

CAREFULL DIAGNOSIS & MANAGEMENT OF MONOCHORIONIC MONOAMNIOTIC TWINS

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MOMO TWINS

Monochorionic monoamniotic twins are a subtype in monozygotic twin pregnancy



DEFINITION

Monoamniotic twins are identical **twins** that share the single chorionic sac, a single yolk sac and a single amniotic sac .

-always identical

-always monochorionic and are usually termed **Monoamniotic-Monochorionic ("MoMo") twins**.

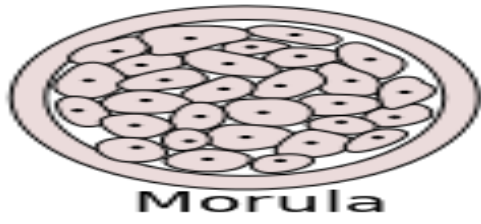
- They also share the placenta, but have two separate umbilical cords.

PATHOLOGY

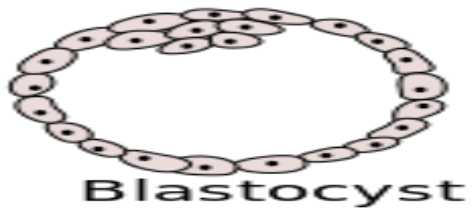
-It results from a separation of a single ovum at 8-13 days following fertilisation (i.e. later than with an MCDA pregnancy).

-By this time a trophoblast has already formed, yielding a single placenta.

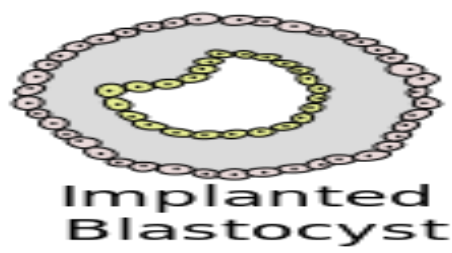
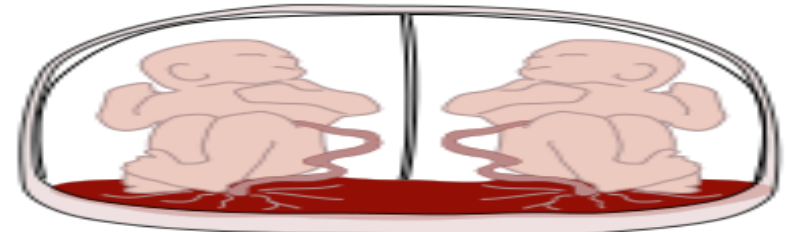




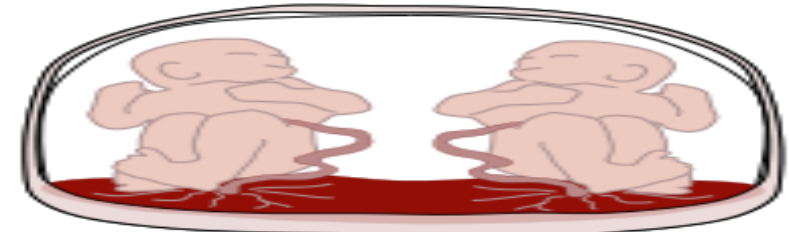
Cleavage
Days 1-3



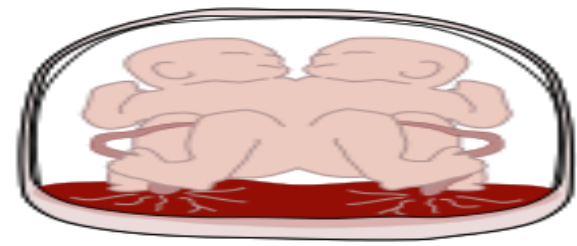
Cleavage
Days 4-8



Cleavage
Days 8-13



Cleavage
Days 13-15



INCIDENCE

-RARE

-1 in 35,000 to 1 in 60,000 pregnancies

WHY INTENSIFIED MONITORING ???

associated with



*Morbidity
and
Mortality.*

CASE REPORT

- Mrs.X, 30 yrs old, G2P1L1

- with previous Full term normal vaginal delivery,

- LCB- 9 years back

- Booked with our hospital from 2 months of amenorrhoea

Menstrual H/O:

