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Evidence-based commentaries on women's reproductive health

SPECIAL FEATURE

Management of Pain Associated With Intrauterine Device Placement

By Jeffrey T. Jensen, MD, MPH, Editor

Leon Speroff Professor and Vice Chair for Research, Department of Obstetrics and Gynecology, Oregon Health & Science University, Portland

We have turned a corner in contraception use, with long-acting reversible contraceptive (LARC) methods (intrauterine devices [IUDs] and implants) showing an increased proportion of users each year at the expense of permanent and short-acting hormonal methods. The most recent published data from the National Survey of Family Growth revealed that about 90% of women at risk for unintended pregnancy report use of a contraceptive method, and that between 2008 and 2014, the proportion of women using a permanent contraception method decreased 8% while LARC method use increased 8%.[1] Although this suggests a shift in use among family completers, implant and IUD use also has soared among younger nulliparous women. In 2014, 4% of young women 15 to 19 years of age and 13% of women 20 to 24 years of age reported use of an IUD. As we can expect to see further increases in use, it makes sense to consider how best to improve the IUD placement experience, particularly for young nulliparous women.

What do we know about management of pain associated with IUD placement? In 2013, Gemzell-Danielsson and colleagues reviewed the literature and concluded that insufficient evidence existed to support the use of any routine prophylactic pharmacological intervention for pain reduction during or after IUD insertion.[2] This review highlighted the importance of the clinician's role in adequate counseling and the creation of a trusting, unhurried clinical encounter to assuage the patient's potential fear of the procedure. These authors termed this clinical experience "verbal anesthesia." Let's examine the basis for this conclusion and whether new literature exists to inform our practice.

Nonsteroidal anti-inflammatory agents (NSAIDs): Since the publication of the Gemzell-Danielsson review, additional investigators have confirmed the 2006 randomized, controlled trial conducted by Hubacher et al, who found no benefit of prophylactic ibuprofen on IUD placement pain in Chilean women.[3] But what about American women? Bednarek et al randomized women to receive either ibuprofen 800 mg or placebo 30 to 45 minutes (peak levels occur one to two hours after oral administration) prior to IUD insertion and evaluated pain

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using a 100 mm visual analogue scale (VAS).[4] They found no significant overall difference in median pain scores (42 mm placebo, 38 mm ibuprofen; $P = 0.50$), and no difference when nulliparous and parous women were analyzed independently. However, median pain scores were clinically and significantly higher in nulliparous women (+18 mm) compared to parous women. Does drug administration timing affect the results? Ngo et al evaluated prophylactic administration of oral naproxen sodium (550 mg) 60 to 90 minutes (peak one hour) prior to IUD placement and found no significant improvement in pain with IUD placement but a significant reduction in post-procedure pain scores five minutes (17 vs. 26 mm; $P = 0.01$) and 15 minutes (13 vs. 24 mm; $P = 0.01$) later.[5]

What about other NSAIDs? Using a double-blind RCT design, Crawford et al administered oral ketorolac 20 mg or placebo 40 to 60 minutes prior to IUD placement and used a numeric rating system (1-10) to evaluate pain. These authors found both a clinically significant improvement in placement (4.2 vs. 5.7; $P = 0.031$) and post-procedure (10 min; 1.1 vs. 2.5; $P = 0.007$) pain with active treatment. However, an intramuscular (IM) injection of a higher dose of ketorolac (30 mg) given 30 minutes prior to IUD placement did not confirm the benefit with placement pain (median 5.2 cm vs. 3.6 cm; $P = 0.99$) compared to saline injection, but did decrease post-procedure pain at 5 (2.2 cm vs. 0.3 cm; $P \leq 0.001$) and 15 (1.6 cm vs. 0.1 cm; $P \leq 0.001$) minutes. While a longer wait time might have made a difference with the IM treatment, this would not represent a practical approach for most clinics. Taken together, the evidence seems weak for an overall benefit of NSAIDs on placement pain but encouraging for post-placement pain. It makes sense to stick with oral agents and to provide instructions for patients to self-administer maximum doses of over-the-counter agents such as ibuprofen or naproxen one hour prior to the scheduled procedure to improve their post-procedure experience.

