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Operative vaginal delivery - Multiple choice answers vol. 56

1. a) F b) T c) T d) F e) T

From current literature review there are no randomised controlled trials exploring the impact of operative vaginal birth. Studies have been performed on specific outcomes at a local level. Local targeted training has shown a reduction in third and fourth degree tear rates. They provided lectures and simulation training on OVB and the reduction in tear rates was following this. There was no detail on what was taught during the training sessions, however it can be assumed that training in OVB would include episiotomy and perineal care during delivery. As demonstrated in several studies, instrumental training targeted at trainees can impact rates of OVB. Currently there is no direct evidence linking OVB training and the reduced hypoxic-ischaemic encephalopathy rates. There is evidence for this however, from obstetric emergency training. Some local studies have reported a reduction in neonatal morbidity following formal OVB training. Non-technical skills such as communication and situational awareness are vital for an accoucheur. Many qualitative studies have examined the importance of these and the impact they can have on birth experience for women and their birth partner(s).

2. a) F b) T c) F d) F e) T

There is currently no systematic review that amalgamates the current data on maternal and neonatal outcomes. There is a Cochrane review underway in an effort to answer this research question. A study has demonstrated that following the introduction and embedding of simulation training over shoulder dystocia there were no cases of brachial plexus injury over a 12 month period. There have been no specific studies correlating emergency training and episiotomy rates. There have been no formal studies exploring the link between skills training and birth experience. This is an area for further research and exploration. A retrospective cohort study has demonstrated a significant reduction in the time taken to deliver the baby following decision for delivery, as a result of team training.

3. a) F b) F c) T d) T e) F

There is no evidence surrounding OVB team training however, when taking parallels from obstetric emergency training it can be assumed that it will be beneficial for maternal and neonatal outcomes. Evidence surrounding programme evaluation suggests that there are four levels of evaluation. Participant satisfaction is only one of these levels, which is important to include but should not be solely focussed upon. Continued assessment of competence is vital for any monitoring of quality control and safety monitoring. This can be done locally through audit and reporting. Evidence extrapolated from obstetric emergency training would suggest that local training is more effective than

distance training. Kirkpatrick's model of programme evaluation level 4 should always be aimed for as this explores the changes in maternal and neonatal outcomes, which should always be the focus of any training programme.

4. a) T b) T c) F d) F e) F

High fidelity training includes the use of patient actors, mannequins that are more realistic. Research within obstetric emergency simulation training has demonstrated reduced rates of brachial plexus injury when using high-fidelity mannequins. Multi-disciplinary team training has been consistently highlighted as a vital aspect of simulation training. It allows for hierarchical barriers to be broken down, increases understanding between team members and improves communication. From current data there seems to be no benefit in centralised or distance simulation training. There have been no significant changes in outcome for learning at simulation centres. Both local and distance learning provides a safe environment for training that should allow participants to flourish. Simulation has been proved in studies to increase knowledge and skill. This has been validated in pre- and post-questionnaire testing. Simulation training is used in many aspects of undergraduate and post-graduate medicine. This includes emergency training, pre-hospital care and surgical skills training. Within obstetrics simulation training is most widely used for obstetric emergencies but this does not mean that this training modality should only be used for this.

5. a) T b) T c) F d) T e) F

There is no data available around cultural beliefs or maternal fear and OVD, hence they are not cited reasons. Inadequate training (lack of skilled healthcare workers), equipment shortages and policies failing to support the use OVD are reasons cited in the literature.

6. a) T b) T c) T d) F e) T

The outcomes for the baby are not better. The studies referenced to in the paper comparing perinatal outcomes after second stage caesarean deliveries and OVD show similar outcomes or even better outcomes for the baby after OVD. The outcomes for the mothers are usually worse: more haemorrhage, prolonged hospital stay in particular.

7. a) F b) T c) T d) F e) F

The RCOG guideline on the use of operative vaginal delivery clearly states that blood-borne viral infections of the mother are no contra-indication to OVD. This is supported by the Cochrane review on choice of instruments for OVD. One should however avoid scalp trauma of the neonate. The National Study of HIV in Pregnancy and Childhood in the UK and Ireland collected data of 9072 live births in HIV-positive women since 2008. Operative vaginal delivery was performed in 251 women, 1 infant was reported to be HIV-positive.

8. a) F b) T c) F d) F e) T

When a fetus presents in transverse lie, vaginal delivery (including OVD) is contra-indicated. Shoulder dystocia is diagnosed after birth of the fetal head, OVD is no longer indicated. The indications for OVD include: fetal distress, prolonged second stage of labour and maternal contra-indications to pushing.

