

98 Validation of a novel transcutaneous fetal oximeter in a hypoxic fetal sheep model



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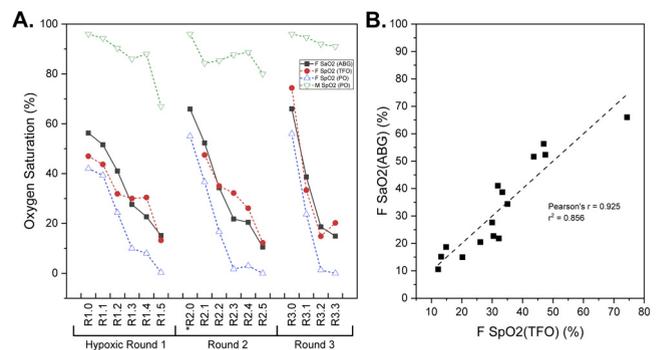
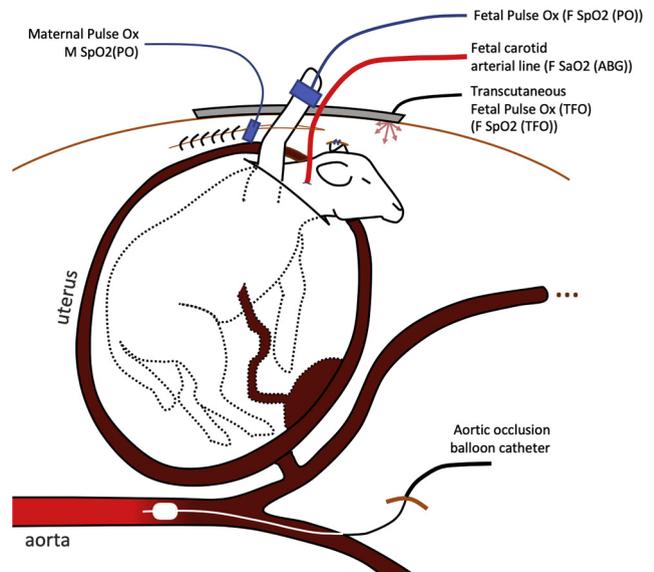
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OBJECTIVE: Current intrapartum fetal oxygen saturation (SaO₂) monitoring methodologies are limited, mostly consisting of fetal heart rate monitoring which is a poor predictor of fetal hypoxia and associated with high false positive rates. With recent advances in technology, transabdominal fetal pulse oximetry may be able to determine fetal SaO₂ transcutaneously. This study is to validate a novel transcutaneous fetal pulse oximeter (TFO) in determining fetal arterial oxygen saturation in a hypoxic fetal sheep model.

STUDY DESIGN: Fetal hypoxia was induced in a pregnant ewe at term (136 days) by placing an aortic occlusion balloon infra-renally via the common femoral artery (Fig 1). A fetal carotid arterial line was placed for fetal arterial blood gases (ABGs) and continuous hemodynamic monitoring. The uterus was closed around the fetal neck and one ear of the lamb was sutured to the ewe's abdominal wall. The laparotomy was closed and the TFO was placed on the ewe's abdomen, leaving one fetal arm exposed for a conventional fetal pulse oximeter. The balloon catheter was inflated in a stepwise fashion to decrease the ewe's mean arterial pressure. The pressure was held at each step for 10-min, and fetal ABGs were recorded at 2.5, 5, and 10 min intervals. The balloon catheter was deflated after 2 consecutive measurements of fetal SaO₂ below 15% on ABG, and the fetus was recovered. This stepwise gradient was repeated 2 more times. The average fetal SaO₂ from the TFO (SpO₂) was derived at each hypoxic level and correlated with the average fetal SaO₂ on ABGs.

RESULTS: Fetal oxygen saturation from the ABGs ranged from 66% to 10.5% (Fig 2A). The TFO SpO₂ correlated with the ABG fetal SaO₂ (r₂=0.856, Fig 2B). The TFO SpO₂ measurements were significantly different than the ewe's SpO₂ (p < 0.01, paired t-test) and demonstrate that the fetal saturation was captured transcutaneously.

CONCLUSION: The recently developed transcutaneous fetal oximeter non-invasively detected the fetal SpO₂, which correlated with fetal SaO₂ on the ABGs and were significantly different than the ewe's SpO₂.



99 Fetoscopic laser ablation therapy in type II vasa previa



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OBJECTIVE: Possible advantages of fetoscopic laser ablation therapy for type II vasa previa compared to traditional conservative management include avoidance of prolonged hospitalization, elective prematurity, and cesarean delivery. The aim of this study was to assess feasibility and outcomes of type II vasa previa patients treated via fetoscopic laser ablation.

STUDY DESIGN: This is a retrospective study of women with type II vasa previa treated with laser at our center between 2006-2019. After 2010, laser ablation of type II vasa previa was offered after 31 weeks of gestation. Continuous variables are expressed as mean ± standard deviation.

RESULTS: During the study period, 33 patients were referred for laser ablation. Fifteen were not candidates (7 had type I vasa previa, 8 had no vasa previa). Of the remaining 18, all with type II vasa previa, 10 (56%) elected to undergo *in utero* laser. Laser ablation of the vasa