

Koala[®] IUPC

Key Takeaways

OBSTETRICS, GYNECOLOGY & NEONATAL
Intrapartum intrauterine monitoring,
optimized for proper placement, easy
true zeroing, small tip, 360° sensing.



Definition

An Intrauterine Pressure Catheter (IUPC) is used as a direct method in measurement of uterine activity, measuring changes in the amniotic fluid pressure (mmHg). An IUPC allows for the quantification of uterine pressure intensity. An IUPC is considered the gold standard for management and decision-making.

IUPC may be used in the following clinical situations:

- To clarify the relationship between the timing of the decelerations and the contractions.
- When quantification of contraction strength is desired.
- To help titration of Oxytocin induction/augmentation in high-risk patients.
- Difficulty monitoring externally due to obesity, position, or activity of baby.
- Trial of labor after Cesarean birth (TOLAC).
- Labor dystocia to rule out failure to progress.
- Amnioinfusion in cases of oligohydramnios, and cord compression, resulting in severe variable deceleration.

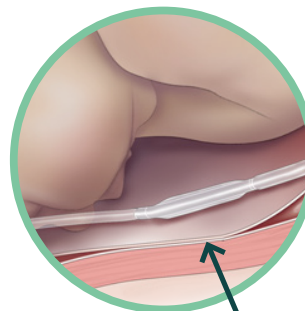
How do you know when the IUPC has been placed in the proper placement?

1. Amniotic fluid should be visible when the catheter has been inserted until the bottom of the introducer is at the text "Pause for Flashback".
2. A correctly placed catheter will have crisp waveforms and baseline within normal limit.

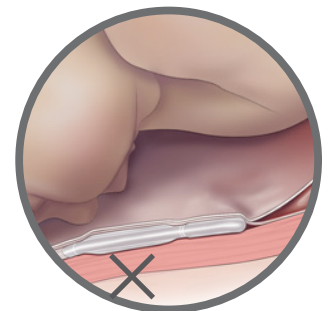
When inserting the IUPC, the clinician should "pause for flashback" when the 30 cm mark is at introitus. When amniotic fluid flashback is visualized, the IUPC can be advanced to the 45 cm mark at the introitus. Visualization of amniotic fluid in the lumen is the only way to verify correct placement. Proper placement is the key to safe and accurate IUP monitoring.

What if no amniotic fluid flashback or frank blood is visualized in the lumen, or resistance is met?

If no fluid flashback is visualized, it should be assumed the lumen has been placed **in the extraovular space** outside the amniotic membranes inadvertently. The presence of blood is always confirming extraovular placement. Correction is obtained by retracting the lumen, re-directing to a new quadrant, and re-inserting. If resistance is met when inserting the IUPC, NEVER FORCE! RETRACT, REDIRECT and REINSERT to a new quadrant or offset the patient's hip. IUPC should advance smoothly and gently.



Proper placement



Improper placement

What is extraovular space?

Extraovular space is the space between the chorion and the decidua-endometrial lining. The catheter will still read pressure values, but it will not be accurate since the baseline value will not be captured accurately. A study done with all IUPCs demonstrated that 14-38% of insertions went inadvertently into the extraovular space resulting in poor readings, negative numbers, and high baselines with dampened waveforms (Wallace W, Lind B (1999)*. If extraovular placement is suspected as evident by a high baseline and/or a dampened waveform the catheter should be replaced. **Visualization of amniotic fluid is the correct placement confirmation.**

What is “true zero”

True zero refers to an accurate baseline being recorded. Zeroing the monitor is the electrical offset or error correction of both the monitor and the transducer located on the cable. True zero can be obtained with the Koala IUPC because there are no electronics in the patient as the transducer is located on the cable. Re-zero after the patient has been disconnected to ambulate and return or as a corrective action at any time to re-establish baseline.

How to re-zero the monitor?

Disconnect the catheter from the reusable cable -> and press the UA ref. button on the monitor -> allow the tip of the catheter to be exposed to air for 15 seconds -> then reconnect the cable to the catheter.

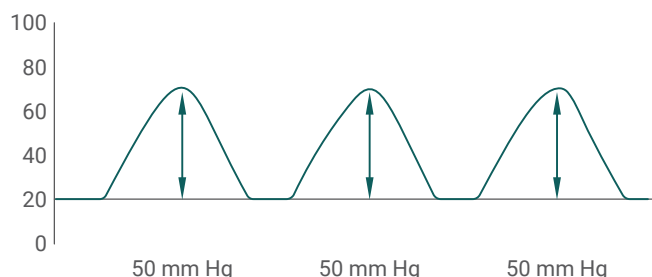
Montevideo units and calculation

Active management of labor dystocia includes calculating the adequacy of uterine contractions using Montevideo units (MVUs) measuring intrauterine pressure catheters (Kissler, 2020). Contraction strength can be assessed using Montevideo units. If MVUs are 200mmHg or greater over a 10-minute window of time, that is considered effective for the progression of labor. Please refer to your local standards and guidelines as the range may vary. Montevideo units are a **method of measuring uterine performance during labor** (Thissen, 2017).

The formula used to calculate MVUs is:

- Subtract the baseline uterine resting tone from the peak contraction pressure of each contraction in a 10-minute window. Add each pressure generated by each contraction and the sum is the number of MVUs.

How to calculate MVUs



50+50+50 = MVUs of 150

Amnioinfusion

Amnioinfusion is beneficial when adding fluid volume to the amniotic cavity. This should decrease complications associated with severe oligohydramnios and/or cord compression resulting in severe variable decelerations during labor.

Flushing the catheter

Flushing the catheter is done to ensure patency of the lumen. Disconnect the cable from the catheter, remove the blue cap, inject 10-20 ml NS/LR into the amnio-port, and replace the cap with the tethered cap. If a catheter has been placed extraovular waveforms may improve temporarily following the flush.

Complications and Adverse Reactions

Known or suspected placenta previa, vasa previa, or bleeding of unknown origin are contraindications to IUPC placement.

Adverse reactions: Perforation of placenta, umbilical cord, or uterus and infection.

Proper Use: Policies and procedures should be established, and clinicians should be trained per unit and manufacturer recommendation for correct insertion and problem-solving.

Reference:

Thijssen KMJ, Tissink JGLJ, Dieleman JP, et al. Qualitative assessment of interpretability and observer agreement of three uterine monitoring techniques. European Journal of Obstetrics, Gynecology, and Reproductive Biology. 2020 Dec; 255:142-146. DOI: 10.1016/j.ejogrb.2020.10.008. PMID: 33129016.

*Wallace W, Lind B (1999) Extraovular placement of intrauterine pressure catheters in laboring patients. 4th WORLD CONGRESS OF PERINATAL MEDICINE Buenos Aires, Argentina 18-22 April 1999

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