

Malpositions and malpresentations of the foetal head

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Abstract

The normal way for a baby to deliver is by the vertex with the occiput lying anteriorly. With a cephalic presentation, if the occiput is not lateral in early labour or anterior in advanced labour then a malposition exists. If the leading pole of the foetus is anything other than the vertex, a malpresentation exists. Malpositions of the vertex and malpresentations of the foetal head usually present in labour and while birth can proceed normally, a more difficult labour is common and operative delivery is more likely, with attendant risks to both the mother and the baby. This article will describe these conditions, the clinical features associated with them and how to recognise and manage them.

Keywords brow presentation; Caesarean section; face presentation; instrumental delivery; occipitoposterior delivery; occipitotransverse position

Definitions

Presentations of the foetal head

The presentation of the foetus refers to the relationship between the leading foetal part and the maternal pelvic inlet. When the foetal head is presenting, the normal leading part of the head is the vertex and the presentation is called 'cephalic'. The vertex describes the upper surface of the foetal head bounded by each parietal eminence and the anterior and posterior fontanelles (Figure 1). It presents the smallest diameters of the foetal head, which fit snugly into the maternal pelvis (Figure 2). If the foetal neck is deflexed, the leading part of the foetal head lies more anteriorly and a malpresentation occurs: either the sinciput (forehead/brow) or in the most extreme cases of deflexion the face then leads, producing brow and face presentations, respectively. The approximate diameters associated with these different presentations are illustrated in Figure 3.

Positions of the foetal head

The position of the foetal head refers to the way the presenting part is facing relative to the mother (anterior, posterior or

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transverse), and each type of presentation uses a particular foetal landmark or *denominator*. For the vertex presentation the occiput is used while the denominator for a face presentation is the foetal chin. For a brow presentation the denominator is not fixed and the sinciput or the occiput can be used.

The foetal head rotates as it descends through the pelvis so its position changes during labour but the normal positions for delivery are occipitoanterior for a vertex presentation although other positions can deliver spontaneously, while the only position possible for vaginal delivery with a face presentation is mentoanterior. There is no 'normal' position for a brow presentation, as other than in exceptional circumstances, these cannot deliver vaginally.

Predisposing factors

Predisposing factors to malpresentation of the foetal head or malpositions of a vertex presentation include anything which causes the foetal neck to extend to produce the deflexed head. Features of the baby that may be responsible include factors that influence its tone or posture, while maternal characteristics tend to be skeletal in origin. Some examples are listed in Table 1.

Normal mechanisms of labour

- In the normal situation, the foetal head descends into the pelvis during the third trimester and engages prior to the onset of labour.
- Normally the vertex leads and lies in the transverse plane most commonly in a left occipito-transverse position.
- With the onset of uterine contractions, the head descends and the first part of the foetal head to reach the 'gutter shaped' muscular pelvic floor rotates to the anterior position. Thus, when the neck is well flexed the occiput reaches the pelvic floor first and rotates to occipitoanterior.
- With further contractions and descent, the head is born by extension of the foetal neck.

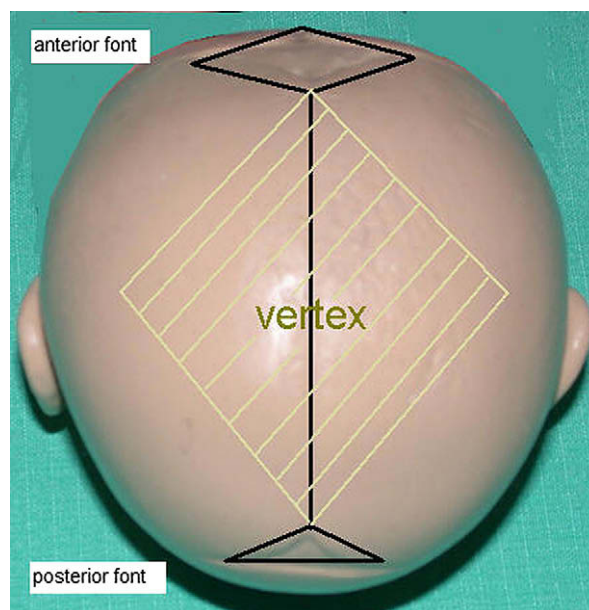


Figure 1 Vertex of the foetal head with the boundaries marked out.

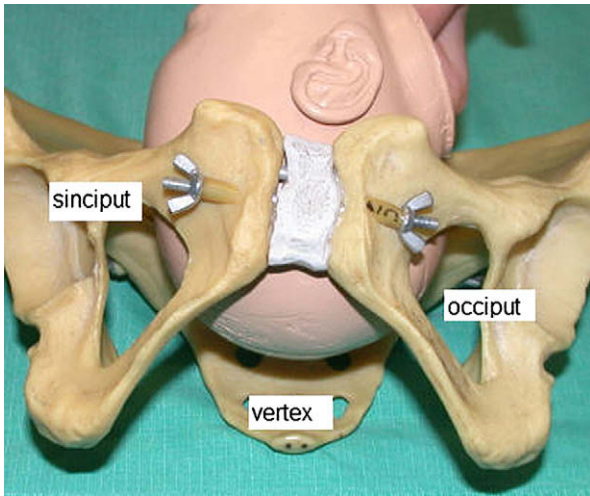


Figure 2 Vertex presentation of foetus presenting with the suboccipito-bregmatic diameter.

