Updade in Assissted Vaginal Birth (AVB)

Introduction

The RCOG had elaborated the fourth edition of the green top guideline number 26, in April 2020, concerning assisted vaginal delivery using obstetrical forceps or vacuum extractor. It was first published in October 2000 under the title *Instrumental vaginal delivery* and revised in January 2011 and October 2005 under the title *Operative Vaginal Delivery.* The latest (current) edition under the title Assisted vaginal birth (AVB). This edition contains new recommendations with their power of evidence.

Since I have a comprehensive slideshow lecture about the subject under the title operative vaginal delivery, I think that summarizing this new edition (AVB) will be essential to update the knowledge in the previous lecture.

Classification of evidence levels

1++	High-quality meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a very low risk of bias
1+	Well-conducted meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a low risk of bias
1–	Meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a high risk of bias
2++	High-quality systematic reviews of case–control or cohort studies or high-quality case–control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal
2+	Well-conducted case–control or cohort studies with a low risk of confounding, bias or chanceand a moderate probability that the relationship is causal
2–	Case–control or cohort studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal
3	Non-analytical studies, e.g. case reports, case series
4	Expert opinion

Grades of Recommendation

A	At least one meta-analysis, systematic reviews or RCT rated as 1++, and directly applicable to the target population; or a systematic review of RCTs or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2++ directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1++ or 1+
C	A body of evidence including studies rated as 2+ directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2++
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2+

Good Practice Points

✓	Recommended best practice based on the clinical experience of the guideline development group

Can AVB be avoided?

1- Encourage women to have continuous support during labor as this can reduce the need for assisted vaginal birth. [A]

2- Inform women that epidural analgesia may increase the need for assisted vaginal birth although this is less likely with newer analgesic techniques. [New 2020] [A]

3- Inform women that administering epidural analgesia in the latent phase of labor compared to the active phase of labor does not increase the risk of assisted vaginal birth. [New 2020] [A]

Can AVB be avoided?

4- Encourage women not using epidural analgesia to adopt upright or lateral positions in the second stage of labor as this reduces the need for assisted vaginal birth. [A]

5- Encourage women using epidural analgesia to adopt lying down lateral positions rather than upright positions in the second stage of labor as this increases the rate of spontaneous vaginal birth. [New 2020] [A]

Can AVB be avoided?

6- Do not routinely discontinue epidural analgesia during pushing as this increases the woman's pain with no evidence of a reduction in the incidence of assisted vaginal birth. [New 2020] [A]

7-There is insufficient evidence to recommend any particular regional analgesia technique in terms of reducing the incidence of assisted vaginal birth. [New 2020] [A]

Can AVB be avoided?

8-There is insufficient evidence to recommend routine oxytocin augmentation for women with epidural analgesia as a strategy to reduce the incidence of assisted vaginal birth. [New 2020] [A]

9- There is insufficient evidence to recommend routine prophylactic manual rotation of fetal malposition in the second stage of labor to reduce the risk of assisted vaginal birth. [New 2020] [B]

10-Recommend delayed pushing for 1–2 hours in nulliparous women with epidural analgesia as this may reduce the need for rotational and mid-pelvic assisted vaginal birth. [B]

When should AVB be recommended/contraindicated?

1-Operators should be aware that no indication is absolute and that clinical judgment is required in all situations. [D]

2-Suspected fetal bleeding disorders or a predisposition to fracture are relative contraindications to assisted vaginal birth. [New 2020] [√]

3-Blood borne viral infections in the woman are not an absolute contraindication to assisted vaginal birth. [New 2020] [D]

When should AVB be recommended/contraindicated?

4- The use of a vacuum is not contraindicated following a fetal blood sampling procedure or application of a fetal scalp electrode.

[New 2020] **[B]**

5- Operators should be aware that there is a higher risk of sub-galeal hemorrhage and scalp trauma with vacuum extraction compared with forceps at preterm gestational ages. Vacuum birth should be avoided below 32 weeks of gestation and should be used with caution between 32+0 and 36+0 weeks of gestation. [New 2020] **[C]**

Essential conditions for safe AVB?

Safe assisted vaginal birth pre-requisites: According to RCOG green top guidelines number 26, january 2011

-Devided into 3 sections ; (previously discussed in OVD lecture)

1-full abdominal & vaginal examination,

2-preparation of the mother , and

3- preparation of the staff.

D

Does ultrasound have a role in assessment prior to AVB?

