Tocolysis for in utero surgery: atosiban performs distinctly better than magnesium sulfate

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Objective
The aim of this study was to compare tocolysis with magnesium sulfate versus atosiban, regarding the occurrence of short-term preterm labor and maternal side effects during and after open fetal myelomeningocele (MMC) repair.

Methods
A prospective non-randomized cohort study was performed at the Zurich Center for Fetal Diagnosis and Therapy (www.swissfetus.ch), including 30 fetal MMC cases being prenatally repaired between 2010 - 2015. The first 15 cases (group 1) received magnesium sulfate intraoperatively and for the first 24 postoperative hours, according to the MOMS protocol. In the following 15 cases (group 2), magnesium sulfate was substituted by atosiban. Chorioamniotic membrane separation (CMS), premature prelabor rupture of the fetal membranes (PPROM), preterm deliveries < 3 weeks after fetal MMC repair, and maternal complications due to the tocolytic medication were the major endpoints. Mann - Whitney U test and chi - square test were used as appropriate.

Results
In both groups one CMS, but no PPROM was diagnosed < 3 weeks after fetal MMC repair. One patient (6.5%) of group 2 delivered < 3 weeks after fetal MMC repair, due to an intraoperative placental abruption at 25+3 weeks. All women of group 1 (100%) showed an electrolyte imbalance during magnesium sulfate administration and one woman of group 1 (6.5%) developed several episodes of an AV block III within the first three days after fetal surgery. Lethargy was found in all women (100%) during magnesium sulfate therapy. No maternal side effects were found under atosiban.

Conclusion
The perioperative use of atosiban resulted in an almost identical short-term uterine outcome, as seen when magnesium sulfate was given. Yet, atosiban administration was not associated with any of the serious maternal complications identified, when magnesium sulfate was used. Thus, the authors suggest using atosiban, instead of magnesium sulfate, in the context of open fetal surgery for spina bifida.