

## Prolonged Labor Incidences: Passage-Passenger Factors Analyzed (Descriptive Study in RSUD dr. Koesma Tuban)

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**Abstract** Prolonged labor is parturition that lasts more than 24 hours, also the last phase of employment that is congested and lasts too long which evoke symptoms such as dehydration, infection, maternal fatigue, asphyxia and fetal death in the uterus. Several determinants factors include power, passage, passenger and helper (physician). The research purpose was to describe the elements behind the prolonged labor incidences regarding adoption and passenger. This research is a descriptive study that aims to make an overview of the prolonged labor incidences at RSUD dr. Koesma Tuban in the period of 2015-2016. Data collection was obtained through secondary data which is medical records of patients who experienced prolonged labor. The results showed that 143 patients experience a prolonged labor, 47.55% types of prolonged labor was prolonged active phase, 41.6% types of labor was *Caesarean Section* (SC), 65.04% of outer pelvis were normal, 57, 34% had no CPD (*Cephalopelvic Disproportion*), 58.74% with soft birth abnormalities, 82.52% babies born were between 2500-4000 grams, and 80.42% of the fetus was in the normal position (*vertex presentation*). The possibility of prolonged parturition should be anticipated by routine pregnancy examinations so that the condition of the mother and fetus continuously monitored.

## 1 INTRODUCTION

Maternal Mortality Rate (MMR) in Indonesia is still quite high. Based on the 2015 Survei Penduduk Antar Sensus (SUPAS) shows that MMR is 305 of 100.000 live births (Kemenkes RI, 2016). The direct cause of maternal mortality in Indonesia year 2013 is currently dominated by bleeding (30.3%), eclampsia (27.1%), prolonged labor and infection (9.2%). Other incidences are caused by indirect factors, namely conditions caused by other diseases or complications that already exist before pregnancy or childbirth and become severe with pregnancy or childbirth, such as the presence of heart disease, hypertension, diabetes, hepatitis, anemia, malaria, and AIDS (40.8%) (Kemenkes RI, 2014).

Childbirth or parturition is a natural process with enough months of pregnancy. The average gestational age is 9 months and 10 days, or around 280 days, starting with cervical dilatation until the birth process of the baby and placenta. Babies can live outside the womb through the birth canal with help or without help. However, if the parturition takes more than 24 hours for *primigravida* or 18 hours for *multigravida*

this condition often referred to prolonged labor. The prolonged labor is the last phase of obstructed parturition and it lasts too long, causing symptoms such as dehydration, infection, maternal fatigue, and asphyxia and fetal death in the uterus (Mochtar, 1998).

Based on a preliminary survey at dr. Koesma Tuban Hospital in the year of 2014, found around 13.2% cases of prolonged labor occurred from all parturition. While in the year of 2015 decreased to 10.2%, and increased to 11.75% in 2016 of all parturition.

The determinants of prolonged labor include 3 main factors. 1) Power (*his* contraction and strength of pushing, also fatigue of the mother). *His* (contraction of the uterine muscles) abnormality in strength or nature causes obstacles in the birth canal is common in every birth. In uterine inertia *his* is weak, short, and rare than usual. The patient's condition is usually good, and not experience pain too much. Parturition should not be left too long to prevent uterine fatigue. 2) Passage (birth canal) can be form as a pelvic deformities, pelvic size, *Cephalopelvic Disproportion* (CPD), and soft birth

canal abnormalities, will affect the course of labor. If there is no suitability between the shape and size of the pelvis and the size of the fetus, it will result in prolonged labor, as well as soft birth canal defect, for example cervical edema, especially due to pelvic narrowness, the cervix is sandwiched between the head and the birth canal resulting in disruption of blood circulation and fluid cause cervical edema. 3) Passenger factors consists of large fetus (fetal weight) such as fetal macrosomia, abnormalities in the head location, cephalic presentation, facial presentation, forehead presentation, occiput fetal position abnormalities, and fetal location abnormalities such as breech position and oblique lie position (Manuaba, 1998).