RMP, 3/30 days cycle

Not associated with pain or clots

Marital H/O:

Married since 10 years

Non consanguinous marriage

Obstetric H/O:

1st pregnancy :

Conceived spontaneously

Boy/ FTNVD/ 9yrs/ Institutional/ Alive & Healthy

No H/O contraceptives

2nd pregnancy :

1ST TRIMESTER :

- confirmed by UPT at 2 months of amenorrhoea
- Dating scan done
- USG at 11 wks revealed – ***“MONOCHORIONIC MONOAMNIOTIC TWIN PREGNANCIES”***
- Tablet Folic acid taken
- No H/O fever with rash/ irradiation exposure/ spotting or bleeding p/v.

2nd TRIMESTER :

- Quickening at 18 weeks of gestation.
- Anomaly scan at 20weeks – one fetus had **SINGLE UMBILICAL ARTERY**
- After 22 weeks **SERIAL ULTRASOUND** every 2 weeks was performed with regular Antenatal visits.
- Every USG – **Full assessment of fetal growth**
 - **Amniotic fluid volume**
 - **fetal doppler**
- 2 doses of Inj. TT were given.
- No H/O abdominal pain/ discharge p/v/ pedal edema

3rd TRIMESTER:

-Perceived fetal movements well

-At 34 weeks – INJ.BETAMETHASONE 12mg IM 2 DOSES, 24 HOURS APART were given

-Admitted at 34 weeks of gestation – “CLOSE MONITORING”

- DAILY NONSTRESS TEST WITH WEEKLY ULTRASOUND WITH DOPPLER

-At 37 weeks she was taken up for EMERGENCY LSCS
- in view of PROM for >12 hours and non-progress of labour

- Caesarean section was performed - I twin was delivered by vertex presentation and II twin by breech extraction.
- She delivered **two live female babies weighing 2.5kgs and 2.9kgs respectively with good APGAR score.**
- The first twin had single umbilical artery .
- Placental examination showed a **SINGLE PLACENTA WITH MONOCHORIONIC MONOAMNIOTIC MEMBRANE AND UMBILICAL CORD ENTANGLEMENT**
- Both infants showed good growth and development with nil complications at 6 months of age.

