



Contemporary Status of Cesarean Delivery

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Abstract

Background: This study has been done in Abu Hammad Hospital, Obstetrics and Gynecology Department in The period between April and October 2009 on all patients who was admitted to Obstetrics Department.

Objective: The main goal of this study is a comprehensive study of cesarean deliveries regarding incidence, indications, complications and factors that contribute to the increase of the rate.

Subjects & Methods: All pregnant women who admitted with labour pain were observed for obstetric outcome as regard to age, parity, mode of delivery, medical disorders, postpartum complications, postpartum hospital stay and neonatal outcome. All data were collected from the files of the patients, tabulated and figured. This study includes 332 patients who were admitted with labour pains.

Results: The results of this study are presented in Tables (2-17) and Figures (13-17). It is found that total numbers of patients who were admitted in labour was (332). Rate of CS increased up to 40.15% in Abu Hammad hospital and this is due to previous CS, fetal distress, cephalo-pelvic disproportion, delay in childbirth and reduced parity, decrease in rate of vaginal breech delivery, short period between Pregnancies especially if previous delivery by CS and fear of complications that may occur to the scar of the uterus during trial of vaginal delivery after CS, in addition to medical complications that may occur with increased age for the mother.

Conclusion: Rate of cesarean section in Abu Hammad Hospital in the period from April to October 2009 was (133 = 40.1%), the cesarean section patient were classified according to causes of cesarean section, it has been found that (35.3%) due to previous CS, (21.8%) due to fetal distress, (15%) due to medical disorder, (9%) due to unknown Indication, (4.5%) due to CPD, (4.5%) due to malpresentations & malpositions, (5 = 3.8%) due to Breech, (2.3%) due to maternal request, (1.5%) due to precious baby, (0.8%) due to Post-date without labor pain, (0.8%) due to soft tissue obstruction, (0.8%) due to elderly primigravida.

In this study a medical disorder or condition associated with pregnancy and complications were increased significantly in cesarean section group than vaginal delivery group. The hospital stay also increased significantly in cesarean section group than vaginal delivery group. As regard gravidity, premature rupture of membranes and the mean of age of the patients participating in the current study, there were no statistically significant differences between both groups of the study.

Key Words: *Brief history, Cesarean section rate, Indications for cesarean section, Evidence based cesarean section, Complications of cesarean section, Cesarean hysterectomy, Delivery after cesarean section, Ethical issues in cesarean section.*

Introduction

Cesarean delivery is defined as the birth of a fetus through incisions in the abdominal wall (laparotomy) and the uterine wall (hysterotomy). This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of the uterus or in the case of an abdominal pregnancy (1).

For the last 30 years, there has been a public health concern about increasing cesarean sections rates. The increase has been a global phenomenon, the timing and the rate of increase has differed from one country to another and marked differences in rate persist.

WHO estimates the rate of cesarean section to be between 10-15% of all births in developed countries. Nevertheless, the cesarean section rate in the UK was about 20% and in US, it was about 29.1% in 2004 (Preliminary Births for 2004, 2006). This increase in rate is partly due to reasons other than medical necessity (2).

Reasons for this escalating trend in cesarean section rates:

This five-fold increase in cesarean rate in Western and Latin American countries had a number of possible explanations including:

1. The improved safety of the procedure contributed by antibiotics, Blood availability.
2. Decreased use of midpelvic forceps and ventouse because of a combination of fear of malpractice litigation or inexperience with the procedures has definitely contributed to increased resort to cesarean delivery.

3. The increasing use of continuous electronic fetal monitoring has been associated with increased cesarean rates as compared with intermittent fetal heart rate monitoring. The looseness and nonstandardization of the criteria of impending fetal hypoxemia contributed to this increased rate.
4. Delivering most of breech presentations by planned term cesarean section.
5. Repeat cesarean sections; consequent to increased primary cesarean sections, repeat section has become the commonest indication of the operation, accounting for more than one-third of the indications.
6. Almost half of pregnant women in the United States are nulliparas and these have increased incidence of pregnancy and labor complications that indicate more cesarean delivery rates.
7. Women in Western societies marry late and end in becoming elderly primigravidae. This is an increasing trend in these communities. These women require more cesarean sections for their delivery (3).

Consequent to increased primary cesarean section rates, repeat section has become the commonest indication. Advocates of trial Vaginal Birth After Cesarean section (VBAC) are decreasing among the obstetricians (4).

Cesarean section is indicated when vaginal delivery might carry a risk to the mother (mainly labor dystocia and previous cesarean) or to the fetus (mainly fetal distress and malpresentations) or both (5).

Cesarean sections may be performed for maternal, fetal, or combined indications. Maternal indications include those done in the mother's interest when vaginal birth is dangerous or impossible. A section would be done for fetal indication when the fetal risk is less with abdominal than with vaginal birth. When it is in the interest of both mother and fetus to have a cesarean delivery, we have a combined indication.