9. a) F b) T c) F d) F e) T

Group A streptococcal infection is particularly of concern in women who have unassisted vaginal births. Previous Confidential Enquiries have noted that maternal deaths are related to transmission of infection from existing children. Septic shock caused by GAS is associated with a 60% mortality.

Urinary tract infection is almost twice as frequent in women who have an OVD, associated with practices such as in-out bladder catheterisation. The peak occurrence of urinary tract infections is 6 days postpartum, and the peak occurrence of endometritis and wound infections is 7 days postpartum. Few studies take into account the possible confounding effect of episiotomy when considering OVD, but a study in two UK hospitals suggested that episiotomy was associated with a four times higher odds ratio of postpartum infection. Most studies report a 2–3 fold higher incidence of infection amongst women undergoing forceps compared to vacuum delivery.

10. a) T b) T c) F d) T e) T

Socioeconomic status can be measured in different ways, but most studies suggest an association with a marker of deprivation, such as unemployment or manual occupation, Medicaid or public health insurance. Most studies consistently report an association with medical co-morbidities, for example anaemia, immunosuppressed states or diabetes. A delay in antibiotic prescribing has been associated with progression to death amongst women with established sepsis. Studies consistently report an association between sepsis and belonging to a black or other ethnic minority group. A UK national case-control study showed a higher risk of sepsis amongst women who had been treated with antibiotics within the previous 14 days, suggesting they had been inadequately treated. It cannot be assumed that antibiotics will prevent progression to severe sepsis.

11. a) F b) T c) T d) F e) T

GAS rarely colonises the female genital tract, unlike GBS. Spread from the respiratory tract of carriers or other infected individuals is more common. GAS infection can present very rapidly, within 2–48 hours of birth, unlike other infections which usually present later. These are the basics of management of any form of maternal sepsis. A sepsis bundle, including antibiotics, fluids and taking of blood for culture should always be started within 1 h of the suspicion of sepsis. Gas in the tissues is a feature of infection with bacteria such as *Clostridium perfringens*, not GAS. Clinical features are often non-specific, with fever, although in severe infection the temperature may be low in association with abdominal pain and hypotension. Infection progresses rapidly so a high index of suspicion is important.

12. a) T b) F c) F d) F e) F

Basic sterile technique will always be key to preventing infection in any operative procedure and it is as important at OVD as in any other operation. Perineal wounds will always become contaminated and there is no evidence to suggest that covering wounds prevents infection. Prenatal antibiotics have the potential for long-term impacts on children and should be avoided as there is no evidence for their efficacy prior to OVD. There is currently insufficient evidence to support the use of antibiotic prophylaxis after OVD. The ANODE trial investigating the effect of antibiotic prophylaxis on infection will report in 2019. Although episiotomy is associated with a higher risk of infection after OVD, and there is no evidence to support its routine use at OVD, there is no current evidence that avoidance of its use will prevent infection.

13. a) T b) F c) F d) F e) F

OASIS is classified as 3a if <50%, 3b if >50% of the external sphincter is torn and 3c if both internal and external sphincters are torn. OASIS can occur in any type of vaginal delivery and even potentially following a failed attempt at operative vaginal delivery resulting in caesarean section. There are wide variations in rates of OASIS during OVD from 2% up to 30%. There is evidence that rates are similar during day and night hours and between rotational and direct forceps delivery.

14. a) T b) F c) T d) F e) F

Mediolateral episiotomy is associated with less risk of OASIS than midline episiotomy and is recommended. The angle recommended is directed at least 60° from the midline. There is evidence that mediolateral episiotomy reduces the risk of OASIS but does not extend to a recommendation to perform episiotomy routinely but rather selectively. There is no evidence that this recommendation should be altered in the case of women with a prior history of OASIS undergoing an OVD in a subsequent pregnancy.

15. a) T b) F c) T d) T e) F

There is good evidence that a woman who experiences OASIS is at an increased risk of faecal incontinence in later life. However, it appears that this risk is similar regardless of mode of vaginal delivery (spontaneous or operative). There is evidence that dyspareunia/pelvic pain rates are similar regardless of mode of vaginal delivery (spontaneous or operative). OVD results in poorer sexual functioning but no delay in the time to resumption of sexual intercourse compared to spontaneous vaginal delivery.