SINGLE UMBILICAL ARTERY



SINGLE PLACENTA WITH MOMO MEMBRANE & ENTANGLED CORD



COMPLICATIONS

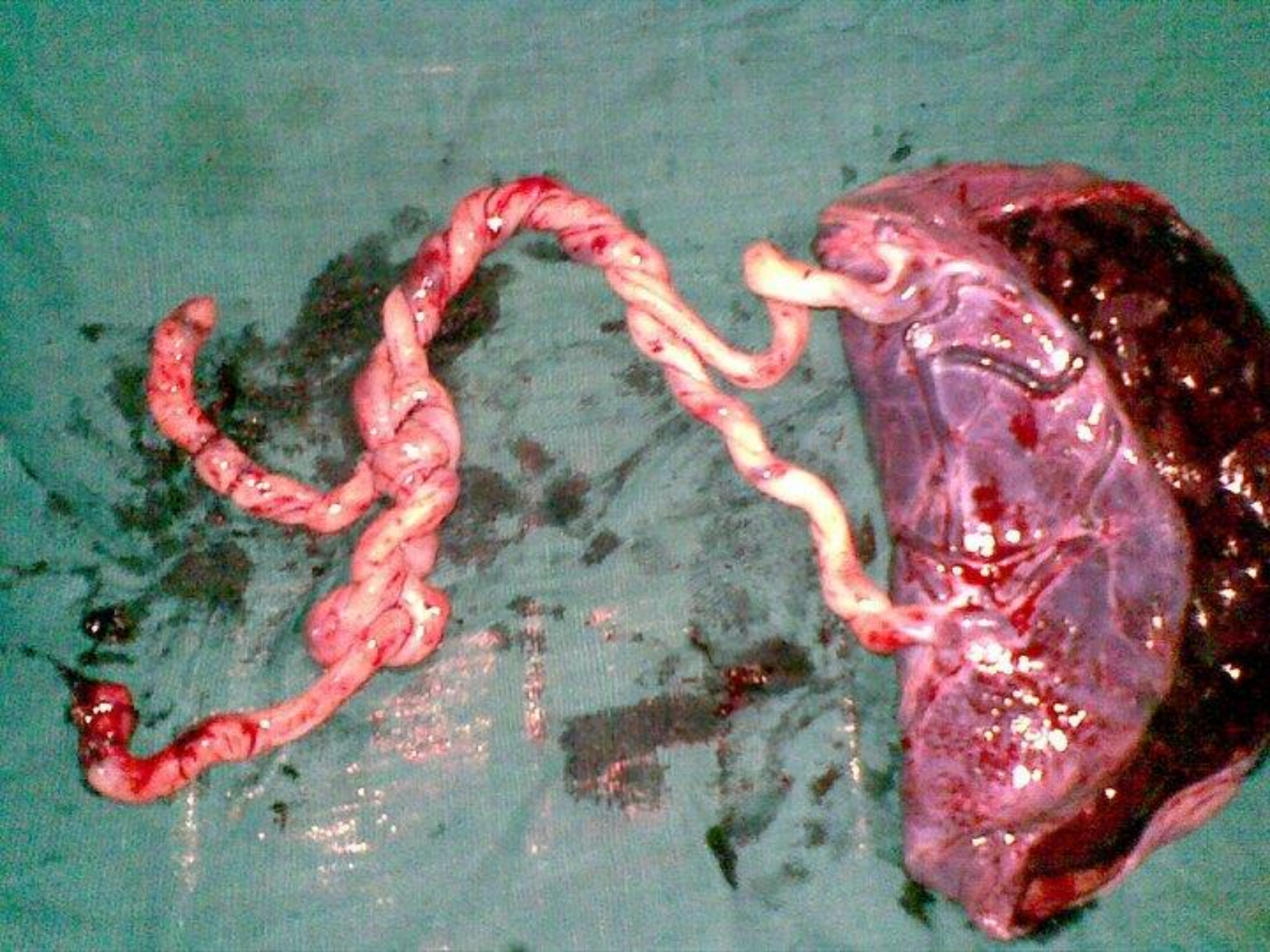


**CORD
ENTANGLEMENT**

ANOMALIES


**TWIN TO TWIN
TRANSFUSION
SYNDROME**

PREMATURITY



CORD ENTANGLEMENT

- 42% - 80% of cases
- traditionally related to high perinatal mortality
- CORD COMPRESSION is another life threatening condition preventing oxygenation and vital nutrients resulting in fetal demise



