



Delivery of the fetus at caesarean section

This statement has been developed and reviewed by the Women's Health Committee and approved by the RANZCOG Board and Council.

A list of Women's Health Committee Members can be found in [Appendix A](#).

Disclosure statements have been received from all members of this committee.

The Committee acknowledges contributing authorship in Appendix B.

Disclaimer This information is intended to provide general advice to practitioners. This information should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient. This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The document has been prepared having regard to general circumstances.

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Objectives: To provide health professionals with information regarding the consequences, delivery principles and considerations for delivery of a fetus at caesarean section.

Target audience: Health professionals providing maternity care, and patients.

Values: The evidence was reviewed by the Women's Health Committee (RANZCOG), and applied to local factors relating to Australia and New Zealand.

Background: This statement was first developed by Women's Health Committee in July 2010 and most recently amended in November 2019.

Funding: This statement was developed by RANZCOG and there are no relevant financial disclosures.

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1. Plain language summary

Caesarean section is a safe procedure. However, just as there is a chance of injury to mother or baby during a vaginal birth, there is a risk of injury to mother or baby during a caesarean birth. The risks are highest when the baby's head is deep in the mother's birth canal at the time of caesarean section, when the baby is very large, or sometimes when the baby is in a breech presentation. The purpose of this statement is to provide guidance for doctors who perform caesarean sections about how best to deliver babies in these circumstances.

2. Summary of recommendations

Recommendation 1	Grade
Obstetricians should be aware of certain circumstances that can increase the risk of fetal injury at caesarean section, for example <ul style="list-style-type: none">• presenting part is deep in the pelvis,• the fetus is macrosomic,• the fetus is in a malpresentation such as a breech presentation.	Consensus-based recommendation
Recommendation 2	Grade
Where an impacted fetal head is suspected, the most senior obstetric doctor present should perform a vaginal examination immediately before commencing a caesarean section to exclude the possibility of further descent of the presenting part such that vaginal delivery would be more easily accomplished.	Consensus-based recommendation
Recommendation 3	Grade
Clinicians experienced in caesarean sections and trained in neonatal resuscitation should be in attendance or readily available where a technically difficult delivery is anticipated.	Consensus-based recommendation
Recommendation 4	Grade
The obstetrician should consider measures to decrease the risk of injury at the time of caesarean section.	Consensus-based recommendation
Recommendation 5	Grade
Consideration should be given to incorporating difficult caesarean section scenarios into obstetric emergency training with both maternity and theatre teams including disimpaction of the fetal head at caesarean section.	Consensus-based recommendation

3. Introduction

The overall risk of fetal injury at caesarean section is low. Nevertheless, there is potential for fetal injury at caesarean section in certain circumstances. These injuries include:

1. Skull fracture and/or intracranial haemorrhage following disimpaction where the head is deep in the pelvis.
2. Brachial plexus palsy following difficult delivery of the shoulders in the presence of fetal macrosomia.
3. Cervical spine, spinal cord and/or vertebral artery injury following delivery of the after coming head of a breech presentation.

4. Discussion and recommendations

4.1 Caesarean section with the fetal head deep in the pelvis

Consequences

Where delivery needs to be expedited with the presenting part deep in the pelvis, there are added risks of caesarean section including increased risks of:

1. Fetal Injury including skull fracture and/or intracranial haemorrhage.
2. Maternal injury including:
 - tears in the lower uterus;
 - haemorrhage;
 - urinary tract injury.

Delivery Principles

The decision for caesarean section in the second stage of labour involves balancing the risks and benefits of a) caesarean section against those of b) an immediate, and potentially difficult, operative vaginal delivery or c) expectant management with the expectation of achieving a safer station or position for operative vaginal delivery. All options carry some risk, and the decision should be made by an experienced accoucheur, preferably with adequate notice of progress in labour, fetal condition and maternal wishes.

If a decision is made to proceed with caesarean section, the following good practice points are recommended.

Pre-operative considerations

1. A vaginal examination should be performed by the most senior obstetric doctor present immediately prior to commencing the procedure. This is to:

- Exclude the possibility of further head descent such that vaginal delivery would be more easily accomplished.
 - Apply steady firm upward pressure to assist with disimpaction of the fetal head and assist with the abdominal delivery. There is some evidence that inflatable devices might reduce the risk of uterine injury in these circumstances.¹ Administration of a tocolytic agent may be of benefit.
2. An experienced obstetrician and paediatrician should be in attendance or readily available where a technically difficult delivery is anticipated.
 3. The anaesthetist should be appropriately prepared in anticipation of the need for acute tocolysis and management of postpartum haemorrhage.

