

ORIGINAL STUDY

**DYSTOCIA THE MOST IMPORTANT CAUSE OF PRIMARY
CESAREAN SECTION**

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ABSTRACT

Labor becomes abnormal when there is poor progress as evidenced by a delay in cervical dilatation or descent of the presenting part and/or the fetus shows signs of compromise. Similarly by definition, if there is a mal presentation, uterine scar or if labor has been induced, labor cannot be considerate normal, one third of primary cesarean section due-to dystocia. This study was designed to assess the early diagnosis of inadequate progress of labor and limited the hours of pain, admission in the delivery room, and un necessary cesarean section. From April 2010 to April 2013, in Malaxa Hospital in Bucharest in obstetrical department, 114 pregnant women with singleton gestation, admitted for labor at > 37 weeks were 68 primiparas and 46 multiparas. Retrospective comparative study done the result were statistically analyses by T student and Pearson tests. In all cases oxytocin infusion were used , analgesic, antispasmodic, were used with no benefited, labor were finished by cesarean section, all pregnant women were monitored by cardiotocography. In the latent phase and acceleration hypertonic uterine contraction mostly appear before 5 cm dilatation, the intensity of uterin contraction >25 mmHg and frequency 5 contraction in 10 min mostly in primiparas. In our study 52% with prolonged latent phase. In active phase there were hypotonic uterine contraction mostly , the percentage of prolong active phase were 40% mostly hypotonic uterine contraction, the intensity <25 mmHg and frequency 2 contraction in 10 min, prolonged second stage of labor 8% of cases. Cervical dystocia is the common cause of a primary cesarean section after those circulars of umbilical cord, diagnosed intraoperative, then disproportion and variation of position in our study. The active management, the main tenet of which is early diagnosis of poor progress in Labor corrected by early ARM and use of oxytocin limiting ours of staying in maternity department and unnecessary cesarean section.

KEYWORDS: *hypotonic contraction, hypertonic contraction, abnormal labor.*

1. Introduction

Dystocia is defined as difficult labor associated with abnormalities of the uterine contractions; these abnormalities are due to certain factors which involve the passenger, the passage or the uterine contractions.

The progress of the labor is evaluated primarily through cervical dilatation and the descent

of the fetal presenting part. Dystocia is the most common indication in primary cesarean section in Malaxa Hospital 33% of cesarean section in primiparas.

Fetus evaluation in relation to dystocia consists of: estimation of fetal size, presentation, attitude, reported to mother's pelvis. The evaluation of pelvis size and shap is made by clinical pelvimetry,

ultrasound measurement (US), magnetic resonance imaging (MRI), and pelvic XRay [1].

The quantification of uterine activity during labor is made by external tocodynamometry on the surface of the abdomen and intrauterine pressure catheter in Malaxa Hospital.

In the United States, the sharp increase in the national cesarean section rate between 1980 and 1985 resulted from substantial increases in the contributions of previous cesarean section, abnormal labor and fetal distress, increasing by an average of 0,4 % per year, in 1990 the rate rose to 23,6 per 100, in Scotland cesarian section rate rose from 13.0 per 100 in 1985 and 14.2 per 100 in 1990.

In Sweden, a decreases of abnormal labor, fetal distress, praevius cesarean section led to a decline in the overall rate.

Failure to progress was the most important or the second most important indications in 1990 in Norway, Scotland and United States. Its contributions to the overall cesarean rate in United States was almost twice its contributions in Norway and was considerably greater then its contribution in Scotland [2].

Classification system for the four types of cesarean section:

- Immediate threat to life of the women or fetus, delivery in 30 min.
- Is not immediately life threatening, delivery in 75 min.
- Needing early delivery but no maternal or fetal compromise, delivery in 24 hour.
- At a time acceptable to both the women and the cesarean section team, understanding that this can be planning cesarien section.

