Instrumental vaginal birth

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 D.

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

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

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

Validation: This statement was compared with RCOG, ACOG and SOGC Guidelines on instrumental vaginal birth.

Background: This statement was first developed by Women's Health Committee in July 2002. During the statements review in November 2015 Rotational Forceps (C-Obs 13) was incorporated to create one statement on Instrumental Vaginal Birth.

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

Table of contents

1. Plain language summary

The use of instruments – a vacuum cup (ventouse) or forceps – may be required to achieve a safe vaginal birth. Using instruments to assist birth is usually recommended when the condition of either the baby or the mother makes it less safe to allow time for normal birth to occur. The choice of which instrument to use depends on the clinical situation, and every birth is different. There are different types of vacuum cup and different types of forceps, and each has different advantages and potential disadvantages. Sometimes a caesarean section will be performed instead of, or even after, an attempted instrumental delivery. However, a caesarean section when the baby's head is deep in the pelvis and the cervix is fully dilated can be very difficult and poses risks to mother and baby. Further, a caesarean section has potential implications for the mother's future pregnancies. For this reason, the benefits and risks of instrumental vaginal birth need to be weighed up in each case, and the following statement provides information for clinicians on the principles that guide instrumental vaginal births.

2. Summary of recommendations

Recommendation 1	Grade
As instrumental vaginal birth may be associated with maternal and neonatal morbidity, measures which safely reduce the need for instrumental birth are recommended.	Good Practice Point
Recommendation 2	**Grade**
Safe instrumental vaginal birth requ	

3. Introduction

Instrumental vaginal birth retains an important role in current obstetric practice. Vacuum and forceps assisted vaginal birth account for approximately 11% of births in Australia (1990-2012)[1] and just under 10% of births in New Zealand.[2] Rates have been reported to vary from 7.4-16% of all births across a spectrum of Australian and New Zealand hospitals.[3] A number of reviews and guidelines have been published.[4-7]

When labour has progressed to full dilation and concerns exist regarding wellbeing of the fetus, mother, or both, three options exist: (1) to allow the labour to proceed aiming for spontaneous vaginal birth; (2) to proceed to attempted instrumental vaginal birth; or, (3) to perform a caesarean section. Each of these options carries both benefits and potential risks and in each individual case there will be pareo19imately 15xr1J-4(4.1(120.66470-Obs 16)Tj3.9102 -1.221seco.

4. Discussion and recommendations

4.1 Non-Operative Interventions

Several approaches to care may reduce the need for instrumental delivery. These include continuous midwifery support during labour and the use of uprigh

during labour may be determined by the urgency of the situation. Verbal consent should be obtained and the discussion documented in the clinical record. Effective communication with the patient and her support person/ persons is required to ensure that there is clear understanding of the management plan.

Written consent should generally be obtained prior to an instrumental vaginal birth in an operating theatre setting, and women made aware of the possibility that attempts at

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Table 2. Classification for instrumental vaginal birth [5]

Outlet	Fetal scalp visible without separating the labia Fetal skull has reached the pelvic floor Sagittal suture is in the antero-posterior diameter

- Estimated fetal weight over 4 Kg.
- Occipito-posterior positions.
- Mid-cavity, or when 1/5 of the fetal head is palpable abdominally. [5]

When a higher risk of failure is suspected, instrumental vaginal delivery should be attempted in a setting where immediate recourse to caesarean section is available.

The role of routine episiotomy for instrumental vaginal birth remains unclear and there are no large randomised controlled trials to guide practice. In a retrospective Dutch study of 28,732 women undergoing an instrumental birth, use of right mediolateral episiotomy was effective in reducing the risk of anal sphincter tears in both vacuum and forceps births. Significant risk factors for anal sphincter tears were primiparity, occipito-posterior position, and increasing fetal weight.[26] Other smaller studies have not reported a protective benefit of episiotomy against anal sphincter injury.[27-29]

A systematic review found that in vacuum assisted births, use of mediolateral or lateral episiotomy in primiparous women may reduce the risk of Obstetric anal sphincter injuries (OASI) (OR 0.53, CI 0.37-0.77)

The meta-analysis also found that one case of OASI was prevented for every 19 episiotomies performed (NNT 18.3, 95% CI 17.7-18.9). [30]

Women's Healthcare Australasia (WHA) collaborative recommended that an episiotomy is indicated for all women having their first vaginal birth requiring a forceps or ventouse assisted delivery. Preliminary results from the collaborative show that when instrumental assistance was required in women having their first vaginal birth, performing an episiotomy led to 24% fewer OASI when forceps were used and 16% fewer OASI when ventouse was used.[31]

4.6.1 Manual rotation

Manual rotation of the fetal head to an occipito-anterior position may be used alone, with a view to increasing the chance of a normal birth, or in conjunction with forceps or vacuum extraction to affect a vaginal birth. Success rates for rotation of 89% and 76% have been reported in two retrospective trials.[21, 22] Success rates were less when performed in nulliparous patients, when performed before full dilation, or when failure to progress was evident before manual rotation was attempted. [21, 22] When successful there was a significant reduction in the caesarean section rate with an increase in both the spontaneous and instrumental vaginal birth rates.[21, 22] The complication rate of manual rotation appears to be low, although data are sparse.[22] Techniques for manual rotation are detailed in Appendix A.

