South Australian Perinatal Practice Guidelines

Twin pregnancy

Note:

This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach.

Information in this statewide guideline is current at the time of publication.

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The clinical material offered in this statewide standard/policy provides a minimum standard, but does not replace or remove clinical judgement or the professional care and duty necessary for each specific patient case. Where care deviates from that indicated in the statewide guideline contemporaneous documentation with explanation must be provided.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for:

- Discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes the use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

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Twin pregnancy

Introduction

- Early assessment of chorionicity by ultrasound is essential in the management of multiple pregnancies as the distinguishing features are more difficult to ascertain later on
- The family with a multiple pregnancy requires extra support not only in pregnancy, but in the first few years after birth. There are many practical challenges in caring for two or more infants at once. Valuable sources of support are the multiple birth coordinators at public hospitals and the Multiple Birth Association. Family planning and breastfeeding advice are also important
- Care for twin pregnancies is likely to require level V or level VI facilities (refer to the 'Standards for Maternal and Neonatal services in South Australia')

Definitions

- Twin pregnancies are commonly divided according to zygosity or chorionicity as these have important implications for pregnancy and infant outcome
- Zygosity refers to whether the twins arose from one (monozygous) or from two fertilized eggs (dizygous)
- Chorionicity refers to placentation; amnionicity refers to the membrane layers that do or do not separate the gestational sacs of the twins (see figure 34.1)
    - Monochorionic Monoamniotic twins have no separating membrane (MC/MA)
    - Monochorionic Diamniotic (MC/DA) twins have a separating membrane consisting of amnion (two layers) only
    - Dichorionic Diamniotic (DC/DA) twins have a separating membrane consisting of both amnion and chorion. They may or may not have separate (or fused) placentae
- Monozygotic twins have a chorionicity that relates to how early the fertilized egg splits. Of liveborn twins:
    - 70 to 75 % are diamniotic dichorionic
    - 25 to 30 % are diamniotic monochorionic
    - 1 % are monoamniotic and therefore also monochorionic (Hall 2003)
- Dizygotic twins have separate placentae although these can be fused together (diamniotic dichorionic)

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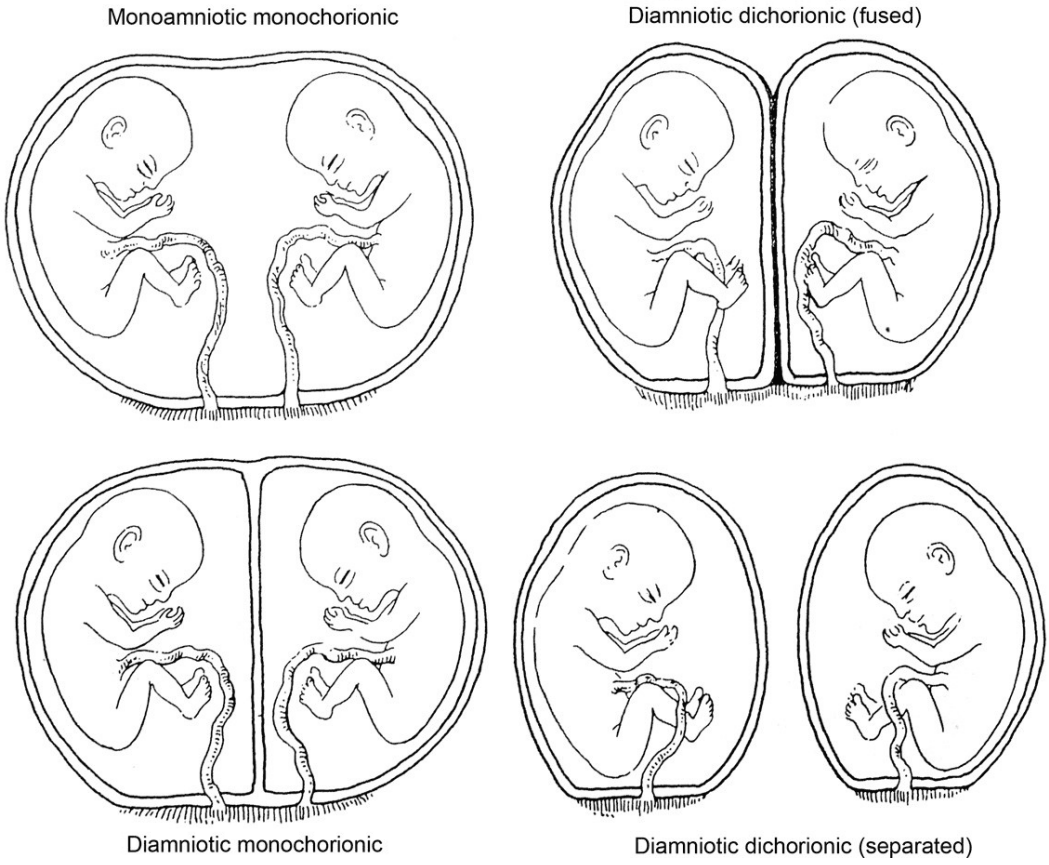
Figure 34.1: Twin chorionicity



