

# **2008 French National Guidelines on Instrumental Delivery**

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## **MEASURES DURING LABOR TO REDUCE THE NUMBER OF OPERATIVE VAGINAL DELIVERIES**

### *During the first phase of labor*

Routine use of a partograph is associated with a reduction in the use of forceps, but not of vacuum extraction (grade A). The improvement occurs because interventions are more relevant for correcting anomalies.

Early artificial rupture of the membranes, associated with oxytocin perfusion, does not reduce the number of operative vaginal deliveries (Grade A), but does increase the rate of fetal heart rate (FHR) abnormalities (grade B). Early correction of lack of progress in dilatation by oxytocin perfusion can reduce the number of operative vaginal deliveries (grade B).

Regional analgesia with local anesthesia concentrations greater than 0.125 increases the rate of operative vaginal deliveries (grade A). The use of very low doses potentiated by morphinomimetics reduces the number of operative interventions, compared with larger doses (grade A). Placement of an epidural before dilatation of 3 cm does not increase the rate of operative vaginal delivery (grade A).

Posterior positions result in more operative vaginal deliveries (grade B). Manual rotation of posterior to anterior positions may reduce the number of operative deliveries (grade C).

Walking during labor is not associated with a reduction in operative vaginal deliveries (grade A).

Continuous support of the parturient by a midwife or partner or family member during labor reduces the number of operative vaginal deliveries (grade A).

### *During the second phase of labor*

Partograph use promotes an objective interpretation of the situation and an assessment of the risk of instrument use (grade B).

A standing, squatting or lateral position during the second phase of labor is not associated with a significant reduction in the number of operative vaginal deliveries compared with the dorsal decubitus or supine position (grade B).

Under epidural analgesia, delayed pushing (2 hours after full dilatation) diminishes the number of difficult operative vaginal deliveries (grade A).

Fundal pressure maneuvers do not reduce the number of operative vaginal deliveries (grade B).

## **INDICATIONS AND PREREQUISITES FOR OPERATIVE VAGINAL DELIVERY: WHEN? WHO? HOW? WHERE?**

### *Necessary preconditions for instrument use*

Thorough knowledge of the medical and obstetrical file (professional consensus), ruptured membranes, cephalic presentation, full dilatation (grade C), engagement of head (professional consensus). If there is any clinical doubt about the presentation, ultrasound is recommended (grade B).

Also necessary are appropriate maternal analgesia, rigorous asepsis (professional consensus) and an empty bladder (professional consensus). The intervention must be explained to the patient (professional consensus).

The choice of instrument depends on the obstetrical situation and the obstetrician's preference (professional consensus). An episiotomy depends on the judgment of the operator (professional consensus).

An operative vaginal delivery must be performed in conditions such that, if it fails, a rapid cesarean is possible.

The obstetrician should perform the operative delivery with a midwife and, if possible, a third person present (professional consensus). The presence of an anesthetist is not mandatory, but is desirable should the obstetrician so request, in case of insufficient maternal analgesia. It is recommended in at-risk situations (professional consensus). Similarly, although the presence of a pediatrician is not essential, the obstetrician may request that the pediatrician be called or be informed that his/her presence may be imminently necessary (professional consensus).

### *Indications*

The principal indications are FHR abnormalities that suggest that fetal acidosis is occurring or impending (grade C).

Instrumental delivery should be envisioned after 30 minutes of pushing with normal FHR, when the intensity of contractions is judged sufficient but the fetus fails to descend (professional consensus).

Operative delivery is also recommended if the patient has any contraindication to Valsalva maneuvers (professional consensus).

#### *Relative contraindications*

The available scientific data are insufficient to contraindicate attempted mid-operative delivery (professional consensus).

## **FORCEPS**

Forceps are an instrument for operative delivery, to guide the descending fetus. The placement and traction differ according to the type of forceps.

Use of crossed-blade forceps with transverse positions is contraindicated (professional consensus). Convergent-blade forceps should then be used or, better, another instrument (spatula or vacuum extraction) (professional consensus).

Operative vaginal delivery with forceps should be abandoned when fetal descent fails to progress after a trial lasting for 3 contractions (grade C).

## **VACUUM EXTRACTION**

This type of instrument allows cephalic flexion, traction and induction of rotation.

The effectiveness of operative delivery by vacuum extraction is highly dependent on the equipment used and compliance with the manufacturer's instructions.

In transverse, posterior, and sacro-occipital positions, intrapelvic rotation generally induces the occiput forward with vacuum extraction as long as the cup is correctly placed (grade C).

The vacuum extractor should not be used for more than 20 minutes (professional consensus). After 3 pulls, the extraction must be deemed to have failed and must be abandoned (professional consensus).

## **SPATULAS**

Spatulas are instruments of propulsion and direction; their mechanism of action and handling are fundamentally different than those of forceps.

They are difficult to handle for posterior positions and mid-station and require specific training. There is no evidence for or against rotational maneuvers by spatulas. A preliminary attempt at manual rotation may be advised.

This instrument appears atraumatic for the fetus (professional consensus).

Episiotomy is more frequent with spatulas. This observation is however often based on routine practice, which may be debated (professional consensus).

## **COMPARISON BETWEEN VACUUM EXTRACTION AND FORCEPS**

The duration of the operative intervention is slightly faster with forceps than with vacuum extraction (grade C). Nonetheless, the urgency of operative delivery is not a reason to choose one instrument rather than another (professional consensus)

The vacuum extractor (in the shape of a cup) seems to be the instrument of choice for operative deliveries of infants in cephalic transverse positions and may also be preferred for posterior positions (professional consensus).