4.6.2 Vacuum extraction

Indications for vacuum are similar to those for forceps. Contraindications include prematurity (gestation less than 34 weeks because of th210.50.6(n)8 because ot

presentation, fetal bleeding diatheses or thrombocytopaenia, and fetal disorders such as

are multiple maternal ‘pushes’ within each contraction), although more pulls may be acceptable if the head has descended to the level of the pelvic floor or perineum especially if birth is attempted without episiotomy.

iii. Cup detachments

Cup detachment should not be regarded as a safety feature of the vacuum extractor, as the rapid decompression

Low threshold for abandoning the procedure and resorting to caesarean section

The procedure should be abandoned if the forceps cannot be applied easily, the handles do not easily approximate, if rotation is not easily effected with gentle pressure, or if there is lack of descent with moderate traction. Under conditions where there is concern that difficulty is more likely to be encountered (e.g. fetal macrosomia, moulding of the fetal head, or the presenting part that is only just engaged), then the forceps should be performed in or in close proximity to an operating theatre equipped and staffed for caesarean section.

A technique for Rotation forceps as agreed by a panel of clinicians is described in Appendix B.

4.8 Complications of instrumental birth

The adverse effects of instrumental birth must be weighed against the consequences of awaiting vaginal birth or alternatively of performing a caesarean section with the head deep in the pelvis. The more serious complications are very uncommon but include:

Fetal complications

a. Shoulder dystocia and its consequences.

4.9 Factors affecting choice between vacuum and forceps delivery

Each instrument has a different profile of complications.[6] **Vaginal** birth is more likely to be achieved with forceps than vacuum and will occur over a shorter time interval.[47] The clinician should select the instrument based on clinical experience and the individual clinical circumstances. A Cochrane revi

be advised so that appropriate surveillance and management of the baby can be instituted.	

Unsuccessful attempts at instrumental birth may be associated with adverse outcome.[49] If an initial attempt does not effect delivery, or there is lack of progress of rotation and/or descent of the vertex, then assessment should be made as to whether alternate instrumental birth should be attempted (ie sequential use of instruments) or a caesarean section performed without further attempt at instrumental birth.

Sequential Use of Instruments

The use of sequential instruments has been associated with an increased risk of trauma to the fetus and mother when compared to the use of forceps or vacuum alone.[50] Nevertheless, these findings need to be interpreted cautiously, given the increasing use of ventouse as the primary instrument in contemporary obstetrics. This change in practice has followed increasing evidence suggesting that ventouse (compared to forceps) reduces maternal obstetric anal sphincter injury [51], levator ani muscle avulsion,[52] urinary incontinence and pelvic organ prolapse. Yet ventouse is also associated with an increased risk of non-completion of delivery with cohort studies suggesting a 30% chance that vacuum devices such as the kiwi cup will fail, requiring completion of delivery by forceps, increasing to 40% for rotational delivery. [53] Hence, the use of sequential instruments may be considered an inevitable consequence of the increasing use of the ventouse.

Caesarean section following attempted instrumental delivery

The alternative to sequential use of instruments is caesarean section following an attempted instrumental birth. These complex caesarean sections, with the fetal head deep within the pelvis, are associated with an increase in maternal morbidity (major postpartum haemorrhage,[8] transfusion, lower segment tear, cystotomy, hysterectomy, ICU admission) and fetal morbidity (neonatal acidosis, intracranial haemorrhage, need for resuscitation). [8, 54]

In some cases, the adverse outcomes associated with difficult instrumental birth may reflect the indication for which instrumental birth was being attempted (e.g. severe fetal compromise) rather than a direct effect of attempts at instrumental birth. The threshold for abandoning an attempted instrumental birth as well as the decision between either choosing an alternative instrument or performing a caesarean section will differ according to the clinician's training, experience, and the clinical setting.

4.11 Postnatal care

Recommendation 7	
For women who undergo assisted vaginal birth, consideration should be given to prophylactic antibiotics to reduce the risk of post-partum infection.	Evidence-based Recommendation Grade A

Antibiotic prophylaxis.

Antibiotics should be considered after birth to those women who have had an instrumental delivery, and particularly where an episiotomy or perineal injury has occurred. This is in light of

new findings from the ANODE trial, where the administration of intravenous Augmentin within 6 hours of delivery was associated with a reduction in the primary outcome - suspected or confirmed maternal infection within 6 weeks of delivery. Significantly fewer women allocated to amoxicillin and clavulanic acid had a confirmed or suspected infection (180 [11%] of 1619) than women allocated to placebo (306 [19%] of 1606; risk ratio 0·58, 95% CI 0·49-0·69; p<0·0001; absolute risk reduction 8%; NNT 13). Infection was defined by a new prescription of antibiotics for specific indications, confirmed systemic infection on culture, or endometritis. Many of these outcomes related to perineal tear infection or pain. These outcomes are most likely in those who have undergone episiotomy or sustained a perineal tear. This study provides Level 2 evidence for administering antibiotics to women following operative vaginal delivery. [55]

The recommended regime is Amoxicillin-Clavulanate iv 1000mg+200mg. The trial did not address alternative antibiotic regimens, but for women without iv access, oral antibiotics (Amoxicillin-Clavulanate 875/125 oral tablet) may be considered. For women allergic to Penicillin, Cephazolin 2g IV or Clindamycin 600mg IV are reasonable alternatives.