Incidence

- The prevalence of spontaneous twin pregnancies ranges from approximately 0.6 % of pregnancies in Asia and 1 to 2 % in Australia, Europe and the USA to about 4 % in Africa (Laws & Sullivan 2004)
- The incidence of monozygotic twins is roughly similar among populations, but the frequency of dizygotic twins varies widely with geography, ethnicity, parity and maternal age, as well as use of assisted reproduction (Hall 2003).
- Worldwide there is an increasing rate of twin pregnancies attributed predominantly to increasing maternal age at conception and use of assisted reproduction
- The rate of monozygotic twins is 2.25 times higher in assisted conceptions than natural conceptions (Vitthala et al. 2009)

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Major challenges

- Perinatal mortality and morbidity is significantly higher in twin than in singleton pregnancies at each week of gestational age (Dodd et al. 2003). Particularly at earlier gestational ages, this often relates to:
  - Preterm birth
  - Intrauterine growth restriction
  - Increased incidence of medical complications including pre-eclampsia
  - Twin to twin transfusion
  - Antepartum death of one of the twins
- Twin pregnancies are also associated with a higher frequency and higher severity of discomforting maternal conditions (e.g. nausea and vomiting in early pregnancy and respiratory discomfort in late pregnancy)
- Conditions that are considerably more frequent in twin pregnancies than in singleton pregnancies include:
  - Miscarriage
  - Anaemia
  - Polyhydramnios
  - Pre-eclampsia
  - Gestational diabetes
  - Congenital anomalies (more common in monozygotic twins)
  - Malpresentations
  - Cord accident (presentation and prolapse)
  - Postpartum haemorrhage
- There is also an increased frequency of long-term adverse infant outcomes including cerebral palsy, even after accounting for gestational age at birth (Pinborg et al. 2004)
- On the whole the maternal age related risk of fetal chromosomal anomalies is similar for twin and singleton fetuses
- All monochorionic twin pregnancies carry a substantial risk of twin to twin transfusion, although this complication can also occur (but rarely) in dichorionic twins with fused placentae
- The congenital abnormality of conjoined twins may occur in 1:200 monozygotic twin pregnancies. Conjoined twins are usually diagnosed antenatally. Determination of the conjoined site allows multidisciplinary discussion before birth as to the prognosis and possibility of surgical correction and allows full involvement of the parents (Dodd et al. 2011)
- Women should be informed of the increased risks associated with twin pregnancy and preterm birth in particular. Fewer than half of twin pregnancies will continue up to and beyond 38 weeks

