

FETAL MONITORING in Practice

FOURTH EDITION



Edited by
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ELSEVIER

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in Practice

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AUSCULTATION OF THE FETAL HEART RATE

Kopalasuntharam Muhunthan, Sabaratnam Arulkumaran

Auscultation of the fetal heart refers to the technique of listening and determining the fetal heart rate (FHR) as beats per minute (bpm). Determination could be either by listening and counting the heartbeats for 1 minute or by listening for a shorter period and then multiplying by a factor to calculate the heart rate. Counting for one full minute provides a more accurate rate compared with a shorter period and multiplying to get the rate for a minute. Though modern and sophisticated systems are available to monitor the FHR and its pattern, auscultation of the FHR is still an integral part of antenatal and intrapartum monitoring of a pregnant woman and is a necessary skill for carers (healthcare providers/healthcare professionals).

HISTORY OF FETAL HEART SOUND AUSCULTATION

Though in the 1600s the sounds of the fetal heartbeat were recognized, the initial interest and use of auscultation was supposedly to determine the viability of the fetus.

This interest gradually grew and resulted in publication of a book on *obstetric auscultation* by Evry Kennedy in 1833 (see Ch. 1).¹

The initial need for an instrument to listen to the fetal heart through the maternal abdomen was to overcome the embarrassment of placing the ear on the abdomen. The rolled sheet used to listen to the adult heart was soon modified into a wooden instrument and used to listen to the fetal heart through the maternal abdomen.

TECHNIQUE OF FETAL HEART AUSCULTATION

Auscultation of the fetal heart either before labour or in labour involves direct contact with the abdominal wall. The examiner explaining the method and its purpose and requesting permission to auscultate will put the woman at ease.

Compared with the adult, the precordium is not so easily accessible on a fetus owing to the attitude it adopts within the uterus, which is folded or bent upon itself. The marker location to hear the heartbeat would be the back of the fetus, between the two scapulae (Fig. 3-1).

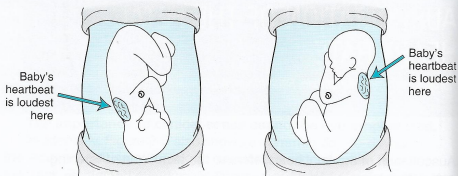


Figure 3-1. Locating the fetal heartbeat.

An abdominal palpation following the modified Leopold's manoeuvre will determine the lie, presentation, position and attitude of the fetus, which will help the examiner to determine the location where the fetal heartbeat is best heard. If the fetal heart cannot be definitely identified, ultrasound could be used to establish the optimal location for auscultation.

The fetal heartbeat produces a distinct sound comparable to a galloping horse, which has to be distinguished from vascular soufflé produced by uterine as well as fetal vessels. The fetal heartbeat is counted for at least 60 seconds to calculate the rate. Evaluation of the maternal pulse simultaneously confirms that the FHR is being monitored.

Placing the hand on the uterine fundus during auscultation provides additional information regarding uterine contractions and fetal movements.

In addition to the heart rate other information, namely FHR characteristics of acceleration and deceleration, could also be obtained, especially if the examiner listens at the time of fetal movements for accelerations and soon after a contraction for decelerations. As with any clinical skill it takes time to develop expertise and there is a slow learning curve for correct identification of accelerations and decelerations.² Its degree of reliability may be unacceptable in modern obstetrics owing to a higher rate of failure to recognize these changes.³

INSTRUMENTS USED FOR FETAL AUSCULTATION

The widely used instruments in current clinical practice are the Pinard stethoscope, the De Lee stethoscope and the hand-held Doppler monitor.

PINARD STETHOSCOPE

This is a modification of the tool used to listen to the adult heartbeat by Laënnec in 1816. In its current form, the Pinard stethoscope was