



C-Obs 16

Instrumental Vaginal Delivery

Instrumental Vaginal Delivery remains an important facet of modern obstetric practice, accounting for approximately 7.4-16.4% of all deliveries in 1999-2000 across a spectrum of Australian and New Zealand Hospitals¹. Even wider variation in the incidence of instrumental delivery has been reported from a group of European hospitals². A number of reviews and guidelines have been published^{3,4,5}.

Indications for Instrumental Delivery

There are few absolute indications or contraindications to instrumental delivery. Each case should be judged on its merits taking into account the relative benefits and adverse effects of the possible courses of action. Instrumental delivery is employed to accelerate delivery in the presence of:

- ***Fetal compromise suspected or anticipated***

The few hours immediately prior to birth is the time of greatest risk to the well-being of most people in their entire life. The risk is even greater in the second stage of labour where fetal descent may precipitate cord compression or a combination of intense uterine activity and expulsive efforts by the mother may reduce placental blood flow to the extent that the fetus is seriously compromised. It is fortuitous that, at the time of greatest fetal risk, instrumental delivery can often be rapidly and safely accomplished.
- ***Delay in the second stage of labour***

There is no clear demarcation as to an appropriate length of time to wait before embarking on instrumental delivery for failure to progress. It is a matter for the clinician and patient given the particular circumstance. The following should be noted in making the decision.

 - i. Increased fetal compromise occurs with prolonged pushing in second stage or when the presenting part is low on the perineum for an extended length of time. These concerns arise largely from publications prior to the widespread use of electronic fetal monitoring. Where electronic fetal monitoring is being utilised and shows no abnormality, the fetal risks of a prolonged second stage are likely to be low.
 - ii. Pelvic floor injury including anal sphincter dysfunction is more common both with prolonged second stages and with instrumental delivery⁶.
- ***Maternal effort contraindicated***

Maternal bearing-down effort may sometimes be contraindicated with maternal conditions such as cerebral aneurysm, risk of aortic dissection, proliferative retinopathy, severe hypertension or cardiac failure. Such women may benefit from

epidural analgesia and elective instrumental delivery.

Complications of instrumental delivery

The adverse effects of instrumental delivery must be weighed against the consequences of awaiting vaginal delivery or alternatively 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 consequences**
The need to perform an instrumental delivery for lack of progress in the presence of anticipated macrosomia should alert the clinician to the increased likelihood of shoulder dystocia⁷.
- b. **Subaponeurotic/subgaleal haemorrhage**
A potentially life threatening complication, occurring in approximately 1 in 300 cases of vacuum delivery^{8,9}.
- c. **Facial nerve palsy, corneal abrasion, retinal haemorrhage**
Facial nerve palsy and corneal abrasion are more common with forceps and retinal haemorrhage with vacuum delivery⁵.
- d. **Skull fracture and/or intracranial haemorrhage**
- e. **Cervical spine injury**
A consequence of rotational forceps delivery may be minimised by ensuring uterine relaxation prior to performing the rotation.

- ***Maternal complications***

The Cochrane review indicates more maternal pain at 24 hours and serious maternal injury with forceps than with vacuum delivery⁵.

- a. **Pain at delivery and postpartum**
- b. **Traumatic injury including anal sphincter damage**
- c. **Postpartum haemorrhage**

Choosing between Vacuum and Forceps delivery

Each instrument has a different profile of complications⁵. Delivery is more likely to be achieved with forceps than vacuum and will occur over a shorter time interval¹⁰. The clinician should select the instrument based on his or her clinical experience and the clinical circumstances.

Failed Instrumental Delivery

Failed instrumental delivery may be associated with adverse outcome¹¹. The following comments are pertinent to this situation.

- a. Each case should be assessed as to whether alternate instrumental delivery (e.g. forceps after failed vacuum) should be attempted or a Caesarean section performed without further attempt at instrumental delivery.
- b. On occasions, reports of poor outcome may reflect the indication for which instrumental delivery was being attempted (e.g. extremely severe fetal compromise) rather than an effect of attempts at instrumental delivery.
- c. The threshold for abandoning an instrumental delivery and resorting to an alternate mode of delivery is likely to differ between clinicians and the clinical circumstances.

Guidelines for Instrumental Delivery

The accoucheur (or supervisor) must be suitably trained in the technique employed and appropriate analgesia should be used.

Obstetric pre-requisites for Instrumental Vaginal Delivery

- i. Full dilatation of the Cervix.
- ii. Engagement of the Fetal Head. The presenting part must be engaged before beginning an instrumental vaginal delivery. Engagement is defined as the maximum diameter of the presenting part having entered the pelvic inlet. This is determined clinically by both abdominal palpation and vaginal examination.
- iii. Favourable presentation. Instrumental delivery may occur with a vertex, deflexed vertex or face presentation. The latter is a contraindication to vacuum delivery.

Fetal contraindications to Instrumental Delivery

A fetal bleeding disorder (e.g. alloimmune thrombocytopenia) or predisposition to fracture (e.g. osteogenesis imperfecta) are relative contraindications to instrumental delivery but will also be associated with considerable fetal risk if the baby is to be delivered abdominally with the head deep in the pelvis.

Citations

1. Women's Hospitals Australasia. Clinical Forum on Caesarean Sections Briefing Kit 2001, pp 4-5, 47.
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3. ACOG Committee on Practice Bulletins – Obstetrics. ACOG Practice Bulletin, 2000: 17.
4. Royal College of Obstetricians and Gynaecologists Guidelines and Audit Committee. RCOG Clinical Green Top Guidelines. Instrumental Vaginal Delivery No.26.
5. Johanson RB, Menon BKV. Vacuum extraction versus forceps delivery for assisted vaginal delivery (Cochrane Review). In: The Cochrane Library - Issue 1, 2001. Oxford: Update Software.
6. Zetterstrom JP, Lopez A, Anzen B, Dolk A, Norman M, Mellgren A. Anal incontinence after vaginal delivery: a prospective study in primiparous women. Br J Obstet Gynaecol 1999; 106: 324-330.
7. Kolderup LB, Laros LK, Musci TJ. Incidence of persistent birth injury in macrosomic infants: association with mode of delivery. Am J Obstet Gynaecol 1997; 177: 37-41.
8. Fortune PM, Thomas RM. Sub-aponeurotic haemorrhage: a rare but life-threatening neonatal complication associated with ventouse delivery. Br J Obstet Gynaecol 1999; 106: 868-870.
9. Ng PC, Siu YK, Lewindon PJ. Subaponeurotic haemorrhage in the 1990s: a 3 year surveillance. Acta Paediatr 1995; 84: 1065-1069.
10. Okunwobi-Smith Y, Cooke I, MacKenzie IZ. Decision to delivery intervals for assisted vaginal vertex delivery. Br J Obstet Gynaecol 2000; 107: 467-471.
11. Edozien LC. Failed instrumental delivery: How safe is the use of a second instrument? J Obstet Gynaecol 1999; 19: 460-2.

Links to other related College Statements

[C-Obs 11 Breech deliveries at term](#)

[C-Obs 13 Guidelines for the use of rotational forceps](#)

[C-Obs 28 Prevention detection and management of Subgaleal Haemorrhage in the newborn](#)

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