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Twin pregnancy

Antenatal care in early pregnancy

- Early (first trimester) ultrasound is recommended to ascertain or confirm gestational age, number of fetuses and their chorionicity
- Assign nomenclature to babies (for example, upper and lower, or left and right) and document this clearly in the woman's notes to ensure consistency throughout pregnancy
- Encourage women with a multiple pregnancy to attend antenatal education specific to care and management of multiple birth
- Encourage women with a multiple pregnancy to join the South Australian Multiple Birth Association
- Screening for Down syndrome by mid-trimester screening is not applicable to twin pregnancies. Nuchal translucency can be applied for screening. Chorion villus sampling or amniocentesis can be used as diagnostic tests. However, reported loss rates are greater in sampling a twin pregnancy (possibly due to double puncture) and there is a possibility of inaccurate diagnosis due to sampling the same sac twice
- Fetal reduction or termination is possible in cases of congenital anomaly in one or both twins

Subsequent care in pregnancy

- Hospitalisation for bed rest, and prophylactic tocolytics have not been shown to confer advantage and do not reduce the frequency of preterm birth or perinatal death
- Hospitalisation may be appropriate for specific pregnancy complications
- Nutritional advice is recommended and may include supplementary iron and folate to accommodate the increased needs in twin pregnancies
- Recommend the avoidance of strenuous work in the second half of pregnancy
- Antenatal visits may need to be more frequent than in singleton pregnancies for the timely detection and treatment of medical or obstetric complications
- Anti-D prophylaxis 625 IU is recommended at 28 and 34 weeks for all Rh negative women
- In dichorionic twin pregnancy, ultrasound is recommended every 3-4 weeks from 24 weeks onwards to detect discordance in fetal size, amniotic fluid volume and umbilical artery Dopplers. Umbilical artery flow velocity studies are indicated especially in monochorionic pregnancies and when there are signs of discordancy (Giles et al. 2003)
- **Twins growing to their full potential should follow the singleton growth curve until 32 – 35 weeks**
- Discordant growth may be due to IUGR of one fetus or twin to twin transfusion syndrome, aneuploidy, anomaly or viral syndrome affecting only one fetus
- Consider further investigations or delivery depending on gestation if growth is below the 10th percentile for the singleton curve or showing significant disparity between twin measurements
- Twin pregnancies require specialist antenatal care and referral to hospitals with adequate facilities when complications such as inadequate or discordant fetal growth occur

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Timing and mode of birth

- The optimal timing of birth is unclear
- NICE 2011 recommends the following:
  - Monochorionic twin pregnancies: elective birth from 36^{+0}, after a course of antenatal corticosteroids has been offered
  - Dichorionic twin pregnancies: elective birth from 37^{+0}
- A randomised controlled trial assessing the optimal time for delivery of term twins is currently in progress in South Australia
- When appropriate obstetric experience is available, vaginal birth is the preferred mode of birth for all twin pregnancies that meet the following criteria:
  - Twins must be diamniotic
  - Twin I is cephalic
  - Twin II is not > 500 g heavier than twin I
  - Neither twin has any evidence of fetal compromise requiring caesarean section
- A multinational, multicentre randomised controlled trial assessing the mode of birth for women with twin I presenting cephalic and no contraindication to vaginal birth from 32 weeks of gestation is currently in progress

Monochorionic twins

- In addition to the complications that can be associated with any twin pregnancy, there are several complications that can occur specifically with monochorionic twins (including twin-twin transfusion syndrome)
- The death of one twin has significant implications in the setting of a monochorionic twin pregnancy where there is a shared placental circulation.
- Ultrasound studies every two weeks from 16 – 26 weeks are recommended to detect TTTS.