Nitrous oxide: Singh et al randomized 80 women to inhale either oxygen (O_2) or a mixture of 50% nitrous oxide and 50% oxygen (N_2O/O_2) through a nasal mask for two minutes before IUD insertion and used VAS to assess maximum pain experienced two minutes after IUD placement (a time when the N_2O was expected to have cleared).[6] They found no difference in the post-placement pain scores (54 mm N_2O/O_2; 55 mm O_2) or overall satisfaction (66 mm vs. 63 mm). The absence of a large effect on satisfaction does not support that assessment of pain at the time of placement would have made a difference. However, as clinicians gain more experience with the obstetric use of N_2O/O_2, I expect we will see additional studies using higher doses (70% N_2O/30% O_2). The safety and rapid onset/termination of N_2O/O_2 effects make this an attractive option for clinic use.

Cervical preps: Gemzell-Danielsson et al found no good evidence to support the routine use of misoprostol prior to placement of an IUD and found some evidence of harm, with consistency of effect in most studies examined. Two recently published studies have suggested benefit in women with prior cesarean delivery (CD)[7] and in nulliparous women.[8] In the post-CD study, the authors reported a clinically and statistically significant reduction in insertion pain (2.2 vs. 4.2; $P = 0.0001$) and successful placements (99% vs. 87%; $P = 0.009$) using 800 mcg of vaginal misoprostol three hours prior to the procedure. However, the success of placement in the placebo group seems surprisingly low. Consistent with all studies of misoprostol, treated women experienced a variety of side effects, such as cramping pain (23% vs. 4% placebo) and shivering (14% vs. 3%). In a study of nulliparous women, Scavuzzi et al used a 400 mcg dose of vaginal misoprostol four hours prior to the placement attempt. Although misoprostol treatment did not improve the proportion of successful procedures (95% misoprostol, 97% placebo), fewer women reported moderate/severe pain (37% vs. 67%; $P < 0.001$), and clinicians rated the insertions procedures less difficult. Again, women treated with misoprostol experienced more cramping pain prior to the procedure, raising questions about routine tolerability and blinding. These new papers do not change my advice against the routine use of misoprostol prior to IUD placement.

However, a final study worth noting is the 2015 paper by Bahamondes and colleagues.[9] These authors recruited a group of women with a failed attempt at IUD placement at their institution (104 out of 2,535 attempts; 4%), randomizing 100 to self-insertion of either misoprostol 200 mcg or placebo vaginally 10 and four hours prior to a new insertion attempt. Misoprostol treatment increased the proportion of successful placements (88% vs. 62%). Although the paper lacks details on side effects, the authors reported that only 10% of the misoprostol-treated women experienced abdominal pain or cramping. This paper provides high-quality evidence to support the use of misoprostol in women

who have experienced a failed attempt by an experienced clinician. The protocol of self-treatment with a lower dose of misoprostol also seems to reduce side effects and does not interrupt clinic flow.

Paracervical block (PCB): Any benefit from PCB must exceed the cost, inconvenience, and pain of administration. Very limited evidence exists to support the routine use of PCB because of the high level of pain with administration. Recently, Akers and colleagues randomized young (14 to 22 years of age) nulliparous women receiving a small frame 13.5 mg levonorgestrel intrauterine system to a 10 mL 1% lidocaine PCB or sham pressure with a cotton-tip applicator, followed by a three-minute delay prior to placement attempt.[10] This group found a statistically and clinically significant reduction in VAS pain scores at all time points associated with the procedure except for the PCB. But the pain scores for block time point also were lower for the active PCB (33 mm) compared to the sham (54 mm), raising concerns about the quality of blinding. This makes these results difficult to interpret, particularly given the great tolerance and high success seen with placement of these small diameter devices in nulliparous women.[11]

Given that most procedures go very well, the PCB may be an excessive intervention. If we believe the data from Akers et al, it appears that placement of a tenaculum represents the primary intervention that stimulates pain. So what about strategies to manage this?

