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Review

Twin pregnancies: guidelines for clinical practice from the French College of
Gynaecologists and Obstetricians (CNGOF)

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ABSTRACT

The rate of twin deliveries in 2008 was 15.6 per 1000 in France, an increase of approximately 80% since the beginning of the 1970s. It is recommended that chorionicity be diagnosed as early as possible in twin pregnancies (Professional Consensus). The most relevant signs (close to 100%) are the number of gestational sacs between 7 and 10 weeks and the presence of a lambda sign between 11 and 14 weeks (Professional Consensus).

In twin pregnancies, nuchal translucency is the best parameter for evaluating the risk of aneuploidy (Level B). The routine use of serum markers during the first or the second trimester is not recommended (Professional Consensus). In the case of a choice about sampling methods, chorionic villus sampling is recommended over amniocentesis (Professional Consensus).

Monthly follow-up by a gynaecologist–obstetrician in an appropriate facility is recommended for dichorionic pregnancies (Professional Consensus). A monthly ultrasound examination including an estimation of fetal weight and umbilical artery Doppler is recommended (Professional Consensus). It is recommended to plan delivery of uncomplicated dichorionic diamniotic twin pregnancies from 38 weeks and before 40 weeks (Level C).

Monthly prenatal consultations and twice-monthly ultrasound are recommended for monochorionic twins (Professional Consensus). It is reasonable to consider delivery from 36 weeks but before 38 weeks + 6 days, with intensified monitoring during that time (Professional Consensus). Prenatal care of monochorionic pregnancies must be provided by a physician working in close collaboration with a facility experienced in the management of this type of pregnancy and its complications (Professional Consensus).

The increased risk of maternal complications and the high rate of medical interventions justify the immediate and permanent availability of a gynaecologist–obstetrician with experience in the vaginal

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delivery of twins (Professional Consensus). It is recommended that the maternity ward where delivery takes place have rapid access to blood products (Professional Consensus). Only obstetric history (history of preterm delivery) (Level C) and transvaginal ultrasound measurement of cervical length (Level B) are predictive factors for preterm delivery. No study has shown that the identification by transvaginal sonography (TVS) of a group at risk of preterm delivery makes it possible to reduce the frequency of such deliveries in asymptomatic patients carrying twins (Professional Consensus).

It is important to recognize signs of TTTS early to improve the management of these pregnancies (Professional Consensus). Treatment and counseling must be performed in a center that can offer fetoscopic laser coagulation of placental anastomoses (Professional Consensus). This laser treatment is the first-line treatment (Level B). In the absence of complications after laser treatment, planned delivery is recommended from 34 weeks and no later than 37 weeks (Professional Consensus).

For delivery, it is desirable for women with a twin pregnancy to have epidural analgesia (Professional Consensus). The studies about the question of mode of delivery have methodological limitations and lack of power. Active management of the delivery of the second twin is recommended to reduce the interval between the births of the two twins (Level C). In the case of non-cephalic presentation, total breech extraction, preceded by internal version manoeuvres if the twin's position is transverse, is associated with the lowest cesarean rates for second twins (Level C). In the case of high and not yet engaged cephalic presentation and if the team is appropriately trained, version by internal manoeuvres followed by total breech extraction is to be preferred to a combination of resumption of pushing, oxytocin perfusion, and artificial rupture of the membranes, because the former strategy appears to be associated with fewer cesareans for the second twin (Level C).

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1. Introduction and method [1,2]

The sponsor (French College of Gynaecologists and Obstetricians (CNGOF)) appointed an organization committee (Appendix) tasked with defining the exact questions to be put to the expert authors, to choose these experts, follow them up and draft the synthesis of recommendations resulting from their work. The experts analyzed the scientific literature on the subject in order to answer the question raised. The MEDLINE database and the Cochrane Library were used to conduct a literature search to locate relevant articles until mid 2009. The search was restricted to articles published in the English and the French languages. Priority was given to articles reporting results of original research, although review articles and commentaries also were consulted. Guidelines published by organizations or institutions such as the Royal College of Obstetrics and Gynecology (RCOG), the American College of Obstetricians and Gynecologist (ACOG) and the Canadian Society of Gynecology and Obstetrics (SOGC) were

reviewed, and additional studies were located by reviewing bibliographies of identified articles.