Intra-operative considerations

1. The head must be elevated into the abdomen before successful delivery can be accomplished. This may be achieved by either or both of:
 - Apply steady firm upward pressure with a cupped hand to assist with disimpaction of the fetal head and assist with the abdominal delivery. All efforts must be directed at avoiding the focused pressure of two fingers pushing on the head. There is some evidence that inflatable devices might reduce the risk of uterine injury in these circumstances.¹ Administration of a tocolytic agent may be of benefit.
 - Steady elevation of the fetal head vaginally by an experienced assistant.
 - The accoucheur's fingers passing between the head and the uterine wall to below the head and exerting upward pressure.
2. The upper uterine segment has invariably retracted, which results in a reduced intrauterine volume in which to accommodate the fetus as it is displaced upwards. While this is most commonly rectified by physical pressure associated with manual elevation of the fetal head, consideration should also be given to the use of tocolysis to relax the uterus. Commonly used agents for acute tocolysis include GTN, salbutamol or terbutaline or deep general anaesthesia.
3. Occasionally, delivery of the fetal head is impossible despite these measures, and delivery of the torso through the uterine incision is appropriate. This may be particularly encountered in the very preterm fetus. While breech delivery in this setting has been the subject of case reports, it should generally only be performed by those experienced in this technique or where other methods have failed.

Post-operative considerations

The risk of major PPH is increased with emergency caesarean section in advanced labour, due to the combination of uterine and vaginal trauma, infection, use of tocolysis and atony. Appropriate preparation for such a delivery includes considering the oxytocic and mechanical agents available to control haemostasis as well as availability of Tranexamic Acide, blood and blood products.

4.2 Caesarean section for the macrosomic fetus

Consequences

Caesarean section for the macrosomic fetus may still result in shoulder dystocia and brachial plexus palsy but with an incidence many times less than with vaginal birth.

Delivery Principles

Where shoulder dystocia and fetal injury is anticipated, the abdominal wall and uterine incisions should be sufficiently large to facilitate delivery. Where difficulties are encountered during delivery, these may need to be extended:

1. To facilitate access for manoeuvres such as delivery of the posterior arm.
2. Converting the uterine incision into a 'J' or 'T' incision.

4.3 Delivery of the breech at caesarean section

Consequences

While caesarean section is generally associated with a reduction in fetal trauma when compared with vaginal birth, caesarean delivery of a breech presentation still poses some fetal risk related to trauma and asphyxia, and maternal risk of trauma.

1. Cervical spine, spinal cord and/or vertebral artery injury may follow delivery of the after coming head of a breech presentation. These injuries may follow hyperextension of the cervical spine while trying to facilitate delivery of the fetal head through the incision. It should be noted that:
 - These injuries may be more likely where the head is hyper-extended antenatally producing anomalous development of the cervical spine, or when fetal muscular tone is reduced through a neuromuscular disorder or fetal hypoxia.
 - Such injuries may also occur antenatally and are not necessarily the consequence of the delivery itself.
2. Maternal consequences of caesarean section can be considerable if the breech is very deep in the pelvis such that vaginal breech delivery may be recommended. Trials recommending caesarean section for breech presentation have not been powered to examine the subgroup with full cervical dilatation and the breech deep in the pelvis.

Pre-operative

High quality antenatal care is imperative for all women so that the incidence of "undiagnosed" breech presentations is minimised. This enables appropriate antenatal management of the term breech, including an ultrasound assessment to exclude fetal normality and hyperextension of the fetal head, and provides an opportunity to offer ECV.

Intra-operative technique

1. Where an emergency caesarean section is being undertaken for the breech presentation in labour, a further vaginal examination should always be performed in theatre immediately before embarking on the caesarean section in order to exclude imminent vaginal delivery.
2. The key to successful delivery of the after coming head of any breech presentation (whether abdominal or vaginal) is to maintain head flexion during delivery of the limbs and torso. Head extension not only makes head diameters much greater but also incurs the possibility of extension injuries.
3. The incision should be sufficiently large to allow access and the necessary manipulations. Head flexion should be maintained during delivery of the limbs and torso by the surgical assistant exerting pressure on the vertex in the appropriate direction.
4. When delivery of the after coming head does not occur with simple downward pressure on the uterine fundus, delivery of the after coming head should be effected when the head is low in the uterus by either:
 - A modification of the Mauriceau-Smellie-Veit manoeuvre; or
 - Obstetric forceps.
5. Where the fetal head is not sufficiently low OR initial attempts at delivery are unsuccessful, the accoucheur may consider:
 - Tocolysis administered by the anaesthetist may assist where there is a uterine retraction ring around the fetal neck, most commonly accomplished with GTN, salbutamol or terbutaline or deep general anaesthesia.
 - Extension of the uterine incision, most commonly upward in the midline in the form of an "inverted T-incision". Although undesirable for subsequent pregnancies, this may avoid fetal injury (traumatic or asphyxial) in this technically difficult situation.