1-Ultrasound assessment of the fetal head position prior to assisted vaginal birth is recommended where uncertainty exists following clinical examination. [New 2020] [A]

2- There is insufficient evidence to recommend the routine use of abdominal or perineal ultrasound for assessment of the station, flexion and descent of the fetal head in the second stage of labor. [New 2020] [C]

The consent required prior to attempting AVB

1- Women should be informed about assisted vaginal birth in the antenatal period, especially during their first pregnancy. If they indicate specific restrictions or preferences then this should be explored with an experienced obstetrician, ideally in advance of labor. [√]

2-For birth room procedures verbal consent should be obtained prior to assisted vaginal birth and the discussion should be documented in the notes. [√]

3- When midpelvic or rotational birth is indicated, the risks and benefits of assisted vaginal birth should be compared with the risks and benefits of second stage cesarean birth for the given circumstances and skills of the operator. Written consent should be obtained for a trial of assisted vaginal birth in an operating theatre. [New 2020] [√]

Who should perform AVB

1-AVB should be performed by, or in the presence of, an operator who has the knowledge, skills and experience necessary to assess the woman, complete the procedure and manage any complications that arise. D

2-Advise obstetric trainees to achieve expertise in SVB prior to commencing training in AVB. [√]

3-Ensure obstetric trainees receive appropriate training in vacuum and forceps birth, including knowledge, simulation training and clinical training under direct supervision. [New 2020] [√]

Who should perform AVB

4-Competency should be demonstrated before conducting unsupervised births. [New 2020] [√]

5-Complex AVB should only be performed by experienced operators or under the direct supervision of an experienced operator. [D]

6- An experienced operator, competent at midpelvic births, should be present from the outset to supervise all attempts at rotational or mid-pelvic AVB . [D]

Where to perform AVB?

1- Non-rotational low-pelvic and lift out assisted vaginal births have a low probability of failure and most procedures can be conducted safely in a birth room. [New 2020] [C]

2- Assisted vaginal births that have a higher risk of failure should be considered a trial and be attempted in a place where immediate recourse to caesarean birth can be undertaken. [C]

What instruments used in AVB?

1-The operator should choose the instrument most appropriate to the clinical circumstances and their level of skill. [√]

2-Operators should be aware that forceps and vacuum extraction are associated with different benefits and risks; failure to complete the birth with a single instrument is more likely with vacuum extraction, but maternal perineal trauma is more likely with forceps. [New 2020] [A]

3-Operators should be aware that soft cup vacuum extractors have a higher rate of failure but a lower incidence of neonatal scalp trauma. [New 2020] [A]

4-Rotational births should be performed by experienced operators; the choice of instrument depending on the clinical circumstances and expertise of the individual. The options include *Kielland's rotational forceps*, *manual rotation followed by direct traction* forceps or vacuum, and *rotational vacuum extraction*. [C]

When should vacuum-assisted birth be discontinued and how should a discontinued vacuum procedure be managed?

1- Discontinue vacuum-assisted birth where there is no evidence of progressive descent with moderate traction during each pull of a correctly applied instrument by an experienced operator. [New 2020] [√]

2-Complete vacuum-assisted birth in the majority of cases with a maximum of 3 pulls to bring the fetal head on to the perineum. Three additional gentle pulls can be used to ease the head out of the perineum. [New 2020] [√]

When should vacuum-assisted birth be discontinued and how should a discontinued vacuum procedure be managed?

3-If there is minimal descent with the first 2 pulls , the operator should consider *whether the application is suboptimal, the fetal position has been incorrectly diagnosed or there is CPD*. Less experienced operators should stop and seek a second opinion. Experienced operators should re-evaluate the clinical findings and either change approach or discontinue the procedure. [New 2020] [√]

4-Discontinue vacuum-assisted birth if there have been two 'pop-offs' of the instrument. Less experienced operators should seek senior support after one 'pop-off' to ensure the woman has the best chance of a successful assisted vaginal birth. [New 2020] [√]

When should vacuum-assisted birth be discontinued and how should a discontinued vacuum procedure be managed?

5-The rapid negative pressure application for vacuum-assisted birth is recommended as it reduces the duration of the procedure with no difference in maternal and neonatal outcomes. [New 2020] [√]

6-The use of sequential instruments is associated with an increased risk of trauma to the infant. However, the operator needs to balance the risks of a cesarean birth following failed vacuum extraction with the risks of forceps birth following failed vacuum extraction. [B]

7-Obstetricians should be aware of the increased neonatal morbidity following failed vacuum-assisted birth and/or sequential use of instruments and should inform the neonatologist when this occurs to ensure appropriate care of the baby. [√]

8-Obstetricians should be aware of the increased risk of obstetric anal sphincter injury (OASI) following sequential use of instruments. [New 2020] [C]

When should attempted forceps birth be discontinued and how should a discontinued forceps procedure be managed?

1- Discontinue attempted forceps birth where the forceps cannot be applied easily, the handles do not approximate easily or if there is a lack of progressive descent with moderate traction. [New 2020] [B]

2-Discontinue rotational forceps birth if rotation is not easily achieved with gentle pressure. [New 2020] [B]

3-Discontinue attempted forceps birth if birth is not imminent following three pulls of a correctly applied instrument by an experienced operator. [New 2020] [B]

4-If there is minimal descent with the first one or two pulls , the operator should consider whether the application is *suboptimal*, the *position* has been *incorrectly* diagnosed or there is *CPD*. Less experienced operators should stop and seek a second opinion. Experienced operators should re-evaluate the clinical findings and either change approach or discontinue the procedure. [New 2020] [√]

When should attempted forceps birth be discontinued and how should a discontinued forceps procedure be managed?