For each question, each overview of validated scientific data was associated with a level of evidence according to the quality of available data, using the working framework defined by the HAS (French Health Authority) as follows.

1.1. Quality of evidence assessment

LE1: very powerful randomized comparative trials, meta-analysis of randomized comparative trials;

LE2: not very powerful randomized trial, well-run non randomized comparative studies, cohort studies;

LE3: case–control studies;

LE4: non randomized comparative studies with large biases, retrospective studies, transversal studies, series of cases.

A synthesis of recommendations was drafted by the organizing committee based on the replies given by the expert authors. Each

recommendation for practice was allocated a Level defined by the HAS as follows:

1.2. Classification of recommendations

Level A: Recommendations are based on good and consistent scientific evidence;

Level B: Recommendations are based on limited or inconsistent scientific evidence;

Level C: Recommendations are based primarily on consensus and expert opinion;

Professional consensus: In the absence of any conclusive scientific evidence, some practices have nevertheless been recommended on the basis of agreement between the members of the working group.

All the texts were reviewed by persons not involved in the work, i.e. practitioners in the various specialties concerned and working in varying situations (public, private, university or non-university establishments) (Appendix). Once reviewing had been completed, changes were made, if appropriate, considering assessment of the quality of the evidence.

The texts are cited [3–17] but the individual references included in each text are not reported here as that would require a huge cumulative space in this guideline article.

2. Epidemiology of twin pregnancies [3]

The rate of twin deliveries in 2008 was 15.6 per 1000 in France, an increase of approximately 80% since the beginning of the 1970s. It is estimated that one quarter to one third of the increase is attributable to the increase in maternal age over this period. On the other hand, 31% of all twin deliveries in France in 2003 followed fertility treatment. Women should therefore be informed reasonably early in their childbearing years of the risks associated with late pregnancy (Professional Consensus). One of the priorities in the management of infertile couples remains the prevention of twin and higher-order multiple pregnancies (Professional Consensus).

The principal health risks associated with twins involve fetal and infant mortality, preterm delivery, fetal growth restriction and cerebral palsy. The risk of preterm delivery (< 37 weeks) was 44.3% in France in 2003, i.e. a relative risk of 8.8 (95% CI 7.8–10.0) compared with singletons. Neither maternal age nor the spontaneous or induced nature of the pregnancy appears to have a significant effect on the excess perinatal risk of twins. Women have an increased risk of mortality and morbidity during multiple pregnancies. It is important in France to have the best tools for monitoring the health status of twins and their mothers. They must accordingly aid the medical profession and the public health authorities in the analysis of their needs and in the evaluation of medical practices (Professional Consensus).

3. Diagnosis of chorionicity [4]

Every report of an ultrasound examination of a twin pregnancy (especially during the first trimester) must include information about chorionicity (Professional Consensus). It is recommended that chorionicity be diagnosed as early as possible in twin pregnancies, because the earlier the diagnosis, the more reliable it is (Professional Consensus). If chorionicity cannot be diagnosed during the first trimester, the patient must be referred to a specialist ultrasonographer at an approved prenatal diagnostic center (CPDPN) (Professional Consensus).

The most relevant signs (close to 100%) are the number of gestational sacs between 7 and 10 weeks and the presence of a lambda sign between 11 and 14 weeks (Professional Consensus). If chorionicity was appropriately diagnosed during the first trimester

of pregnancy and the “explicit photograph of the ultrasound image allowing diagnosis of chorionicity” can be furnished, this diagnosis is permanent and need not be reconsidered later (Professional Consensus).

