Fetal surgery for myelomeningocele versus myeloschisis: Any relevant disparities?

Moehrlen U, Ochsenbein N, Mazzone L, Zimmermann R, Meuli M
University Children's Hospital Zurich, Zurich, Switzerland

Objective
Spina bifida aperta presents with two typical phenotypes: myelomeningocele (MMC, the cystic variant) and myeloschisis (MS, non-cystic variant). Histologically however, the malformation architecture is basically identical. Both lesions basically qualify for fetal repair. The goal of this study was to analyze whether there are any relevant differences between MMC and MS with regard to repair before birth.

Methods
We analyzed the first 60 patients undergoing open fetal spina bifida repair at our Center focusing on relevant differences between the MMC versus the MS group, including OR time, repair technique, and outcome. Patient management for both groups was identical, essentially according to MOMS.

Results
A total of 59 patients were included (100%), 34 (58%) were MMC, 25 (42%) were MS. All patients were operated between 22+3 and 26+6 weeks of gestation. The OR time did not differ between the groups (MS 142±25min vs MMC 140±23min). The use of transposition flaps or implantation of a skin substitute to achieve skin closure was significantly higher in MS (69%) compared to MMC (16%) (p<0.001). The mean GA at birth was 35+3 weeks in MS and 35+4 weeks in MMC (n.s.). Postnatal surgery for definitive back wound closure was necessary in 8/25 MS patients (32%) and in none of the 34 MMC patients (p<0.001). There was no significant difference between anatomical and functional levels (MS 1.16±1.5, MMC 0.76±1.3) or the shunt rate for hydrocephalus (MS 46%, MMC 44%).

Conclusion
The only relevant difference is that MS repair requires more often special techniques for intraoperative closure of the skin defect. Consequently, there is also a considerable rate of postnatal surgery for definitive back skin reconstruction. A tenable explanation for this disparity is that MS lesions tend to be larger, especially wider, than MMC lesions. This information must be included into prenatal counseling.