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Original Research Article

Indications and complications of first caesarean section in Tanta University Hospital Versus Sidi Salem Central Hospital a comparative prospective study

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ABSTRACT

Background: Caesarean section (CS) is a surgical procedure in which obstetricians do incisions through the mother's abdomen and uterus to deliver one or more viable babies. The present study was undertaken to determine the indications and complication of first CS.

Methods: This prospective comparative study was done in Tanta university hospital and Sidi Salem central hospital, Egypt for one year in the gynecology and obstetrics department. It involved all females delivered by primary CS in the period from November 2020 to November 2021. Data was collected from the admission sheets of the patients and hospital record system.

Results: The total number of cases delivered by primary CS was 317, 104 case that represented 14.91%, 11.72% from the total number of cases delivered by CS in Tanta and Sidi Salem hospitals respectively. The most common indication for primary CS in Tanta university hospital among studied group was preeclampsia and eclampsia 53 case (16.71%). While in Sidi Salem central hospital, the most common indication was Failure of labor progress 18 case (17.3%). In Tanta university hospital, the most common complication was post-operative shivering 14 case (19.71%). While in Sidi Salem central hospital, the most common complication was intra operative hemorrhage 17 case (28.33%).

Conclusions: The incidence of primary CS in both hospitals was high, so intensive care units, blood banks, incubators with artificial respiration machines and expertise staff must be available at central hospitals in an attempt to decrease the incidence and complications.

Keywords: CS, Indication, Complications, Post-operative shivering, Intra operative hemorrhage

INTRODUCTION

Caesarean section (CS) is a surgical procedure in which obstetricians do incisions through the mother's abdomen and uterus to deliver one or more viable babies. It is usually done when vaginal delivery would endanger the mother's or baby's life or health, although in recent eras cesarean deliveries have been done upon request of the mothers for births that can otherwise be natural.¹ CS delivery ratio enlarged constantly by years owing to the diminution of maternal mortality after that process which

was beneath 1 per 1000 since 1985. This increased security fortified obstetricians to generate extra reasons for doing this interference and still increasing in spite of efforts to decrease it. Worldwide, cesarean delivery represented 15% to 25% of childbirths in 2000 and 2001.² Furthermore, the average maternal age is rising, and older females, particularly primiparas, are at increased possibility of caesarean delivery. The prevalent usage of electric fetal monitoring is accompanied with an amplified caesarean delivery rate compared with alternating auscultation of fetal heart.³

In Egypt, the report of the Egyptian population council during the year 2018 said that the rate of CS reached (52%) in the last 10 years. While CS is common at the present time, it was limited in the past.² In the United States, the rates of CS are growing irrespective of maternal race, age, gestational age or medical condition and the number of no indication first cesarean delivery is also increasing.⁴ In 2017, it was about (32%) of all births.⁵ The advanced rates of CS procedure could even be associated with surgical complications that are not in comparison with therapeutic advantages.⁶ In the developing countries cesarean deliveries represent one of the major causes of maternal deaths and fetal respiratory complications. For these reasons; almost all guidelines advice performing cesarean delivery beyond 39 weeks of gestation.^{7,8} Also, the raised CS rates have negative effect on resources of the hospitals.⁹⁻¹²

There are many indications for doing CS s such as obstructed labor, multiple gestations and many reasons related to the umbilical cord and the placenta.¹³⁻¹⁶ So, the aim of the present study was to determine the indications and complication of first CS in two hospitals, Tanta university hospital and Sidi Salem central hospital, Egypt.

METHODS

This prospective comparative study was done at Tanta university and Sidi Salem central hospitals during one year from November 2020- November 2021 to females delivered by primary CS. The medical files of the patients included in the study were gathered, the collected data was revised and analyzed. There were code number for each patient file to save the patients data privacy.

The following data were collected from the participants sheets, name and address of all participants but a code number was given to each female.

Age

Maternal age was divided into groups; from 18 to 24 years, from 25 to 30 years, from 31 to 35 years and from 36 to 40 years.

Parity

All females were primigravida.

Gestational age at delivery time

It was recorded according to last menstrual period date and/or ultrasonographic reports. There were three groups preterm (<37 weeks of gestation), full term (37-42 weeks) and postdate (>42 weeks).

Fetal presentation

Fetal presentation was whether cephalic, breech or shoulder.

CS type

Type A-emergency, there was fetal or maternal life-threatening condition. Type B-elective, no fetal or maternal life-threatening condition and done after assessing fetal maturity.

Indications for CS

Indications for CS was whether fetal, maternal or fetomaternal indications.

Complications of CS.