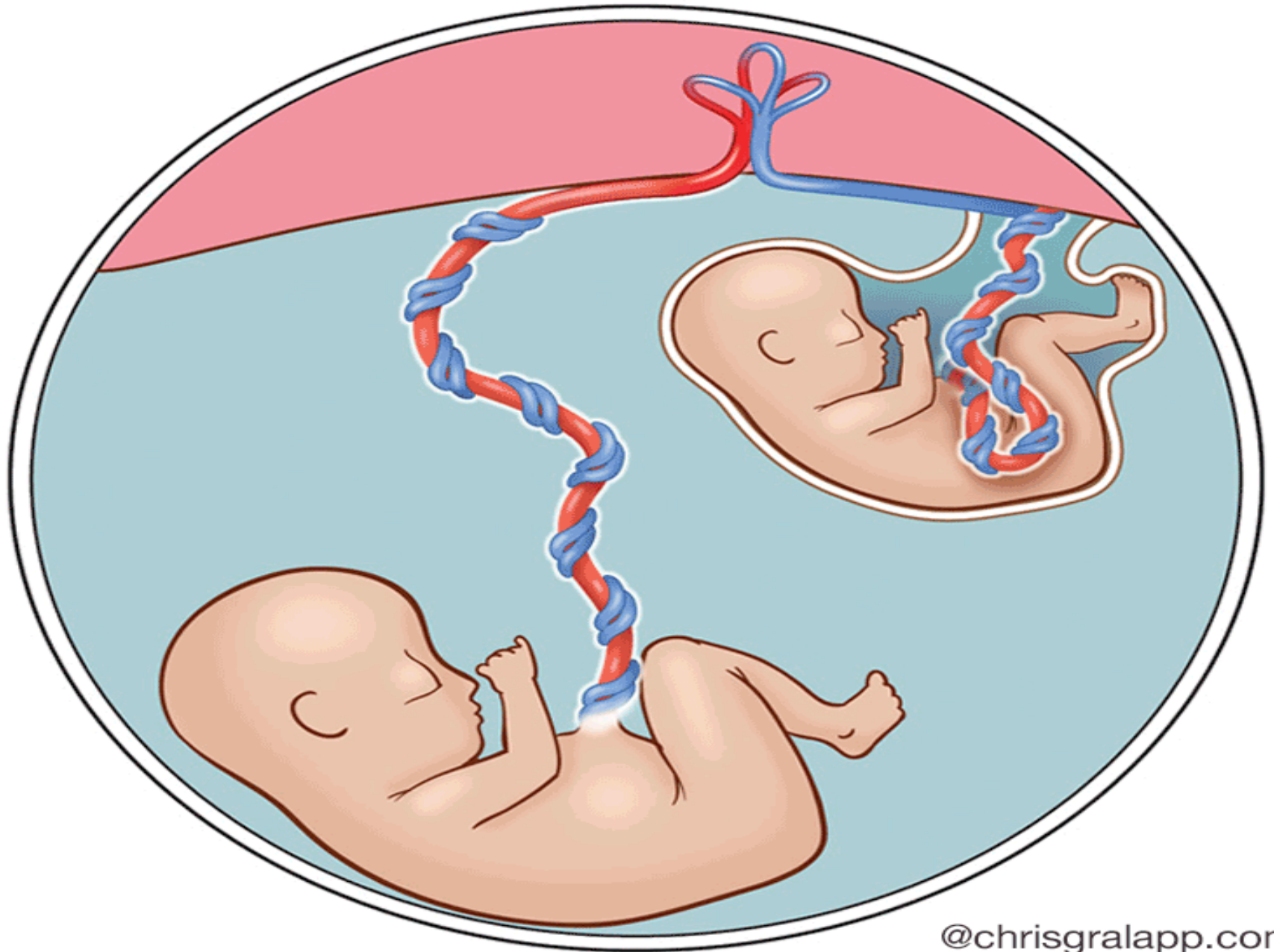
•Cord entanglement is one of the main complications associated with monoamniotic twins.

•Because the twins have **NO AMNIOTIC MEMBRANE** separating them, their umbilical cords can easily become entangled.

CORD COMPRESSION

- Cord compression is another life threatening condition common in monoamniotic twins.
- As the twins move around in the amniotic sac, it is possible that one will compress the other"s umbilical cord.
- This can prevent vital nutrients and blood from traveling to the other baby. resulting in fetal death.

Twin Twin Transfusion Syndrome



TWIN TO TWIN TRANSFUSION SYNDROME

-Because there is no barrier separating the two fetuses from each other, there are almost always blood vessel connections in the placenta shared by two fetuses in [monochorionic twin](#) (MC) pregnancies.

-10-15% of monochorionic twins

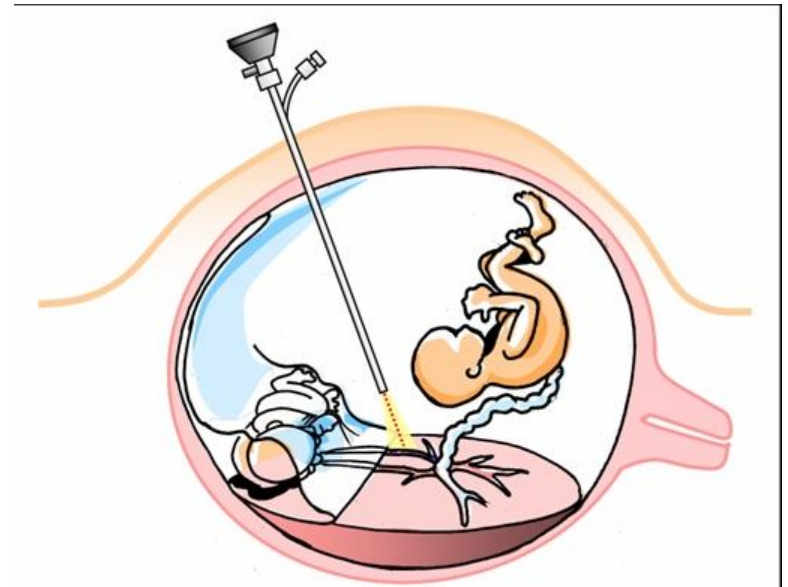
-In these instances, there may be significant transfer of blood from one twin (the so-called “donor”) to the other twin (the so-called “recipient”), resulting in twin-to-twin transfusion syndrome (TTTS).