The four most common indications for cesarean section accounting for approximately 70% of these deliveries are:

1. Previous Cesarean delivery.
2. Non reassuring fetal status.
3. Failure to progress in labor.
4. Fetal malpresentation.

The interest of the mother and fetus don't always coincide. The decision making requires experience, clinical judgment, logic, and consideration of the wishes of the parents. The right decision results from understanding all factors, rather than relying on a tabulated list of indications.

The final goal of any operative indication is that the necessity of performing the operation would appear as valid in retrospect as it does in prospect. Although this goal may never be achieved in all cases, it should be sought (6).

Cesarean section is a major abdominal surgery. So, it may have major complications e.g. hemorrhage, infection, organ injuries, and thromboembolism. The relative mortality is higher than that of vaginal delivery (2-10 folds) (3).

In some cases, and most often because of emergent complications such as intractable hemorrhage, abdominal hysterectomy is indicated following delivery. When performed at the time of cesarean delivery, it is called cesarean hysterectomy. If done within a short time after vaginal delivery, it is termed postpartum hysterectomy (1).

During the evolution of cesarean section, key steps in reducing maternal mortality were: adherence to principles of asepsis, the introduction of uterine suturing by Max Sanger in 1882, extraperitoneal cesarean section and then moving to transverse lower-segment incision by Kronig, anesthetic advances, blood transfusion practice, and antibiotic use (6).

Subjects and Methods

This retrospective study has been done in Abu Hammad Hospital, Obstetrics department in the period from April to October 2009 to evaluate Cesarean delivery in Abu Hammad Hospital –Sharkia Governorate as a rural area.

All pregnant women who admitted with labour pain were observed for obstetric outcome as regard to mode of delivery, age, Gravidity, indications, gestational age, medical disorders, postpartum complications, hospital stay and neonatal outcome.

All data were collected from the files of the patients, tabulated and figured.

This study includes 332 patients who were admitted with labour pain divided into two groups, Group 1 which included (133) women who delivered by cesarean section and Group 2 which included (199) women who delivered by vaginal delivery.

*According to age, it is found that:

- Total number of patients from 20-24 years was (170 = 51, 21%),
- Total number of patients from 25-29 years was (100 = 30.12%),
- Total number of patients from 30-34 years was (43 = 12, 95%),
- Total number of patients from 35-40 years was (19 = 5, 72%).

*According to gravidity, it is found that:

- Total number of primigravida was (133 = 40, 1%), and
- Total number of Multigravida was (199 = 59, 9).

*According to mode of delivery, it is found that:

- As regard to C.S rate was (133 = 40, 1%),
- As regard to vaginal delivery rate (199 = 59, 9 %).

*According to gestational age, it is found that:

- Term about (312 = 93.97%)
- Preterm about (19 = 5.72%),
- Postterm about (1 = 0.3%).

*According to causes of cesarean section, it is found that:

- Repeated sections was (47 = 35.3%)
- Fetal distress was (29 = 21.8%)
- Unknown indication was (12 = 9%)
- CPD with labor pain was (6 = 4.5%)
- Malpresentations was (6 = 4.5%)
- Breech with labour pain was (5 = 3.8%)
- Maternal request was (3 = 2.3%)
- Precious baby was (2 = 1.5%)
- Elderly primigravida was (1 = 0.8%)

- Post-date without labor pain was (1 = 0.8%)
- Soft tissue obstruction was (1 = 0.8%).
- Medical disorders (20 = 15%), it is found that:
- Total number of cases with Hypertension (9 = 6.8%)
- Total number of cases with APH (7 = 5.3%)
- Total number of cases with Diabetes mellitus (1 = 0.8%)
- Total number of cases with Hydramnios (1 = 0.8%)
- Total number of cases with Heart disease (1 = 0.8%)
- Total number of cases with Oligohydramnios (1 = 0.8%)

* According to Fetal outcome, it is found that:

- Total number of male live births was (169 = 50.75%)
- Total number of female live births was (164 = 49.25%).

Statistical analysis:

These data were recorded, and transferred to IBM cards using IBM computer with statistical program “SPSS” to obtain:

1- Descriptive statistics: a-mean (x)

b-standard deviation (\pm SD)

a & b for quantitative data

c-percentage of the value to total number of the group for qualitative data.

2- Analytical statistics:

a-student “t” test to compare two independent means.

P (probability) value = level of significance.

$p > 0.05$ = non significant.

$p < 0.05$ = significant.

b- Chi-square test to compare between different qualitative data.

Results

This study has been done in Abu Hammad Hospital, Obstetrics and Gynecology Department in The period between April and October 2009 on all patients who were admitted to the Obstetrics Department in Labour. It has been found that total number of patients was (332) divided into two groups, Group 1 which included (133) women who delivered by cesarean section and Group 2 which included (199) women who delivered by vaginal delivery. The results of this study are presented in Tables (2 - 17) and Figures (13 – 17).