Normal labor involves uterine contractions that progressively dilate and efface the cervix. Failure to meet these milestones defines dysfunctional labor indicating increased risk of an unfavorable birth outcome. Dysfunctional labor can result from

inadequate size and contour of the pelvis, malpresentation of the infant, and/or insufficient power or uterine contractility. Protracted or arrested cervical dilatation alters the obstetrician to consider delivery by cesarean section to minimize health risks to the mother and infant [1,2]

All available tracings of fetal heart rate were reviewed after delivery by a single obstetrician. A tracing was classified as pathological if any of the following features were identified: fetal tachycardia when more than 160 beats per minute for more than 20 minutes; fetal bradycardia when less than 110 beats per minute for more than 10 minutes; persistent reduced long-term variability (<5 beats per minute) in combination with late decelerations severe variable decelerations and prolonged decelerations [3-6].

2. Material and Methods

Delays in the progress of labor that occur when cervical dilatation is less than 5 cm include latent – phase disorders, which are considered have less prognostic importance with respect to the method of delivery than delays occurring later in labor.

First stage of labor can be divided into two phases: the latent phase, is the time between the onset of Labor and 3-4 cm dilatation, cervix should be fully effaced and it should possible to determine the position and the station of the presenting part.

The active phase is the time between 3-4 cm to full dilatation with progress of 1,2 cm for primiparas and 1,5 cm for multiparas.

In order to address this limitation of the study definition of dystocia, was a delay of at least four hours after 5 cm of dilatation had been achieved during which the average rate of cervical dilatation was less than 0.5 cm per hour [4].

Study design:

This retrospective comparative study enrolled

114 pregnant women, in Malaxa Hospital Bucharest admitted in labor to obstetrics department between April 2011 and April 2012, both nullipares and multipares are recruited 68 primiparous and 46 multipareus.

All patients were low-risk for obstetric complications and had singleton, term pregnancy. In addition they had a normal antenatal routine testing and a normal anatomy ultrasound scan at 20 to 22 weeks gestation.

The assessment of fetal well-being that was often judged by cardiotocographic readings.

Inclusion criteric:

- Live fetus with vertex presentation
- Singleton pregnancy
- Gestational age 37-42 week

Reassuring fetal heart tracing by external tocodynamometry

Exclusion criteria:

- History of previous uterin surgery
- Imminence of preclampsia/eclampsia
- Any contraindication to vaginal delivery (e.g. placenta praevia, nonvertex presentation, multiple gestations) or other non-obstetric causes.
- Reassuring fetal heart tracing at admission

Therapeutic Protocol followed in case of dystocia

After preliminary preparation, an intravenous 500 ml glucose 33% containing oxytocin was started and external fetal heart monitoring was applied. The patient given a regime of steadily increasing the dose of oxytocin with establishment of regular uterine contraction of 40 seconds every 2-3 minutes, the dose continued just sufficient to maintain contractions at this rate.

The initial dose of oxytocin was 2 mu/min, with doubling of the dose every 20-30 minutes up to 32 mu/min.

Evidence of fetal distress was treated accordingly; amniotomy was not performed until the

cervix became favorable.

Repeated genital exam every two hours in case of pregnant with intact membrane and every four hours in case of gravid with ruptured membrane spontaneous or artificial. Turned those systematic ARM on early beginning of labour (Cervix fully effaced, regular contraction, vertex presentation). To about 40% of cases we added infusion of oxytocin increasing up to 30 mU/min.

3. Results

From the total number of 1345 of pregnant were hospitalized in delivery room during April 2011 – April 2012, a number of 456 pregnant 33,90% of cases were delivered by caesarian lower segmental transvers incision of 114 pregnant, 25% cases of caesarian and 8,48 % of total number indication of caesarian it was dystocia. From the total number of 1345 of pregnant were hospitalized in Malaxa.

In this study mean maternal age $27 \pm 4,6$ year were primiparas and $30 \pm 4,8$ year for multiparas, mean gestational age $39,2 \pm 1,2$ weeks for primiparas and $39 \pm 2,1$ weeks for multiparas.

Neonatal birth weight (kg) 3289 ± 459 kg for primiparas and 3313 ± 530 kg for multipares (table I).

