| Study | Study design | Primary outcome | Population | Gestational age at examination | Chromosomal abnormalities exclusion | Additional anomalies exclusion | Ultrasound machine | Ultrasound probe | Level of sonographer |
|-------|--------------|-----------------|------------|--------------------------------|-----------------------------------|---------------------------------|-------------------|-----------------|-------------------|
| Appasamy, 2006 (21) | Retrospective cohort | Compare prenatal and postnatal US/MRI findings on head signs and lesion levels in fetuses with MMC | Prenatal & postnatal diagnosis | 16-23 weeks | NA | NA | Varies | NA | NA |
| Bahlmann, 2015 (22) | Cross-sectional (retrospective analysis) | Determine the incidence of secondary cranial signs in fetuses with MMC | Prenatal diagnosis | 18-23 weeks | Yes | NA | Machines used below† | NA | US specialists |
| Callen, 2008 (30) | Cross-sectional (retrospective analysis) | Determine the incidence of pointed deformity of occipital horns of lateral ventricles in fetuses with MMC | Prenatal diagnosis | 17-34 weeks | NA | NA | NA | 2-4-MHz vector/2-6-MHz curved array transducer | Single US specialist |
| Callen, 2009 (27) | Cross-sectional (retrospective analysis) | Determine the incidence of prominent beaking and elongated tectum in fetuses with MMC | Prenatal diagnosis | 17-34 weeks | NA | NA | NA | 2-4-MHz vector/2-6-MHz curved array transducer | Single US specialist |
| Cuppen, 2015 (40) | Cross-sectional (retrospective analysis) | Assess fetal BPD and HC during second trimester in fetuses with MMC | Prenatal diagnosis | 16-26 weeks | NA | NA | NA | NA | US-specialists |
| D’Addario, 2008 (17) | Cross-sectional (retrospective analysis) | Compare diagnostic accuracy of lemon sign, ventriculomegaly, effaced cisterna magna, small cerebellum, small clivo-supraoccipital angle and spinal defect in detecting fetuses with MMC | Prenatal diagnosis | 18-28 weeks | NA | NA | NA | NA | NA |
| Filly, 2010 (32) | Cross-sectional (retrospective analysis) | Describe the abnormal more posterior position of occipital horn of the lateral ventricle in fetuses with MMC | Prenatal diagnosis | 18-30 weeks | NA | NA | NA | 2-4-MHz vector/2-6-MHz curved array transducer | NA |
| Fleurke-Rezema, 2014 (23) | Retrospective cohort | Assess the impact of mid-trimester ultrasound on pregnancy outcomes of MMC | Prenatal & postnatal diagnosis | 18-24 weeks | NA | NA | NA | NA | NA |
| Ghi, 2006 (24) | Cross-sectional (retrospective analysis) | Identify criteria important to differentiate closed from MMC | Prenatal & postnatal diagnosis | 16-34 weeks | NA | Yes | Varies | NA | NA |
| Mauriész, 2020 (28) | Retrospective cohort | To examine cerebral anomalies related to MMC besides Chiari II malformation | Prenatal & postnatal diagnosis | 20-26 weeks | Yes | Yes | Canon Apio 400 unit Vascular and curved array or transvaginal transducer | Single US specialist |
| Muñoz, 2019 (25) | Retrospective cohort | Identify maternal and fetal characteristics associated with pregnancy outcomes of MMC | Prenatal diagnosis | 20.3 weeks* | Yes | Yes | NA | NA | NA |
| Oliver, 2019 (29) | Retrospective cohort | Determine the effect of presence/absence of MMC sac on fetal talipes | Prenatal diagnosis | 18-24 weeks | NA | NA | NA | US-specialists |
| Ramin, 2002 (25) | Cross-sectional (retrospective analysis) | Assess the association between prenatal ultrasound markers and postnatal neurological outcomes in fetuses with MMC | Prenatal diagnosis | 19-22 weeks | Yes | Yes | Toshiba SSA-270, ATL5000 3.75-5.2-MHz transducer | NA |
| Wax, 2009 (31) | Cross-sectional (retrospective analysis) | Determine the incidence of pointed deformity of occipital horns of lateral ventricles in fetuses with and without MMC | Prenatal diagnosis | 19.2 weeks* | NA | NA | NA | NA | US-specialists |
| Wong, 2009 (33) | Cross-sectional (retrospective analysis) | Determine the incidence of interhemispheric arachnoid cysts in fetuses with MMC | Prenatal diagnosis | 17-35 weeks | NA | NA | NA | 2-4-MHz vector or 2-6-MHz curved array transducer | Single US specialist |

Abbreviations: MMC, myelomeningocele; BPD, biparietal diameter; HC: head circumference; NA, data not available; US ultrasound
†Combison 330/530D MT, Voluson730 Expert/E8, Sonoace Accuvix, Hitachi EUB 6500, Siemens Elegra, Acuson Sequoia, GE Logiq 9, HDI 5000 Sono CT, Philips IU22, Aloka Prosound SSD, Aplo XG/500
*Average GA at diagnosis
Table S2. Quality appraisal for cohort study assessed by Newcastle-Ottawa scale

| Study name                  | Selection 1 | Selection 2 | Selection 3 | Selection 4 | Comparability | Outcome 1 | Outcome 2 | Outcome 3 | Summary |
|----------------------------|-------------|-------------|-------------|-------------|---------------|-----------|-----------|-----------|---------|
| Appasamy, 2006 (47)        | 1           | 1           | 1           | 1           | 0             | 1         | 1         | 1         | Poor    |
| Fleurke-Rozema, 2014 (49)  | 1           | 1           | 1           | 1           | 0             | 1         | 1         | 1         | Poor    |
| Maurice, 2020              | 1           | 1           | 1           | 0           | 1             | 1         | 1         | 1         | Good    |
| Munoz, 2019 (52)           | 1           | 1           | 1           | 1           | 0             | 1         | 1         | 1         | Poor    |
| Oliver, 2019 (53)          | 1           | 1           | 1           | 1           | 1             | 1         | 1         | 1         | Good    |

Table S3. Quality appraisal for cross-sectional study assessed by modified Newcastle-Ottawa scale

| Study name                  | Selection 1 | Selection 2 | Selection 3 | Selection 4 | Comparability | Outcome 1 | Outcome 2 | Summary |
|----------------------------|-------------|-------------|-------------|-------------|---------------|-----------|-----------|---------|
| Bahlmann, 2015 (26)        | 1           | 0           | 1           | 2           | 0             | 2         | 1         | Good    |
| Callen, 2008 (30)          | 1           | 0           | 1           | 2           | 0             | 1         | 1         | Satisfactory |
| Callen, 2009 (27)          | 1           | 0           | 1           | 2           | 0             | 1         | 1         | Satisfactory |
| Cuppen, 2015 (20)          | 1           | 0           | 1           | 2           | 0             | 2         | 1         | Good    |
| D’Addario, 2008 (18)      | 1           | 0           | 1           | 2           | 0             | 2         | 0         | Satisfactory |
| Filly, 2010 (32)           | 1           | 0           | 1           | 2           | 0             | 1         | 1         | Good    |
| Ghi, 2006 (51)             | 1           | 0           | 1           | 2           | 0             | 2         | 0         | Satisfactory |
| Ramin, 2002 (40)           | 1           | 0           | 1           | 2           | 0             | 2         | 1         | Good    |
| Wax, 2009 (31)             | 1           | 0           | 1           | 2           | 2             | 1         | 1         | Good    |
| Wong, 2009 (33)            | 1           | 0           | 1           | 2           | 0             | 1         | 0         | Satisfactory |