*According to the age:

It is found that:

Total number of patients from 20-24 years was (170= 51, 21%),

Total number of patients from 25-29 years was (100=30, 12%),

Total number of patients from 30-34 years was (43=12, 95%),

Total number of patients from 35-40 years was (19= 5, 72%).

Age groups	Frequency	Percentage
20 – 24 years	170	51, 21
25 – 29 years	100	30, 12
30 – 34 years	43	12, 95
35 – 40 years	19	5, 72

Table (2): Shows the Distribution of Patients According to Age groups:

*According to mode of delivery:

It is found that:

- Total number of vaginal deliveries was (199 = 59.1%),
- Total number of Cesarean deliveries was (133 = 40.1%).

group \ Feature	Frequency	Percent
Vaginal	199	59.9%
c.s	133	40.1%
Total	332	100 %

Table (4): Shows the Distribution of Patients According to Mode of Delivery

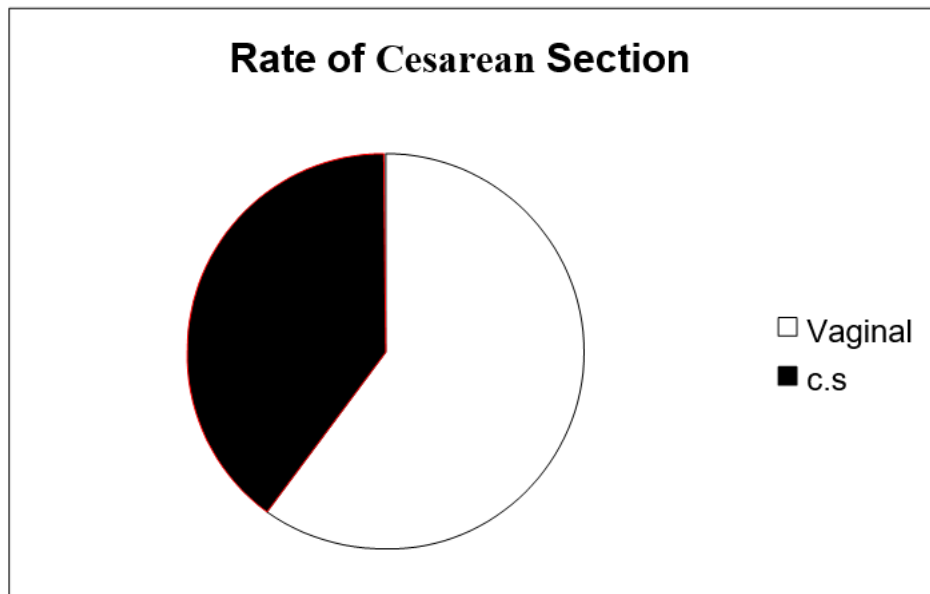


Figure (14) Shows the Distribution of Patients According to Mode of Delivery

*According to gestational age:

Total number of full term was (310 = 93.4%), Total number of preterm was (21= 6.3%), and Total number of post term was (1 = 0.3%).

Feature	Frequency	Percent
Gestational age		
Full term	310	93.4%
Preterm	21	6.3%
Post term	1	0.3%
Total	332	100%

Table (5): shows the Distribution of Patients regarding Gestationalage;

*According to indications for cesarean section:

Total number of cases due to repeated sections was (47 = 35.3%), due to Fetal Distress was (29 = 21.8%), due to Medical disorder was (20 =15%), due to Unknown Indication was (12 = 9%); due to CPD with labor pain was (6 = 4.5%), due to Malpresentations was (6 = 4.5%), due to Breech with labor pain was (5 = 3.8%), due to Maternal request was (3 =2.3%), due to Precious baby was (2 = 1.5%), due to Elderly primigravida was (1 = 0.8%), due to Post-date without labor pain was (1 = 0.8%), and Total number of cases due to Soft tissue obstruction was (1 = 0.8%).

Feature	Frequency	Percent
Indications		
Repeated sections	47	35.30%
Fetal distress	29	21.80%
Medical disorder	20	15.00%
unknown	12	9.00%
C.P.D	6	4.50%
Malpresentations	6	4.50%
Breech	5	3.70%
Maternal request	3	2.30%
Precious baby	2	1.50%
Elderly primigravida	1	0.80%

Post-date	1	0.80%
Soft tissue obstruction	1	0.80%
Total	133	100%

Table (6): shows Distribution of cases according to indications for cesarean section:

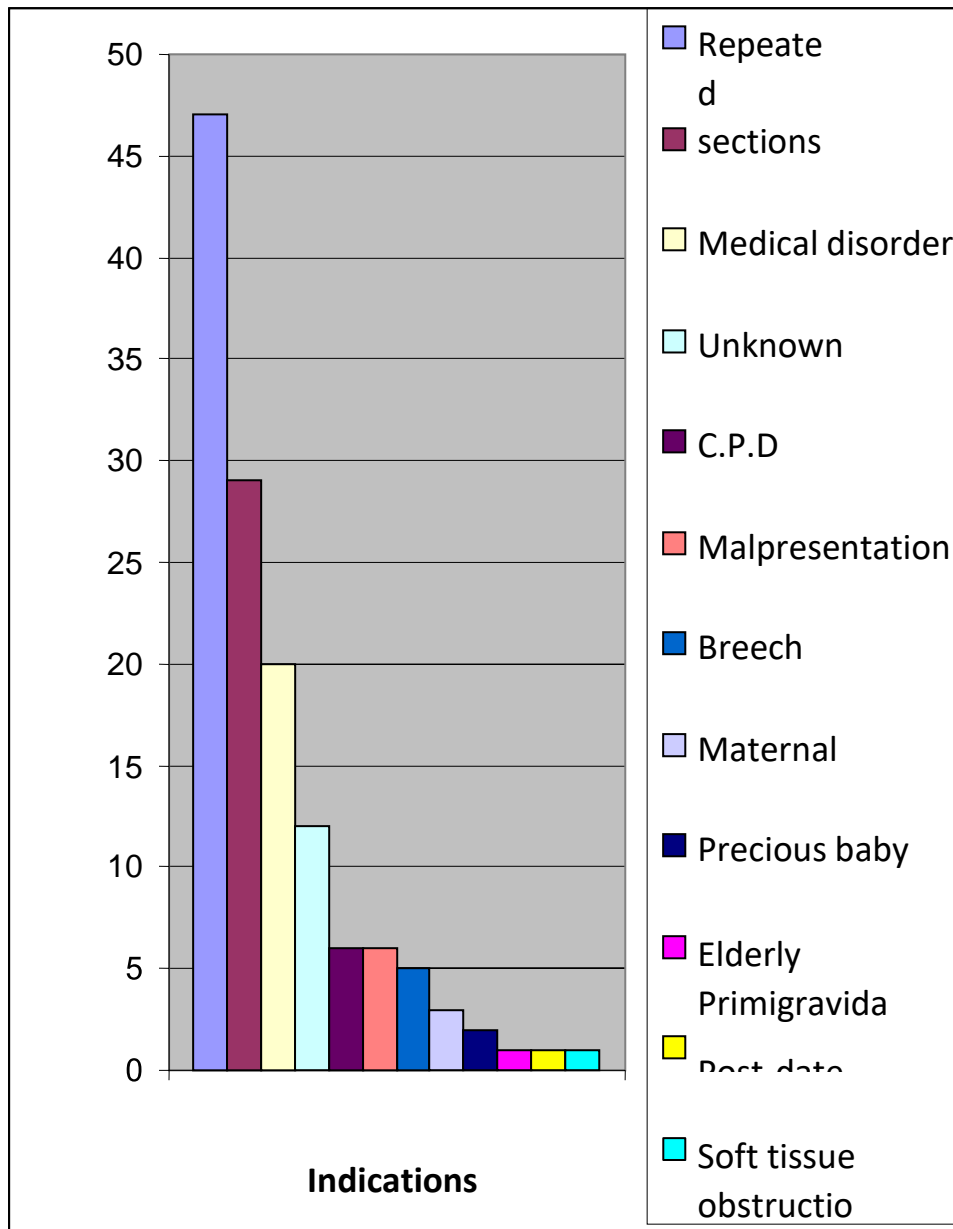


Figure (15): Shows Distribution of cases according to indications of cesarean section:

	Frequency	Percent
Hypertension	9	6.80%
A.P.H	7	5.30%
Diabetes Mellitus	1	0.8%
Hydramnios	1	0.8%
Oligohydramnios	1	0.8%
Heart disease	1	0.8%
Total	20	15%

Table (7): Shows Distribution of cases according to medical disorder as an indication for Cesarean section:

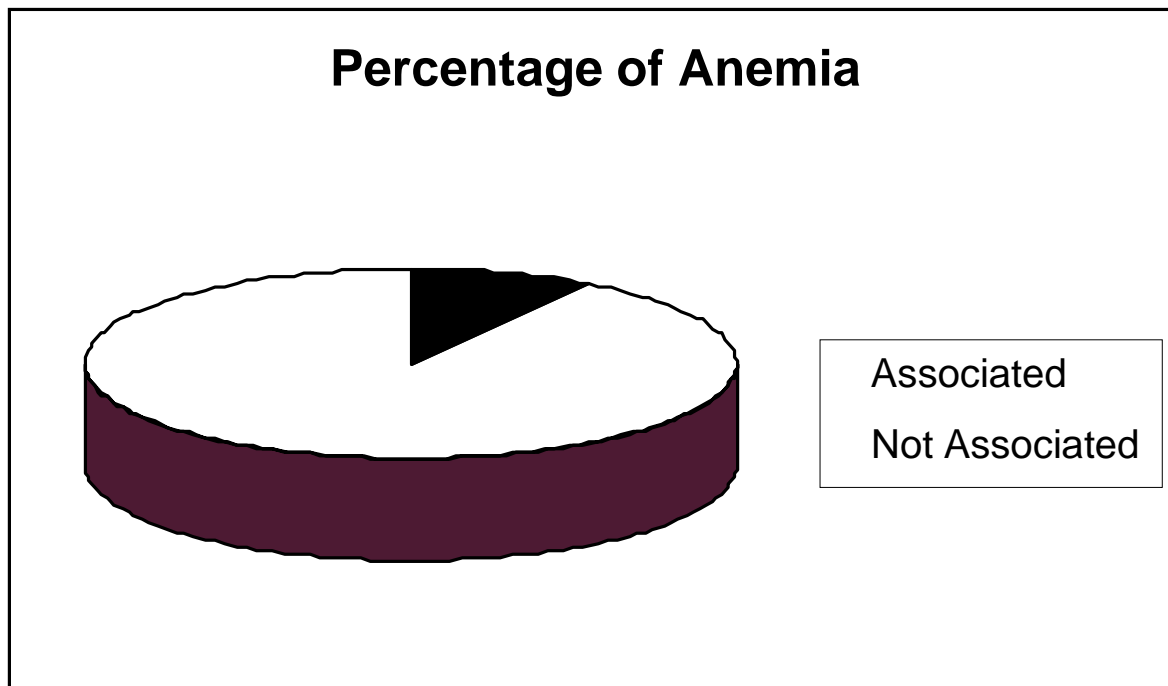


Figure (16): shows the Distribution of Patients According to association with Anemia

*According to fetal outcome after delivery:

- Total number of male live births was (169 = 50.75%), and
- Total number of female live births was (164 = 49.25%).

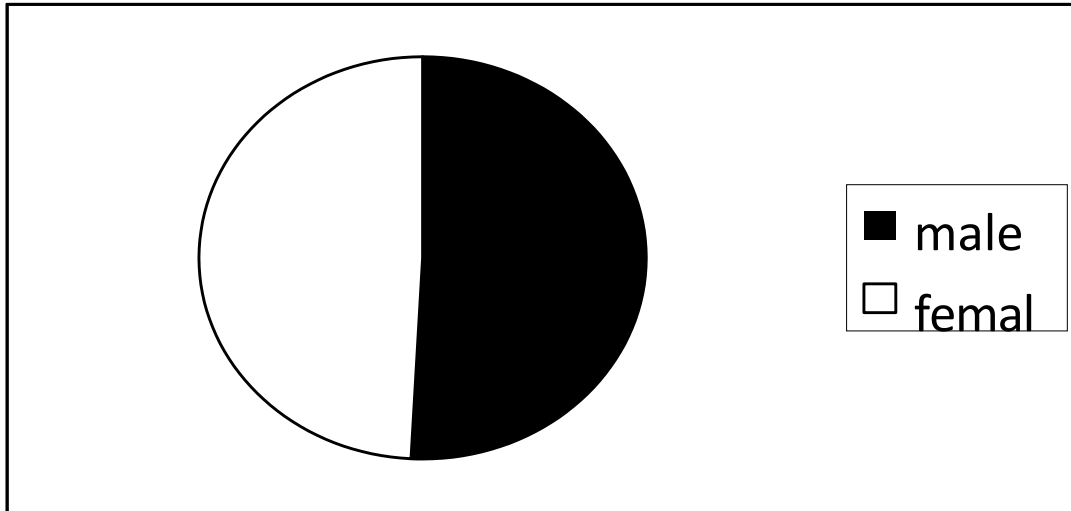


Figure (17): shows the Distribution of Patients According to gender of delivered baby.

*According to Maternal and Fetal morbidity (complications):

Total number of cases with Fetal prematurity was (10 = 3%), Total number of cases With Postpartum hemorrhage was (7 = 2.1%), Total number of cases with Post partum Infection Was (4 = 1.2%), Total number of cases with Postpartum Seizures was (3 =0.9%), Total number of cases with Post partum wound complications was (1= 0.3 %).

	Frequency	Percent
fetal prematurity	10	3.0
P.P.H	7	2.1
P.P. infection	4	1.2
P.P. Seizures	3	0.9
wound complications	1	0.3
Not associated with complications	307	92.5
Total	332	100.0

Table (9): Shows the Distribution of Patients According to Maternal and Fetal Morbidity (complications):

Complications	Group	Delivery mode		Total	x ²	p
		Group1	Group2			
Fetal prematurity	NO.	5	5	10	11.960	0.035
	%	3.8%	2.5%	3%		
P.P.H	NO.	5	2	7		
	%	3.8%	1%	2.1%		
P.P. infection	NO.	3	1	4		
	%	2.3%	0.5%	1.2%		
P.P. Seizures	NO.	3	0	3		
	%	2.3%		0.9%		
Wound complication	NO.	1	0	1		
	%	0.8%		0.3%		
Not associated with Complications	NO.	116	191	307		
	%	87.2%	96%	92.5%		
Total	NO.	133	199	332		
	%	100%	100%	100%		