TWIN TO TWIN TRANSFUSION SYNDROME

- one twin becomes undernourished whereas the other develops hyperdynamic circulation and heart failure.
- In severe TTTS presenting with acute polyhydramnios during the second trimester, endoscopic laser coagulation of the intercommunicating placental vessels is associated with survival of at least one baby in about 70% of the pregnancies
- TTTS is not as common among MoMo as in MoDi pregnancies
- The presence of polyhydramnios, discordant fetal growth, hydrops, congestive heart failure, tricuspid regurgitation and discordant bladder fillings make the prenatal diagnosis of TTTS possible.

TREATMENT

- FETOSCOPIC LASER INTERVENTION
- AMNIOREDUCTION IN DI AMNIOTICS



PREMATURITY

•It is known that uncomplicated twin pregnancies have a higher incidence of premature birth than singletons and that MoMo twins are at an even greater risk of being born before 32 weeks of gestation.



Those born before 32 weeks of gestation have a high incidence of

- perinatal depression,
- respiratory distress,
- early and late onset sepsis,
- patent ductus arteriosus,
- necrotizing enterocolitis,
- Intracranial hemorrhage,
- prolonged hospitalization and
- poor neurological outcomes.



DIAGNOSIS

- MOMO twins has the highest perinatal mortality, about 50%.
- Detection of monochorionic pregnancies at 10 to 14 weeks of gestation and monitoring by serial ultrasounds should lead to early diagnosis of TTTS



ULTRASOUND

Ist TRIMESTER

* shows a twin pregnancy with a single gestational sac and a single yolk sac (differentiating from a DCDA and MCDA pregnancy)

* there is no inter twin membrane: theoretically this differentiates from a DCDA and MCDA pregnancy

o however, even in a MCDA pregnancy the intertwin membrane may be difficult to see

o therefore non-visualisation of the intertwin membrane is not in itself diagnostic

MOMO TWINS



MCDA TWINS



Second trimester

- * specific to a MCMA pregnancy:
 - there can be presence of cord entanglement
 - there can be presence of cord fusion
 - absent inter twin membrane: although may be difficult to see sometimes even with a MCDA pregnancy

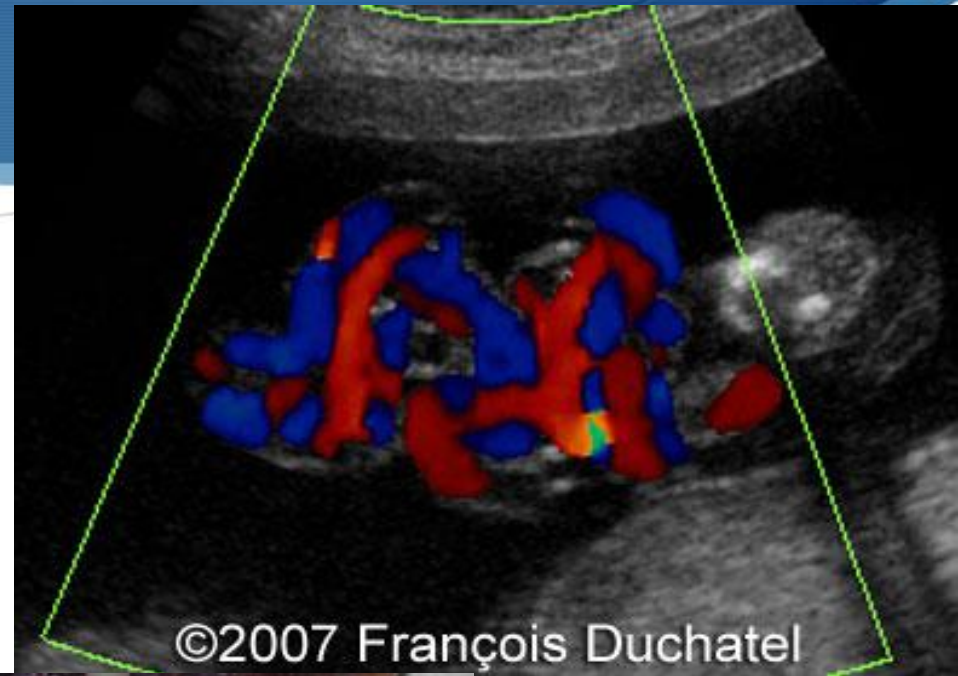
- * common to both MCMA and MCDA pregnancies
 - a single placenta is seen
 - absent twin peak sign