Cervical analgesia: Several recent studies suggest that providing pre-insertion local anesthesia at the cervix can reduce pain with IUD placement. These results are consistent with the above PCB study. Two RCTs found lidocaine spray superior to lidocaine gel[12] and cream or injection.[13] However, the magnitude of the improvement was of marginal clinical significance (15 mm), and the difficulty of adequately blinding the intervention raises questions regarding the rigor of both studies. Similar results come from studies of lidocaine and lidocaine/prilocaine (EMLA) gels applied topically or in the cervical canal.[14]

Nonpharmacologic interventions: Authors of several studies have noted that fear of pain at the time of placement is a barrier to choosing an IUD.[3,15] Finding ways to reduce stress and fear should decrease pain and improve the experience. Many women seek alternatives to pharmacologic interventions. Shahnazi and colleagues found that aromatherapy with lavender could reduce pain and anxiety prior to IUD placement attempt, but the effect size was small.[16] Ireland and Allen reviewed pain management strategies for office gynecologic procedures, including IUD placement.[17] My favorite approach is the use of verbal anesthesia suggested in the Gemzell-Danielsson et al review. I prefer the term "verbacaine." This low-cost intervention requires some practice, but costs nothing and uses no supplies. Under this paradigm, the clinician creates a setting that allows the encounter to succeed. After an appropriate counseling session for informed consent, the conversation turns to a pleasant distracting chatter to prevent the patient from focusing on the procedure and her potential fears. Rather than unduly stressing or ignoring potential pain, I like to normalize the experience and reinforce a sense of control. Strategies like coughing or singing provide a useful distraction during placement of the tenaculum, but must occur concurrent with placement and not before or after. If the women report no more than moderate discomfort with the tenaculum and require no dilation, we proceed without additional local anesthetic. Uncommonly, tenaculum placement results in more significant discomfort. In this case, I remove the device quickly and provide an appropriate block. In my experience, fewer than one in 10 placements require a local anesthetic. Obviously, clinical experience represents the lowest level of medical evidence, so you should cautiously consider these remarks. However, there are few risks to kindness and no costs.

Are some women at more risk of a painful experience? When you look across studies, several baseline characteristics are associated with higher levels of pain: severe dysmenorrhea, nulliparity, and anxiety. Women who report high levels of pain with prior gynecologic procedures also figure into this high-risk group. Following a standardized practice does not mean doing the same thing for all women. Although I believe that most women do not require additional pharmacologic interventions for IUD placement, some may benefit from pre-procedure NSAIDs and a PCB. Extremely anxious women or those with a history of a failed or extremely painful placement attempt may benefit from sedation. However, most women, including young nulliparous women, will do great with only a supportive, caring clinic encounter.

The practice of medicine is an art and a science. Our evidence-based approach to care provides guidelines for best scientific practice. Unfortunately, with respect to pain-reduction strategies for IUD placement, the clinical benefit of most strategies is marginal at best. More research is needed. Until then, first, do no harm. Be a master clinician and practice the art. ■

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ABSTRACT & COMMENTARY

Recommendations for Surgical Treatment of Pelvic Organ Prolapse

By Chiara Ghetti, MD

Associate Professor, Obstetrics and Gynecology, Division of Female Pelvic Medicine and Reconstructive Surgery, Washington University School of Medicine, St. Louis

Dr. Ghetti reports no financial relationships relevant to this field of study.

SYNOPSIS: This is a summary of the 2017 International Consultation on Incontinence recommendations for surgical treatment of pelvic organ prolapse.

SOURCE: Maher CF, et al. Summary: 2017 International Consultation on Incontinence Evidence-Based Surgical Pathway for Pelvic Organ Prolapse. *Female Pelvic Med Reconstr Surg* 2018; Apr 28. doi: 10.1097/SPV.0000000000000591. [Epub ahead of print].

The objective of this work was to develop an evidence-based consensus pathway for the surgical management of pelvic organ prolapse (POP). The committee searched English-language, peer-reviewed articles relating to POP surgery that were published before December 2016. Although they preferred level 1 evidence (randomized, controlled trials [RCTs] or systematic reviews of RCTs), level 2 or level 3 evidence was included if level 1 was not available. After evaluating the literature and reaching consensus, the committee made recommendations based on the highest level of evidence available according to the Oxford evidence-based method: grade A (based on consistent level 1 evidence); grade B (based on consistent level 2 and/or 3 studies or "majority evidence" from RCTs); grade C (based on level 3 studies or "majority evidence" from level 2/3 studies or expert opinion); and grade D, "no recommendation possible" (used when the evidence was inadequate or conflicting). The committee developed a clinically applicable surgical pathway for women undergoing POP surgery based on the quality of the recommendations at various decision points.