To avoid prolonged labor during childbirth, in terms of passage, pregnant women should have regular prenatal checks according to the schedule or as it needed, so that can be known earlier if there are abnormalities or defect on the pelvis and soft birth canal. In terms of passenger, mothers should maintain that the body is not too fat because obesity probably cause the baby becomes bigger too. In addition, in terms of parity, mothers who have given birth to a big baby may also be pregnant with a big baby too, as well as mothers with diabetic who are not well controlled tend to get a bigger baby. Therefore, to get a normal baby's birth size and weight which is between 2500-4000 grams, then the mother must maintain and pay attention to the food diet (Santi, dkk., 2017).

This study aims to describe the factors behind the prolonged labor occurrence in terms of passage and passenger at RSUD dr. Koesma Tuban (District Hospital) during the period of 2015-2016. The factors passage include outer pelvic size, cephalopelvic imbalance, and soft birth canal abnormalities. While the factors passenger, including newborns weight and fetal location abnormalities (*malpresentations*).

## 2 METHOD

This research was a descriptive study that aims to make an overview or description of a situation objectively about the incidences of prolonged labor at RSUD dr. Koesma Tuban for the period of years 2015-2016. Data collection was obtained through secondary data, which is medical records of patients who experienced a prolonged labor at dr. Koesma Tuban District Hospital during the period of the years 2015-2016.

## 3 RESULT AND DISCUSSION

### Result

Data collection showed around 143 patients experienced prolonged labor. Research data grouped into general data and specific data. General data includes identification of the duration of labor and type of labor. While the specific data are passage and passenger factors, including pelvic size, *cephalopelvic disproportion*, soft birth canal abnormalities, infant or newborns weight, and fetal location abnormalities.

Table 1: Distribution of Patients by Prolonged Labor Types

Types of Prolonged Labor	f	%
Prolonged Active Phase	68	47.55
Prolonged Second Stage	67	46.85
Prolong Latent Phase	7	4.90
Secondary Arrest	1	0.70
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 1 shows that the prolonged active phase (47.55%) and the prolonged second stage (46.55%) halve the same as the incidences of prolonged labor, whereas in secondary arrest only 1 case (0.70%).

Table 2: Distribution of Patients by Delivery Types

Types of Delivery	f	%
Sectio Caesaria (SC)	59	41.26
Rear Spontaneous Head	43	30.07
Vacuum Extraction	34	23.78
Spontaneous Manual Aid	5	3.50
Spontaneous Bracht	2	1.40
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 2 shows that the highest labor types of delivery were Sectio Caesaria as many as 59 respondents (41.26%) and labor with Spontaneous Bracht delivery were 2 patients (1.40 %).

Table 3: Distribution of Prolonged Labor Identified from Passage (*Pelvic Size*)

Pelvic Size	f	%
Narrow	50	34.97
Normal	93	65.03
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 3 shows that patient with normal pelvic size is as much as 93 respondents (65.03%) and those with narrow pelvic size are 50 respondents (34.97%).

Table 4: Distribution of Prolonged Labor Identified from Passage (*Cephalopelvic Disproportion*)

CPD	f	%
CPD	61	42.66
No CPD	82	57.34
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 4 shows that most parturition (57.34%) did not occurred CPD, and parturition with CPD occurred as many as 61 patients (42.66%).

Table 5: Distribution of Prolonged Labor Identified from Passage (*Soft Birth Canal Abnormalities*)

Soft Birth Canal Abnormalities	f	%
There abnormalities	59	41.26
Normal	84	58.74
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 5 shows that most of patients (58.74%) had no soft birth canal abnormalities, and patients with birth canal abnormalities were 59 patients (41.26%).

Table 6: Distribution of Prolonged Labor Identified from Passenger (*Newborns Weight*)

Newborns Weight	f	%
< 2500 grams	9	6.29
2500 - 4000 grams	118	82.52
> 4000 grams	16	11.19
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 6 shows that in general (82.52%) the weight of babies born (newborns weight) with prolonged labor is between 2500-4000 grams. With the lowest baby weight around 2450 grams, and the largest baby weight is 4200 grams.