MOMO TWINS AT 16 WEEKS



TWIN PEAK
SIGN IN
DCDA TWINS

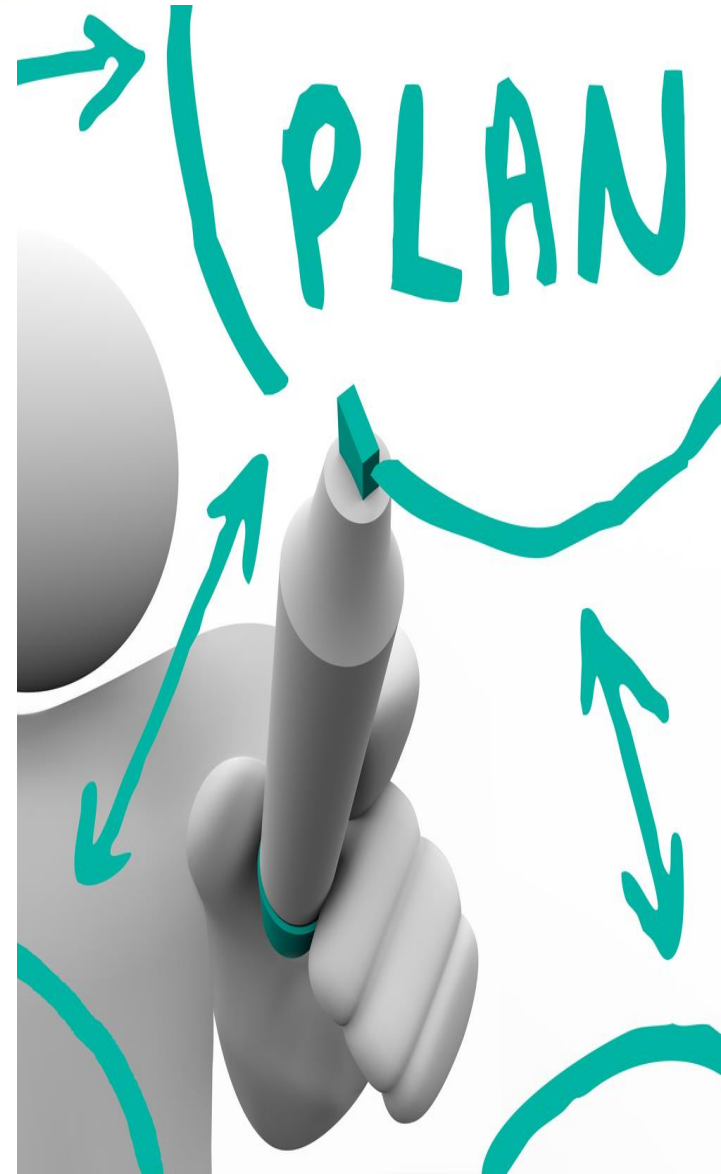




TREATMENT

- Unfortunately, there is no treatment that can reverse this pregnancy condition.
- An experimental drug, **SULINDAC** - has been used to in some monoamniotic twins.
- This drug lowers the amount of fluid in the amniotic sac thereby reducing the amount of fetal movement.
- This is thought to lower the chances of cord entanglement or compression. However, this drug has not been studied in a large number of pregnancies and its potential side effects are unknown.