Timing of birth

- The optimal timing of birth is unclear, with some practitioners advocating delivery at 36^{+0} weeks for women with an otherwise uncomplicated monochorionic twin pregnancy (Level IV)

Twin to twin transfusion syndrome TTTS

- 15 % of monochorionic twin pregnancies show clinical evidence of twin to twin transfusion syndrome (TTTS)
- If TTTS is suspected, a maternal fetal medicine specialist should be consulted and frequent ultrasound follow-up will be necessary
- Fetal hydrops is a pre-terminal sign
- Clinical suspicion is raised antenatally when monochorionic twins show disparity in fetal size. Early polyhydramnios in the sac of the bigger twin is common while oligohydramnios is commonly associated with the smaller twin

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- Clinical suspicion is raised when there is:
  - Early discordance in fetal size and or nuchal translucency measurement
  - Discordance in fetal growth / size (alone or with associated polyhydramnios / oligohydramnios)
  - Rapid increase in maternal abdominal girth representing rapid accumulation of polyhydramnios

TTTS treatment

- Amnioreduction (by amniocentesis) is an established method of treatment
- In experienced hands, fetoscopic laser ablation of placental vascular anastomoses in the second trimester of pregnancy has been found to improve infant outcome compared with serial amnioreduction (Senat et al. 2004). The fetoscopic laser ablation procedure requires referral of the woman to interstate Maternal Fetal Medicine units where this is practised (e.g. Mater Mothers' Hospital, Brisbane)

Death of one twin

- Death of one twin is not uncommon in twin pregnancy. Mostly this occurs early in gestation but even late antepartum death is not rare
- In early pregnancy, there is usually some extent of resorption of the fetus and placenta. The perinatal risk for the remaining fetus remains higher than it would have been for a singleton pregnancy
- In monochorionic twin pregnancy, death of one fetus later in pregnancy is associated with a much higher risk of death and subsequent disability for the other fetus. Death after 20 weeks of gestation may carry a risk of death or damage for the remaining fetus of up to 20 %. For dichorionic twin pregnancies, the risk of cerebral damage is far lower
- At the time of birth, identify any remains of 2nd twin and ensure the remains are identified and sent to Histopathology

Preterm labour

- The wellbeing of both twins should be ascertained by cardiotocography before tocolytics are considered
- If inhibition of labour is indicated follow the guidelines for tocolysis in preterm labour (see PPG 'Nifedipine for preterm labour')
- Corticosteroids are indicated as in a singleton pregnancy

Delivery

- Vaginal birth is suitable in cases where twin one is vertex
- Randomised trials are currently underway to determine the optimal timing and mode of delivery for twins at term

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Intrapartum management

- Intravenous mainline Hartmann's (or 0.9 % sodium chloride) with sideline Syntocinon® 10 units in one litre Hartmann's (or 0.9 % sodium chloride) on hand for second twin
- Blood for complete blood picture, group and save
- Ensure extra equipment for delivery of twin II on hand
    - Amnihook
    - IV Syntocinon® 10 units in one litre Hartmann's (or 0.9 % sodium chloride) infusion.
    - Bolus dose Syntocinon® 10 units (prophylaxis of 3rd stage **after delivery of twin II**)
    - Portable ultrasound
    - Forceps (Neville Barnes, Simpsons, Kjellands) and Ventouse
    - Extra cord blood syringe (20 mL), blood sample tubes, container to receive cord blood, cord gas syringes and needles
    - Extra cord clamp for twin II (and to identify placental cords I and II)
    - Extra drying towel (cloth napkin) and warm wraps
- Continuous electronic fetal monitoring (EFM) for both twins
    - Consider fetal scalp electrode for twin one if technical difficulties with external monitoring
- Reconsider mode of delivery if unable to continuously record the second twin's heart rate
- Ensure portable ultrasound machine available in Delivery unit
- Effective epidural anaesthesia at delivery may be useful if interventions for the birth of the second twin are needed
- Delivery of the first twin may be conducted as for normal vaginal birth. Ensure adequate preparation has been made in case of complications with the second twin
- Blood should be available and an operating theatre on standby
- An experienced obstetrician or registrar should supervise the delivery
- The anaesthetist should be available
- Appropriate neonatal or paediatric staff should be present

