UTHealth Houston
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Obstetrics, Gynecology
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Breastfeeding & Placenta Accreta

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Endocrinology of Lactation: Lactogenesis

- Placental progesterone production inhibits stage II lactogenesis
  - Small amounts of colostrum containing lactose and casein may be present after approx 16 wks. (Stage I)
  - During late pregnancy, small amounts expressible colostrum common

Endocrinology of Lactation: Progesterone

- Progesterone antagonizes the action of PRL at its own receptor and decreases PRL binding
- Progesterone directly suppresses milk synthesis (suppressing PRL receptors in breast)
- In pregnancy progesterone promotes mammary epithelial proliferation and ductal development

Endocrinology of Lactation: Progesterone

- Progesterone suppresses milk synthesis.
  - A corepressor binds to a promoter region of casein gene, inhibiting transcription. Progesterone stimulates generation of the corepressor
- Loss of progesterone @ delivery decreases this inhibitory corepressor –
  - Prolactin binding increases
  - Casein production increases
  - Milk yield increases
  - Stimulates PRL signaling via STAT5
  - Triggers closure of TJ's in between alveolar cells

Endocrinology of Lactation: Progesterone

- Progesterone levels do not appear to impact milk production
  - Rat studies giving progesterone injections 1-2 wks PP did not significantly impact lactation
- Progesterone levels in fat are higher in obesity (bovine studies suggest progesterone from pregnancy can remain in the adipose tissue)
- Decline in serum progesterone levels from human studies were not significantly different base on BMI evaluated at 37 weeks, 48 hours and 7 d PP

Endocrinology of Lactation: Prolactin

- During pregnancy:
  - Normal pre-pregnancy levels: 10-25ng/ml
  - Increase after about 8 weeks
  - Increase parallels and increase in estrogen that begins at 7-8 weeks
    - Mechanism believed to be E2 suppression of hypothalamic PIF, dopamine & direct stimulation of PRL gene transcription in pituitary.
  - Peak at term ~ 200-400ng/ml

Endocrinology of Lactation: Estrogen

- Produces differentiation of lactotrophs (ant pit)
- Stimulates PRL production
- E2 response element in distal enhancer region of transcription factor PIT 1 needed for PRL
- Suppresses dopamine secretion (increasing PRL)

Endocrinology of Lactation: Estrogen

- High doses of PP estrogen has been used to inhibit lactation (10-20% failure rate)
- E2 can block PRL action

Endocrinology of Lactation: Insulin

- Insulin regulates gene expression in milk protein synthesis
- It activates transcription factors in prolactin signaling

Early progesterone contraception

- Theoretical concern that early introduction of progesterone contraception within 72 hours of delivery may suppress lactation
- DMPA, Nexplanon and LNG-IUD insertion in this initial time period are frequently used
- Most studies have failed to confirm the theoretical concern
- Multiple limitations to much of this research (don't consider infant weight, use of supplement and exclusivity verses mixed feeding)

•. 2025 Feb:142:110726.
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Early progesterone contraception

Contraception 2025 Feb:142:110726

- Prospective study 2019-2121 of DMPA within 48 hrs of delivery (55), placebo or no injection (95)
- Lactogenesis II 57.8 hours verses 64.1 hours (control). Not statistically different

•. 2025 Feb:142:110726.

Early progesterone contraception

Am J Obstet Gynecol 2023 Jan;228(1):55. e1-55.e9

- Noninferiority RCT on etonogestrel implant during delivery hospitalization (within 2 hours and 24-48 hrs) and Stage II lactogenesis
- 95 patients enrolled, 77 completed (39 early and 39 delayed)
- Early 65 hours verses delayed 73 hours (not statistically different)

Retained Placenta Case Reports

- Anecdotal reports that retained POC can be associated with insufficient milk supply and that after uterine evacuation milk supply can improve.
- No studies or data to evaluate this statement

PAS Program

Our institution offers alternative management options for women with PAS disease in a tertiary care system

1) Hysterectomy @ delivery
2) Delivery with delayed hysterectomy (delay was 7 to 28 days)
3) Delivery with plan to retain uterus

Our Study Design

- Retrospective cohort of 126 patients 2015-2023
- Comparing the 3 groups
- Breastfeeding information from chart review
  - Breastfeeding yes or no
  - Time of perceived copious onset of milk production

Results:

- 30 patients received conservative mgmt.
- 96 underwent cesarean hysterectomy

Results:

- The average GA was earlier for the hysterectomy group 32 2/7 weeks verses 33 4/7 weeks for conservative mgmt. (P0.03)
- Breastfeeding rate were similar between groups
  - 62.5% for cesarean hysterectomy
  - 66.7% for conservative mgmt

Results:

- PP Progesterone levels were significantly lower in the cesarean hysterectomy group compared to the conservative mgmt. group:
- Pre delivery levels (P=0.6)
  - Hysterectomy 138
  - Conservative 115
- Post delivery levels (P<.001)
  - Hysterectomy 1.86ng/ml
  - Conservative mgmt. 62.9
- Hcg levels did not differ

Results:

- Copious onset of lactation: (P.07)
  - Hysterectomy day 3.8
  - Conservative day 5.6

Results:

Table 1. Differences in Lactation Outcomes Among Individuals With Conservative Management Compared With Cesarean Hysterectomy for Placenta Accreta Spectrum

	Conservative Management (n=30)	Cesarean Hysterectomy (n=96)	*P*
Age (y)	33 (24–51)	34 (23–50)	.48
Parity	2 (1–5)	2 (0–10)	.06
Gestational age at delivery (wk)	33 4/7±8.4 d	32 2/7±7.2 d	**.03**
Breastfeeding	20 (66.7)	60 (62.5)	.68
Progesterone level predelivery (ng/mL)	115.6±63.1	138±10.2	.60
Progesterone level postdelivery (ng/mL)	62.9, 31.3	1.86, 2.1	**<.001**
β-hCG level (milli-international units/mL)	6,605 (463–38,224)	8,033 (267–47,691)	.17
No. of days for milk supply to come in	5.6±0.5	3.75±0.3	.07

Data are median (range), mean±SD, or n (%) unless otherwise specified.
Bold indicates statistical significance.

Thoughts:

- Limitations:
  - Small sample size
  - Retrospective study design
  - Single progesterone level PP
- Strengths:
  - Routine PP Lactation support

Thanks to the study team!

Research Letter

Conservative Management of Placenta Accreta Spectrum and Breast-Milk Production

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