- The best treatment for monoamniotic twins is to have regular and aggressive fetal monitoring.
- twice-weekly monitoring of fetal heart rate and movement. particularly after the 26th week.
- Aggressive monitoring can help to lower the risk of fetal death considerably.



Conclusion



CONCLUSION

Women with monochorionic monoamniotic twins should be **counseled** immediately after the diagnosis of MoMo twins regarding the complications and perinatal mortality.



- With a **multidisciplinary approach** a good outcome can be achieved.
- These antenatal women should be subjected to **intensified monitoring** as well early admission in the hospital for close monitoring; taking care and caution to prevent perinatal mortality, thus, progressing to deliver at term.



REVIEW OF LITERATURE





IMPROVED PERINATAL SURVIVAL WITH INPATIENT MONITORING

Improved perinatal survival of monoamniotic twins with intensive inpatient monitoring.

Heyborne KD, et al. Am J Obstet Gynecol. 2005.
[Show full citation](#)

Abstract

OBJECTIVE: The purpose of this study was to evaluate the impact of routine hospitalization for fetal monitoring on the perinatal survival and neonatal morbidity of monoamniotic twins.

STUDY DESIGN: This was a multicenter retrospective cohort analysis of 96 monoamniotic twin gestations from 11 university and private perinatal practices. Overall mortality rates were calculated. The risk of intrauterine fetal death and neonatal morbidity was compared among women who were observed as inpatients versus outpatients.

RESULTS: The overall mortality rate from enrollment was 19.8% (mean gestational age at enrollment, 17.4 weeks). The perinatal mortality and corrected perinatal mortality rates were 15.4% and 12.6%, respectively. Eighty-seven women had both twins who were surviving at 24 weeks of gestation; 43 women were admitted electively for inpatient surveillance at a median gestational age of 26.5 weeks; the remainder of

ALL WOMEN WERE DELIVERED BY CAESAREAN SECTION

Monoamniotic twins in contemporary practice: a single-center study of perinatal outcomes.

Baxi LV, et al. J Matern Fetal Neonatal Med. 2010.
[Show full citation](#)

Abstract

OBJECTIVE: The previous studies of monochorionic monoamniotic (MCMA) twins reported perinatal mortality rates as high as 70-80%. The recent trends have been towards significantly improved outcomes, though results from all studies have not been consistent.

METHOD: A retrospective cohort analysis of all MCMA pregnancies $>$ or $=$ 20 weeks delivered in a single university institution from 2001 to 2009, using a computerised hospital database. MCMA twins are managed by a close antenatal surveillance program, preferably elective admission at 26-28 weeks, daily non-stress tests, regular assessment of fetal growth with the goal of cesarean delivery by 34 weeks.

RESULTS: Of the 25 MCMA pregnancies delivered, 98% (49/50) of twins were live-born.

All women were delivered by cesarean section.

There was one intrauterine fetal demise, which was secondary to anencephaly. There were three neonatal deaths, two in association with

INCIDENCE OF PERINATAL MORTALITY HAS DECREASED

1. Perinatal Outcome of Monoamniotic Twin Pregnancies, February 2009.

http://journals.lww.com/greenjournal/fulltext/2009/02000/perinatal_outcome_of_monoamniotic_twin_pregnancies.17.aspx (Full Article)

Abstract:

OBJECTIVE: To study perinatal mortality and neonatal morbidity in a large cohort of monoamniotic twin pregnancies with special emphasis to the gestational age-specific mortality.

METHODS: The study included monoamniotic twin pregnancies delivered in 10 perinatal centers in the Netherlands between January 2000 and December 2007.

RESULTS: A total of 98 monoamniotic pregnancies were included. The perinatal mortality rate (20 weeks of gestation through 28 days of life) was 19%; after exclusion of fetuses with lethal anomalies, the rate was 17%. After 32 weeks of gestation, only two pregnancies were complicated by perinatal mortality (4%). The incidence of twin–twin transfusion syndrome was 6%. The incidence of congenital heart anomalies and cerebral injury was 4% and 5%, respectively.

