

## **MONOAMNIOTIC TWINS - MANAGEMENT**

*This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.*

### **1. AIM**

- Diagnosis of monoamniotic twin pregnancy
- Regular antenatal review, fetal welfare scanning and preterm birth plan
- Preparation for parenting twins and preterm birth

### **2. PATIENT**

- Woman suspected of having a monoamniotic (MA) twin pregnancy

### **3. STAFF**

- Medical and midwifery staff
- Sonographers
- Neonatologists

### **4. EQUIPMENT**

- Ultrasound machine

### **5. CLINICAL PRACTICE**

- Diagnose the MA twin pregnancy by identifying two fetal poles with no separating membrane. The presence of one or two yolk sacs is no longer considered necessary for the diagnosis <sup>1</sup>
- Arrange referral to Maternal fetal medicine (MFM) clinic whenever MA twins diagnosed
- Discuss the need for increased antenatal surveillance with the woman, explain the increased incidence of unexpected stillbirth due to cord entanglement, fetal anomalies and preterm birth
- Discuss screening for aneuploidy and fetal anomalies with first trimester screening or non-invasive prenatal screening plus structural ultrasound scan
- Recommend fortnightly ultrasound from 16 weeks gestation and one to two weekly antenatal ultrasound from 24 weeks gestation to monitor:
  - Position of fetuses
  - Cord entanglement
  - Amniotic fluid volume
  - Umbilical artery Doppler blood flow
  - Middle cerebral artery Doppler waveforms (from 20 weeks gestation)
  - Growth (on a fortnightly basis)
  - Fetal bladder volume
- Discuss options of frequency of ultrasound and cardiotocograph (CTG) monitoring, including inpatient and outpatient monitoring
- Recommend outpatient management from 26 weeks if Monochorionic Monoamniotic (MCMA) twins are uncomplicated
- Consider CTG monitoring from 26 weeks gestation as part of outpatient management (see educational notes), particularly if there is significant estimated fetal weight discordance

## MONOAMNIOTIC TWINS – MANAGEMENT cont'd

- Recommend antenatal care as per twin pregnancy LOP. Review risk factors for pre-eclampsia, iron deficiency anaemia, preterm birth, and cervical length < 25mm at 19 weeks (transvaginally)
- Recommend elective Caesarean section for birth between 32+0 and 33+6 weeks gestation in the absence of other complicating factors. Steroid administration is recommended before birth (aiming for within 7 days of delivery)
- Discuss issues associated with preterm birth and care of preterm neonates. Recommend neonatal consultation
- Offer tour of the Newborn Care Centre (NCC) at an appropriate gestation