Table 7: Distribution of Prolonged Labor Identified from Passenger (*Fetal Location Abnormalities*)

Fetal Location	f	%
Fetal Location Abnormalities ( <i>Malpresentation</i> )	28	19.58
Normal Fetal Position ( <i>Vertex Presentation</i> )	115	80.42
Total	143	100

Source: Medical Record Data dr. Koesma Tuban 2015-2016

Table 7 describe that out of 143 patients shows the location of the fetus was normal (80.42%), while those with location abnormalities were 28 patients (19.58%).

## Discussion

From the number of samples of pregnant women with prolonged parturition due to factors passage (outer pelvic size) does not always related to prolonged labor incidences. The outer pelvic size can only guide us to conceive probability of obstructed parturition due a narrow pelvis. For example, in women who have a short posture, or height of less than 150 cm, we may suspect pelvic narrowness. But not all mothers with short posture have narrow pelvic size and *vice versa*. Therefore we must prove by another examination that is by palpation, clinical pelvimetry, deep pelvic examination by VT, or it can also be done by *Pelvimetric X-Ray* examination. Childbirth can take place normally or cannot be influenced by many interrelated things, either from the scope of the passage itself or influenced by power, passenger and helper in childbirth (Wijayanti, 2015).

We always think of the possibility of a narrow pelvis, if there is a *primigravida* at the end of the pregnancy the baby's head has not entered the upper pelvic and there is an abnormality in the location of the fetus. Usually at anamnesis, the head does not enter the upper pelvic and there is a history of location abnormalities (oblique lie position, position of the buttocks), past parturition takes too long times, stillbirth or fetal death, parturition process helped by tools (vacuum extraction or forceps) and surgery.

Basically the labor process is a mechanical process, in which an object is pushed through the room by a force / power (*his*). The object being pushed is the baby, the room is pelvis, and *his* is the force that has two functions to open the cervix and push the baby out. If there is no disproportion between the pelvis and the normal baby, and the location of the child is not pathological, spontaneous labor can be awaited. If there is a *fetopelvic disproportion* or fetal location abnormalities then pathological labor and delivery will occur (Mochtar, 1998). Maternity with passage factors (*cephalopelvic disproportion*) does not always have a linear relation with prolonged labor incident. Although the size of the mother's outer pelvis is narrow or abnormal, but the babies born are relatively low birthweight, there is a balance between the birth canal and the baby's weight so that the long duration of labor is probably due to other factors, which can be from power, passenger, or helper (Prawirohardjo, 2006).

Abnormalities in the soft birth canal could be occurred as abnormalities in the uterine cervical, vagina, hymen, and other abnormalities in the soft birth canal. There are 4 types of abnormalities in the cervix, including stiff cervix which is a condition where the entire cervix is stiff. This condition is often

found in *elderly primigravida*, or in any scars or infection scar, or in cervical carcinoma. Usually a diagnosis of *dystocia* due to a stiff cervix given if there is a good and normal *his* at the first stage of labor followed with opening (*dilation*) of cervix, and after several examinations within a certain time the cervix is tense and stiff. Drugs treatment such as *valium* and *petidine* does not change the trait of stiffness. Necessary action due this condition is *caesarean section*. The hanging cervix is a condition where the external uterine ostium can open wide, while the internal uterine ostium does not open. The cervix will hang like a funnel. If in the n observation the situation remains and there is no progress in opening the internal uterine ostium, then an appropriate help is to do a *caesarean section* (Prawirohardjo, 2006).

