conflicts of Interest

The Authors did not report any potential conflicts of interest.
Unintended Pregnancy with Implantable Subdermal Contraceptive Device (Nexplanon): A Case Report

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References


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Highlights

2018 Fall Conference

October 25-28, 2018
The Worthington Renaissance Fort Worth, TX

OMM Workshop

Third and Fourth Year Medical Students participated in Mock Interviews

(Continued on Page 24)
Past President Honorary Lecture Award

David Boes, DO presents the ACOOG Past President Honorary Lecture Award to Lisa Thiel.

ACOOG History Book Signing - 85 Years (Second Edition)
New Members
Welcome new members! The Board of Trustees approved the following new members at the October 2018 meeting in Fort Worth, TX.

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The ACOOG Board of Trustees has donated to MEFACOOG in their memory.
ACOOG Calendar of Events & AOBOG News

ACOOG CME
Calendar of Events

86th Annual Conference
March 24-29, 2019
Hilton Riverside
New Orleans, LA

2019 Fall Conference
October 3-6, 2019
Hyatt Regency Downtown
Columbus, OH

87th Annual Conference
March 29-April 2, 2020
Hilton La Jolla Torrey Pines
San Diego, CA

88th Annual Conference
April 11-16, 2021
Hyatt Regency Coconut Point
Bonita Springs, FL

89th Annual Conference
April 3-8, 2022
Grand Hyatt San Antonio Riverwalk
San Antonio, TX

90th Annual Conference
March 26-31, 2023
Manchester Grand Hyatt
San Diego, CA

(Continued on Page 27)
AOBOG News

Check Out Our New Website!

AOBOG recently launched a fully redesigned website: certification.osteopathic.org/obstetrics-gynecology/ The updated layout and user-friendly navigation will enable users to find critical information much faster. We hope you like the modern and engaging look as much as we do!

OCC Changes
Changes will be coming to OCC – check the website and be on the lookout for communications to come about exciting changes will take effect in 2019!

One change that’s already been in place for a while is the drop in the required number of modules for OCC Component 4 – Practice Performance Assessment (PPA Modules) to 2 PPA modules per 6-year OCC cycle (previous requirement was 5 PPA modules). Also, if you are doing any quality improvement (QI) activities through your hospital, employer, etc., you may now attest to QI activities to count for PPA Module credit. The online attestation form can be found at physicianportal.osteopathic.org under “Component 4 Attestation.”

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The AOBOG welcomes its newest examiners – Dr. Glenn Bigsby, Dr. Bryan Roehl, and Dr. Terry Tressler!

2019 Examination Schedule

Spring 2019 Exam Dates and Deadlines: (Applications available beginning September 1, 2018)

• April 12-13, 2019 – Primary Oral Exam – Rosemont, IL (final deadline to apply is January 14, 2019)

• April 12-13, 2019 – Subspecialty Certification Exams – Rosemont, IL (final deadline to apply is December 17, 2018)

• April 29 – May 4, 2019 – Primary Written Exam – Pearson VUE Testing Centers across the U.S. (final deadline to apply is March 11, 2019)

Fall 2019 Exam Dates and Deadlines: (Applications available beginning March 1, 2019)

• September 20-21, 2019 – Primary Oral Exam – Rosemont, IL (final deadline to apply is June 24, 2019 or when the cap on candidates has been reached)

• September 20-21, 2019 – Subspecialty Certification Exams – Rosemont, IL (final deadline to apply is June 3, 2019)

All examination applications are exclusively available on the AOBOG website.

Visit the AOBOG website for up-to-date information about certification, examinations, applications, and Osteopathic Continuous Certification (OCC).

View the entire calendar of upcoming exams at certification.osteopathic.org/obstetrics-gynecology/important-dates/ Visit the AOBOG website for up-to-date information about certification, examinations, applications, and Osteopathic Continuous Certification (OCC).
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(Continued on Page 31)
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Group ID: ACOOG
ACOOG Rate $249.00

The Hilton New Orleans Riverside places you at the center of it all. Nestled against the banks of the Mississippi, guests can watch the ships come sailing in or dive into the city life just steps away. Grab a beignet, listen to live jazz, ride a streetcar, or hop into a parade, you never know what you’ll experience in the vibrant culture and excitement of New Orleans just outside our front door. Make it a trip to remember with Hilton.