4. Particularity of prenatal diagnosis in twin pregnancies

4.1. Particularities of aneuploidy screening [5]

It appears legitimate to use the risk estimate tables for aneuploidy established for singletons in everyday practice (Professional Consensus). In dichorionic pregnancies, this risk is estimated during the first trimester by a calculation that integrates maternal age and the measurement of the crown-rump length (CRL) and of the nuchal fold of each fetus (Level B). In monochorionic pregnancies, the risk of aneuploidy in the first trimester must be estimated on a risk scale bounded by the values of the thickness of the nuchal fold of each fetus (Professional Consensus). The routine use of serum markers during the first trimester is not recommended, but their use in twins is currently being assessed (Professional Consensus). Nor is it recommended to order serum marker tests routinely during the second trimester, because the mean sensitivity is associated with a high false-positive rate and the screening test does not provide the separate risk for each fetus (Professional Consensus).

4.2. Diagnostic sampling: chorionic villus sampling or amniocentesis? [6]

The risk of fetal loss associated with sampling in a twin pregnancy may be slightly higher than that observed for singleton pregnancies (Level C). In the case of a choice about sampling methods, chorionic villus sampling is recommended over amniocentesis (Professional Consensus). Its performance, between 11 and 14 weeks, provides an earlier result than amniocentesis and makes it possible to perform selective pregnancy reduction with less risk (Professional Consensus).

Sampling from a twin pregnancy must be performed by an operator experienced in taking these samples in multiple pregnancies (Professional Consensus). When amniocentesis is performed, the choice of inserting one needle or two is left to the operator (Professional Consensus). Routine sampling of both conceptuses is not always necessary. Nonetheless, parental request justifies it, even in situations where a single sample might otherwise seem sufficient (Professional Consensus). In chorionic villus sampling, the transabdominal route should be preferred to the cervical (Professional Consensus).

5. Monitoring twin pregnancies

5.1. Monitoring dichorionic diamniotic twin pregnancies [7]

Monthly follow-up by a gynaecologist–obstetrician in an appropriate facility is recommended (Professional Consensus). For mothers with a prepregnancy body mass index (BMI) between 19 and 25, the total recommended weight gain is 16–24 kg (Level B). Current data are insufficient to justify a recommendation for or against systematic screening for pregnancy-related diabetes (Professional Consensus). A monthly ultrasound examination including an estimation of fetal weight and Doppler umbilical artery velocimetry is recommended (Professional Consensus). More intensive ultrasound monitoring is advised if the weight discordance between the two fetuses exceeds 20–25% (Level B). Because of the increased risk of obstetrical complications, more intensive follow-up may be set up during the third trimester (Professional Consensus). It is recommended to plan delivery of uncomplicated dichorionic diamniotic twin pregnancies from 38 weeks and before 40 weeks (Level C).

5.2. Monitoring monochorionic diamniotic twin pregnancies [8]

Because of the increased risk of morbidity and mortality in monochorionic pregnancies and their relative rarity, clinical and ultrasound monitoring should be performed by a physician working in close collaboration with a healthcare facility experienced in the management of these pregnancies and their principal complications (Professional Consensus). In cases of doubt or complications, the patient should be referred to a prenatal diagnostic center for an opinion (Professional Consensus). Monthly prenatal consultations and twice-monthly ultrasound are recommended (Professional Consensus). Threatened preterm delivery requires consideration of specific potential underlying complications (Professional Consensus). The optimal term for delivery of an uncomplicated monochorionic pregnancy is lower than the optimal term for delivery of a dichorionic pregnancy. It is reasonable to consider delivery from 36 weeks but before 38 weeks + 6 days, with intensified monitoring during that time (Professional Consensus).

5.3. Monitoring monochorionic monoamniotic twin pregnancies [9]

This type of twin pregnancy is associated with high mortality due to the almost routine presence of cord entanglement. Obstetric monitoring must be intensified at 27–30 weeks (Professional Consensus). That can be done as an inpatient or outpatient at a level III maternity ward (Professional Consensus). Delivery as early as 32 weeks and before 36 weeks is recommended (Professional Consensus). Cesarean delivery is highly recommended (Professional Consensus).

5.4. Where should prenatal care take place and where should twins be born? [10]

Prenatal care of twin pregnancies is not currently well codified in France. It must be performed by a physician with good knowledge of this type of pregnancy (Professional Consensus). Prenatal care of monochorionic pregnancies must be provided by a physician working in close collaboration with a facility experienced in the management of this type of pregnancy and its complications (Professional Consensus). Prenatal care of monoamniotic pregnancies must take place in close collaboration with a level III facility (Professional Consensus). Current data are insufficient to justify a recommendation that “twin clinics” be set up in France for the management of twin pregnancies (Professional Consensus).