### 6. DOCUMENTATION

- Medical record
- Antenatal Yellow Card
- ViewPoint report

### 7. EDUCATIONAL NOTES

- The incidence of monoamniotic twins (twins within the same amniotic cavity with no separating membrane, arising from late division of the embryo after fertilisation) is approximately 1% of all monozygotic pregnancies<sup>2</sup>, with less than 100 cases per annum in Australia
- Approximately 90% of MA twins are female<sup>3</sup>
- Historically perinatal outcomes for monoamniotic twins were poor<sup>2</sup>, however in recent times these outcomes have improved<sup>14</sup>. The rate of perinatal death at > 24 weeks in MCDA twins that were alive at 24 weeks was recently reported as 9.3%. The rate of loss at < 24 weeks gestation for all fetuses was 21.8% (compared to 2.3% in all twins)<sup>18</sup>
- Fisk et al suggested the use of sulindac (a non-steroidal anti-inflammatory drug) for the pharmacological effect of decreasing amniotic fluid volume by reducing fetal urine output<sup>4</sup>. It was thought that the use of sulindac, weekly ultrasound and preterm delivery was responsible for the greatly improved perinatal mortality (PNM) rates seen in monoamniotic twins in the new millennium. However other data suggests it is probable that preterm elective delivery by Caesarean section alone is responsible for the reduction in PNM<sup>5</sup>
- Whilst data from America<sup>6</sup> often cites the use of preterm admission and CTG monitoring, outcomes from this regimen are no better than regular ultrasound surveillance and preterm birth<sup>5</sup>
- Inpatient management is associated with prolonged periods of CTG monitoring (a median of 12.5 hours per day in one American study<sup>7</sup>) and increased incidence of venous thromboembolism<sup>8</sup>. In addition, prolonged admission cause significant economic costs and may be associated with psychiatric morbidity<sup>12</sup>
- The recent MONOMONO study found no difference in outcomes in uncomplicated MCMA twins, whether they were managed as outpatients or inpatients<sup>9</sup>. Inpatient monitoring included CTGs two to three times a day, and Doppler ultrasound every two weeks
- Outpatient management protocols evaluated in recent systematic and literature reviews vary<sup>9,10,11</sup>. Regular CTG forms one component of some protocols assessed and has been recommended by Van Mieghem, as some studies showing similar inpatient and outpatient outcomes included CTG monitoring<sup>12,13</sup>. However regular CTG is not universally included in protocols around the world<sup>14,15</sup> and is not included in the NICE guidelines<sup>16</sup>
- The optimal frequency of CTG monitoring is uncertain, but protocols have included at least once daily to several times a week. Protocols that have compared inpatient with outpatient monitoring have not undertaken monitoring in the same frequency or started at the same gestation, and hence frequency of CTG monitoring should not be equated with inpatient monitoring<sup>12</sup>

## MONOAMNIOTIC TWINS – MANAGEMENT cont'd

- The literature indicates a greatly increased rate of cardiac anomalies in MA twins, however some of these may be overstated by including pregnancies affected by twin reversed arterial perfusion syndrome (TRAP)
- Referral to twin specific parent education classes may be helpful in providing women and their partners with strategies to manage the early newborn period
- Twin to transfusion syndrome (TTTS) in MCMA twins is less common than in MCDA twin pregnancies. There is no consensus about the optimal approach in TTTS, however it is associated with high perinatal mortality.

### 8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- Referral to Maternal Fetal Medicine
- Twin Pregnancy - Antenatal Care Guideline
- Ministry of Health NSW. Maternity – Management if Threatened Preterm Labour GL2020\_009
- Corticosteroids – for women at risk of preterm birth or with a fetus at risk of respiratory distress – antenatal
- Ministry of Health NSW health. Maternity - Management of Monochorionic Twin Pregnancy GL2020\_011

### 9. RISK RATING

- 

### 10. NATIONAL STANDARD

- Standard 5 – Comprehensive Care

### 11. REFERENCES

- 1 Bishop D. Yolk-sac number in monoamniotic twins. *Obstet Gynecol* 2010;116:504-7
- 2 Quingley J K. Monoamniotic twin pregnancy. *AJOG* 1935;29:354-62
- 3 Derom C, Vlietinick R, Derom R et al. Population-based study on sex proportion in monoamniotic twins. *N Engl J Med* 1988;319:119-20
- 4 Pasquini L, Wimalasundera C, Fichera A et al. High perinatal survival in monoamniotic twins managed by prophylactic sulindac, intensive ultrasound surveillance and Cesarean delivery at 32 weeks' gestation. *Ultrasound Obstet Gynecol* 2006;28:681-7
- 5 Dias T, Thilaganathan B, Bhide A. Monoamniotic twin pregnancy. *TOG* 2012;14:71-78
- 6 Heyborne KD, Porreco RP, Garite TJ et al. Improved perinatal survival of mono-amniotic twins with intensive inpatient monitoring. *AJOG* 2005;192:96-101
- 7 Bibbo C, Easter SR, Saadeh M, Little SE, Robinson JN. Timing of Antenatal Corticosteroid Administration in Monoamniotic Twins. *AJP Rep.* 2019 Apr;9(2):e153-e159
- 8 Abdul Sultan A, West J, Tata LJ, Fleming KM, Nelson-Piercy C, Grainge MJ. Risk of first venous thromboembolism in pregnant women in hospital: population based cohort study from England. *BMJ* 2013; **347**: f6099
- 9 MONOMONO Working Group. Inpatient vs outpatient management and timing of delivery of uncomplicated monochorionic monoamniotic twin pregnancy: the MONOMONO study. *Ultrasound Obstet Gynecol.* 2019 Feb;53(2):175-183.
- 10 D'Antonio F, Odibo A, Berghella V, Khalil A, Hack K, Saccone G, Prefumo F, Buca D, Liberati M, Pagani G, Acharya G. Perinatal mortality, timing of delivery and prenatal management of monoamniotic twin pregnancy: systematic review and meta-analysis. *Ultrasound Obstet Gynecol.* 2019 Feb;53(2):166-174.
- 11 Post A, Heyborne K. Managing Monoamniotic Twin Pregnancies. *Clin Obstet Gynecol.* 2015 Sep;58(3):643-53.