The recommendations that make up the pathway are summarized here. The first decision point for reconstructive surgery involves attention to apical support. For women with vaginal vault prolapse, sacrocolpopexy is the preferred apical suspension procedure when compared to transvaginal repairs for vaginal vault prolapse (GrA). Uterosacral and sacrospinous colpopexies have similar efficacy for apical prolapse (GrB). For uterine prolapse, the pathway diverges between uterine preservation and hysterectomy. The options for hysterectomy include vaginal hysterectomy with apical suspension or abdominal procedures including sacrocolpopexy with hysterectomy or supracervical hysterectomy. The committee acknowledged the lack of data for uterine prolapse pathway, and the recommendation favored vaginal hysterectomy with apical support over abdominal-based procedures for uterine prolapse undergoing hysterectomy (GrC). In the uterine preservation pathway, the committee's recommendations prefer vaginal sacrospinous hysteropexy to abdominal intervention for uterine-preserving surgery (GrB-C). In the pathway for anterior and posterior compartment prolapse, native tissue repair (AC) is recommended for anterior compartment prolapse and similarly for posterior compartment prolapse. The committee developed a web-based application, which is available at: http://www.urogynaecology.com.au/ici-2017-pathway-prolapse-surgery/.

■ COMMENTARY

The published pathway was developed in response to findings of significant international variation in surgical treatment of prolapse. Despite predictions of an aging population and increased rates of surgery for prolapse, some researchers have reported decreasing rates of surgical interventions for prolapse in Denmark and the United

States.[1,2] Other researchers have reported on dramatic differences in rates and types of procedures performed by country.[3] For example, transvaginal mesh was used eight times more frequently in Germany than England, and sacral colpopexy was used 13 times more frequently in France than in Sweden.

The pathway was developed to help standardize the approach to POP surgery and provide a benchmark by which to compare clinical practice worldwide. The first decision point of the pathway reflects the importance of achieving apical support to improve the success rates of prolapse surgery. While Liu et al reported that American urologists are performing fewer anterior repairs without apical support,[4] continued attention to providing adequate apical support at the time of prolapse repair is paramount.

The main recommendations include sacrocolpopexy as the preferred procedure for women with post-hysterectomy or vault prolapse and vaginal-based suspensions for the management of uterine prolapse. In addition, the pathway does not support the use of transvaginal mesh in vaginal repairs. The pathways are limited by the quality of data available and highlight the significant deficiencies in the data. Specifically, data are lacking regarding various options for the surgical management of uterine prolapse and for the use of transvaginal mesh interventions. As more data become available, these recommendations will need to be reevaluated.

Although the presented treatment pathway uses an evidence-based grading system, it is not a formal decision tree model. The evidence-based pathway can function as an important tool in the decision-making process for women with POP. While many individual factors are not included in the pathway, it helps strengthen the shared decision-making process between patient and clinician by guiding them to evidence-based surgical options. ■

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ABSTRACT & COMMENTARY

Is Human Placentophagy Safe? What Patients Should Know

By Rebecca H. Allen, MD, MPH

Associate Professor, Department of Obstetrics and Gynecology, Warren Alpert Medical School of Brown University, Women and Infants Hospital, Providence, RI

Dr. Allen reports she is a Nexplanon trainer for Merck.

SYNOPSIS: In this cross-sectional study of U.S. women who delivered at home or at a birth center, 30.8% consumed their placenta, and, of those, 58% consumed the placenta in a raw form. The most common reason for consuming placenta was to prevent or treat postpartum depression. There was no association between placentophagy and neonatal hospitalization or death within six weeks of birth.

SOURCE: Benyshek DC, et al. Placentophagy among women planning community births in the United States: Frequency, rationale, and associated neonatal outcomes. *Birth* 2018; May 2. doi: 10.1111/birt.12354. [Epub ahead of print].

Benyshek et al performed this cross-sectional study that used data from the Midwives Alliance of North America Statistics (MANA Stats) project, which is a web-based, secure, data collection platform. Midwives voluntarily enrolled in the MANA Stats project enter data regarding prenatal, birth, and postpartum care and maternal demographics. The authors analyzed data from May 2015, when questions regarding placentophagy were added, to the end of December 2016, and included 23,242 consecutive planned birth center or home births. The aim of the study was to describe the demographic characteristics associated with placentophagy, what formulation (raw/cooked/encapsulated) was used, why women consumed their placentas, and whether neonatal outcomes differed between women who consumed and did not consume their placentas. Neonatal outcomes included hospitalization in the first six weeks, neonatal intensive care unit (NICU) admission in the first six weeks, and neonatal or infant death.