Diagnosis to determine whether the baby is large or not is sometimes difficult. This can be estimated by investigate a history of parturition (birth before) and mother history of diabetes mellitus. Excessive weight gain not due to other reasons (e.g. oedema) should carefully examined of *cephalopelvic disproportion* or *photo-pelvic disproportion*, in this case it is recommended to measure the baby's head by ultrasonography (Mochtar, 1998). In the normal pelvis, babies weighing around 4000-4500 grams generally do not cause labor difficulties. *Dystocia* will be obtained if the fetus is larger than 4000-4500 grams or baby's head skull harden (*postmaturity*) and baby with big narrow shoulders (*baby kingkong*). If *cephalopelvic* or *photo-pelvic disproportion* ignored, there will be difficulties both in the mother and in the baby. In *cephalopelvic* or *photo-pelvic disproportion* cases, *caesarean section* is recommended. In the difficulty of birth delivery with live fetus which have a big narrow shoulder, an *episiotomy* procedure must be taken, or execute an effort to minimized the shoulder of the baby by *unilateral-bilateral cleidotomy*. After delivery, vagina is sewn shut back, whereas for *postcleidotomy* injury is strongly recommended, consult to the surgery. If there any case that the fetus dies then *embryotomy* procedure can be taken (Rusydi, 2005).

The results of this study are in accordance with the theory put forward by Stenchever and Sarsen that the position and location of the fetus can only be estimated. Even in very experienced hands, it is difficult to determine the weight of the fetus by examining the abdomen (Marton, et al., 1996). Ultrasound measurements can be made and increase accuracy in a variety of circumstances, but still errors often occurs. Success in childbirth such as the progress of labor and birth itself will be affected by

the size of the fetus. The size of the fetus is only half of an equation, but the other is the size of the pelvic bones. Large fetus may be born easily through a wider pelvis, while a small fetus may be able to be born easily through a smaller pelvis. So this success or failure is determined by the reciprocal relationship of these two factors (Rusydi, 2005).

*Malpresentation* is all fetal presentations other than *vertex presentation*. Malposition is the fetal head relative to the pelvis with the occiput as the reference point. The fetus in a state of malposition and *malpresentation* may cause prolonged labor or congestion. For example *occiput posterior fetal position* is when the back of baby's head is against the mother's back, or occiput position facing the posterior of transverse pelvic diameter (Prawirohardjo, 2002).

Based on the number of samples of maternity mothers with prolonged labor, passenger factor (abnormalities in fetal location) are not always have causative affect to the occurrence of prolonged parturition. Because among these abnormalities, it is rare to get a woman giving birth with prolonged labor caused by abnormalities in the location of the fetus, even though on normal infants who have enough months, it is impossible to be born spontaneously. The fetus can only be born spontaneously, if the fetus is small or premature, or it is dead and becomes soft or when the pelvis is broad. Likewise the breech position, so that it can be born spontaneously the size of the pelvis must be wide, because the buttocks are shorter than the head, so it has less power to push the infant head and finally the cervical opening lasts for a long time (Varney, et al., 2008).

The prevalences of prolonged parturition varies from country to others, but generally occurs in developing countries. Some of the factors that led to this include lack of adequate health care facilities, poor nutrition (inadequate and unbalance), poverty, socio-economic, and cultural believe factors that has opposite perceived attitude toward the antenatal care and examination during pregnancy. In developing countries, the incidences of prolonged labor are difficult to estimate, especially because secondary data collection procedures are lacking and because most studies reported are based on data from tertiary hospitals. However, reported prolonged labor events vary from 1-2/100 deliveries in Nigeria, and 3/100 deliveries in India. Estimates of these incidences are separated from the *section caesarean* birth rate data, because most of the prolonged labor in developing countries is still treated with slow treatment procedures (Wijayanti, 2015).

#### 4 CONCLUSION

From the results of research on the duration of parturition in terms of *passage* and *passenger* at RSUD dr. Koesma Tuban for the period of 2015-2016 was 143 people who experienced prolonged labor, most of the prolonged parturition was prolonged active phase, the type of labor was mostly with *Caesarean Section* (SC), mostly the size of the outer pelvis patients are normal, almost entirely has no CPD (*Cephalopelvic Disproportion*) and soft birth canal abnormalities, most of the babies born are between 2500-4000 grams, and almost all of the fetus are normal (*vertex presentation*).

Serious efforts should be taken to anticipate the possibility of prolonged labor by routine pregnancy examinations, so that the health condition of the mother and fetus are continuously monitored. In addition, pregnant mothers and health workers especially midwifery must be vigilant if one day the pregnancy and childbirth experience risk or complications.

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