FETAL REPAIR OF MYELOMENINGOCELE

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ABSTRACT

Introduction: To report perinatal outcomes in a case series of patients who had open fetal surgery for myelomeningocele repair and to study a collaborative model of postoperative care.

Methods: Perinatal outcomes of a series of 40 patients who underwent open fetal surgery for repair of myelomeningocele from 03/1/2011 through 05/31/2013. Patients were discharged one week post-operatively for care locally or for collaborative care at home by their maternal-fetal medicine (MFM) specialist and the primary fetal surgery team. Weekly ultrasound reports were obtained and reviewed for choioamnion separation, amniotic fluid index, and ventriculomegaly. Weekly telephone contact was made with those patients who elected care at home. Operative reports and neonatal information was obtained following delivery.

Results: There were 40 patients with complete data. Thirty-one patients (78%) from 17 different states chose to return home and were co-managed with the referring MFM. Eighty percent of the surgeries were performed at 23 weeks' gestational age (GA) or less. The mean GA at delivery was 34.4 weeks (SD 6.6) similar to MOMS (34.1 weeks’ SD 3.3). However, only 8/40 (20%) delivered at or before 34 weeks’ GA significantly better than MOMS (46%, p=0.04). Two patients (5%) delivered prior to 30 weeks’ GA as compared to 10% (13%) for MOMS, a difference that approached but did not reach statistical significance (p=0.05). PROM (11% versus 46%, p=0.02) and choioamnion separation (0%, p<0.001) were significantly reduced compared to MOMS. Birth weight, lesion and delivery complications were consistent with those reported in the MOMS study. There were no cases of uterine scar dehiscence, but there were 4/40 (10%) cases of scar thinning. Thirteen babies (32%) were shunted which is equivalent to the results of the MOMS trial.

Conclusions: Coordinating postoperative care with the referring maternal-fetal medicine specialist at the patient’s home center is associated with good perinatal outcomes.

INTRODUCTION

Myelomeningocele (MMC) is a congenital defect of the spine and spinal cord resulting from incomplete closure of the neural tube in the fourth week of fetal life. In most cases, it is associated with a Chiari II malformation. Standard neonatal management consists of prompt postnatal closure of the defect in an attempt to prevent further injury to the exposed neural elements. A growing body of evidence from human studies (1) suggest that antenatal repair of myelomeningocele may help to preserve neurological function that might otherwise be lost during gestation, and to prevent or reverse elements of the spectrum of deformity responsible for much of the morbidity and mortality of this condition. Postsurgical prenatal and delivery management was initially provided by the prenatal surgical center during the MOMS clinical trial. However, since March, 2010, patients treated at the Fetal Surgery Center at Vanderbilt have returned to their referring maternal-fetal medicine physicians for continue care and delivery.

MATERIALS AND METHODS

• Data from a series of 43 delivered patients who received prenatal repair of MMC (3/1/2010-5/31/2013) were reviewed with 41 analyzed (2).
• Patients were admitted for 5-7 days, and discharged home 1 week postoperatively for care locally or for collaborative care by the referring maternal-fetal medicine.
• Weekly ultrasound reports were obtained and reviewed for choioamnion separation, amniotic fluid index (AFI), ventriculomegaly and fetal well-being. Weekly phone contact was made with patients who elected care at home.
• Operative reports and neonatal information was obtained following delivery.

RESULTS

• 31/41 (77%) patients from 17 states co-managed with a referring maternal fetal specialist.
• Mean GA at delivery was 34.4 wks (SD 6.6) (MOMS 34.1 wks (SD 3.1))
• Infants born at term (37 weeks or greater) was significantly higher for the study cohort (16 of 41; 39%) than for the MOMS cohort (16 of 78; 21%) (p = 0.030).
• Only 2 (4%) of 41 infants in the study cohort were delivered earlier than 30 weeks of gestation compared with 10 (13%) of 78 patients in the MOMS cohort, (p = 0.084, approaching significance).
• Premature rupture of membranes (22% vs 46%, p = 0.011) and choioamnion separation (0% vs 26%, p < 0.001) were lower for the study cohort than for the MOMS cohort.
• Birthweight, lesion and delivery complications consistent with those reported in MOMS.
• Incidence of oligohydramnios did not differ between the cohorts.
• Uterine scar dehiscence - 0%
• Scar thinning – 4/41 (10%)
• Shunt rate – 13 (32%) (equivalent to MOMS trial)
• 2 fetal deaths; believed to be associated with placental disruption and maternal unidentified thrombophilia. Mortality rates did not statistically differ between the cohorts.

CONCLUSIONS

Coordinating postoperative care with the referring maternal fetal medicine specialist at the patient’s home center is associated with good perinatal outcomes.

REFERENCES