5. References

Seal SL, Dey A1, Barman SC, Kamilya G, Mukherji J, Onwude JL. Randomized controlled trial of elevation of the fetal head with a fetal pillow during cesarean delivery at full cervical dilatation. *Int J Gynaecol Obstet.* 2016 May;133(2):178-82.

6. Links to other College statements

[Evidence-based Medicine, Obstetrics and Gynaecology \(C-Gen 15\)](#)

7. Patient information

A range of RANZCOG Patient Information Pamphlets can be ordered via <https://ranzcof.edu.au/womens-health/patient-information-guides/patient-information-pamphlets>

Appendices

Appendix A Women's Health Committee Membership

Name	Position on Committee
Professor Yee Leung	Chair and Board Member
Dr Gillian Gibson	Deputy Chair, Gynaecology
Dr Scott White	Deputy Chair, Obstetrics
Associate Professor Ian Pettigrew	Member and EAC Representative
Dr Kristy Milward	Member and Councillor
Dr Will Milford	Member and Councillor
Dr Frank O'Keefe	Member and Councillor
Professor Steve Robson	Member
Professor Sue Walker	Member
Dr Roy Watson	Member and Councillor
Dr Susan Fleming	Member and Councillor
Dr Sue Belgrave	Member and Councillor
Dr Marilyn Clarke	ATSI Representative
Associate Professor Kirsten Black	Member
Dr Thangeswaran Rudra	Member
Dr Nisha Khot	Member and SIMG Representative
Dr Judith Gardiner	Diplomate Representative
Dr Angela Brown	Midwifery Representative, Australia
Ms Adrienne Priday	Midwifery Representative, New Zealand
Ms Ann Jorgensen	Community Representative
Dr Rebecca Mackenzie-Proctor	Trainee Representative
Dr Leigh Duncan	Maori Representative
Prof Caroline De Costa	Co-opted member (ANZJOG member)
Dr Christine Sammartino	Observer

Appendix B Overview of the development and review process for this statement

i. Steps in developing and updating this statement

This statement was originally developed in July 2010 and was most recently updated in November 2019. The Women's Health Committee carried out the following steps in reviewing this statement:

- Declarations of interest were sought from all members prior to reviewing this statement.
- Structured clinical questions were developed and agreed upon.
- An updated literature search to answer the clinical questions was undertaken.

- At the November 2019 face-to-face committee meeting, the existing consensus-based recommendations were reviewed and updated (where appropriate) based on the available body of evidence and clinical expertise. Recommendations were graded as set out below in Appendix B part iii)

ii. Declaration of interest process and management

Declaring interests is essential in order to prevent any potential conflict between the private interests of members, and their duties as part of the Women’s Health Committee.

A declaration of interest form specific to guidelines and statements was developed by RANZCOG and approved by the RANZCOG Board in September 2012. The Women’s Health Committee members were required to declare their relevant interests in writing on this form prior to participating in the review of this statement.

Members were required to update their information as soon as they become aware of any changes to their interests and there was also a standing agenda item at each meeting where declarations of interest were called for and recorded as part of the meeting minutes.

There were no significant real or perceived conflicts of interest that required management during the process of updating this statement.

iii. Grading of recommendations

Each recommendation in this College statement is given an overall grade as per the table below, based on the National Health and Medical Research Council (NHMRC) Levels of Evidence and Grades of Recommendations for Developers of Guidelines.¹⁷ Where no robust evidence was available but there was sufficient consensus within the Women’s Health Committee, consensus-based recommendations were developed or existing ones updated and are identifiable as such. Consensus-based recommendations were agreed to by the entire committee. Good Practice Notes are highlighted throughout and provide practical guidance to facilitate implementation. These were also developed through consensus of the entire committee.

Recommendation category		Description
Evidence-based	A	Body of evidence can be trusted to guide practice
	B	Body of evidence can be trusted to guide practice in most situations
	C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
	D	The body of evidence is weak and the recommendation must be applied with caution

Consensus-based	Recommendation based on clinical opinion and expertise as insufficient evidence available
Good Practice Note	Practical advice and information based on clinical opinion and expertise

Appendix C Full Disclaimer

This information is intended to provide general advice to practitioners, and should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient.

This information has been prepared having regard to general circumstances. It is the responsibility of each practitioner to have regard to the particular circumstances of each case. Clinical management should be responsive to the needs of the individual patient and the particular circumstances of each case.

This information has been prepared having regard to the information available at the time of its preparation, and each practitioner should have regard to relevant information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that information is accurate and current at the time of preparation, it takes no responsibility for matters arising from changed circumstances or information or material that may have become subsequently available.