

# Risk of Cesarean Delivery in Induced Labour

Fazia Raza and Roeda Shams

## ABSTRACT

**Objective:** To determine risk of cesarean section in induced labour.

**Study Design:** Retrospective observational

**Place and Duration of Study:** This study was conducted at the Department of Obstetrics & Gynaecology, Rehman Medical Institute from January 2018 to December 2018.

**Materials and Methods:** A total of 1875 patients were admitted for induction of labour. Data was collected from labour register and patients record file. All patients were induced with Prostin E2. Maximum of 4 doses at interval of 4 hours with exception of patients with PROM, who were induced with 50µg Misoprostol orally as per ward protocol were given. Data collected included parity, gestational age, indication for induction and indication of cesarean section.

**Results:** There were 102 had emergency cesarean section (23.75 of all induced patients) and 327 (76.3%) patients had normal vaginal deliveries. The most common indication for induction was prolong pregnancies [n=147 (34.2%)] followed by PROM [n=71(16.5%), PIH [n=469 (10.7%)], reduced liquor [n=37 (8.6%)], reduced fetal movements (n=33 (7.6%)) and diabetes [n=33(7.6%)]. The most common indication for cesarean section in induced patients was failed induction [n=53 (51.9%)], followed by prolong second stage [n=30(29.4%)]. The average cesarean section rate (elective + emergency) was 40.7%. The rate of emergency c/section in induced patients was 13.55% in comparison to 15.7% in spontaneous labour.

**Conclusion:** Induction of labour for medical reason is not associated with increase in risk of cesarean section.

**Key Words:** Risk, Cesarean delivery, Induced labour

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## INTRODUCTION

Induction of labour is most common obstetric procedure worldwide. Labour is induced in all such condition where continuation of pregnancy possess more maternal or foetal risk than induction. Induction of labour is on rise and has reached to about 20% in most countries in past few years.<sup>1,2</sup> There are number of medical and elective indication for induction of labour. Induction is termed as elective if conducted solely for the convenience of patient or provider without any maternal or foetal compromise.<sup>3</sup>

Medical indications include IUGR, intrauterine foetal death. PROM, pregnancy >41 weeks, uncontrolled diabetes and hypertensive disorders.<sup>2,4</sup> Induced labour is associated with many complications like failed induction, prolong labour, more pain, more analgesia, fetal distress and more fetal and maternal monitoring,

but the major concern is increase rate of cesarean section.

Cesarean section rate has rising trend over past few year<sup>5</sup> and increase in elective induction is considered to have major contribution to it.<sup>6,7</sup>

Several studies have been conducted to determine the association of cesarean section with induced labour but have conflicting result<sup>8</sup>

There is no agreed or accepted definition of failed induction but according to some studies it is considered to be successful if patient delivers normal vaginally and failed if it end up in c/section<sup>9</sup> while, some defines failure as inability to enter into active phase after 12 hour oxytocin administration.<sup>10,11</sup> There are several factors affecting success of induction including parity, indication for induction, cervical ripening<sup>12</sup> and method of induction and individual obstetrician decision.<sup>13</sup>

The main indication for cesarean section in induced labour are failed induction, meconium staining or failed progress. The purpose of our study is to determine the association between c/section and induced labour.

## MATERIALS AND METHODS

This is a retrospective observational study conducted on all women, who underwent induction of labour for medical indications in Rehman Medical Institute from January 2018 to December 2018. All patients who were admitted for induction were included in study. Most of

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the patients were booked patients of consultants but some were referred cases. All patients were induced with 3mg of prostin E2 vaginal pessaries with exception of those with PROM. Who were induced with oral 50ug of mesoprostol. Maximum of 4 doses of prostaglandin E2 and misoprostol were given at interval of 4 hours. AT 4 cm cervical dilatation or with start of contraction, labour was augmented with amniotomy and syntocinon. This was protocol followed by all consultants for induction of labour. The information collected included parity, gestational age, indication for induction and indication of caesarean section. The data was analyzed using SPSS-20.

**RESULTS**

There were 1836 (97.9%) were delivered while 39 (2.1%) patients were admitted for observation. One thousand, one hundred and twenty (59.7%) patients had normal vaginal deliveries and 755 (40.3%) had cesarean section. Out of total caesarean sections, 534 were elective or planned c/sections while 221 were emergency caesarean deliveries. One hundred and two of emergency c/sections were conducted on patients with induced labour while 119 were performed in patients with spontaneous labour (Tables 1-2).