Failure occurs more often with vacuum extraction than with forceps (grade B). Sequential application of these interventions is highly controversial. Forceps failure should lead to cesarean delivery (professional consensus). No evidence justifies a preference for forceps or cesarean after vacuum extraction has failed. The decision must be made on a case-by-case basis based on the operator's experience (professional consensus).

### *Maternal complications*

Overall, immediate maternal complications are more frequent with forceps than with vacuum extraction (grade B). Relative to forceps, operative vaginal delivery by vacuum extraction appears to diminish the number of episiotomies (grade B), first- and second-degree perineal lesions, and damage to the anal sphincter (grade B).

Among the long-term complications, urinary incontinence appears at similar rates after forceps, vacuum extraction, and spontaneous vaginal delivery (grade B). Anal incontinence is more frequent after forceps delivery (grade B).

### *Neonatal complications*

The instruments have similar rates of immediate neonatal mortality and morbidity (grade B). The rates of neonatal convulsions, intracranial hemorrhage, and jaundice do not differ for the two instruments (grade B and C).

## **OBSTETRICAL ANESTHESIA FOR OPERATIVE VAGINAL DELIVERY**

The anesthesia options (site and technique) must be chosen while taking into account the potential risk of cesarean, estimated for each case, and local organizational constraints (professional consensus). Regardless of the technique chosen, the standard safety rules set forth by the French Society of Anesthesiologists must be followed.

When effective epidural analgesia is in place, it may be insufficient at the concentrations currently recommended for labor, especially for forceps use. It is therefore necessary to notify the anesthesia team so that they can decide if it should be reinforced.

For any general anesthesia, rapid sequence induction with a Sellick maneuver (pressure to the cricoid cartilage) and tracheal intubation with a balloon catheter is recommended (grade B)

Post-intervention and post-anesthesia surveillance must be stronger than that for spontaneous delivery and last at least 2 hours, as for any delivery.

## **MATERNAL COMPLICATIONS OF OPERATIVE VAGINAL DELIVERY**

### **Immediate and short-term complications**

Operative vaginal delivery significantly increases the risk of severe perineal lacerations (third and fourth-degree) compared with spontaneous vaginal delivery (grade B). Numerous factors are involved in the risk of severe perineal lesions: application to a higher station, especially if associated with a rotation of more than 45° (grade B), posterior positions (grade B), and fetal macrosomia.

The 2006 French clinical guidelines on episiotomy did not conclude that routine episiotomy had any advantages. Nonetheless, a mediolateral episiotomy may reduce the risk of sphincter lacerations with both vacuum extraction and forceps (grade C). It must be determined on a case-by-case basis.

Sequential use of two instruments indicates a difficult delivery and multiplies the risks compared with spontaneous vaginal delivery or operative vaginal delivery with a single instrument (grade C).

### **Late and long-term complications**

Instrumental delivery, especially by forceps, appears to be associated with the risk of anal incontinence during the year following vaginal delivery (grade B). The risk of occult anal sphincter lesions does not appear to differ between forceps and vacuum extraction

(grade B). Persistent anal incontinence has a similar prevalence regardless of mode of delivery, cesarean or not, instrumental or not, thus suggesting the involvement of other factors (grade B).

Instrumental interventions do not seem to be associated with an increased risk of persistent postpartum urinary incontinence compared with spontaneous vaginal delivery (grade B).

Instrumental delivery does not appear to promote pelvic organ prolapse (grade C).

Instrumental delivery and the presence of severe perineal lacerations increase the risks of perineal pain, dyspareunia, and postpartum sexual disorders compared with spontaneous vaginal delivery (grade C).

It appears that difficult instrumental delivery may cause psychological sequelae that may result in a decision to not have more children (grade C).

## **NEONATAL COMPLICATIONS OF OPERATIVE VAGINAL DELIVERY**

- Besides the complications associated with instrumental delivery in the strict sense of the term, most often benign, more severe complications occur that may involve the technique, but may be due instead or in addition to the events that led to operative intervention, such as dystocia or fetal anoxia. These complications are also observed in normal deliveries.

### *Complications associated with vacuum extraction*

Cephalhematomas, diffuse subcutaneous hematomas of the scalp (subgaleal hematoma) and retinal hemorrhages are more frequent with vacuum extraction (grade B).

The risk of the much rarer intracranial hemorrhages is increased by vacuum extraction (grade C).

All these hemorrhages have good short-term prognosis (except for the diffuse subcutaneous hematoma, which is nonetheless very rare). Their frequency may be underestimated.

### *Complications of operative vaginal delivery with forceps*

The rare risk of a depressed skull fracture is fairly specific to forceps use (grade B). It is generally asymptomatic.

### *Long-term complications*

Instrument use does not seem to induce neurocognitive sequelae (grade B).

## **TRAINING FOR OPERATIVE VAGINAL DELIVERIES**

Training must ensure that obstetricians can identify indication and contraindications, choose the appropriate instrument, use it correctly and know the principles of Quality Control applied to operative vaginal delivery.

The program must including simultaneous training in forceps use, vacuum extraction, and if possible spatulas (complementarity of instruments). It requires excellent knowledge of obstetric mechanics.

Today, the traditional training may be completed with simulations. This simulation training method also helps to resolve the problem that extensive experience in a large number of procedures is desirable but difficult to attain in real life. Training should be individualized and prolonged for some students.

The danger of instrumental deliveries depends more on the operator's skills than on the instrument itself.

Assessment of training involves both teachers and trainees.

Sessions to evaluate department-wide professional practices should be performed and cover quality criteria associated with operative vaginal deliveries. Such a procedure, simply by involving obstetricians, may improve practices (Hawthorne effect).