Table (10): shows the comparison between vaginal delivery group and cesarean section group regarding complications using Pearson chi square test there was statistically significant difference between both groups. (P value <0.05)

Group \ Gravidity		Delivery mode		Total	x ²	p
		Group 1	Group 2			
Primi	no.	48	85	133	1.456	0.227
	%	36.1%	42.7%	40.1%		
Multi	no.	85	114	199		
	%	63.9%	57.3%	59.9%		
Total	no.	133	199	332		
	%	100%	100%	100%		

Table (11): shows the comparison between Cesarean Section group and vaginal delivery group regarding gravidity using Pearson Chi Square Test, there was no statistically significant difference between both groups (p value > 0.05)

Group \ prom		Delivery mode		Total	x ²	p
		Group 1	Group 2			
Not associated with prom	No.	116	186	302	3.788	0.052
	%	87.2%	93.5%	91%		
Associated with Prom	No.	17	13	30		
	%	12.8%	6.5%	9%		
Total	No.	133	199	332		
	%	100%	100%	100%		

Table (12): shows the comparison between Cesarean Section group and vaginal delivery group regarding Premature Rupture of membranes using Pearson Chi Square Test, there was no statistically significance difference between both groups. (P value > 0.05)

Complications	Group	Delivery mode		Total	x ²	p
		Group1	Group2			
A medical disorder	NO.	113	193	306	18.155	0.006
	%	85%	97%	92.2%		
Hypertension	NO.	9	5	14		
	%	6.8%	2.5%	2.4%		
Diabetes	NO.	1	0	1		
	%	0.8%		0.3%		
Heart disease	NO.	1	0	1		
	%	0.8%		0.3%		
Oligohydramnios	NO.	1	0	1		
	%	0.8%		0.3%		
A.P.H.	NO.	7	1	8		
	%	5.3%	0.5%	2.4%		
Hydramnios	NO.	1	0	1		
	%	0.8%	100%	0.3%		
Total	NO.	133	199	332		
	%	100%	100%	100%		

Table (13): shows the comparison between Cesarean Section group and Vaginal delivery group regarding Medical disorder using Pearson Chi Square Test, there was statistically significant difference between both groups. (P value <0.05)

Gender \ Feature	Frequency	Percent
Males	169	50.75%
Females	164	49.25%
Total	333	100%

Table (14): Shows the Distribution of Patients According to fetal outcome after delivery

Group \ Feature	Delivery mode		t	p
	Group 1 no (133)X ± SD	Group 2 no (199)X ± SD		
Gestational age	38.66 ± 2.33	39.37 ± 1.77	-3.156	<0.001

Table (15): shows the comparison between Cesarean Section group and Vaginal delivery group regarding mean of gestational age using t-Test, there was statistically significant difference between both groups (P value <0.05).

Group \ Feature	Delivery mode		t	p
	Group 1 no (133)X ± SD	Group 2. no (199)X ± SD		
Age	25.42 ± 4.42	25.11 ± 4.75	0.610	0.542

Table (16): shows the comparison between Cesarean Section group and Vaginal delivery group regarding mean of age using t-Test, there was no statistically significant difference between both groups (P value >0.05)

Group Feature	Delivery mode		t	p
	Group 1 no (133) X ± SD	Group 2 no (199) X ± SD		
Hospital stay	2.06 ± 0.40	1.09 ± 0.32	24.301	<0.001

Table (17): shows the comparison between Cesarean Section group and Vaginal delivery group regarding mean of Hospital Stay using t- test, there was statistically significant difference between both groups. (P value <0.05).

Discussion

Cesarean deliveries are a surgical procedure to resolve maternal or fetal complications not amenable to vaginal delivery. A study was conducted in Abu Hammad Hospital, Obstetrics Department between April 2009 and October 2009 on 332 patients who were admitted to the Obstetrics Department in Labour. Results showed no statistically significant differences between both groups, except for gravidity, premature rupture of membranes, age, and medical disorders associated with pregnancy. This study found that the rate of cesarean section in the United States had increased significantly since 1988, from 20.7% in 1996 to 31.1% in 2006. The rate increased for women of all ages, race/ethnic groups, and gestational ages and in all states. (9,11)

In Urban China, cesarean section rates in 1998 to 2002 were 39.5%, and in 2002 it was 26.1%, the highest rate ever recorded. In 2005, the rate was 30.2% in the United States. The cesarean rate has increased 46% since 1996, with 120,000 caesarean sections performed annually in England and Wales. In 2002-2003, the rate was 22% in England, 22.5% in Canada, 30.8% in Italy, and 29.2% in Australia. Abu Hammad Hospital accepts all referred patients with complications to reduce fetomaternal morbidity and mortality. (12)