Maternal: Such as intra operative hemorrhage, septic wound, postoperative hemorrhage, paralytic ileus, infection and maternal death.

Fetal: trauma, neonatal respiratory distress and mortality.

Anesthetic complications: technique failure, headache, motor block and spinal shock.

The collected data was processed and statically analyzed using Chi-square by SPSS V17.

RESULTS

The total number of cases admitted to Tanta university hospital for CS from November 2020 to November 2021 was 2126 case among them 317 delivered by primary CS representing 14,91% while in Sidi Salem central hospital 104 case delivered by primary CS from 887 case representing 11.72% as shown in Table 1.

The most common indication for primary CS in Tanta university hospital among studied group was preeclampsia and eclampsia 53 case (16.71%) followed by premature rupture of the membrane (PROM) with failed normal vaginal delivery (NVD) 47 case (14.82%) then failure of labor progress 41 case (12.93%). In Sidi Salem central hospital, most common indication for primary cesarean was failure of labor progress 18 case (17.3%), followed by preeclampsia and eclampsia 14 case (13.46%) then PROM with failed NVD 12 case (11.53%) as shown in Table 2.

In Tanta university hospital, among 317 case complications occurred in 71 case (22.39%) while in Sidi Salem central hospital, among 104 cases, complications occurred in 60 case (57.69%). In Tanta university hospital, the most common complication was post-operative shivering 14 case (19.71%), followed by intra operative hemorrhage 11 case (15.49) and neonatal asphyxia 11 case (15.49%), then neonatal mortality 10 cases (14.08%). In Sidi Salem central hospital, among 104 cases, the most common complication was intra operative hemorrhage 17 case (28.33%), followed by neonatal asphyxia 9 cases (15%) and post-operative shivering 9 cases (15%) then failed spinal anesthesia 5 cases (8.33%) as shown in Table 3.

Table 1: Rate of repeated CS and first CS in Tanta university hospital and Sidi Salem central hospital from November 2020 to November 2021.

| Variables | Tanta university hospital | | Sidi Salem central hospital | | Chi-square | |
|--------------------|---------------------------|-------|-----------------------------|-------|----------------|---------|
| | N | % | N | % | X ² | P value |
| Repeated CS | 1809 | 85.08 | 783 | 88.28 | 5.023 | 0.025 |
| First CS | 317 | 14.91 | 104 | 11.72 | 5.023 | 0.025 |
| Total | 2126 | 100 | 887 | 100 | | |

Table 2: Indications of first CS performed in Tanta university hospital and Sidi Salem central hospital from November 2020 to November 2021.

| Indications of first CS | Tanta university hospital | | Sidi Salem central hospital | | Chi-square | |
|-------------------------------------|---------------------------|-------|-----------------------------|-------|----------------|---------|
| | N | % | N | % | X ² | P value |
| Preeclampsia and eclampsia | 53 | 16.72 | 14 | 13.46 | 0.401 | 0.526 |
| Failure of labor progress | 41 | 12.93 | 18 | 17.31 | 0.907 | 0.341 |
| PROM with failed NVD | 47 | 14.83 | 12 | 11.54 | 0.456 | 0.499 |
| Oligohydramnios | 17 | 5.36 | 5 | 4.81 | 0.001 | 0.974 |
| Cephalopelvic disproportion | 23 | 7.26 | 7 | 6.73 | 0.002 | 0.969 |
| Antepartum hemorrhage | 34 | 10.73 | 11 | 10.58 | 0.020 | 0.888 |
| Fetal distress | 23 | 7.26 | 10 | 9.62 | 0.321 | 0.571 |
| Malpresentation | 20 | 6.31 | 8 | 7.69 | 0.070 | 0.791 |
| Maternal diseases | 13 | 4.10 | 9 | 8.65 | 2.423 | 0.120 |
| Multiple pregnancy | 9 | 2.84 | 3 | 2.88 | 0.099 | 0.753 |
| Post date | 16 | 5.05 | 1 | 0.96 | 2.402 | 0.121 |
| Macrosomia | 2 | 0.63 | 1 | 0.96 | 0.105 | 0.746 |
| Old primigravida | 7 | 2.21 | 2 | 1.92 | 0.047 | 0.829 |
| IUFD with failed NVD | 8 | 2.52 | 1 | 0.96 | 0.319 | 0.572 |
| IUGR with failed NVD | 3 | 0.95 | 2 | 1.92 | 0.076 | 0.782 |
| Congenital uterine Anomalies | 1 | 0.32 | 0 | 0.00 | 0.345 | 0.557 |
| Total | 317 | 100 | 104 | 100 | 11.40 | 0.724 |

