

# Malpositions and malpresentations of the fetal head

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## Abstract

Nearly 95% of fetuses at term present with the vertex and with such a presentation, the vast majority of women progress well in labour and have a spontaneous vaginal delivery. Any presentations other than vertex can lead to difficulties in labour and hence are called as malpresentations.

Malpresentations of fetal head occur due to extension of the fetal head causing brow or face to present during labour. Malpositions of fetal head result when the occiput persists in a lateral or posterior position. Malpresentations and malpositions of fetal head are usually diagnosed in labour and are associated with difficult labour and increased risk of operative intervention. Regular systematic clinical examinations to monitor progress of labour and fetal wellbeing are necessary once fetal malpresentations or malpositions are diagnosed. Although vaginal delivery is possible in many cases, caesarean section becomes necessary when the malposition or malpresentation persists and labour fails to progress.

**Keywords** brow; face; malposition; malpresentation; occipitoposterior; occipitotransverse

## Introduction

The normal mechanism of labour involves a well flexed fetal head that engages into maternal pelvis so that the occiput comes to lie near one of the lateral aspects of maternal pelvis at the onset of labour. As labour advances, progressive flexion and descent of fetal head cause the occiput to rotate anteriorly when the head reaches the pelvic floor. When this sequence of changes in the position of fetal head is altered, a malposition or malpresentation occurs.

To complete the process of labour successfully, a fetus has to pass through the maternal bony pelvis. The widest parts of the fetal body are its head (in the anteroposterior plane), and the shoulders (laterally across the shoulder tips). About 95% of fetuses at term, present by the vertex in labour and this is hence

called a normal presentation. The vertex is a diamond-shaped area defined by the two parietal eminences, the anterior fontanelle and the posterior fontanelle (Figure 1). It presents the smallest diameters of the fetal head to the maternal pelvis. The vertex adopts the occipitoanterior (OA – right, left or direct) position in about 90% of the cases in the late first stage of labour at term and this is generally referred to as a normal position.

As women choose to have fewer babies, the incidence of malpresentations has fallen in modern times as many malpresentations are associated with high parity. Most of the malpositions or malpresentations of fetal head are diagnosed in labour. While in many cases, vaginal delivery is possible, they are associated with difficult labour and increased operative interventions, with attendant risks to both the mother and the baby.

## Definitions

**Presentation:** refers to the part of the fetus which is presenting to the pelvic inlet. Presentations other than vertex such as breech, brow, face or shoulder are termed malpresentations.

**Denominator:** is the fetal reference point used in defining position. It is usually a prominent bony landmark at the circumference of the presenting part e.g. occiput for vertex, sacrum for breech, mentum (chin) for face and acromion for shoulder presentation. For a brow presentation, the denominator is not fixed and either the sinciput or occiput can be used.

**Position:** refers to the relationship of the denominator to the fixed points on the maternal pelvis such as pubic symphysis. For vertex presentations, the occiput can occupy the following positions in labour – occipitoanterior (OA), occipitotransverse (OT) or occipitoposterior (OP).

**Attitude:** refers to the degree of flexion or extension of the fetal head with respect to the trunk. A well-flexed fetal head presents the most favourable diameters to the maternal pelvis (Figure 2). If the fetal neck is deflexed, the leading part of the fetal head lies more anteriorly and a brow presentation can occur, while if there is complete extension of the fetal neck, the face becomes the leading part producing face presentation (Figures 3 and 4).

## Mechanism of normal labour

**Descent:** As the fetal head engages and descends, it assumes an OT position; this facilitates the widest pelvic diameter available for the widest part of the fetal head (Figure 5).