• Downtown New Orleans hotel in the Warehouse and Arts District
• Walking distance to the French Quarter and Jackson Square
• Contemporary and comfortable guest rooms and suites
• Amazing downtown or Mississippi River views from upper floor rooms
• Drago’s Restaurant, Riverblends Café, Spirits Bar & Public Belt
• Two outdoor pools, Health Club by Hilton Fitness Facility
• Award-winning meeting space with highly trained staff

LEARNING OBJECTIVES

Those participating in this activity will receive information that should allow them to...

• Enhance the skills needed to diagnose and manage common and uncommon clinical challenges faced in a modern OB/GYN practice
• Address current and future OB/GYN practice issues
• Apply advances in technology and therapeutics to facilitate improved patient care and outcomes

ACCREDITATION

The American College of Osteopathic Obstetricians & Gynecologists is accredited by the American Osteopathic Association to award continuing medical education credits to physicians. This activity has been planned and implemented in accordance with the accreditation requirements and policies of the American Osteopathic Association and the Accreditation (AOA) Council for Continuing Medical Education (ACCME).

CREDIT STATEMENTS

The AOA Council on Continuing Medical Education approves this program for 28 credits of AOA Category 1A CME for The American College of Osteopathic Obstetricians & Gynecologists. Physicians should only claim credit commensurate with the extent of their participation in the activity. A completed attestation form and post-course evaluation are required to receive CME credit and a certificate of attendance.

PHOTOGRAPHY DISCLAIMER

Registration and attendance at, or participation in ACOOG meetings and other non-CME activities constitutes an agreement by the registrant to ACOOG’s use and distribution of the registrant’s or attendee’s image or voice in photographs, videotapes, electronic reproductions and audiotapes of such activity.

PRESIDENTIAL CELEBRATION

Please watch our website for details as the event approaches.
### OMM Workshop
**March 24, 2019  2:00-5:00 PM  Anita Showalter, DO**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00-2:00 PM</td>
<td>Diabetes in Pregnancy</td>
</tr>
<tr>
<td>2:00-3:00 PM</td>
<td>Preterm Labor</td>
</tr>
<tr>
<td>3:00-3:15 PM</td>
<td>Break</td>
</tr>
<tr>
<td>3:15-4:15 PM</td>
<td>Genetic Testing/Screening Update</td>
</tr>
<tr>
<td>4:15-5:15 PM</td>
<td>Fetal Growth Restriction</td>
</tr>
</tbody>
</table>

### General Session
**Monday, March 25, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30-7:45 AM</td>
<td>President’s Welcome</td>
</tr>
<tr>
<td>7:45-8:30 AM</td>
<td>Distinguished Fellows Honorary Lecture</td>
</tr>
<tr>
<td>8:30-9:15 AM</td>
<td>Adnexal Mass Work-up and Management: Surgical or Conservative?</td>
</tr>
<tr>
<td>9:15-10:00 AM</td>
<td>Female Sexual Dysfunction</td>
</tr>
<tr>
<td>10:00-10:45 AM</td>
<td>Visit Exhibits</td>
</tr>
<tr>
<td>10:45-11:30 AM</td>
<td>Malignancy Diagnosed During Presumed Benign Adnexal Mass Surgeries: What to Do?</td>
</tr>
<tr>
<td>11:30-12:15 PM</td>
<td>Post Partum Hemorrhage &amp; OB Simulation Tools</td>
</tr>
<tr>
<td>12:15-1:30 PM</td>
<td>Lunch provided, visit Exhibits</td>
</tr>
<tr>
<td>1:30-2:15 PM</td>
<td>Anticoagulant in The Peri-Post Partum Period</td>
</tr>
<tr>
<td>2:15-3:00 PM</td>
<td>Early Detection of Endometriosis &amp; Improvement in Outcomes</td>
</tr>
<tr>
<td>3:00-3:45 PM</td>
<td>Visit Exhibits</td>
</tr>
<tr>
<td>3:45-4:30 PM</td>
<td>OMM &amp; Headache in Pregnancy</td>
</tr>
</tbody>
</table>