Delivery of first twin

- Birth of twin one as per normal vaginal birth
- After birth of the first baby, withhold oxytocic
- If possible a nuchal cord should not be clamped and cut until after the birth of twin I (lift over the fetal head as rarely the cord may be that of twin II)

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Twin pregnancy

Delivery of second twin

- Immediately after the birth of twin I, perform an abdominal and vaginal examination to determine the lie and presentation of the second twin
- Ultrasound to confirm presentation if uncertain
- Commence Syntocinon® 10 units in one litre Hartmann's (or 0.9 % sodium chloride) infusion as per medical order if indicated
- Continuous electronic fetal monitoring
- If the fetal heart rate is normal, birth of the second twin can be awaited
- External version or internal podalic version by an experienced obstetrician may be used to achieve a longitudinal lie
- If the uterine contractions are inadequate an IV oxytocin infusion should be commenced
- Encourage the woman to commence active pushing after adequate contractions have been achieved
- The birth of the second twin should not be rushed if all is normal and the fetal heart rate is satisfactory
- Amniotomy should not be performed unless the fetus is in a longitudinal lie and well applied in the pelvis or as part of planned internal podalic version
- Be aware of the risk of cord prolapse
- If signs of fetal compromise occur, birth can be expedited with an instrumental delivery, breech extraction or caesarean section
- Give stat dose of Syntocinon® 10 units IV after the anterior shoulder of the second twin has been delivered
- Obtain cord blood for group Rh, direct coombs and blood gases for both twins
- Perform active management of third stage by controlled cord traction (for further information, refer to the PPG 'Active management of the third stage – CCT')
- After delivery of twin II and the placenta and membranes, commence a 40 units Syntocinon® infusion (in 1 litre Hartmann's or 0.9 % sodium chloride) at 250 mL / hour for PPH prophylaxis as indicated

Elective caesarean section

- Twin pregnancies with breech presentation of twin one or other major obstetric risk factors may require elective caesarean section at 38 weeks gestation
- Breech presentation of the second twin is not a contraindication to vaginal birth (Crowther, 1996)

Paediatric consultation

- The babies should be checked immediately by the paediatrician because of the higher risk of anomalies, IUGR, anaemia, polycythaemia, hypoglycaemia and coagulopathy

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Postnatal management

- Intravenous Syntocinon® 40 units (prophylactic) should run at 250 mL / hour for 4 hours after delivery unless contra-indicated. In all cases extra observations are required to ensure the uterus remains contracted to reduce postpartum haemorrhage
- Fused placentae of like sex twins should be sent unfixed for pathological examination to help confirm chorionicity