The increasing proportion of births by caesarean section has led to an increased proportion of the obstetric population with a history of prior cesarean delivery. Studies have noted an increased risk for neonatal and maternal mortality for all cesarean deliveries and for medically elective cesareans. The decrease in total and repeat cesarean delivery rates between 1990 and 2000 was due to a transient increase in the rate of vaginal births after cesarean delivery. The cesarean delivery rate has also increased throughout the world, but rates in certain parts of the world are still substantially lower than in America. (10)

The cesarean delivery rate has increased significantly in the US, with a median rate of 33%. Reasons for the increase include repeat cesarean delivery, increased nulliparous births, and decreased vaginal breech delivery. The rate of repeated sections as an indication for cesarean section is 35.3%, and the frequency of nulliparous births increases with advancing age. By 1985, almost 85% of breech presentations were delivered by cesarean. A multicenter and multinational prospective study determined that cesarean delivery was the safest mode of delivery for a breech presentation. (14)

The American College of Obstetricians and Gynecologists (ACOG) has recommended that planned vaginal delivery may be reasonable under hospital-specific protocol guidelines. Perinatal mortality with cesarean delivery has been improved by improved technology and prenatal care. In 1988, 36.3% of all cesarean deliveries were repeat procedures. The safety of allowing vaginal birth after a cesarean delivery has been present since the 1960s. In 2003, the repeat cesarean delivery rate for all women was 89.4%, and low-risk women giving birth for the first time are more likely to have a subsequent cesarean delivery. (15)

This includes delays in childbirth and reduced parity, as well as an increase in the percentage of births to women older than 30, 35, and even 40 years. In 2001, a multicenter and multinational prospective study determined that cesarean delivery was the safest mode of delivery for a breech presentation. The most recent recommendation from the American College of Obstetricians and Gynecologists (ACOG) is that planned vaginal delivery may be reasonable under hospital-specific protocol guidelines. Perinatal mortality with cesarean delivery has been greatly enhanced by improved technology and prenatal care. Fetal heart rate monitoring has decreased the threshold to perform cesarean deliveries for nonreassuring fetal status but has not decreased the overall rate of cerebral palsy. (10)

Electronic fetal monitoring has increased the cesarean delivery rate as much as 40%, without a decrease in the cerebral palsy or perinatal death rate. ACOG recommends that any facility providing obstetric care have the capability to perform a cesarean delivery within 30 minutes of the decision. (13,17)

Malpresentation, Breech with labor pain, and Cephalopelvic disproportion (CPD) are all indications for cesarean delivery. CPD can be suspected based on possible macrosomia or an arrest of labor despite augmentation. Vaginal delivery increases the risk of infectious complications to both mother and fetus, as well as maternal hemorrhagic and fetal metabolic consequences. The NIH convened a consensus conference to address cesarean delivery on request in 2006, which recommended that it should not be performed before the 39th week of pregnancy or without verifying fetal lung maturity. This procedure requires individualized counseling by the practitioner of the potential risks and benefits of both vaginal and cesarean delivery. (21)

The most important details in this text are that cesarean delivery should not be routinely offered on ethical grounds, and that many obstetricians may have a lower threshold to perform a cesarean despite the incidence of neonatal seizures or cerebral palsy. Additionally, many obstetricians may have a lower threshold to perform a cesarean due to fear of medical malpractice lawsuits. Finally, critics worry that cesareans are performed because they are profitable for the Hospital, or because a quick cesarean is more convenient for an obstetrician than a lengthy vaginal birth. Preterm delivery is a leading cause of neonatal morbidity and mortality in developed countries, mainly due to respiratory distress syndrome. Race is a significant risk factor for preterm delivery, with black women having a prematurity rate of 16-18% compared to 7-9% for white women. A medical disorder or condition associated with pregnancy and complications was increased significantly in Group 1 (cesarean section group) than Group 2 (vaginal delivery group). (23)

Primary prevention is possible for certain complications, such as hemorrhage, infection, and obstructed labour. If the maternal mortality ratio is to be reduced and the Healthy People 2010 objective is to be achieved, maternal morbidity, particularly severe morbidity, must be addressed and monitored. Definitions of severe maternal morbidity attributable to direct obstetric causes include hemorrhage, dystocia, hypertension, and sepsis. The leading obstetrical cause of admission in the ICU was obstetric hemorrhage, which contrasts with reports from the USA and other European countries which put hypertensive diseases as the main or third indication for admission. (20)

Conclusion

Rate of cesarean section in Abu Hammad Hospital in the period from April to October 2009 was (133 = 40.1%), the cesarean section patient were classified according to causes of cesarean section, it has been found that (35.3%) due to previous CS, (21.8%) due to fetal distress, (15%) due to medical disorder, (9%) due to unknown Indication, (4.5%) due to CPD, (4.5%) due to malpresentations & malpositions, (5 = 3.8%) due to Breech ,(2.3%) due to maternal request, (1.5%) due to precious baby, (0.8%) due to Post-date without labor pain, (0.8%) due to soft tissue obstruction, (0.8%) due to elderly primigravida.