The sample was typical of U.S. women who choose home or birth center delivery: The majority were white (85%) and married or partnered (95%), and half (50%) had a bachelor's degree or higher education level. Two-thirds (69%) delivered at home and one-third (31%) delivered at a birth center. A total of 30.8% of women consumed their placenta, 47.1% did not, and 22% were unknown. In adjusted analyses, the strongest predictors of placentophagy

were primiparity (adjusted odds ratio [aOR], 1.65; 95% confidence interval [CI], 1.53-1.78), pregravid history of depression or anxiety (aOR, 1.75; 95% CI, 1.58-1.94), and home vs. birth center delivery (aOR, 2.21; 95% CI, 2.04-2.39). Placentophagy was less likely in New England states compared to states on the west coast (aOR, 0.52; 95% CI, 0.44-0.61). Among the 5,923 women for whom a reason for placentophagy was known, the most common motivation was to prevent postpartum depression or improve postpartum mood (73.1%), followed by prevention or treatment of anemia (14.2%), improved lactation (4.6%), and improved energy (4.5%). The method of placenta preparation was known for 94% of participants. The most common method was encapsulation by either dehydrating and pulverizing the raw placenta (48%), or cooking the placenta and then dehydrating and pulverizing it (37%). An additional 9% of women consumed the placenta raw as part of a smoothie drink or other form. After adjustment for primiparity and intrapartum transfer, there was no association between placenta consumption (aOR, 0.87; 95% CI, 0.74-1.03) or whether the placenta was raw or cooked (OR, 1.01; 95% CI, 0.77-1.33) on neonatal hospitalization in the first six weeks. Also, there was no association with NICU admission, and the data were inconclusive for neonatal death. There were no deaths in the cooked placenta group and one death in the raw placenta group, which was attributed to a rapidly progressive neonatal sepsis in an infant with Down syndrome occurring on day 14. There was no autopsy performed.

■ COMMENTARY

Placentophagy is the practice of consuming the placenta after birth. Although common in mammals, there is no current human society that routinely practices placentophagy. Nevertheless, the practice has become more popular in recent years. The placenta can be eaten raw or cooked and often is encapsulated or consumed in smoothies or tinctures. There are commercial companies that will process the placenta, typically through steaming and dehydration into 100 to 200 capsules for ingestion. The cost is roughly between $200 and $400.[1] There are no scientific studies showing any benefit from placentophagy, despite claims that it will prevent postpartum depression, increase energy, and increase lactation. Existing studies include only self-reported surveys or anecdotal reports. In the only double-blind, randomized, controlled trial, Gryder et al evaluated the effect of placenta ingestion on maternal iron status among 23 women. No difference was found in maternal iron levels up to three weeks postpartum.[2]

There are possible harms associated with placentophagy, even if the placenta is cooked. Namely, there is no regulation of the processing steps that are taken to encapsulate the placenta. Human placentophagy is not regulated by the U.S. Food and Drug Administration nor any other agency. Therefore, there is no guarantee that the placenta has been steamed to high enough temperatures to kill all viruses and bacteria.[1] In 2017, the Centers for Disease Control and Prevention (CDC) reported a case of a term infant who was readmitted to the hospital because of late-onset group B *Streptococcus* (GBS) *agalactiae* sepsis five days after completing treatment for early-onset GBS.[3] These authors determined that the uncooked placenta capsules the mother was consuming three times daily tested positive for the identical GBS isolate. Furthermore, toxins do accumulate in the placenta as part of its function, so it may contain minute quantities of heavy metals and/or other substances. In a recent review in the *American Journal of Obstetrics and Gynecology*, Farr et al concluded that there was no proven benefit to human placentophagy and possible harms; therefore, clinicians should counsel patients against the practice.[1] The CDC also has advised against placentophagy because of possible contamination of the capsules.[3]

Benyshek et al used an existing data set that tracks births at home and at birth centers in the United States. They rightly supposed that this would be a population more likely to practice human placentophagy. The data were entered by midwives who volunteer to be part of the program. Therefore, it was not a population sample or complete record of women who delivered at home or in birth centers in the country. The authors estimated that 30-40% of practicing midwives were contributing data to the MANA Stats program during the study period.[4] In addition, as with any medical record study, there will be limitations related to the quality of information entered. There may be missing data, and neonatal outcomes were tracked only for six weeks. There also was no information on any maternal outcomes from placentophagy. So, although this study does not provide definitive proof of the safety of human placentophagy, it does offer an interesting picture of the practice in the United States.