**Tuesday, March 26, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30-8:15 AM</td>
<td>Adnexal Malignancy During Pregnancy</td>
</tr>
<tr>
<td>8:15-9:00 AM</td>
<td>ACGME Update</td>
</tr>
<tr>
<td>9:00-9:45 AM</td>
<td>BetaHCG Levels Benign or Malignant</td>
</tr>
<tr>
<td>11:00-11:45 AM</td>
<td>Break/Exhibits</td>
</tr>
<tr>
<td>11:45-12:45 PM</td>
<td>Urological Concerns: Microscopic/ Gross Hematuria, IC, PBS, Recurrent UTI</td>
</tr>
<tr>
<td>12:45-1:30 PM</td>
<td>Medical Team Building</td>
</tr>
<tr>
<td>1:30-2:15 PM</td>
<td>Sterilization and Fertility: Vasectomy The Reversal, Tubal Ligation with Reanastomosis</td>
</tr>
<tr>
<td>2:15-2:30 PM</td>
<td>Break/Exhibits</td>
</tr>
<tr>
<td>2:30-3:00 PM</td>
<td>Legal Pearls for The OB/GYN</td>
</tr>
<tr>
<td>3:00-3:45 PM</td>
<td>Legal Scenarios for the OB/GYN</td>
</tr>
</tbody>
</table>

### Meetings:
**March 24, 2019**

**ACOOG Board Meeting**
8:00 AM - 12:00 PM

**March 25, 2019**

**Resident Reporter Orientation**
6:30-7:30 AM

**March 26, 2019**

**Historian & Traditions / Membership & Promotions**
7:00-8:00 AM

**MEFACOOG Board Meeting**
8:30-11:00 AM
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 7:00-7:10 AM | **MEFACOOG Presentation**  
                Eric Carlson, DO                                                |
| 7:10-7:45 AM | **AOA President-elect**  
                Ronald Burns, DO                                                |
| 7:45-8:15 AM | **ACOG President-elect**  
                Ted L. Anderson, MD, PhD                                         |
| 8:15-8:30 AM | **ACOOG Postgraduate Thesis Winner**  
                TBD                                                             |
| 8:30-9:15 AM | **MEFACOOG Distinguished Lecture**  
                Rebekah Gee, MD                                                  |
| 9:15-10:00 AM| **Barbara Hawkes Memorial Lecture**  
                TBD                                                             |
| 10:00-10:30 AM| **Break**  
                (All participants assemble for entrance processional)          |
| 10:30-12:00 PM| **Awards Ceremony & Presentation of New Fellows**                   |

**Breakout I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 1:00-1:45 PM | **Risk Reduction Surgery in BRCA Patients**  
                Jeffery James, DO                                                |
| 1:45-2:30 PM | **Endometrial Hyperplasia: Medical/Surgical & Fertility Sparing**  
                Mark Miller, DO                                                  |
| 2:30-2:45 PM | **Break**                                                            |
| 2:45-3:30 PM | **Sling Complications/Revision: Method & Timing**  
                Michael Coyle, DO                                                |
| 3:30-4:15 PM | **Hysteropexy vs Supracervical/Cervicopexy Morcellation vs TLH/ASC vs Vag Hyst/ASC**  
                Carlos Roberts, MD                                               |

**Breakout II**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 1:00-1:45 PM | **Hematologic Disorders in Pregnancy, Thalassemia, Sickle Cell, and Leukemia**  
                James Hole, DO                                                  |
| 1:45-2:30 PM | **Optimal Timing of Delivery for PPROM: Before, At, or After 34 Weeks**  
                Robert Debbs, DO                                                |
| 2:30-2:45 PM | **Break**                                                            |
| 2:45-3:30 PM | **Managing Fertility in Primary Ovarian Failures**  
                Cindy Duke, MD                                                  |
| 3:30-4:15 PM | **Onco-Fertility**  
                Cindy Duke, MD                                                  |

**Events:**

March 27, 2019  
Presidential Celebration  
6:00-10:00 PM  
Riverboat New Orleans - boarding at the Hilton Riverside private dock

**Meetings:**

March 27, 2019  
Re-Org Board of Trustees  
1:30-3:00 PM  
March 28, 2019  
CMEC Meeting  
10:30-12:00 PM
Friday, March 29, 2019
7:00-7:45 AM  Psychopharmacology Update  
Elizabeth Yoder, DO
7:45-8:30 AM  Premenstrual Dysmorphic Disorder  
Elizabeth Yoder, DO
8:30-9:15 AM  Trends in Ovarian Cancer Treatment with 
Addition of Bevacizumab & PARP Inhibitors/ Immunotherapy  
Del Priore Giuseppe, MD
9:30-10:15 AM  Neurological Conditions During Pregnancy: Normal or Emergent  
Divya Singhal, MD
10:15-11:30 AM  Obesity and The Female Pediatric Patient  
Tyree Winters, DO

Things to Do!

