

# Efficacy of Castor Oil as Labor Inducing Agent and its Fetomaternal Outcome in Tertiary Care Centre

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**Abstract:** Background: Labor is a fastidious journey and secret of its successful culmination depend on coordination between contracting uterus and ripening cervix. Induction of labor is an obstetric procedure, designed to pre-attempt the natural process of labor by initiating its onset artificially, before this occurs spontaneously. Castor oil is an herbal preparation that has been used for induction of labor from ancient Egypt until now<sup>5</sup>, but it has not achieved destined popularity. Castor oil is a vegetable oil, pressed from castor beans. Castor oil is an effective agent for induction of labor and cervical ripening at term, when compared to other methods of labor induction. Objective: Our study is being carried out to assess the efficacy of castor oil as a labor inducing agent and its fetomaternal outcome in tertiary care Centre. Material and methods: It was a descriptive study carried out at Umaid hospital, Dr.S.N. medical college, Jodhpur, a tertiary care hospital in Rajasthan from month of May 2020 to July 2020. All women with 37 completed weeks gestation with single live fetus in cephalic presentation with a Bishops score <6 and a reactive nonstress test were included in the study. Results: A total of 200 patients were studied, HDOP (35.7%) was the most common indication for induction of labor in primigravida using castor oil followed by postdated pregnancy (25.2%). In multigravida postdated pregnancy (28.5%) was the most common indication for induction of labor in using castor oil followed by oligohydromnios (26.6%). Out of 105 multigravidas 90(85%) were successfully induced with castor oil. Among primigravida 54(56.8%) out of 95 were successfully induced, so castor oil is more effective in multigravida as an inducing agent for labor. Active Labor initiation in castor oil administered women (both primigravida and multigravida) was 60%. In successfully induced group 90.2% women delivered vaginally and 9.7% underwent caesarean section. In successfully not induced group 46% women delivered vaginally and 53.5% women underwent caesarean section. 32(16%) women had meconium stained liquor and 168(84%) women had clear liquor. Oxytocin augmentation was required in 69.4% in primigravida and 38% in multigravida. Need of additional method i.e. dinoprostone gel and oxytocin was required in 61% in primigravida and 20.9% in multigravida. Most common side effects seen in mother was nausea (15%) followed by diarrhea (12.5%) and vomiting (10%). There were no side effects in majority (62.5%) of the women. No. of babies mother shifted were majority (94%) and only 6% were admitted in NICU. Conclusion: Castor oil is safe and effective agent for cervical ripening and labor induction. Castor oil induction is an easy and cost effective method when compared to other inducing agent. Induction delivery interval, requirement for oxytocin augmentation is less in castor oil users. Vaginal delivery rate is high in those who use castor oil as labor inducing agent. So, castor oil is safe, efficient and cost effective. Inducing agent with few maternal and fetal side effects which may become first choice for induction of labor in the coming years.

**Keywords:** Induction of labor, cervical ripening

## 1. Introduction

Labor is a fastidious journey and secret of its successful culmination depend on coordination between contracting uterus and ripening cervix. Induction of labor is an obstetric procedure, designed to pre-attempt the natural process of labor by initiating its onset artificially, before this occurs spontaneously. The aim of successful induction is to achieve vaginal delivery when continuation of pregnancy presents a threat to the life or wellbeing of the mother or her unborn child.

There are different methods of induction (mechanical, surgical and pharmaceutical) to prevent prolonged pregnancy<sup>1, 2</sup>, but there is no safe method yet without any maternal and fetal complications.

Oxytocin stimulation and induction with dinoprostone gel requires hospitalization and attention of specially trained personnel. Pregnant women must be confined to bed for maternal and fetal monitoring<sup>3</sup> Due to different side effects of chemical drugs, physicians nowadays recommend herbal preparations<sup>4</sup>

Castor oil is an herbal preparation that has been used for induction of labor from ancient Egypt until now<sup>5</sup>, castor oil is a vegetable oil, pressed from castor beans.



It is a colorless to very pale yellow liquid with a distinct taste and odor. It is a triglyceride in which approximately 90% of fatty acid chain are ricinoleates.