Benyshek et al speculated that women in western states are more likely to practice placentophagy because of more liberal state laws regarding placental release from hospitals. Only four states have legalized placental release on request (Hawaii, Oregon, Mississippi, and Texas).[1] Other states do not have regulations, and hospitals frequently create their own policies, allowing release if pathological exam is not required and the woman signs a waiver. Benyshek et al also found that primiparous women and women with a history of depression and anxiety were more likely to practice placentophagy. This makes sense, as women undergoing their first birth often have more stress in the transition to parenting. This also implies that pregnant women should be educated about the signs and symptoms of postpartum depression as well as evidence-based treatments that do exist to help them. Finally, pregnant women need to be educated that there is absolutely no scientific evidence that placentophagy provides any benefit. At the very least, it is a waste of money. At most, it could be harmful. ■

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ABSTRACT & COMMENTARY

All About Cesarean Delivery

By John C. Hobbins, MD

Professor, Department of Obstetrics and Gynecology, University of Colorado School of Medicine, Aurora

Dr. Hobbins reports no financial relationships relevant to this field of study.

SYNOPSIS: A collection of articles and letters to the editors suggests that postpartum ultrasound evaluation of uterine wall thickness is of little value in predicting uterine wall complications in subsequent pregnancies, that two-layer closure of the uterus during cesarean delivery probably is better than single-layer closure, and that staple closure of the skin in patients with three or more previous cesarean deliveries is associated with more wound complications than suture closure.

SOURCE: Di Spiezio SA, et al. Risk of cesarean scar defect following single- vs double-layer uterine closure: A systematic review and meta-analysis of randomized clinical trials. *Ultrasound Obstet Gynecol* 2017;50:578-583.

In a departure from the usual format, this month's Alert will feature snippets from the recent literature that may help clinicians in preparing and performing cesarean deliveries — especially since one in three pregnancies in the United States ends this way. Over the last five years, there has been significant interest in fine-tuning operative methods to diminish future complications. The authors of a recent complex meta-analysis dealt with the ability to predict future uterine wound complications in patients who underwent double- vs. single-layer closure of the uterine wall. Di Spiezio et al, who scanned the literature for postpartum ultrasound evaluation of the uterine scars, were interested in the rates of downstream-dependent variables: 1) the rate of cesarean scar defects; 2) postpartum residual myometrial thickness (RMT) as a surrogate for dehiscence (UD) or rupture (UR); and 3) actual incidences of UD or UR in the patients' subsequent pregnancies.

Five trials showed a nonsignificant increase in the rate of uterine scar defects with two-layer closure vs. the one-layer method (25% vs. 43%; relative risk [RR], 0.77; 95% confidence interval [CI], 0.36-1.4), which was counterintuitive. Four trials showed a significantly thinner RMT in the scar area with single-layer closure, with a mean difference of -2.19 mm (95% CI, 1.57-2.80) in the single layer cohort. In three trials, no significant differences were noted between single- and double-layer closure in the rates of UD (0.4% vs. 0.2%; 95% CI, 0.24-4.82) or UR in one trial (0.1% vs. 0.1%). However, the lower prevalence of adverse outcomes caused the latter studies to be rated as low-quality evidence. In fact, the evidence for conclusive results in every analysis in the paper was rated as low by the commonly used GRADE assessment tool.

In an accompanying referee commentary, Rozenberg, who originally reported the association between uterine wall thickness (UWT) just prior to cesarean delivery with uterine wall complications at delivery, noted that the above meta-analysis provided no solid evidence that the number of layers used to close the uterus had any major effect on the rates of cesarean scar defects.[1] The thinner postpartum RMTs with the single-layer closure seem like a no-brainer, but there is no evidence that the RMT is the proper surrogate for future UD or UR, nor does it necessarily even correlate with later UWT in subsequent pregnancies.