Table 3: Complications of first CS performed in Tanta university hospital and Sidi Salem central hospital from November 2020 to November 2021.

| Complications | Tanta university hospital | | Sidi Salem central hospital | | Chi-square | |
|----------------------------------|---------------------------|-------|-----------------------------|-------|----------------|---------|
| | N | % | N | % | X ² | P value |
| Maternal | | | | | 6.454 | 0.374 |
| Intraoperative hemorrhage | 11/71 | 15.49 | 17/60 | 28.33 | 0.667 | 0.414 |
| Septic wound | 4/71 | 5.63 | 3/60 | 5.00 | 0.033 | 0.856 |
| Fever>38.5°C and lasted>48 hours | 9/71 | 12.67 | 4/60 | 6.66 | 2.288 | 0.130 |
| Postoperative hemorrhage | 3/71 | 4.22 | 3/60 | 5.00 | 0.070 | 0.792 |
| Maternal death | 0 | 0.00 | 3/60 | 5.00 | 1.148 | 0.284 |
| HELLP syndrome | 1/71 | 1.4 | 2/60 | 3.33 | 0.013 | 0.909 |
| Purpural sepsis | 1/71 | 1.4 | 1/60 | 1.66 | 0.394 | 0.530 |
| Neonatal | | | | | 3.268 | 0.195 |
| Neonatal asphyxia | 11/71 | 15.49 | 9/60 | 15.00 | 0.374 | 0.541 |
| Surgical scalp cut wound | 0 | 0.00 | 1/60 | 1.66 | 0.060 | 0.806 |
| Neonatal mortality | 10/71 | 14.08 | 3/60 | 5.00 | 1.140 | 0.286 |
| Anesthetic complications | | | | | | |
| Shivering | 14/71 | 19.71 | 9/60 | 15.00 | 0.048 | 0.827 |
| Failed spinal anesthesia | 7/71 | 9.85 | 5/60 | 8.33 | 0.048 | 0.827 |
| Total | 71 | 100 | 60 | 100 | 2.635 | 0.268 |

In Tanta university hospital, emergency CS was 82.96% while in Sidi Salem central hospital, it represented 56.73% of cases as shown in Figure 1.

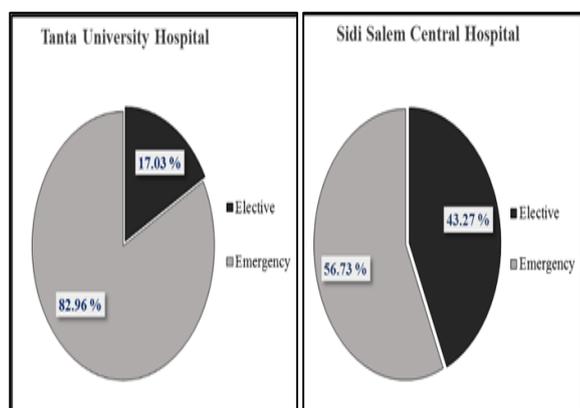


Figure 1: Type of CS in the studied cases.

The incidence of CS was highest (57.09%) among the age group 18-24 years and was lowest (2.2%) among age group 36-40 years in Tanta university hospital. While in Sidi Salem central hospital the incidence was highest (75.96%) among the age group 18-24 years and was lowest (1.92%) among the age group 36-40 years as shown in Figure 2.

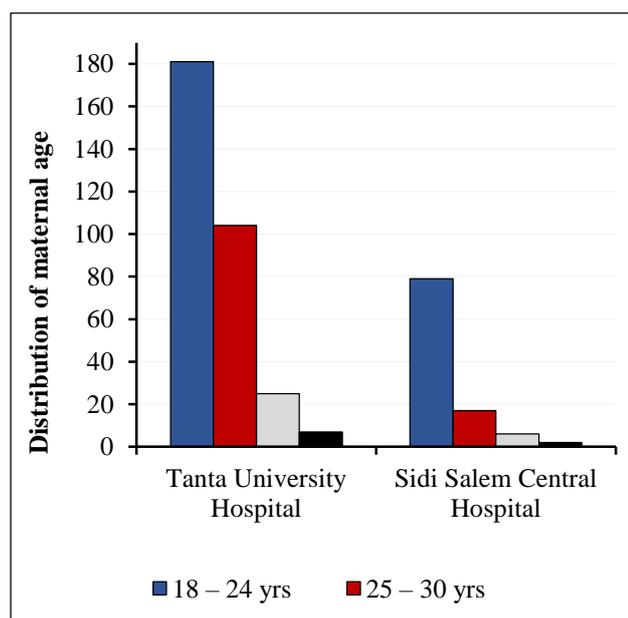


Figure 2: Distribution of maternal age at time of CS in Tanta university hospital and Sidi Salem central hospital from November 2020 to November 2021.