16. a) F b) T c) T d) T e) T

A review of incidents in a surgery showed that communication error contributed to 43% of these adverse events. This study was carried out by interview study of surgeons across three teaching hospitals. In obstetrics up to 70% of adverse events have been attributed to communication errors. Each Baby Counts reported that human error was a contributory factor in 30% of 1136 cases of intrapartum stillbirths, neonatal deaths or severe brain injury within seven days of birth. Each Baby Counts is a UK wide quality improvement program run by Royal College of Obstetricians and Gynaecologists that collects data on all cases of intrapartum stillbirths, neonatal deaths or severe brain injury within seven days of birth. In 2015 1136 cases were reviewed and lack of situational awareness, stress and fatigue were most frequently identified individual factors. Studies have shown that 3–4% of women suffer from post-traumatic stress disorder (PTSD) following birth. Negative interaction with medical staff and perception of lack of support and loss of control are recognised as risk factors for the development of PTSD. Second victims are defined as healthcare professionals who are involved in an adverse patient incident and feel traumatised by the event. In some cases this can have a severe detrimental effect such as post-traumatic stress disorder. A large scale Dutch study of obstetricians and gynaecologists reported that this was related to non-technical skills such as conflict with colleagues, unsatisfactory breaking bad news conversations and doubting the decision making. Psychological safety is a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns or mistakes. Good leadership has been shown to empower team members to report patient care related adverse events, as they feel safe to do so. Teams that are open and respect their members have greater psychological safety.

17. a) F b) F c) F d) F e) F

Little good quality evidence exists concerning the best option for delivery in the scenario of malpositioned fetal head. However, retrospective cohort studies and propensity analyses have suggested that an attempted rOVD is no riskier for either mother or baby than primary caesarean section. Therefore an attempted rOVD by an experienced operator in theatre should be considered a reasonable approach.

18. a) T b) T c) F d) T e) F

RCOG Greentop Guideline 26, Operative Vaginal Delivery, states that before any rotational operative birth, an operator experienced in mid-cavity and rotational births should be present, and that these deliveries should take place in theatre. The other criteria for all OVDs also apply to rOVD, and these are:

Full abdominal and vaginal examination	Head is \leq 1/5th palpable per abdomen Vertex presentation. Cervix is fully dilated and the membranes ruptured. Exact position of the head can be determined so proper placement of the instrument can be achieved. Assessment of caput and moulding. Pelvis is deemed adequate. Irreducible moulding may indicate cephalo–pelvic disproportion.
Preparation of mother	Clear explanation should be given and informed consent obtained. Appropriate analgesia is in place for mid-cavity rotational deliveries. This will usually be a regional block. A pudendal block may be appropriate, particularly in the context of urgent delivery. Maternal bladder has been emptied recently. In-dwelling catheter should be removed or balloon deflated. Aseptic technique.
Preparation of staff	Operator must have the knowledge, experience and skill necessary. Adequate facilities are available (appropriate equipment, bed, lighting). Back-up plan in place in case of failure to deliver. When conducting mid-cavity deliveries, theatre staff should be immediately available to allow a caesarean section to be performed without delay (less than 30 minutes). A senior obstetrician competent in performing mid-cavity deliveries should be present if a junior trainee is performing the delivery. Anticipation of complications that may arise (e.g. shoulder dystocia, postpartum haemorrhage) Personnel present that are trained in neonatal resuscitation

19. a) F b) F c) F d) F e) F

While all of these points have been suggested, based on either clinical experience (a and e) or retrospective cohort studies (b and c) no prospective randomized trials exist to support these.

20. a) T b) F c) T d) F e) T

The pre-requisites for OVD include fetal head deeply engaged in the pelvis defined as \leq 1/5 palpable abdominally or station at spines or below vaginally. The cervix must be fully dilated (10cm). Knowing the exact fetal head position is a pre-requisite and this can be a malposition therefore. The operator should have the appropriate knowledge, skills and experience required – this is unlikely to be the case for a doctor with one year experience in obstetrics. Trainees should be adequately supervised by more senior obstetricians, especially in cases of mid-cavity or rotational deliveries. The indication, benefits, risks and alternatives of OVD should be discussed with the woman and her partner in order to obtain

informed consent – verbal consent is adequate for OVD performed in the labour room. Written consent is required if a woman is being transferred to theatre for a trial of OVD.

21. a) T b) T c) T d) F e) F

The likelihood of failed OVD increases with failure to identify fetal head malpositions. Another risk factor for failed OVD is misjudging the fetal size (especially neonatal head circumference >37cm) or ignoring signs of cephalo-pelvic disproportion. Maternal obesity may also contribute to failed OVD. There is no evidence suggesting a link between failed OVD and previous caesarean section or a pathological CTG.

22. a) T b) F c) F d) T e) F

A large randomised controlled trial has shown that ultrasound assessment in addition to clinical assessment enhances the diagnosis of the fetal head position without delaying the decision to delivery interval. In this study, improved diagnosis of the fetal head position had no impact on the mode of delivery. Ultrasound assessment in labour has been shown to be well tolerated and welcomed by mothers in labour. The learning curve for ultrasound in labour has been shown to be easier than for vaginal examination.