**MONOAMNIOTIC TWINS – MANAGEMENT cont'd**

- 12 Van Mieghem, T., Shub, A. (2019). Management of monoamniotic twins: the question is not “where?” but “how?”. *Ultrasound Obstet Gynecol* 2019. **53:151-152**
- 13 Van Mieghem T, De Heus R, Lewi L, Klaritsch P, Kollmann M, Baud D, Vial Y, Shah PS, Ranzini AC, Mason L, Raio L, Lachat R, Barrett J, Khorsand V, Windrim R, Ryan G. Prenatal management of monoamniotic twin pregnancies. *Obstet Gynecol.* 2014 Sep;124(3):498-506.
- 14 Glinianaia SV, Rankin J, Khalil A, Binder J, Waring G, Sturgiss SN, Thilaganathan B, Hannon T. Prevalence, antenatal management and perinatal outcome of monochorionic monoamniotic twin pregnancy: a collaborative multicenter study in England, 2000-2013. *Ultrasound Obstet Gynecol.* 2019 Feb;53(2):184-192.
- 15 Madsen C, Søgaard K, Zingenberg H, Jørgensen FS, Rosbach H, Hoseth E, Pedersen LH, Petersen OB. Outcomes of monoamniotic twin pregnancies managed primarily in outpatient care-a Danish multicenter study. *Acta Obstet Gynecol Scand.* 2019 Apr;98(4):479-486.
- 16 Twin and triplet pregnancy NICE guideline [NG137]2019  
.https://www.nice.org.uk/guidance/ng137
- 17 Murgano, D., Khalil, A., Prefumo, F., Mieghem, T.V., Rizzo, G., Heyborne, K.D., Melchiorre, K., Peeters, S., Lewi, L., Familiari, A., Lopriore, E., Oepkes, D., Murata, M., Anselem, O., Buca, D., Liberati, M., Hack, K., Nappi, L., Baxi, L.V., Scambia, G., Acharya, G. and D'antonio, F. (2020), Outcome of twin-to-twin transfusion syndrome in monochorionic monoamniotic twin pregnancy: systematic review and meta-analysis. *Ultrasound Obstet Gynecol*, 55: 310-317
- 18 Litwinska E, Syngelaki A, Cimpoca B, Frei L, Nicolaidis KH. Outcome of twin pregnancy with two live fetuses at 11-13 weeks' gestation. *Ultrasound Obstet Gynecol.* 2020 Jan;55(1):32-38.

**REVISION & APPROVAL HISTORY**

Reviewed and endorsed Maternity Services LOPs 4/5/21  
Approved Quality & Patient Safety Committee 15/8/13  
Endorsed Obstetrics LOPs group 13/8/13

**FOR REVIEW : MAY 2026**