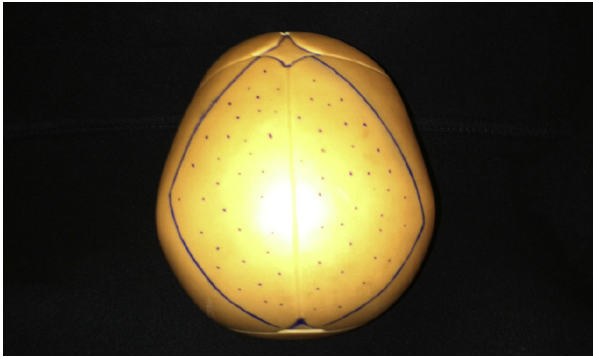
**Flexion:** While descending through the pelvis, the fetal head flexes so that the fetal chin approximates to the fetal chest. This functionally presents smaller diameters to pass through the maternal pelvis. When flexion occurs, the posterior fontanelle slides more into the centre of the birth canal, and the anterior fontanelle becomes more remote and difficult to feel.

**Internal rotation:** With further descent, the occiput rotates anteriorly.

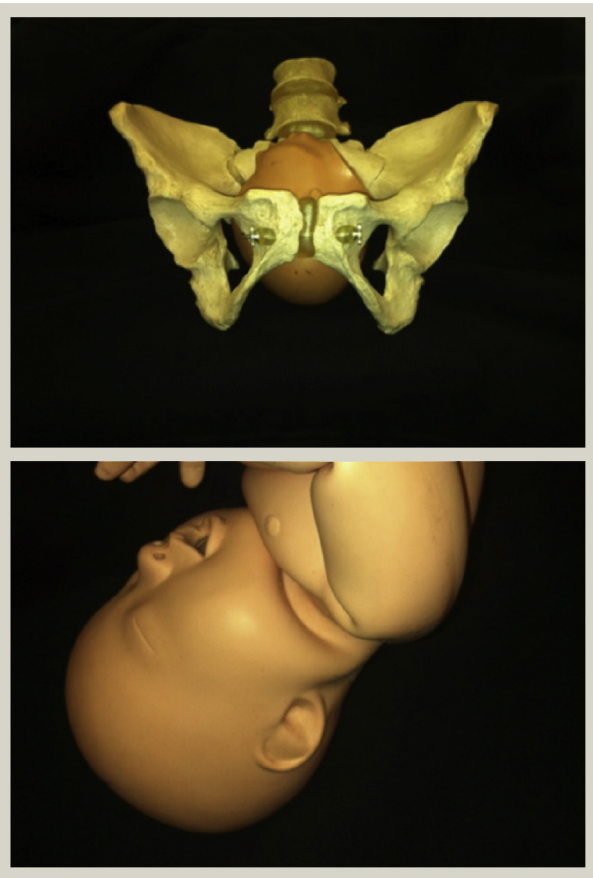
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**Figure 1** Diamond shaped area of the fetal vertex bounded by each parietal eminence and the anterior and posterior fontanelles.



**Figure 2** Vertex presentation with flexed attitude.

**Extension:** The curve of the hollow of the sacrum favours extension of the fetal head as further descent occurs.

**Restitution and external rotation:** With further uterine contractions and descent, the head is born by extension of the fetal neck followed by restitution. The head then undergoes external rotation as the shoulders continue their internal rotation to come to lie in the sagittal plane for delivery. The baby is then born by lateral flexion of the body. If the fetal head is not well flexed, the presenting diameters to the pelvis are larger and this causes malpositions or malpresentations. The larger diameters can lead



**Figure 3** Brow presentation with deflexed head.

to slow progress or arrest of labour. The presenting diameters associated with these different presentations at term are listed in [Table 1](#) and shown in [Figure 6](#).

### Aetiology

The three Ps of normal labour - Power (uterine activity), Passage (maternal pelvis and soft tissues) and Passenger (position and size of fetal head) all play an important role in success of vaginal delivery.

#### Maternal factors (passage and power)

- Contracted pelvis, android pelvis
- Pelvic tumour/fibroid
- Uterine malformation
- Oligohydramnios
- Placenta praevia
- Pendulous abdomen with lax abdominal muscles,
- Weak uterine contractions

#### Fetal factors (passenger)

- Prematurity
- Multiple pregnancy
- Macrosomia

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