Castor oil is an effective agent for induction of labor and cervical ripening at term, when compared to other methods of labor induction. Its probable mechanism is to stimulate labor following secretion of prostaglandins<sup>3,6,7</sup>. Castor oil is

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regarded as uterine stimulant and irritant laxative. Castor oil promote activation of prostaglandin receptors (EP<sub>3</sub>) on pregnant uterus, which evoke contraction of uterine smooth muscle.<sup>8,9,10</sup>

Our study is being carried out to assess the efficacy of castor oil and watch the maternal and fetal outcome.

## 2. Material and methods

It was a descriptive study carried out at unaid hospital, Dr.S.N. medical college,jodhpur, a tertiary care hospital in Rajasthan from month of May 2020 to July 2020.After taking informed consent, 200 women with single, term live pregnancy fulfilling admission criteria admitted for induction of laborwere recruited in our study. All women with 37 completed weeks gestation with single live fetus in cephalic presentation with a Bishops score <6 and a reactive nonstress test were included in the study.

## 3. Results

**Table 1:** Distribution of cases according to indication of induction in primigravidas

Indication	No.	%
Postdated	24	25.2%
HDOP	34	35.7%
Oligohydromnios	15	15.7%
Polyhydromnios	5	5.2%
Rh negative	12	12.6%
GDM	2	2.1%
IUGR	0	0

In our study, in primigravidaHDOP (35.7%) was the most common indication for induction of labor using castor oil followed by postdated pregnancy (25.2%).

**Table 2:** Distribution of cases according to indication of induction in multigravidas

Indication	No.	%
Postdated	30	28.5%
HDOP	20	19%
oligohydromnios	28	26.6%
polyhydromnios	10	9.5%
Rh negative	10	9.5%
GDM	2	1.9%
IUGR	5	4.7%

In our study, in multigravida Postdatedpregnancy (28.5%) was the most common indication for induction of labor using castor oil followed by oligohydromnios (26.6%).

**Table 3:** Distribution of cases according to parity

Gravida	Successfully induced		Successfully not induced	
Primi(95)	54	56.8%	41	43.1%
Multi(105)	90	85%	15	14.2%
	144		56	

In our study, out of 105 multigravidas 90(85%) were successfully induced with castor oil. Among primigravida 54(56.8%) out of 95 were successfully induced.

**Table 4:** Distribution of cases according to labor initiation

Labor initiation	Castor oil induction	%
Yes	120	60%
No	80	40%

Labor initiation in castor oil administered women (both primigravida and multigravida) was 60%. 40% women did not go into labor after castor oil administration.

**Table 5:** Distribution of cases according to mode of delivery

	Successfully induced		Successfully not induced	
vaginal	130	90.2%	26	46%
caesarean	14	9.7%	30	53.5%
Total	144		56	

In our study, in successfully induced group 90.2% women delivered vaginally and 9.7% underwent caesarean section. In successfully not induced group 46% women delivered vaginally and 53.5% women underwent caesarean section, so castor oil favor in vaginal delivery in successfully induced women.

**Table 6:** Distribution of cases according to condition of amniotic fluid

Amniotic fluid color	No. of patients	%
meconium	32	16%
clear	168	84%
Total	200	100%

In our study, 32(16%) women had meconium stained liquor and 168(84%) women had clear liquor.

**Table 7:** Distribution of cases according to oxytocin augmentation in both primigravida and multigravida

Gravida	No.	%
primi	66	69.4%
multi	40	38%
	106	

In our study, oxytocin augmentation was required in 69.4% in primigravida and 38% in multigravida.

**Table 8:** Distribution of cases according to need of additional induction method(c-gel) and oxytocin in both primigravida and multigravida

Gravida	No.	%
Primi	58	61%
Multi	22	20.9%

In our study, need of additional method i.e. diniprostone gel and oxytocin was required in 61% in primigravida and 20.9% in multigravida.

**Table 9:** Distribution of cases according to maternal side effects

Side effects	No.	%
Nil	125	62.5%
Nausea	30	15%
Vomiting	20	10%
Diarrhea	25	12.5%
Excess uterine activity	0	0
PPH	0	0
Rupture uterus	0	0

In our study, most common side effects seen in mother was nausea (15%) followed by diarrhea (12.5%) and vomiting (10%). There were no side effects in majority (62.5%).