Table I. Clinical characteristic of study group

	Primiparas	Multiparas
Maternal age (year)	$27 \pm 4,6$	$30 \pm 4,8$
Gestational age (week)	$39,2 \pm 1,2$	$39 \pm 2,1$
Neonatal birth Weight (Kg)	3289 ± 459	3313 ± 530

Distribution of abnormal uterine contraction within phases there were 52 in cases of hypo and hyper dynamic in latent phase 40% of hypo and hyper dynamic in active phase and 8% in second stage

(table II).

Table II. *Distribution of dystocia within phases of labor*

Phase of labour	Latent	Active	II Stage
%	52	40	8
primiparas	33	23	4
multiparas	19	17	4

The criteria for abnormal FHR tracings were: abrupt falls in FHR to levels as low as 70 beats/min, lasting no more than 30—45 s without any decrease in variability or increase in baseline FHR. Spontaneous onset of labor was noted in all cases.

FHR monitoring is very subjective in its interpretation and is an indirect method of assessing fetal oxygenation.

FHR patterns are not so predictive of the compromised fetus. Fetuses delivered operatively because of non-reassuring FHR patterns are often not hypoxic or asphyxiated. Therefore, in pathological cardiotocogram fetal blood gas may be considered to assess fetal well-being.

A normal FHR pattern alone is reassuring and the use of fetal pulse oximetry is not necessary [4].

In our study fetal compromise was 43% of the presenting cases (table III).

Table III. *Fetal compromise in latent and active phase.*

Fetal compromise	Primiparas	Multiparas
Latent phase	18	7
Active phase	10	8

In time of fetal extraction intraoperative we discovered 26 cases of double, triple, pericervical circular of umbilical cord, short cord, true, and node. The average length of admission in the delivery room was 12 h for nulliparous and 9 h from multiparas

(table IV- VII).

Table IV. *Average of time in delivery room*

		Duration in delivery	
		mean	SD
Nulliparas	68	8 hours	± 4
Multiparas	46	6 hours	± 3
Total	114		

Table V. *Abnormal uterine contraction within abnormal labor in our study*

	Hypertonic		Hypotonic		Normotonic		Total
	pp	mp	pp	mp	pp	mp	
Latent phase	17	9	14	10	2	0	52
Active phase	6	5	16	11	2	1	40
Second stage	3	2	1	1	0	1	8
Total	35	22	21	16	4	2	100

Normal uterine contraction:

- basal uterine intensity 12-15 mmHg
- painful uterine contraction
- regular rhythm frequent 3-5/10 minute
- the average duration 60-80 seconds
- the limits between 30-90 seconds
- the intensity of uterine contraction is 25-75 mm Hg
- uterine activity 25-395 unit Montevideo

Hypotonic uterine contraction

- basal uterine intensity 12-15 mm Hg
- little painful
- frequency sub 2 contraction/10 minute
- the intensity sub 25 mm Hg, 20 mm Hg or sub 15 mm Hg
- occur specially in active Phase of Labor

Hypertonic uterine contraction:

- very painful uterine contraction
- basal uterine intensity over 15 mm Hg
- uterus contracted always on palpation
- frequency more than 5-6 contractions per 10 minute
- the duration is more than 90 – 120 seconds

Table VI. *Distribution of hyper and hypodynamic of uterine contraction*

	Hypertonic	Hypotonic	Normotonic
Latent	26%	24%	2%
Active	26%	11%	3%

Table VII. Causes of dystocia

Variation of position occiput post transvers	Circular of umbilical cord	Disproportion CPD	Cervical dystocia	
Latent phase	5%	13%	7%	15
Active phase	7%	13%	15%	25

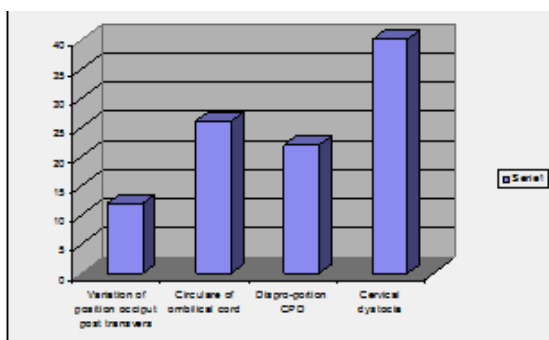


Figure 1. *Causes of dystocia*

4. Discussions

Management of abnormal labor depending on the parity, gestational age, maternal age, BM Index, existence of cephalopelvic disproportion, when poor progress is detected in first or second stage, it is vital to make a diagnosis (i.e. consider the cause). Artificial rupture of membrane followed by an oxytocin infusion, is the treatments of choice of primary dysfunctional labor caused by poor contraction or mall presentation, active management of labor by early of artificial rupture membrane and use of oxytocin the most important factor in the apparent success of active management in limiting

cesarean section.

