Ex utero intrapartum treatment

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EXIT, an acronym for ex utero intrapartum treatment, is a procedure which has been developed in the USA establishing an airway in newborns with obstructed upper airways while oxygenation is still sufficient through the umbilical circulation (Cormblehome et al.). Typical indications include giant foetal neck masses, prenatally detected laryngeal atresia, iatrogenic occlusion of the trachea as a therapeutic option for treatment of severe congenital diaphragmatic hernia, and anticipated pulmonary insufficiency requiring extracorporal membrane oxygenation (ECMO).

An EXIT procedure requires a deep general anaesthesia of the mother to allow complete relaxation of the uterus, often a longitudinal laparatomy, sometimes an uncommon uterine incision to avoid cutting through an anterior lying placenta, and the stapling of the uterotomy to avoid maternal haemorrhage.

Only the head and trunk of the baby is delivered to avoid complete contraction of the uterus, thus allowing establishing an airway by fibro-optic instruments without hurry.

The maternal risks include a higher incidence of uterine atonia after delivery of the placenta.

An EXIT procedure is a highly concerted action involving many people, which has to be planned thoroughly. In addition to the obstetrical team a neonatology team or a paediatric anaesthesiology team is required at the table. If paediatric surgery is needed paediatric surgeons are completing the team.

A selection of sterile instruments has to be available. The costs for an EXIT procedure are high.

In this issue Kern et al. describe their experience with the EXIT procedure in five cases with divergent indications. Two cases had severe pleural effusions, two cases a congenital cystic adenomatoid malformation (CCAM) of the lung and one case had a lung sequester. They delivered five cases with a modified EXIT procedure. The modifications of the classical EXIT include spinal anaesthesia in three cases, a complete delivery of the child and a specific relaxation of the uterus (no information included) in only one case. The time between uterotomy and cord clamping was 4-5 minutes in four and 9 minutes in one case. The authors conclude that "our experience shows that the EXIT procedure is a feasible approach for some compromised foetuses with intra-thoracic lesions with minimal maternal and neonatal morbidity."

I do not agree with this conclusion regarding the expansion of the indications list, and the modification of the procedure.

The fact that the authors could feel the umbilical circulation during the procedure is not a proof that oxygenation of the foetus was sufficient. In vaginal births it is well known that intrauterine pressure increases rapidly after delivery of the child to levels much higher than systolic blood pressure, preventing a sufficient materno-placental perfusion although umbilical pulsations is present for many minutes. A complete delivery of the child during a c-section has been found to increase intrauterine pressure as well (Cromblehome et al.). A spinal anaesthesia does often not lead to a complete relaxation of the uterus. In order to support the hypothesis that this modified EXIT procedure is really effective the authors need to monitor the baby during the procedure with a sterile pulse oximeter, a technique which is normally applied in standard EXITs.

In addition in all cases with lung lesions ventilation can be started using a bag, until intubation can be done if necessary. The feasibility that intubation is possible at the table is not a proof that there is also a benefit for the newborn. Pleural effusions can often easily be punctured immediately before delivery to allow a better expansion of the lungs after delivery. In many centres babies with lung lesions and hydrothorax born without the EXIT procedure, seem to do as good as the babies in Geneva. In these cases the crucial problem is not to establish an airway, but the question whether the volume of the lung and its function is sufficient to allow normal oxygenation. Only a suspected pulmonary insufficiency, eg a severe lung hypoplasia as a consequence of a congenital diaphragmatic hernia where ECMO is planned may be an additional indication for an EXIT procedure.

In these five cases the authors increased the maternal risk and produced higher costs. At the same time they failed to demonstrate a benefit for the newborn.

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