- Restitution occurs as the foetal head rotates passively back to the oblique position to come back into line with the shoulders.
- The shoulders continue their internal rotation to come round to the sagittal plane before delivery.
- The baby is then born by lateral flexion.

These mechanisms are dependent on optimum presenting diameters of the baby, good uterine activity and an adequate maternal pelvis. If the foetal neck (and therefore head) are not well flexed, then the presenting diameters are larger and malpositions of the vertex or even malpresentations can ensue.

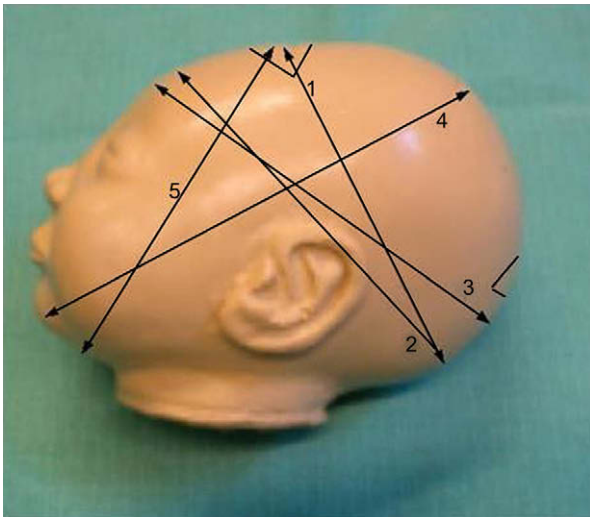


Figure 3 Showing the different diameters associated with each presentation.

Presentation	Diameter	Approximate length (cm)
Flexed vertex	Suboccipito-bregmatic (1)	9.5
Semi-deflexed vertex	Suboccipito-frontal (2)	10.5
Deflexed vertex	Occipito-frontal (3)	11.5
Brow	Mentovertical (4)	13.0
Face	Submentobregmatic (5)	9.5

With larger diameters presenting, the foetal head fits less well into the maternal pelvis and this can cause problems with initiating labour, progress during labour and delivery of the baby.

Cervical ripening – which normally occurs painlessly over the last few weeks before spontaneous labour starts – may fail to occur, resulting in:

- a prolonged latent phase of labour (defined as greater than 8 hours)
- a higher chance of a postdates pregnancy
- less chance of going into spontaneous labour after spontaneous prelabour rupture of the membranes.

The larger diameters can compromise progress in labour (see Figure 4a, b):

- this can be slow from the start (primary dystocia)
- this can stop after previously good progress (secondary arrest).

Many cases of malpositions and malpresentations can self-correct itself as it descends through the pelvis.

However, in some cases, labour becomes obstructed and Caesarean section is needed.

Progress to full dilatation may occur but the mechanics of the situation make spontaneous delivery more difficult for the mother and, therefore, operative delivery is more likely.

Clinical observations in labour

The partogram is a diagrammatic documentation tool for recording observations in labour to highlight the progress of labour and the condition of the mother and baby. The progress of labour describes:

- the descent of the foetal head into the maternal pelvis as palpated per abdomen
- the descent of the presenting part of the foetal head relative to the ischial spines as defined at vaginal examination
- the dilatation of the cervix.

Further information regarding caput and moulding of the foetal head, the thinning and application of the cervix to the presenting part and the strength and duration of the contractions are also all crucial to take into account.

Normal progress lies to the left of the old ‘alert’ line which describes 1 cm/hour cervical dilatation for babies lying in the correct position with a vertex presentation. Slower progress than this is still normal for malpositions and this is probably why the National Institute for Clinical Excellence Intrapartum Guidance on augmenting slow spontaneous labour suggests no action is taken until progress is slower than 0.5 cm per hour.¹ This should not stop clinicians from thinking critically though, and the presentation and position of the foetal head should always be considered with the other factors mentioned above when assessing progress in labour.

If progress arrests in the first stage of labour (e.g. secondary arrest – see Figure 4b), then it is crucial to establish why and to exclude obstructed labour before augmenting contractions.² If assistance is needed to deliver the baby in the second stage of labour, the clinical assessment must be thorough before embarking on instrumentation as described in Table 2.

Malpositions of the foetal vertex

Occipitoposterior position

This occurs in 10–30% of fetuses in the early stages of labour but most rotate spontaneously. Problems arise because

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