Augmentation of labour

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Recommendations

Definition of start of labour (strong recommendation)
Definition of start of active labour, WHO definition (4 cm cervical dilation and regular contractions (recommendation)
Use of a partogram (strong recommendation)
Definition of slow progress (strong recommendation)
Use of alert line and action line (recommendation)
Use of WHO's definition with action line delayed by 4 hours (suggestion)

Other measures to stimulate contractions such as encouraging the adoption of mobility and upright position, empty the urine bladder and offer oral fluid and food intake before the action line is crossed (proposal)
One to one support (strong recommendation)
Amniotomy before oxytocin augmentation (strong recommendation)
Augmentation with oxytocin is recommended in women with slow progress due to insufficient contractions (strong recommendation)
Oxytocin augmentation may be relevant in nulliparous women with ineffective contractions in latency phase and effaced cervix dilated <3-4 cm (proposal)
Fetal surveillance with CTG should be used in all women accelerated with oxytocin. (strong recommendation)
Consider operative delivery after one hour with active pushing (recommendation)

Litterateur search

Up to date, pub-med, National Institute for Health and Clinical Excellence guidelines, Cochrane Database, guidelines from the Royal College of Obstetricians & Gynaecologists, Danish and Swedish guidelines.

Definition

The process of stimulating the uterus to increase the frequency, duration and intensity of contractions after onset of the active phase of labour
Hyperstimulation is defined as > 5 contractions / 10 min or duration of the contraction > 2 minutes[1]. Stimulation of contractions should be regarded as the continuation of a physiological process the body itself has already started (as opposed to induction of labor)[2].

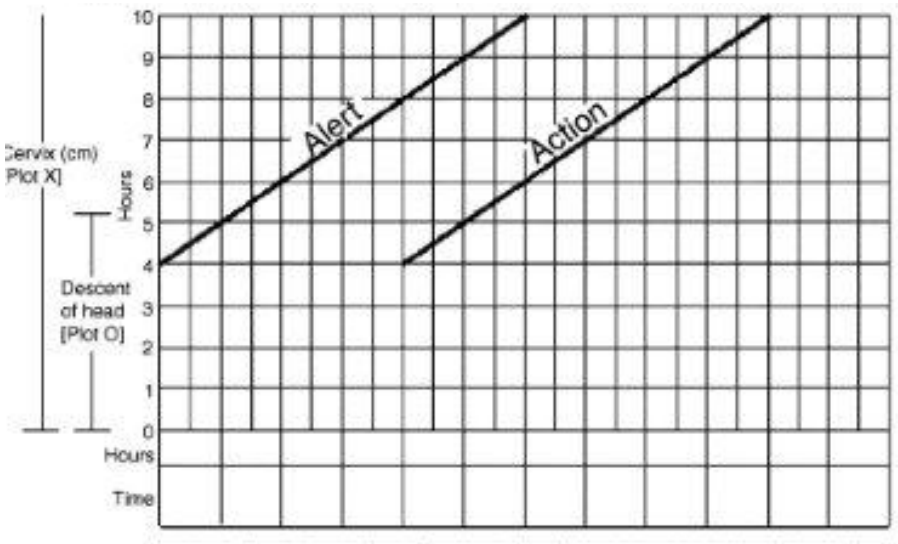
Stages of labour

The birth contains three stages. First stage lasts from the start of contractions until the cervix is completely dilated. This stage is divided into a latency phase and an active phase. The active phase starts, in accordance to the WHO's definition, when cervix is dilated to 4 cm in a woman with regular contractions[3-6]. Some will define the start of active phase earlier if cervix

is effaced. The second stage lasts from cervix is fully dilated until the child is delivered and this stage is also divided into a latency phase (until leading part has reached the pelvic floor) and an active phase (time of bearing down)[5] .The third stage is the time from the child is born until the placenta is expelled.

The partograph

Partographs have not documented differences in perinatal or maternal morbidity or mortality[7] and a Cochrane review concludes that the benefits of using a partograph are not documented[8]. Nevertheless, the partograph is the most important tool in surveillance of labour progress, and use of a partograph is strongly recommended[9] [IV]. Cervical dilation and station is recorded graphically in the partograph. WHO recommends a partograph with an alert line and an action line delayed 4 hours. The alert line follows 1cm dilatation / hour.



WHO partograph with alert line and action line

Slow progress

No evidence for an upper limit of normal duration exists[10] or the definition of how slow progress should be defined[11]. However, all labour wards should have their own guideline defining slow progress to avoid incautious use of oxytocin augmentation[12]. Structured care during birth improves outcomes[13] [Ib].

First stage

The latency phase can last up to 20 hours in nulliparous and 14 hours in multiparous women[3, 14]. Generally it is recommended that women stay at home in the latency phase, because hospitalisation is associated with increased use of obstetrical interventions[15] [Ib]. However, some women need hospitalization and analgesia. The follow-up should be individualised[5]. Epidural analgesia can be started in the latency phase without prolonging the labour[16].

Several definitions of slow progress in the active phase of labor exist.

- When cervical dilatation crosses the alert line
- WHO partograph with four hours delay between alert line and action line[6, 17]
- 3 hours between the lines[18]
- 2 hours between the lines[7]

- No change in dilatation or station within two hours[3]
- <2cm change in dilatation during four hours[5]
- Slow progress in the first stage active phase[3]
- <1.2 cm / hour in nulliparous women
- <1.5cm / hour in multiparous women

In a prospective study women using action line two hours delayed were most satisfied[19], but the use of action line earlier than four hours increases the need of augmentation without better birth outcomes[5, 8] [Ib]. NICE guidelines suggest using the WHO recommendations[5], and we agree.