The increased risk of maternal complications and the high rate of medical interventions (cesareans, instrumental operative intervention, and manoeuvres) justify the immediate and permanent availability of a gynaecologist–obstetrician with experience in the vaginal delivery of twins (Professional Consensus). The presence of an anesthesiologist is especially recommended during the phase of actual fetal and placental delivery because of the increased risk of hemorrhage. It is recommended that the maternity ward where delivery takes place have rapid access to blood products (Professional Consensus). The immediate and permanent availability of a pediatric team appropriate in size and resuscitation skills to the number of newborns and the extent of their prematurity is recommended (Professional Consensus). Twins may be delivered in maternity units that meet these specifications (Professional Consensus).

6. Complication of twin pregnancies

6.1. Prevention of spontaneous preterm delivery in asymptomatic twin pregnancies [11]

Neither tocography nor screening for bacterial vaginosis allows the identification of a population at risk of preterm delivery

(respectively Levels B and C). Current data in the literature are contradictory and insufficient to determine whether the results of either testing for fetal fibronectin in cervicovaginal secretions or digital cervical examination are predictive of preterm delivery (Professional Consensus).

Only obstetric history (history of preterm delivery) (Level C) and especially transvaginal ultrasound measurement of cervical length (Level B) are predictive factors for preterm delivery. Nonetheless, no study has shown that the identification by transvaginal ultrasound of a group at risk of preterm delivery makes it possible to reduce the frequency of such deliveries in asymptomatic patients carrying twins (Professional Consensus). If transvaginal ultrasound is performed, information about a long cervix (>30 mm) is more pertinent than that of a shortened cervix (<25 mm) (Professional Consensus). Preterm delivery rates have not been reduced by any of the following interventions: strict bedrest, use of prophylactic oral tocolytics, administration of progesterone, or prophylactic cerclage in patients with or without cervical modifications (Level A).

6.2. Management of twin–twin transfusion syndrome (TTTS) [12]

It is important to recognize signs of TTTS early to improve the management of these pregnancies (Professional Consensus). It is therefore important to look in monochorionic pregnancies for discordance in amniotic fluid volume (smaller sac <2cm and larger sac >8 cm or >10 cm respectively ≤ 20 weeks or >20 weeks) and/or discordance in bladder size (Professional Consensus). Twice-monthly ultrasound monitoring, sometimes even weekly, is recommended for this type of pregnancy because of the risk of complications (Professional Consensus). TTTS is an obstetric emergency that is easy to diagnose with ultrasound.

Treatment and counseling must be performed in a center that can offer fetoscopic laser coagulation of placental anastomoses (Professional Consensus). This laser treatment is the first-line treatment (Level B). Monitoring after treatment should be conducted in association with the reference center (Professional Consensus). In the absence of complications after laser treatment, planned delivery is recommended from 34 weeks and no later than 37 weeks (Professional Consensus).

6.3. Conflicts of interest between twins [13]

The incidence of malformations in dichorionic and monochorionic pregnancies is respectively double and triple that in singleton pregnancies. They should be managed at a prenatal diagnostic center (Professional Consensus). In the case of an especially severe malformation in a dichorionic twin, selective pregnancy reduction is possible and does not present a direct risk to the healthy twin (Professional Consensus). The risk of fetal loss is approximately 8% and of very preterm birth (25–32 weeks) around 12% (Level C). In the case of an especially severe malformation of a twin in a monochorionic pregnancy, umbilical cord occlusion with bipolar forceps is an alternative treatment. In the absence of imminent risk for the healthy twin, this procedure is recommended at or after 18 weeks (Level C), to be performed by an operator experienced in this technique (Professional Consensus). The risk of premature rupture of the membranes is approximately 20% and survival around 80% of the other twin. The woman's active participation in the choice of treatment is essential (Professional Consensus).