- New Orleans Area Plantations  
- Cemetery and Voodoo Tour  
  website: https://www.tourneworleans.com/cemetery_setoutside.html
- French Quarter  
  website: https://www.frenchquarter.com
- The National WWII Museum  
  website: https://www.nationalww2museum.org/
- Audubon Aquarium of the Americas  
  website: https://audubonnatureinstitute.org/aquarium
- New Orleans Cuisine  
  website: https://www.neworleans.com/restaurants/
- New Orleans Cocktail Scene  
  website: https://www.neworleans.com/drink/
- Mardi Gras Museums  
- Mardi Gras World  
  website: https://www.mardigrasworld.com/
ACOOG 86th ANNUAL CONFERENCE

REGISTRATION FORM

First Name* MI Last Name*

AOA # *

Degree* DO MD Other

Address*

Apt. or Suite

City*

State* Zip*

Contact Tel*

E-mail *

Guest Badge **

Please print name for guest badge (Adults only)

Please list any dietary restrictions / ADA compliant accommodations.

* Required ** Adults only; includes entrance to Exhibit Hall only, daily meals not included. Please call the ACOOG office for guest meal package pricing.

Refund Policy: Written cancellation of registration by February 28, 2019 will be subject to a $50 processing fee. No refunds will be given after this date.

Supplemental Sessions are space limited. Your registration will be returned if a session has reached maximum capacity. Medical students may audit workshops free of charge if space is available.

Please print name for guest badge (Adults only)

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In accordance with the Americans with Disabilities Act, every effort has been made to make this conference accessible to people of all capabilities. To request special accommodation, please contact ACOOG via e-mail at cme@acoog.org.

√ GENERAL SESSION

<table>
<thead>
<tr>
<th>Physician Member (Regular, Senior, Fellow, DF)</th>
<th>Early-Registration (payment received by February 28, 2019)</th>
<th>Late Registration (payment received after February 28, 2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Member (Regular, Senior, Fellow, DF)</td>
<td>$850</td>
<td>$1,050</td>
</tr>
<tr>
<td>Non-Member Physician</td>
<td>$1,200</td>
<td>$1,400</td>
</tr>
<tr>
<td>Life Member</td>
<td>$525</td>
<td>$625</td>
</tr>
<tr>
<td>Affiliate Member (Non-physician member)</td>
<td>$525</td>
<td>$625</td>
</tr>
<tr>
<td>Candidate (Resident member)</td>
<td>$400</td>
<td>$500</td>
</tr>
<tr>
<td>Non-Member Resident</td>
<td>$500</td>
<td>$600</td>
</tr>
<tr>
<td>Student Member</td>
<td>$200</td>
<td>$300</td>
</tr>
</tbody>
</table>

Daily rates available. Please contact ACOOG at 817-377-0421 for more information.

Pre-registrations will be accepted until March 12, 2019. All registrations received after this date will be processed at the late registration rate. Registrations received after March 12, 2019 will be accepted on site at the registration desk only. Payment must be received in full to process registration. Faxed registrations without payment information will not be processed.

√ SUPPLEMENTAL SESSIONS

<table>
<thead>
<tr>
<th>MFM Sub-specialty Pre-Course</th>
<th>March 24, 2019</th>
<th>1:00-5:00 PM</th>
<th>4</th>
<th>100</th>
<th>$150</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMM Pre Course Workshop</td>
<td>March 24, 2019</td>
<td>2:00-5:00 PM</td>
<td>3</td>
<td>100</td>
<td>$125</td>
</tr>
</tbody>
</table>

Workshops and supplemental sessions are space limited. Your registration will be returned if a session has reached maximum capacity. Medical students may audit workshops free of charge if space is available.

√ ADDITIONAL EVENTS

<table>
<thead>
<tr>
<th>ADULT- Presidential Celebration: Seated Dinner Buffet, Drinks, &amp; Entertainment</th>
<th>March 27, 2019</th>
<th>6:00-10:00 PM</th>
<th>$95</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD- Presidential Celebration Ticket</td>
<td>March 27, 2019</td>
<td>6:00-10:00 PM</td>
<td>$30</td>
</tr>
</tbody>
</table>

PAYMENT

Total Due $ Payment Method □ Check (payable to ACOOG) □ Credit Card (complete below)

Card Type □ Visa □ MasterCard □ Amex Name on Card

Card #

Exp. Date

CCV #

American College of Osteopathic Obstetricians and Gynecologists
201 Main Street, 6th Floor, Fort Worth, TX 76102 • Phone: 817-377-0421 • Fax 817-377-0439 • www.acoog.org