References

1. Laws PJ and Sullivan EA. Australia's mothers and babies 2002. AIHW Cat. No. PER 28. Sydney: AIHW National Perinatal Statistics Unit (Perinatal Statistics Series No. 15); 2004.
2. Hall JG. Twinning. The Lancet 2003; 362: 735 – 747.
3. Vitthala S, Gelbaya TA, Brison DR, Fitzgerald CT, Nardo LG. The risk of monozygotic twins after assisted reproductive technology: a systematic review and meta-analysis. Human Reproduction Update 2009; 15:45-55 (Level I).
4. Dodd JM, Robinson JS, Crowther CA, Chan A. Stillbirth and neonatal outcomes in South Australia, 1991-2000. AJOG 2003; 189: 1731-1736.
5. Pinborg A, Loft A, Schmidt L, Greisen G, Rasmussen S, Nyboe Andersen A. Neurological sequelae in twins born after assisted conception: controlled national cohort study. BMJ 2004; 329: 311 - 314 (Level III-I).
6. National Institute for Health and Clinical Excellence (NICE). Multiple pregnancy: The management of twin and triplet pregnancies in the antenatal period. NICE clinical guideline 129. Developed by the National Collaborating Centre for Women's and Children's Health. London: RCOG Press; September 2011. Available from URL: http://guidance.nice.org.uk/CG129/Guidance/pdf/English
7. Giles W, Bisits A, O'Callaghan S, Gill A, and the DAMP study group. The Doppler assess in multiple pregnancy randomised controlled trial of ultrasound and biometry in twin pregnancy. BJOG 2003; 110: 593 – 597 (Level II).
8. Senat MV, Deprest J, Boulvain M, Paupe A, et al. Endoscopic laser surgery versus serial amnioreduction for severe twin-to-twin transfusion syndrome. New Eng J Med 2004; 351: 136 – 145 (Level II).
9. Dodd JM, Grivell RM, Crowther CA. Multiple pregnancy. In James DK, Steer, PJ, Weiner CP, Gonik B, editors. High risk pregnancy management options, 4th ed. St Louis: Saunders; 2011.
10. Crowther CA. Caesarean delivery for the second twin. *Cochrane Database of Systematic Reviews* 1996, Issue 1. Art. No.:CD000047. DOI: 10.1002/14651858.CD000047. (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000047/pdf_fs.html
11. Crowther CA, Han S. Hospitalisation and bed rest for multiple pregnancy. *Cochrane Database of Systematic Reviews* 2010, Issue 7. Art. No.: CD000110. DOI: 10.1002/14651858.CD000110.pub2. (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000110/pdf_fs.html
12. Dodd JM, Crowther CA. Elective delivery of women with a twin pregnancy from 37 weeks' gestation. *Cochrane Database of Systematic Reviews* 2003, Issue 1. Art. No.: CD003582. DOI: 10.1002/14651858.CD003582 (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003582/pdf_fs.html

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13. Grant AM. Cervical cerclage in twin pregnancy. In: Keirse MJNC, Renfrew MJ, Neilson JP, Crowther C (eds.) Pregnancy and Childbirth Module. In: The Cochrane Database of Systematic Reviews [database on disk and CDROM]. The Cochrane Collaboration; Issue 2, Oxford: Update Software; 1995. Available from BMJ Publishing Group (Level I).
14. Enkin M, Keirse MJNC, Neilson J, Crowther C, Duley L, Hodnett E et al. A Guide to Effective Care in Pregnancy and Childbirth. 3rd ed. Oxford: Oxford University Press; 2000 (Level I).
15. Yamasmit W, Chaithongwongwatthana S, Tolosa JE, Limpongsanurak S, Pereira L, Cheku B, Lumbiganon P. Prophylactic oral betamimetics for preventing preterm birth in women with a twin pregnancy. *The Cochrane Database of Systematic Reviews* 2004, Issue 2. Art. No.: CD004733. DOI: 10.1002/14651858.CD004733 (Level I).
16. Lui S, Benyrschek Scioscia AL, Manniono FL. Uterine death in multiple gestation. Acta Genet Med Gemellol 1992; 41: 5 – 26.
17. MacLennan AH. Multiple Gestation: Clinical characteristics and management. In Creasy RK, Resnik, eds. Maternal Fetal Medicine. 3rd ed. Philadelphia: Saunders; 1994. p. 589 - 601.

Useful resource:

Royal Australian and New Zealand College of Obstetrics and Gynaecology (RANZCOG). Management of monochorionic twin pregnancy. C-Obs 42

http://www.ranzcog.edu.au/womens-health/statements-a-guidelines/new-a-revised-statements-and-guidelines/413--management-of-monochorionic-twin-pregnancy-c-obs-42.html

Abbreviations

DC/DA	Dichorionic Diamniotic
EFM	External fetal monitoring
e.g.	For example
et al	And others
IU	International units
MC/MA	Monochorionic Monoamniotic
MC/DA	Monochorionic Diamniotic
%	Percent

Version control and change history

PDS reference: OCE use only

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1.0	07 Apr 05	11 Aug 08	Original version
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