Recommendation 8	
Postnatal care following instrumental vaginal birth requires attention to thromboembolic prophylaxis, analgesia, voiding function, rehabilitation of the pelvic floor, and counselling regarding the index birth and future births.	Consensus-based recommendation

Thromboprohylaxis

Following an instrumental vaginal birth, women should be assessed for their risk profile for venous thromboembolism and, if appropriate, thromboprophylaxis measures should be employed. Instrumental vaginal birth is associated with risk factors for venous thromboembolism such as prolonged labour, BMI>30, pre-eclampsia and postpartum haemorrhage of greater than 1000ml. Consideration of local hospital or published guidelines is appropriate. [56]

Analgesia

Regular paracetamol and nonsteroidal anti-inflammatory agents should be offered when there is no contraindication. Pain not relieved by these measures should prompt clinical assessment to exclude complications such as haematoma formation or infection.

Voiding function

The risk of urinary retention after birth is increased after instrumental vaginal birth, particularly if spinal or epidural anaesthesia has been employed for the birth. RCOG recommends an indwelling catheter for 12 hours following instrumental vaginal birth if a spinal or epidural top up has been used for anaesthesia and a trial of instrumental vaginal birth has been planned. [5] Careful observation of postpartum voiding function and the insertion of an indwelling catheter may be required to prevent bladder over-distention and long term bladder dysfunction. It is appropriate for obstetric units to have protocols aimed to prevent this complication.

Pelvic floor rehabilitation.

Appropriately conducted pelvic floor exercises in the postnatal period should be encouraged. There is evidence that physiotherapist-led intervention reduces urinary

incontinence in women who had had an instrumental vaginal birth and/or a baby over 4000g.

6. References

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8. Links to other College statements

Breech deliveries at term (C-Obs 11)
https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Management-of-breech-presentation-at-term-(C-Obs-11)-Review-July-2016.pdf?ext=.pdf

Prevention, detection and management of Subgaleal Haemorrhage in the newborn (C-Obs 28)
https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Prevention-detection-and-management-of-Subgaleal-Haemorrhage-(C-Obs-28)-Review-November-2015_1.pdf?ext=.pdf

Birth after previous caesarean section (C-Obs 38)
https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Birth-after-previous-Caesarean-Section-(C-Obs-38)Review-March-2019.pdf?ext=.pdf

Consent and provision of information to patients in Australia regarding proposed treatment (C-Gen 02a)
https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical%20-%20General/Consent-and-provision-of-information-to-patients-in-Australia-(C-Gen-2a)-Review-July-2016.pdf?ext=.pdf

Consent and provision of information to patients in New Zealand regarding proposed treatment (C-Gen 2b)
https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical%20-%20General/Consent-and-provision-of-information-NZ-(C-Gen-2b).pdf?ext=.pdf

Evidence-based Medicine, Obstetrics and Gynaecology (C-Gen 15)
https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical%20-%20General/Evidence-based-medicine,-Obstetrics-and-Gynaecology-(C-Gen-15)-Review-March-2016.pdf?ext=.pdf

RCOG The Management of Third- and Fourth-degree Perineal Tears. RCOG Greentop Guideline No 29, 2015. https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-29.pdf

9. Patient information

A range of RANZCOG Patient Information Pamphlets can be ordered via:

https://www.ranzcog.edu.au/Womens-Health/Patient-Information-Guides/Patient-Information-Pamphlets

Appendices

Appendix A Techniques for Manual Rotation [7]

Technique No.1	1. The entire hand is placed in the woman's vagina with the palm up. 2. The fetal head is flexed and slightly dislodged. 3. The occiput is rotated anteriorly by pronation or supination of the forearm. 4. The fetal head may need to be held in place for a few contractions or until the application of a vacuum or forceps is completed.

Technique No.2	1. The fingers may be placed along the lambdoid sutures. 2. Using mild pressure and a dialling motion, the fetal head can be rotated to an occiput anterior position. 3. The fetal head may need to be held in place for a few contractions or until the application of a vacuum or forceps is completed.

Appendix C Women's Health Committee Membership

Appendix D 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 2002 and was most recently reviewed in NovtatNovvtater 3.9(tate0s8 0 TD-is)6(u-g th)5.8(i)3.3(s)-.3( )-6(stat)4Ag atInsNo.50D0 Th origi TD Tw[.79645

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. 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

Appendix E 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.