In this study a medical disorder or condition associated with pregnancy and complications were increased significantly in cesarean section group than vaginal delivery group.

The hospital stay also increased significantly in cesarean section group than vaginal delivery group.

As regard gravidity, premature rupture of membranes and the mean of age of the patients participating in the current study, there were no statistically significant differences between both groups of the study.

References

1. Porreco, R.P. and Thorp, J.A. (1996): The cesarean birth epidemic: Trend, causes, and solution. *Am J Obstet Gynecol*; 175: 369- 74.
2. Royal College of Obstetricians and Gynaecologists Clinical Effectiveness Support Unit. National Sentinel Caesarean Section Audit Report. London: RCOG Press; 2001.
3. Shaaban M. Mamdouh (2006): Cesarean section. *Obstetrics Theory and Practice*; 42: 594-620.
4. Zelop, C.M. and Shipp, T.D. et al. (2001): Outcomes of trial of labor following previous cesarean delivery among women with fetuses weighing > 4000 gm. *Am J Obstet Gynecol*; 185: 903-905.
5. Williams Obstetrics (1971): Appleton Century Crofts. 14th edition. New York; 1163-1190.
6. Pelosi, M.A.; Pelosi, M.A.III and Giblin, S. (1995): Simplified cesarean section. *Contemp Obstet Gynecol*; 40: 89-100.
7. Placek PJ, Taffel SM. Recent patterns in cesarean delivery in the United States. *Obstet Gynecol Clin North Am*. Dec 1988;15(4):607- 27.
8. Thomas, S.L.; Newell, M.L. and Peckham, C.S. (1998): A review of hepatitis C virus vertical transmission: Risks of transmission to infants born to mothers with and without HCV viremia or HIV infection. *Int J Epidemiol*; 27: 108-17.
9. Smith, G.C.S.; Pell, J.P. and Dobbie, R. (2003): Caesarean section and risk of unexplained stillbirth in subsequent pregnancy. *Lancet*; 362: 1779-1784.
10. Rouse, D.j.; Owen, J. and Hauth, J.C. (1999): Active phase labor arrest: Oxytocin augmentation for at least 4 hours. *Obstet Gynecol*; 93: 323.
11. Pearlman, N.W.; Stiegmann, G.V. and Vance, V. et al. (1991): A prospective study of incisional time, blood loss, pain, and healing with carbon dioxide laser, scalpel, and electrosurgery. *Arch Surg*; 126: 1018-1020.
12. Morrison, J.J.; Rennie, J.M. and Milton, P.J. (1995): Neonatal respiratory morbidity and mode of delivery at term; influence of elective caesarean section. *Br J Obstet Gynecol*; 102: 101-6.

13. McNally, O.M. and Turner, M.J. (1999): Induction of labor after one previous cesarean section. *Aust NZ J Obstet Gynecol*; 39: 425-429.
14. Lieberman, E. and O'Donoghue, C. (2002): Unintended effects of epidural analgesia during labor. A systematic review. *Am J Obstet Gynecol*; 186: 531.
15. Landon, M.B.; Leindecker, S. and Spong, C.Y. et al. (2005): Factors affecting the success of trial of labor after previous cesarean delivery. *Am J Obstet Gynecol*; 193: 1016-1023.
16. Frishman, G.N.; Schwartz, T. and Hogan, J.W. (1997): Closure of Pfannenstiel skin incisions; staples versus subcuticular suture. *J Reprod Med*; 42: 627-30.
17. Eccles, M. and Mason, J. (2001): How to develop cost-conscious guidelines. *Health Technology Assessment*; 5(16).
18. Cunningham, G.F.; Hauth, J.C. and Leveno, K.J. et al. (2005): *Williams Obstetrics (22th ed)*; 25: 587-606.
19. Bujold, E.; Bujold, C. and Hamilton, E.F. (2002): The impact of a single-layer or double-layer closure on the uterine rupture. *Am J Obstet Gynecol*; 186: 1326-30.
20. Bofill, J.A.; Lenki, S.G. and Barhan, S. (2000): Instrumental delivery of the fetal head at the time of elective repeat cesarean: A randomized pilot study. *Am J Perinatol*; 17: 265-9.
21. Badawy, S.Z.; Etman, A. and Singh, M. et al. (2001): Uterine artery embolization: The role in obstetrics and gynecology. *Clin Imaging*; 25: 288-295.
22. Apuzzia, J.J. and Salamon, C.G. (2006): Cesarean section. Editors: Apuzzio JJ, Vintzileos AM, Iffy L. *Operative Obstetrics*, 3rd edition; 30: 365-386.
23. Apuzzio, J.J. and Garcio, J. (2006): Prevention of surgical site infection. Editors: Apuzzio JJ and Vintzileos AM, Iffy L (eds). *Operative Obstetrics*, 3rd edition; 31: 387-394..