23. a) T b) F c) F d) F e) F

Osteogenesis imperfecta is an absolute contraindication. b is an indication in the hands of an experienced operator. A pathological CTG is a fetal indication for forceps-assisted delivery where there is a time pressure. Forceps is preferable to ventouse at preterm gestational ages especially below 32 weeks gestation. Severe hypertension is a maternal obstetric/medical indication and forceps may be preferable to ventouse in order to minimize the need for maternal pushing.

24. a) F b) T c) F d) T e) T

The incidence of OASI with forceps is approximately twice that of ventouse. Although the prevalence of urinary incontinence following forceps attenuates over time it is still increased at 1 and 3 years. The opposite is true with approximately 80% or more of women having a vaginal birth following forceps compared to 30–35% following second stage CS. This is an important complication of forceps that may lead to women preferring CS. Women can experience adverse psychological sequelae after all types of births but a “traumatic” birth experience is reported to be more common following forceps.

25. a) F b) T c) F d) T e) T

Fetal head impaction can occur without forceps for example, in the first stage of labour with a brow presentation. Reverse breech extraction at Caesarean section is a useful manoeuvre with some reported advantages over other manoeuvres. Traumatic injuries may be multi-factorial and include trauma from the manoeuvres used to relieve especially where an inexperienced operator panics. A clinical incident form should be filled in as this is a serious complication with the potential for significant morbidity/mortality. The risk is much higher for intra or extra-cranial haemorrhage or skull fracture that may not be immediately apparent. The neonatologist may be called to an operating theatre after a failed attempt at forceps in the delivery room and not realise what has occurred.

26. a) F b) F c) T d) F e) T

Most medical negligence cases are tried in civil courts before a judge but without a jury. There may be justification for deviating from clinical practice guidelines, for example a prolonged bradycardia in a second twin with a high head where the obstetrician attempts vacuum delivery in the interest of speed. In general terms, a robust defence is more likely to succeed where guidelines have been adhered to. A criminal conviction for manslaughter is very uncommon and only likely if there has been gross negligence. The Montgomery ruling established a duty of care to warn of material risks. Doctors have a duty of candour and must advise patients if there have been short-comings in their care, however, they should not jump to conclusions on causation until all of the necessary information has been gathered. The consent process should reflect shared decision-making where the patient has received the necessary information and sufficient time to make informed decisions.

27. a) T b) F c) F d) T e) T

Second stage CTGs are particularly challenging to interpret leading to inter- and intra-observer variation on decision-making, such as when to intervene. There is a well-recognized tendency to interpret CTGs less favourably in retrospect when an adverse outcome is known. Clinical practice guidelines are designed to limit unnecessary variation in practice but should support not limit good decision-making for the given circumstances. Errors of judgement will occur even in the hands of the most skilled and experienced operators – for example, the term “trial of forceps” reflects the inherent uncertainty with any attempt at OVD. A child that is diagnosed with cerebral palsy will have complex care needs and lost earnings which will typically be estimated at millions of pounds over their lifetime.

28. a) T b) F c) T d) F e) F

In English law causation proves a direct link between the defendant's negligence (breach of duty) and the claimant's loss and damage. In England an individual must start their legal claim within 3 years from when the incident happened or when they first realised they'd suffered an injury. In the case of OASI or pelvic floor trauma it may be some time before the patient appreciates that there is a persistent injury as there will be an expectation of recovery taking weeks to months. In the case of cerebral palsy or brachial plexus injury most claims will be brought by a parent or guardian on behalf of the child. No-fault compensation refers to a compensation scheme based on the principle that injured persons are entitled to receive compensation for their injuries, without proving fault against the opposite party. There may or may not be any sub-standard element of care. ‘Witnesses to fact’ refers to the staff involved in the care of the patient who attend court to provide factual evidence. Independent experts are instructed to provide the court with specialist expertise.

29. a) T b) T c) F d) T e) T

Situational awareness is the assessment of the environment and the detection of any changes within it. It forms three parts: perception, comprehension and projection. Perception involves assessment of the clinical situation when asked to review a mother with view to performing an OVD. The next step is comprehension, where the obstetrician uses the information gathered to analyse if an OVD can be avoided and if not, assess the safest method. Projection involves thinking ahead to the variables that could occur in the situation. This is important for overall labour ward management, and within an OVD setting may include anticipating potential complications. When performing an OVD, situational awareness involves evaluating the clinical situation continuously and adjusting the actions accordingly.

30. a) T b) T c) T d) T e) T

Situational awareness can be easily lost, through cognitive overload and distractions. The Each Baby Counts report from 2015 found situational awareness to have been a contributory factor in 44% of babies with poor outcomes and recommended that all clinical staff need to understand the key principles of maintaining situational awareness to ensure the safe management of complex situations.