Second stage

Active pushing should not start until the fetal head has reached the pelvic floor unless an immediate birth is needed due to fetal distress or suspected infection. Several labour wards practice one hour as limit for the duration of the latency phase, but other wards accept two hours. Evidence of best practice is limited.

Some countries allow two hours of bearing down in nulliparous women[5], but it is shown that active pushing exceeding 30 minutes is associated with increased risk of asphyxia. The probability of spontaneous delivery decreases with duration of bearing down[20] [Ib]. We suggest considering an operative delivery after 60 minutes of active pushing both in nulliparous and multiparous women. This recommendation should also be applied in women with epidural analgesia.

Causes of slow progress

Slow progress in labour may be due to ineffective contractions, malpresentations, fetal-maternal disproportions (pelvis and passenger) or a combination of these factors. Problems are more common in nulliparous women. Oxytocin augmentation is only indicated in cases with insufficient contractions.

A clinical examination is indicated when slow progress is diagnosed. Recent studies have shown that fetal position and level can be assessed by ultrasound[21] , but routinely use cannot be recommended due to limited evidence[22].

Malpresentations as brow, mento posterior or transverse face presentations or posterior asynclitism are incompatible with vaginal birth, but the malpresenataions often change spontaneously. Most fetuses in occiput posterior position will rotate spontaneously (also in the second stage)[22] [IIb].

Actions when slow progress is suspected

All women in the latent phase should be offered a meal. Eating and drinking is also important in the active phase and might effect the duration of labour[23, 24] [III].

Empty the urinary bladder

Change maternal position and recommend activity

One to one supervision increases the likelihood of an uncomplicated vaginal delivery[25] [Ia].

Some studies have shown that acupuncture can shorten duration of labour[26, 27] [Ib].

Amniotomy shortens duration of labour, but routinely amniotomy is not recommended[11, 28].

The combination of amniotomy and augmentation with oxytocin is more effective than the use of the factors alone[29] [Ib].

Amniotomy should be performed before oxytocin augmentation is started

Oxytocin augmentation

Oxytocin augmentation is recommended in women with ineffective contractions. Oxytocin augmentation shortens birth outcomes [Ia], but an eventual reduction in instrumental delivery is not documented, although the drug has been used for this indication in over 40 years[1, 30, 31].
Clinical assessment of the strength of contractions is subjective. A huge variation in the use of oxytocin augmentation is published, 32-60% among nulliparous women and 14-27% in parous women[32, 33].
One Swedish study has documented that the use of oxytocin is unstructured[12].
Oxytocin augmentation does not affect the frequency of instrumental vaginal deliveries in women with epidural analgesia[34].
In a randomised controlled trial early augmentation with oxytocin was not associated with better birth experience[35].

Risks associated to prolonged labour

Prolonged latency phase and prolonged active birth has been associated with operative vaginal birth, cesarean sections, chorioamnionitt, postpartum haemorrhage, low Apgar scores, and poor birth experience causing request for cesarean section in the next birth[19, 36-42]. The partograph is an important tool in recording labour progress, indications of oxytocin augmentation and indications for operative interventions[9]. One to one supervision is important when the progress in slow[25].

Risks associated to oxytocin augmentation

Oxytocin is a drug with side effects and misuse may cause serious damage to the mother and fetus[43]. The sensitivity of the drug is individual, and the augmentation should be individualised[1]. Hyperstimulation might affect the placental circulation causing fetal distress[1, 44, 45]. Hyperstimulation is one of the main causes of birth asphyxia[43, 46, 47]. Oxytocin augmentation is also associated with uterine rupture, especially in women with a previous scar in uterus[48, 49].

Two special managements

Active management of labour[2]

This concept from the National Maternity Hospital in Dublin includes:

- One to one follow-up
- Duration of the active stage <12 hours
- Definition of active phase
- Routinely amniotomy
- Vaginal examination every second hour
- Oxytocin acceleration in women with cervical dilatation <1cm/hour after two hours in active phase in nulliparous women and after four hours in multiparous women.

Active management of labour might reduce the need of cesarean sections[11], but intensive surveillance is required[50, 51]. New evaluations of the concept are recommended[4, 51, 52].

Proactive labour

Prolonged latency phase is associated with complications for both mother and child[53, 54].
Some women (<10%) have dysfunctional contractions during the latency phase and early amniotomy and oxytocin augmentation can bring them into the active phase[55]. Short and careful use of oxytocin in this phase is probably associated with less risk compared to augmentation later in labour. One-to one support is important throughout the birth in these women.

Administration of oxytocin

Intravenous infusion of five international units (0.01mg) oxytocin in 500 ml saline should be administered. The infusion rate starts at 6 milliunits/minute (30 milliliter per hour), and a dose increment by 3 milliunits/minute (15ml/h) every 15 minutes to a maximum of 40 milliunits/minute (180 ml/h) is recommended until progress in labor or regular contractions at a rate of 3-5/10 min are achieved.

The use of 0.1ml (1IE) oxytocin im (or iv) during the final stage of labour should be avoided because of increased risk of hyperstimulation and subsequent fetal distress. In exceptional cases it might be indicated when the fetal head is supposed to be delivered during the next contraction. Oxytocin augmentation should not be used in situations with shoulder dystocia.

Monitoring

The fetus should be monitored continuously with CTG (or STAN) when the labours are accelerated with oxytocin[5] [IV]. Duration, strengths and frequency of contractions should be continuously recorded[56]. Continuous surveillance is mandatory and eventual hyperstimulation should be observed. Whenever hyperstimulation is suspected the infusion rate should be reduced or discontinued.

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