

SAFER technique for the repair of spina bifida improves posnatal motor outcomes

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Objective

To evaluate the longitudinal perinatal results and motor outcome in patients submitted to a Single-layer Antenatal Fetoscopic Repair (SAFeR) of meningocele (MMC).

Methods

We compared the first 15 cases with the last 18 cases, from a total 33 patients submitted to fetoscopic repair of MMC. Study criteria were the same as the MOMS study, except for a prior c-section was not an exclusion criteria and the gestational age upper limit for surgery was 28 weeks. After general maternal-fetal anesthesia, three (first period) up to four trocars (last period) were inserted in the uterine cavity and partial carbon dioxide (heated in the second period) fetoscopy was performed. After the placode release and circumferential undermining of the skin, a midline single-layer skin suture was performed over a biocellulose patch. Prophylactic tocolysis with Atosiban was used all cases in the first period and not used in 11 in the last period. Only one patient required postoperative ICU, bed rest was not recommended, only progesterone was maintained until delivery. C-section was planned for 39 weeks, or 34 weeks in case of PPRM (managed with steroids and antibiotics). Neonatal MRI or US were performed before neonatal discharge. Neurodevelopmental outcome was assessed within the first twelve months and yearly after that, by comparing the functional (active movement of the lower limbs) and the anatomical (spinal ultrasound or MRI) lesion level.

Results

Gestational age of surgery ranged from 24-28 week (mean 26, 4) and 8 patients had 1 or 2 previous c-section. The average surgical duration was 229 and 206 minutes in the first and last periods. Successful closure was achieved in all but two cases (both in first period) and 3 pregnancies are ongoing. From the remaining 30 patients. Inhibition of preterm labor was required in only 4 patients and PPRM occurred in 26/30 cases. Two patients delivered vaginally and no uterine rupture has occurred. The mean gestational age of delivery increased from 32, 3 to 33, 5 (range 27-38) weeks between first and last period (4 cases below 30 weeks), surgery to delivery interval increased from 3, 6 to 6, 4 (range 1-10) weeks. One fetal and one neonatal death occurred in the first period, and none in the last. Placental abruption occurred in 5 cases and 2 cases required blood transfusion. A total of 27 babies were followed up and a VP shunt was placed in 47%. Two babies died from shunt infection at 7 months. The functional level of the lesion was assessed a total 19 cases (6 cases older than 12 months) and was found to be better than the anatomical level in 73%, only two cases showed worse motor than anatomical level.

Conclusion

Fetoscopic percutaneous correction is feasible and SAFER than open fetal approach; however, it is associated with an increased risk of PPRM. Perinatal outcome is improving with time and fetoscopic correction seems an alternative for patients with previous c-section. The SAFER technique statistically significantly improves motor outcome, when compared to MOMS trial results, so it is not only BETTER for mothers but also for babies.