In a letter to the editor, Demers and Roberg emphasized the usefulness of assessing UWT prior to repeat cesarean deliveries and cited their previous publications.[2] In their meta-analyses of retrospective studies, these authors found a single-layer closure to be associated with a significantly higher rate of UR and UD in subsequent pregnancies and with thinner UWT, obtained just prior to the next deliveries.[3,4] The take-home message is that postpartum findings in the meta-analyses did not provide enough evidence to recommend one method of uterine wall closure over another. It is not even clear that postpartum RMT is an appropriate surrogate for later uterine wall complications. However, pending new information to the contrary, the previously published data suggest benefit of taking the extra time to close the uterus with two layers.[3,4]

Fox et al undertook another retrospective study in patients having higher order (three or more) cesarean deliveries.[5] The rates of wound complications were compared before 2011, when staples were used for skin closure, with a cohort collected after 2011, when the members of a large practice closed the skin with subcuticular sutures. The study included 551 patients, 192 of whom had staple closure and 359 had suture closure. Those in the former group had a higher rate of wound complications (separation and/or infection requiring antibiotics; 11.5% vs. 4.7%; 95% CI, 7.7%-16.7%). The authors indicated that no other new variables were introduced in the clinicians' consistent method of performing cesarean sections before and after 2011.

Interestingly, Zaki et al studied only those patients who were at high risk for wound complications — obese women with body mass index > 40 kg/m^2.[6] They randomized 119 women to have staples and another 119 were assigned to

have sutures for skin closure. Again, the outcome variables were wound separation or infection. There were no significant differences in wound complications, which occurred in 19.3% of the staples group and 17.6% in the suture group ($P = 0.74$). What was striking in the analysis was the higher rate of wound complications in the study in smokers (RR, 4.37; 95% CI, 1.37-18.03). Also, when asked their preference, fewer women would choose staples again.

The message from these studies is that the superficial tissue of patients undergoing three or more cesarean deliveries was less likely to separate or get infected if the operators took the extra time to close with subcuticular sutures, but that wound complications were no more likely to occur with staples in morbidly obese patients having cesarean deliveries, in general.

This month's bonus: Drukker et al studied a clever ultrasound maneuver that may help in predicting the degree of difficulty one experiences while performing repeat cesarean deliveries.[7] A group from Israel described a pre-cesarean ultrasound maneuver that involves watching (and videotaping) the abdominal peritoneum slide over the underlying uterus during a deep respiration. If there was no movement, it was described as a "negative sliding sign." During the study, 453 patients had repeat cesarean deliveries and, after exclusions, 370 remained. The operating surgeons, blinded to the results of the ultrasound exam, rated the amount of adhesions and surgical difficulty on a scale of 0 to 3, the latter representing "severe." The rates of severe adhesions were 6.8%, and 56% of these patients were labeled as having a negative sliding sign. This finding also was associated with significantly longer operating times and more blood loss. It is also of note that adding the history of findings of adhesions in previous operative notes only increased the detection rate to 64%. These findings suggest that this maneuver may help surgeons prepare for potential complications that might require thoughtful preparation in the operating room and ready availability of blood. ■

REFERENCES

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6. Zaki MN, et al. Comparison of staples vs subcuticular suture class III obese women undergoing cesarean: A randomized control trial. *Am J Obstet Gynecol* 2018;218:451.e1-451.e8.
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CME/CE QUESTIONS

1. **In the study by Benyshek et al, which factor was associated with human placentophagy?**
   a. Residence in New England
   b. Multiparity
   c. Delivery at a birth center
   d. History of depression and/or anxiety

2. **Based on the International Consultation on Incontinence Evidence-Based Surgical Pathway for Pelvic Organ Prolapse, which of the following statements is true?**
   a. There is strong evidence to support recommendations for all surgical options for pelvic organ prolapse (POP).
   b. Achieving support of the vaginal apex is an essential component of surgical repair for POP.
   c. The presented pathway is a formal decision tree model.
   d. There is strong evidence supporting the use of vaginal mesh procedures for surgical correction of POP.

3. **Postpartum ultrasound uterine wall thickness measurements are a useful tool to predict uterine scar complications in subsequent pregnancies.**
   a. True
   b. False

[IN FUTURE ISSUES]

A New Treatment for Early Pregnancy Loss