**Table 10:** distribution of cases according to no. of babies in NICU admission

NICU	NO.	%
Yes	12	6%
No	188	94%

In our study, no. of babies mother shifted was majority (94%) and only few (6%) were admitted in NICU.

#### 4. Discussion

A total of 200 patients were studied and analyzed to assess the efficacy of castor oil as labor inducing agent and its effect on mother and fetus.

In our study, in primigravida HDOP (35.7%) was the most common indication for induction of labor using castor oil followed by postdated pregnancy (25.2%), oligohydromnios (15.7%), Rh negative pregnancy (12.6%), polyhydromnios (5.2%), GDM (2.1%), IUGR(0%) respectively whereas in multigravida, postdated pregnancy(28.5%) is the most common indication for induction of labor followed by oligohydromnios (26.6%), HDOP (19%), polyhydromnios (9.5%), Rh negative pregnancy (9.5%), IUGR (4.7%), GDM (1.9%) respectively.

In our study, it was observed that 90(85%) out of 105 multigravida women were successfully induced by castor oil. Among primigravida women, 54(56.8%) out of 95 were successfully induced by castor oil. Therefore, castor oil is more effective in multigravida as an inducing agent for labor coinciding with the study in Gilad et al(2017)<sup>16</sup> in which 60% multiparous women delivered within 24 hours in castor oil group. In other studies, the effect was equivocal.

In our study, frequency of labor initiation in castor oil user is 60% which is coinciding with study of Garry et al (2000)<sup>6</sup> (57.7%), Azhari et al (2006)<sup>11</sup>(54.2%), Boel et al (2009)<sup>18</sup> (54.2%) and okoyo et al (2019)<sup>17</sup>(57.1%) respectively.

In our study, total normal vaginal delivery after castor oil ingestion was 156(78%) and caesarean section were 44(22%). Among normal delivery 130(90.2% were successfully induced and 26(46%) were successfully not induced where we used other inducing agents dinoprostone gel and oxytocin. Among caesarean group 14(9.7%) were successfully induced though they underwent caesarean due to indications like fetal distress, non-progression of labor, failed induction etc. and 30(53.5%) were not successfully induced where we gave other agents too, that means there were some intrinsic factors which were not favorable for vaginal delivery and even other agents too cannot aid in vaginal delivery. This shows castor oil favor in vaginal delivery in successfully induced women. The rate of vaginal and caesarean delivery is coinciding with studies of Garry et al (2000)<sup>6</sup>, azhari et al (2006)<sup>11</sup>,gilad et al (2006)<sup>16</sup> and okoyo et al (2019)<sup>17</sup> respectively.

In our study, incidence of meconium stained liquor is 16% coinciding with studies of boel et al (2009)<sup>18</sup>(22.5%), lamadah et al (2014)<sup>19</sup>(18%) and gilad et al(2018)<sup>16</sup>(16.7%) respectively. Among women with meconium, induction was done on account of postdated pregnancy, so it was not known whether meconium was due to castor oil or due to postdated pregnancy.

In our study, oxytocin augmentation was required in 69.4% in primigravida and 38% in multigravida, a total being 53% which is coinciding with study of okoyo et al (2019)<sup>17</sup>(47%). In our study, additional induction method that is dinoprostone gel was required in 42% in primigravida and 11.4% in multigravida, a total being 26%, which is in which 27.8% women received dinoprostone gel as additional inductive method.

In our study, most common side effects seen in mother was nausea (15%) followed by diarrhea(12.5%) and vomiting (10%) which is coinciding with studies done by lamadah et al (2014)<sup>19</sup> and okoyo et al (2019)<sup>17</sup>.There were no side effects in 62.5% of women given castor oil.

The incidence of NICU admission was 6% and babies mother shifted were 94%, shows the safety of castor oil.

#### 5. Conclusion

Castor oil is safe and effective agent for cervical ripening and labor induction. Castor oil induction is an easy and cost effective method when compared to other inducing agent. Castor oil is stable at room Temperature and does not need refrigeration for storage. Induction delivery interval, requirement for oxytocin augmentation is less in castor oil users. Vaginal delivery rate is high in those who use castor oil as labor inducing agent.

