

Prenatal repair of myelomeningocele: Experience in Hospital Universitari Vall d'Hebron, Barcelona. Part I: Evolution of the surgical technique

Carreras E, Illescas T, Maroto A, Arévalo S, Molino JA, Giné C, Peiró JL
Hospital Universitari Vall d'Hebron, Barcelona, Spain

Objective

To describe our experience in the prenatal surgical repair of fetal myelomeningocele, in Hospital Universitari Vall d'Hebron (Barcelona).

Methods

Observational prospective study including patients pregnant with fetuses affected by myelomeningocele, treated in our center from March-2011 to January-2016 with prenatal surgery. Three groups are contemplated: O) Open approach, with 'patch and glue' coverage technique, F1) Fetoscopic approach ('patch and glue' technique), F2) Fetoscopic approach (skin closure technique). The 'patch and glue' model had been previously tested in an ovine model. The whole research protocol had full approval from our Local Ethics Committee. The switch from group O to F1 occurred when a Jehovah witness patient refused an eventual blood transfusion. The switch from group F1 to F2 was motivated by the unsatisfactory surgical outcomes in the last 3 patients in group F1. Maternal-fetal and surgical outcomes are described and compared between groups.

Results

Twenty-eight patients carrying a fetus with myelomeningocele were operated in our center. Group O included 7 patients (23 first months), group F1 had 12 cases (23 months) and group F2 included 9 cases (13 last months). In all cases the surgery was completed. There were no significant differences regarding maternal age or BMI, gestational age at surgery, stay at the hospital, chorioamnionitis rate and PROM rate between groups. The mean operating time was similar in groups O (200 minutes) and F1 (227 minutes), but significantly shorter at group F2 (140 minutes) with respect to F1. The median gestational age at delivery was 31. 4 weeks (O), 36. 9 weeks (F1) and 34. 3 weeks (F2), respectively. There was a neonatal death in group O and an intrauterine death in group F2, both at 26 weeks. There were no maternal deaths. Pulmonary edema occurred in 3 cases (1 in group O, 2 in group F1). Uterine moderate dehiscence without rupture was noticed in 2 patients at group O.

Conclusion

In our experience the fetoscopic approach increased the gestational age at birth, with lower operating time and similar PROM rate with respect to the open approach. The fetoscopic 'patch and glue' technique did not reproduce in all cases the good results obtained in the ovine model, so it was abandoned in favor of the direct skin closure. The fetoscopic approach for prenatal MMC repair may lead to better maternal outcomes and the skin closure technique showed better correction outcomes.