**Table No.1: Frequency of ward statistic**

Total admissions	2306
Total obstetric admissions	1875
Total inductions	429
Total vaginal deliveries	1120 (59.7%)
Total caesarean section	755 (40.3%)
Total c/sections after inductions	102 (23.7%) of all inductions (13.5% of all c/sections)
Total vaginal deliveries after inductions	327(76.3%) of all inductions
Total deliveries (NVDS = C/sections)	1836

**Table No.2: Total cesarean sections (n=755)**

Cesarean section	No.	%
Total elective c/sections	534	70.8
Total Emergency c/sections	221	29.2
Emergency c/sections in induced patients	102	13.5
Emergency c/section in spontaneous labour	119	15.7
C/sections in induced primi parous	68	66.6
C/sections in induced multi parous	34	33.4

The average caesarean section rate was 40.7%. 429 (23%) patients were induced. Out of these 102 had emergency c/section (23.75 of all induced patients) and 327 (76.3%) patients had normal vaginal deliveries. 203 (47%) of induced patients were primiparous and 226(53%) were multigravidas (Table 3). The most

common indication for induction was prolong pregnancies (n=147 (34.2%) followed by pre labor rupture of membrane (PROM) (n=71 (16.5%), pregnancy induced hypertension (PIH) (n=46 (10.7%), reduced liquor (n=37 (8.6%), reduced fetal movements (n=33 (7.7%), diabetes (n=33 (7.7%) and rest were rare causes (Table 4). Out of total 102 induced patients who, ended up in c/section 68 (66.6%) were primiparous. and 34 (33.3%) were multigravidas. The most common indication for c/section in induced patients were failed induction (n=53(51.9%), followed by prolong second stage (n=30(29.4%), abnormal fetal heart rate pattern (n=10(9.8%) and meconium stained liquor (n=9 (8.8%) [Table 5]. The rate of emergency c/section in induced patients was 13.5% in comparison to 15.7% in spontaneous labour.

**Table No.3: Total patient induced (n=429)**

Induction	No.	%
Primi-parous	203	47.3
Multi-parous	226	52.7

**Table No.4: Indications for induction of labour (n=429)**

Indication	No.	%
Prolong pregnancy	147	34.2
PROM	71	16.5
Gestational hypertension	46	10.7
Reduced liquor	37	8.6
Reduced fetal movements	33	7.7
Uncontrolled diabetes	33	7.7
Obstetric cholestasis	18	4.3
Intra uterine growth restriction	11	2.5
Bad obstetrical history	9	2.1
Intra uterine death	9	2.1
Pre eclampsia	4	0.9
Poly hydramnios	5	1.2
Suspected macrosomia	4	0.9
DVT	1	0.3
Pancreatitis	1	0.3

**Table No.5: Indications of c/sections in induced patients (n=102)**

Indication	No.	%
Failed induction	53	51.9
Prolong second stage	30	29.4
Abnormal fetal heart rate tracing	10	9.8
Meconium stained liquor	9	8.8

**DISCUSSION**

The current world wide rising trend of c/deliveries is a major concern .The most common cause is considered to be increase in rate of induction in all obstetric units. One large study involving 1,389 induced patients showed that c/section rate is not increased, no matter

what ever is indication of labour but makes difference if bishop score is poor particularly in nulliparous .<sup>14</sup>cesarean delivery rate was 23.4% in patients induced for medical reason while 23.8% in patients induced for elective reasons and 12 % in spontaneous labour. Our results are consistent with this study showing cesarean delivery rate of 13.5% in patients induced for medical reasons .c/section rate was high in primiparous (66.65) as compared to multigravidas (33.3)

Another large study was conducted including data from 5 (level 3) hospital of north Portugal in 2013. According to this study rate of induction was between 16.9 and 41.7%.<sup>15</sup>The proportion of induce patients for elective indications were 20.3% to 45.55% and rate of c/section was 41.55. The main indication to proceed for c/delivery was failed induction (21-27%) in patient with elective induction and was 17-34% in patients with medical indication. Two of hospital found increase c/deliveries in induced labour.<sup>15</sup>According to this study again it's the indication that makes difference. In our study induction rate was 13.5% and all had medical indication as elective indication is not entertained in our unit. The average c/section rate was 40.7% while 13.5% in induced patients. The main indication for c/section was failed induction [n=53 (51.9%)]

Another study conducted by Vahartian in 2004 concluded that women who underwent elective induction have 3.5 time more risk of having cesarean deliveries as compared to spontaneous labour and especially in patients with poor bishop score.<sup>16</sup>In our study c/section rate was not much different between induced patients and patients with spontaneous labour (13.5% and 15.7% respectively) [Table 2].

Another recent systemic review and meta-analysis of randomized controlled trial has demonstrated no risk of cesarean section in uncomplicated singleton gestation.<sup>17</sup> Our results are in consistent with this finding. We compared rate of c/section to induction of labour in individual months which do not show any linear relationship. In month of April and November and December induction was lowest but c/section rate was highest, while on contrary induction were at its highest rate in March, May, September and October but cesarean section rate was lowest.

One large systemic review also disagreed with fact that induction of labour increases c/deliveries .it rather shows that induction reduces the cesarean deliveries risk.<sup>18</sup> Another systemic review and meta-analysis on use of labor induction and risk of cesarean delivery published in 2014 also concluded that induction of labor reduces risk of c/section compared with expectant management in term and post term pregnancy.<sup>19</sup>

## CONCLUSION

Induction of labour for medical reason does not increase risk of cesarean section.

### Author's Contribution:

Concept & Design of Study: Fazia Raza  
 Drafting: Roeda Shams  
 Data Analysis: Roeda Shams  
 Revisiting Critically: Fazia Raza, Roeda Shams  
 Final Approval of version: Fazia Raza

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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