In the latent phase and acceleration hypertonic uterine contraction mostly appear before 5 cm dilatation, the intensity of uterine contraction > 25 mm Hg and frequency 5-6/10 min mostly at primipary. In our study 52% were prolonged latent phase, in inactive phase there were hypotonic contraction mostly, 40% the percentage of prolonged active phase the intensity of uterine contraction is < 25 mmg frequency 2 contraction in 10 min, 8% in the second stage [6-8].

Causes of dystocia in our study 12% malposition (transvers, posterior), 22% CPD, 40% cervical dystocia, 26% per cervical circular of umbilical cord, diagnostic intraoperative (figure 1), associated with abnormal uterine contraction 94% of cases.

In women with less than 2 cm progress in 4 h is considered as delay, once labor is established. At this stage the NICE guide lines recommend ARM and repeat examination after 2h or use of oxytocin and repeat examination after 4 h if membranes are not intact however if there has been a slowing down of a previously progressing labor in the presence adequate contractions augmentation may increase the risk of rupture of uterus.

It is important to maintain momentum in labor and to titrate the oxytocin infusion to sustain contractions from moderate to strong nature at a rate of four in 10 min. It is paramount that there is no delay in vaginal examinations. In addition a clear plan needs to be documented in the note starting at which point a vaginal delivery should be abandoned and the team should be proceed to cesarean section [9,10].

In the event of suspicious trace, measures should be taken to improve this such as turning the mother into left position, giving intravenous fluid and ensuring there is no evidence of uterine hyper contractibility. In this case, measures to try to

improve CTG were instituted when the CTG first became suspicious.

When these were unsuccessful an FBS was performed at 3 cm dilatation, to confirm fetal well-being. A fetus scalp pH of ≥ 7.25 is classified as reassuring, but the CTG should be reviewed after hand the FBS repeated if the CTG remains pathological if the FBS pH is borderline $> 7.20 - < 7.25$ the scaple should be repeated after 30 min, if the pH is < 7.20 , delivery should be expedited.

Uterine hyper stimulation must be considered in the setting of oxytocin use and oxytocin should be reduced if contractions are more frequent than five in 10 min.

5. Conclusions

When poor progress is detected in first or second stage it is vital to make a diagnosis of the cause. ARM followed by an oxytocin infusion is the treat of choice for primary dysfunctional labor in a primiparus labor caused by poor contraction or malposition.

Great care must be exercised in the use of oxytocin if CPD, or malposition, or malpresentation is suspected in a multiparous labor.

Augmentation of contraction with oxytocin should not ever be commenced if the GTG or FBS is abnormal.

The active management of Labor is a philosophy of Labor management originating from Ireland, the main tenet of which is early diagnosis of poor progress in Labor corrected by early ARM and use of oxytocin.

In fact, the most important factor is the apparent success of active management in limiting cesarean section, reducing hours of pain and compromised facts, reducing fetal mortality and morbidity.

ARM has recently been advocated to prevent

dystocia in women in spontaneous labor. In the first stage of labor, dystocia is defined as a delay in progress beyond which medical intervention, usually the administration of oxytocin is considered justified. In women with dystocia, oxytocin is used to stimulate labor and to distinguish functional uterine disorders from cephalo-pelvic disproportion. The failure of dystocia to respond to medical treatment may lead to cesarean section, among nulliparous women; dystocia is the most frequent indication for cesarean section.

Cervical dystocia is the common cause of a primary cesarean section after those circulars of umbilical cord, diagnosed intraoperative, then disproportion and variation of position in our study.

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