

**Table S1.** Characteristics of included studies

Study	Study design	Primary outcome	Population	Gestational age at examination	Chromosomal abnormalities exclusion	Additional anomalies exclusion	Ultrasound machine	Ultrasound probe	Level of sonographer
<b>Appasamy, 2006 (21)</b>	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
<b>Bahlmann, 2015 (22)</b>	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
<b>Callen, 2008 (30)</b>	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
<b>Callen, 2009 (27)</b>	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
<b>Cuppen, 2015 (20)</b>	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
<b>D'Addario, 2008 (17)</b>	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
<b>Filly, 2010 (32)</b>	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
<b>Fleurke-Rozema, 2014 (23)</b>	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
<b>Ghi, 2006 (24)</b>	Cross-sectional (retrospective analysis)	Identify criteria important to differentiate closed from MMC	Prenatal & postnatal diagnosis	16-34 weeks	NA	Yes	Varies	NA	NA
<b>Maurice, 2020 (28)</b>	Retrospective cohort	To examine cerebral anomalies related to MMC besides Chiari II malformation	Prenatal & postnatal diagnosis	20-26 weeks	Yes	Yes	Canon Aplio 400 unit	Vector and curved array or transvaginal transducer	Single US specialist
<b>Munoz, 2019 (25)</b>	Retrospective cohort	Identify maternal and fetal characteristics associated with pregnancy outcomes of MMC	Prenatal diagnosis	20.3 weeks*	Yes	Yes	NA	NA	NA
<b>Oliver, 2019 (29)</b>	Retrospective cohort	Determine the effect of presence/absence of MMC sac on fetall talipes	Prenatal diagnosis	18-24 weeks	NA	NA	NA	NA	US specialists
<b>Ramin, 2002 (25)</b>	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
<b>Wax, 2009 (31)</b>	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
<b>Wong, 2009 (33)</b>	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, Aplio 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	1	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