5-Obstetricians should be aware of the potential neonatal morbidity following a failed attempt at forceps birth and should inform the neonatologist when this occurs to ensure appropriate management of the baby. [New 2020] [√]

6-Obstetricians should be aware of the increased risk of fetal head impaction at caesarean birth following a failed attempt at birth via forceps and should be prepared to dis-impact the fetal head using recognized maneuvers. [New 2020] [√]

What is the role of episiotomy in preventing maternal pelvic floor morbidity at assisted vaginal birth?

1- Mediolateral episiotomy should be discussed with the woman as part of the preparation for assisted vaginal birth. [New 2020] [√]

2- The decision to perform episiotomy should be tailored to the circumstances at the time and the preferences of the woman. The evidence to *support use of mediolateral episiotomy at assisted vaginal birth in terms of preventing OASI is stronger for nulliparous women and for birth via forceps*. [New 2020] [B]

3-When performing a mediolateral episiotomy the cut should be at a 60 degree angle initiated when the head is distending the perineum. [New 2020] [B]

Aftercare of AVB- Prophylactic antibiotics

1- A single prophylactic dose of intravenous amoxicillin and clavulanic acid should be recommended following assisted vaginal birth as it significantly reduces confirmed or suspected maternal infection compared to placebo. [New 2020] [A]

2- Good standards of hygiene and aseptic techniques are recommended. [√]

Aftercare of AVB- Thromboprophylaxis

Reassess women after assisted vaginal birth for venous thromboembolism risk and the need for thromboprophylaxis. [D]

Aftercare of AVB- Post procedure
Analgesia

In the absence of contraindications, women should be offered regular nonsteroidal anti-inflammatory drugs (NSAIDs) and paracetamol routinely. [A]

Aftercare of AVB- Care of the bladder

1-Women should be educated about the risk of urinary retention so that they are aware of the importance of bladder emptying in the postpartum period. [New 2020] [√]

2-The timing and volume of the first void urine should be monitored and documented. [New 2020] [C]

3- A post void residual should be measured if urinary retention is suspected. [√]

4-Recommend that women who have received regional analgesia for a trial of AVB in theatre have an indwelling catheter in situ after the birth to prevent covert urinary retention. This should be removed according to the local protocol. [New 2020] [√]

5-Offer women physiotherapy-directed strategies to reduce the risk of urinary incontinence at 3 months. [B]

Aftercare- reduce psychological morbidity

1-Shared decision making, good communication, and positive continuous support during labor

have the potential to reduce psychological morbidity following birth. [New 2020] [√]

2-Review women before hospital discharge to discuss the indication for AVB, management of any complications and advice for future births. Best practice is where the woman is reviewed by the obstetrician who performed the procedure. [√]

3-Offer advice and support to women who have had a traumatic birth and wish to talk about their experience. The effect on the birth partner should also be considered. [New 2020] [√]

4-Do not offer single session, high-intensity psychological interventions with an explicit focus on 'reliving' the trauma. [New 2020] [√]

5-Offer women with persistent post-traumatic stress disorder (PTSD) symptoms at 1 month referral to skilled professionals as per the NICE guidance on PTSD. [New 2020] [D]

Aftercare- Information for future births

1-Inform women that there is a high probability of a spontaneous vaginal birth in subsequent labors following assisted vaginal birth. [New 2020] [B]

2- Individualise care for women who have sustained a third- or fourth-degree perineal tear, or who have ongoing pelvic floor morbidity. [√]

Governance issues;Documentations of AVB

1- Documentation for AVB should include *detailed information on the assessment, decision making and conduct of the procedure, a plan for postnatal care and sufficient information for counselling in relation to subsequent pregnancies.* Use of a standardized proforma is recommended. [New 2020] [√]

2-Paired cord blood samples should be processed and recorded following all attempts at assisted vaginal birth. [New 2020] [√]

3-Adverse outcomes, including *unsuccessful AVB, major obstetric hemorrhage, OASI, shoulder dystocia and significant neonatal complications* should trigger an incident report as part of effective risk management processes. [New 2020] [√]

Governance issues; Dealing with serious adverse effects

1-Obstetricians should ensure that the ongoing care of the woman, baby and family is paramount. [New 2020] [√]

2-Obstetricians have a duty of candor; a professional responsibility to be honest with patients when things go wrong. [New 2020] [√]

3-Obstetricians should contribute to adverse event reporting, confidential enquiries, and take part in regular reviews and audits. They should respond constructively to outcomes of reviews, taking necessary steps to address any problems and carry out further retraining where needed. [New 2020] [√]

4-Maternity units should provide a safe and supportive framework to support women, their families and staff when serious adverse events occur. [New 2020] [√]

Thanks