6.4. Management of a twin pregnancy after in utero death [14]

The neonatal mortality rate in twins is up to seven times higher than in singletons and affects approximately 5% of all twin pregnancies. In the case of dichorionic pregnancy, the absence of

vascular interaction between the twins means that the death of one twin should not have any consequence on the survivor. The risks of fetal death and neurological abnormalities of the surviving twin are estimated at 4% and 1% respectively. The principal risk is preterm delivery.

In the case of monochorionic pregnancy, anastomoses on the chorionic plate will lead to morbidity and perhaps death of the co-twin. The risks of fetal death and neurological abnormalities of the surviving twin are estimated at 12% and 18% respectively, with an increased risk of preterm delivery. A possible cerebral lesion (associated with hypovolemic shock) can generally be detected only 3 weeks to a month after the death of the other twin. Ultrasound evaluation and fetal cerebral MRI are recommended to look for these cerebral lesions in survivors (Professional Consensus). Early delivery in the hours or days after the death is not recommended, because it cannot in any case prevent the potential cerebral lesions (Professional Consensus). If the patient has not given birth spontaneously, induction should be proposed at 39 weeks at the latest (Professional Consensus).

Psychological counseling is recommended at the death of a twin (Professional Consensus).

7. Delivery of twin pregnancies

7.1. What kind of delivery is best for twins? [15]

The patient should receive thorough information about the risks of vaginal and cesarean deliveries (Professional Consensus). It is desirable for women with a twin pregnancy to have epidural analgesia (Professional Consensus). The studies about the question of mode of delivery have methodological limitations and lack power. Vaginal delivery should be performed by an obstetrician with experience in the vaginal delivery of twins (Professional Consensus).

There is no reason to recommend one type of delivery rather than another in twin pregnancies, regardless of gestational age at birth (Level C). In particular, there is no reason to recommend one type of delivery rather than another:

- in a twin pregnancy with Twin 1 in cephalic presentation near term (Level B),
- in a twin pregnancy with Twin 1 in breech presentation near term (Level B),
- in a twin pregnancy in women with uterine scars (Level C),
- in a twin pregnancy with Twin 1 in cephalic or breech presentation in women with preterm labor (Level C).

8. Delivery of the second twin [16]

Active management of the delivery of the second twin is recommended to reduce the interval between the births of the two twins (Level C), because this interval is associated with:

- progressive degradation of neonatal acid-base indicators (Level C),
- increase in the number of cesareans for the second twin (Level C),
- neonatal morbidity of the second twin (Level C).

In the case of noncephalic presentation, total breech extraction, preceded by internal version manoeuvres if the twin's position is transverse, is associated with the lowest cesarean rates for second twins (Level C). In these situations, external cephalic version may be harmful (Level C). In the case of a high and not yet engaged cephalic presentation and if the team is appropriately trained, version by internal manoeuvres followed by total breech extraction is to be preferred to a combination of resumption of pushing, oxytocin

perfusion, and artificial rupture of the membranes, because the former strategy appears to be associated with fewer cesareans for the second twin (Level C). In the case of an engaged cephalic presentation, management should involve resumption of pushing, oxytocin perfusion, and artificial rupture of the membranes (Level C). Obstetric manoeuvres on the second twin should be practised as first-line treatment with intact membranes (Professional Consensus).

Conflict of interest

There are no conflicts of interest.

Appendix A. Appendix

A.1. Steering committee

F. Puech, president (gynaecologist/obstetrician, CHRU Jeanne-de-Flandre, Lille, France), C. Vayssière, coordinator and methodologist (gynaecologist/obstetrician, CHU Toulouse, Toulouse, France), Y. Ville (gynaecologist/obstetrician, CHU Necker-enfants maladies, Paris, France), D. Lemery (gynaecologist/obstetrician, CHU Clermont-Ferrand, Clermont-ferrand, France), Jean-Claude Pons (gynaecologist/obstetrician, CGU Grenoble, Grenoble, France), Agnes Simon (midwife, CHU Saint-Antoine, Paris, France), Paul Jabert (federation Jumeaux et plus, Paris, France).

A.2. Working group

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