So, castor oil is safe, efficient and cost effective inducing agent with few maternal and fetal side effects which may become first choice for induction of labor in the coming years.

#### References

- [1] Krishna U, Tank DK, Daftary S, editors. Pregnancy ay risk current concepts. 4<sup>th</sup>ed. New Delhi: jaypee Brothers; 2001.p.286-289,417-418.
- [2] Gilstrap LC, Cunningham FG, VandorstenjP. Operative obstetrics. 2<sup>nd</sup> Ed. New York: McGraw-Hill; 2002. 523-532.
- [3] Davis L. The use of castor oil to stimulate labor in patients with premature rupture of membranes. JNursMidwifery 1984; 29(6): 366-370.
- [4] Gibson PS, Powire R, Star j. Herbal and alternative medicine use during pregnancy: A cross sectional survey. ObstetGynecol 2001; 97 (4 suppl 1):S44-S45.
- [5] McFarlin BL, Gibson MH, O'Rear J, Harman P. A national survey of herbal preparation use by nurse – midwives for labor stimulation. Review of the literature and recommendations for practice. J Nurse Midwifery 1999;44(3):205-16.

- [6] Garry D, Figueroa R, Guillaume J, Cucco V. Use of castor oil in pregnancies at term. *Altern Ther Health Med* 2000;6:77-79
- [7] Harris M, Nye M. Self-administration of castor oil. *Mod Midwife* 1994; 4:29-30.
- [8] Tunaru S, Althoff TF, Nusing RM, Diener M, Offermanns S. Castor oil induces laxation and uterus contraction via ricinoleic acid activating prostaglandin EP3 receptors. *Procs Natl Acad Sci U S A* 2016;(109(23)):9179-84.
- [9] Senior J, Marshall K, Sangha R, Clayton JK. In vitro characterization of prostanoid receptors on human myometrium at term pregnancy. *Br J Pharmacol*. 1993; 108:501-506.
- [10] Kotani M, et al. Multiple signal transduction pathways through two prostaglandin E receptor EP3 subtype isoforms expressed in human uterus. *J clin Endocrinol Metab*. 2000;85:4315-4322.
- [11] Azhari S, Pirdadeh S, Lotfalizadeh M, Shakeri MT. Evaluation of the effect of castor oil on initiating labor in term pregnancy. *Saudi Med J* 2006;27(7):1011-4.
- [12] Saberi F, Abedzadeh M, Sadat Z, et al. Effect of castor oil on induction of labor. *Feyz journal of kashan University of Medical sciences* 2008; 11:19-23.
- [13] Sullivan M, Lee S, Rijken M, et al. Castor oil for induction of labor: not harmful, not helpful. *Gynecology* 2009 Oct;49(5):499-503.
- [14] Isabella Neri, Giulia Dante, Lucrezia Pignatti, Chiara Salvioli & Fabio Facchinetti (2007): Castor oil for induction of labor: a retrospective study, *The Journal of Maternal-Fetal & Neonatal Medicine*.
- [15] DeMaria AL, Sundstorm B, Moxley GE, Banks K Bishop A retrospective descriptive study *Women Birth*. 2018 Apr; 31(2):e99-e104.
- [16] Gilad R, Hochner H, Savitsky B, et al. Castor oil for induction of labor in post date pregnancies: A randomized controlled trial. *Women Birth* 2018;31:e26-e31.
- [17] Okoro OS, Ugwu EO, Dim CC, Ozuma C, Nkwo PO, Ajah LO, and Okeke TC, "Effectiveness of Castor oil in Preventing Post-term Pregnancy in Low Resource Setting: A Randomized Controlled Trial". *American Journal of Clinical Medicine Research*, vol. 7, no. 2(2019): 37-43.
- [18] Boel M, Lee S, Rijken M, et al. Castor oil for induction of labor: not harmful, not helpful. *Gynecology* 2009 Oct; 49(5): 499-503.
- [19] Lamadah S, Mohammed H, El-Khedr S. Castor Oil Safety and Effectiveness on Labor Induction and Neonatal Outcome. *Journal of Biology, Agriculture and Healthcare* 2014;4.