CONCLUSION: The current incidence of perinatal mortality in monoamniotic twins is considerably lower than in previous decades, but it is still high and occurs throughout pregnancy.

NO IUD IN ANY HOSPITALISED PATIENT

2. Heyborne Study, Received for publication February 27, 2004; revised May 21, 2004; accepted June 2, 2004.

Email us for a copy of this study. (Abstract below from: <http://www.ajog.org/article/S0002-9378%2804%2900637-4/abstract>)

Abstract:

STUDY DESIGN: This was a multicenter retrospective cohort analysis of 96 monoamniotic twin gestations from 11 university and private perinatal practices. Overall mortality rates were calculated. The risk of intrauterine fetal death and neonatal morbidity was compared among women who were observed as inpatients versus outpatients.

RESULTS: The overall mortality rate from enrollment was 19.8% (mean gestational age at enrollment, 17.4 weeks). The perinatal mortality and corrected perinatal mortality rates were 15.4% and 12.6%, respectively. Eighty-seven women had both twins who were surviving at 24 weeks of gestation; 43 women were admitted electively for inpatient surveillance at a median gestational age of 26.5 weeks; the remainder of the women were followed as outpatients and admitted only for routine obstetric indications

(median gestational age, 30.1 weeks). No intrauterine fetal deaths occurred in any hospitalized patient. The risk of intrauterine fetal death in women who were followed as outpatients

RISK FOR CORD ENTANGLEMENT, CONGENITAL MALFORMATION, TTS & PREMATUREITY

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Received 3 October 2005; Revised 8 December 2005; Accepted 19 December 2005; Published online 9 February 2006.

Abstract

Background: Monochorionic monoamniotic twins (MoMo) occur in one of 10 000 pregnancies. Cord entanglement, malformations, twin-to-twin transfusion syndrome (TTS) and prematurity are responsible for their high perinatal morbidity and mortality.

Objective: To report our experience with 36 sets of MoMo twins (1990 to 2005) and to provide updated information for counseling.

Methods: Chorionicity was determined by placental examination, gestational age and TTS clinically and by sonography. Intrauterine growth restriction (IUGR) was diagnosed with a twin-specific nomogram.

Results: Cord entanglement was observed in 15 pregnancies, but only one twin with entanglement and a true knot, experienced related morbidity. Four of 71 live births were IUGR. Malformations were diagnosed prenatally (one hypoplastic left heart and one body stalk) and postnatally (one vertebral anomalies-anal atresia-tracheoesophageal fistula-renal defect (VATER) and two lung hypoplasias). Twin-to-twin transfusion syndrome affected three sets of twins. Five twin sets delivered before 31, 19 sets at 31 to 32 and 12 sets at 33 to 34 weeks. Six of 71 (8%) twins died (four malformations, one TTS and one 26 weeks premature). Head ultrasounds in 59 of 65 survivors showed two (3%) periventricular leukomalacia, five (9%) Grade I-II intraventricular hemorrhage and 52 (88%) normal.

Conclusions: Monochorionic monoamniotic twins remain a group at risk for cord entanglement, congenital malformations, TTS and prematurity. Although their neonatal mortality and morbidity is high, outcomes for survival are better than anticipated.

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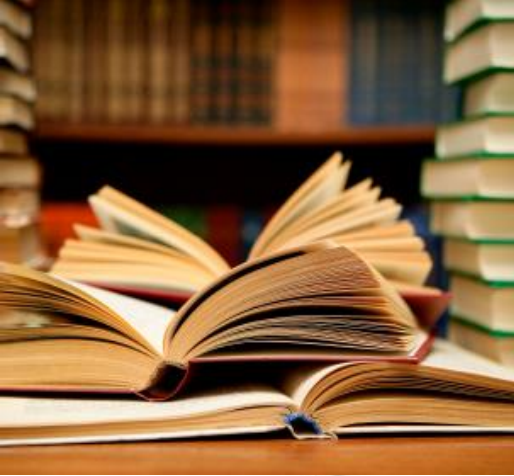
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Thank
You



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