DISCUSSION

The present work is a comparative study about primary CS to record the incidence, indications, complications, possibility of raised rate of primary CS and measures to decrease that increased rate. In a study done in Mansoura

university hospital (2013) invented that three chief explanations were responsible for the advanced rate of CS. The first was that; an obstetric anesthetic staff fellow is not accessible within the wards of delivery to offer epidural analgesia if necessary, the second was lack of trying instrumental methods of delivery (ventouse and forceps and) in numerous circumstances when it could be fruitful, and the last was that junior obstetricians considered that CS is a conventional manner of delivery.¹⁷

Despite the universal growth in CS proportion, the rate is quiet low in Jordan since in most hospitals the same strategy is used which consist of; a trial of labor, the use of greater quantities of oxytocin and for extended episodes and cesarean birth for fetuses <30 weeks is performed in sporadic cases. This strategy is prevalent as >80% of deliveries are done by midwives, lack of greatly accomplished neonatology units and the nonexistence of medico-legal difficulties.¹⁸

As demonstrated in Table 1, the rate of primary CS in Sidi Salem central hospital was fewer than Tanta University hospital as the deficiency of facilities end by raised referral rates. In the year 2012, in a study made in Prince Zaid Bin Al Hussein military hospital-Jordan, there were 216 (48%) primary CS and 234(52%) repeated CSs which proved that the higher the facilities in hospital, the higher incidence of primary caesarean delivery what we settled in our study.¹⁹

As shown in Table 2, the most common indications of primary CS in Tanta university hospital were preeclampsia and eclampsia, then premature rupture of the membrane (PROM) with failed normal vaginal delivery (NVD) then failure of labor progress. While in Sidi Salem central hospital, the most common indications of primary cesarean were failure of labor progress, followed by preeclampsia and eclampsia, then PROM with failed NVD.

A study done in Saudi Arabia found that the major indications for primary CS involved: fetal distress 27.5%, non-progress of labor 22.5%, breech presentation 18%, failed labor initiation (4.5%) and other non-reported indications in 4.00%.²⁰

In 2016, a retrospective study was prepared in Felegehiwot referral hospital, Northwest Ethiopia, that study stated that the most common indications of primary cesarean delivery were obstructed labor, fetal distress and abnormal presentation representing (30.7%), (15.9%) (13.4%) respectively.²¹

In a prospective study done in Rwanda, the chief indications for primary CS were acute fetal distress (31.3%), generally contracted pelvis (28.1%), engagement failure (25%), cephalopelvic disproportion (9.4%), face presentation (3.1%) and eclampsia (3.1%) which does not coincide with the present study.²²

As demonstrated in Table 3, in Tanta university hospital, the most common complications were post-operative

shivering, followed by intra operative hemorrhage and neonatal asphyxia, then neonatal mortality. While in Sidi Salem central hospital, the most common complications were intra operative hemorrhage, followed by neonatal asphyxia and post-operative shivering then failed spinal anesthesia.

Florica et al reported that sever intra-natal hazards were infrequent, fetal distress complicated about 25% of all cesarean births and fetal deaths during delivery were as low as 1.9 per 10.000 deliveries.^{18,23}

As shown in Figure 1, in Tanta university hospital; emergency CS was higher than elective CS and in Sidi Salem central hospital; emergency CS was also higher than elective CS. In a retrospective study made in Soder hospital, Sweden, emergency CS was (54.09%), elective CS was (40.00%) and immediate CS was (5.90%) which match our study.²³

As shown in Figure 2, in both hospitals, the rate of primary CS was greater among the age group 18-26 years and was lowest in the age group 36-40 years due to the old traditions of early marriage even before 18 years. This represent the opposite of a study made in Brazil which showed that the higher CS percentage was among women aged >35 years.²⁴ Similarly, a study was done in Alexandria, founded that an increase in CS proportion is due to advancing maternal age because the maximum incidence of CS was found among age group 30-40 years.²⁵ A relationship was established between maternal age and the intercurrent clinical circumstances as diabetes and chronic hypertension. Also, they found an important increase in CS rate in nullipara beyond 35 years (48.5%).²⁶

CONCLUSION

From the current study we can concluded that, the prevalence of primary CS in both hospitals was high. Intensive care units, blood banks, incubators with artificial respiration machines must be available at central hospitals. The select of CS as a method of delivery should be done by senior staff who must be present and examine the case. Patient's sheets should be considered formal documents and a responsible staff should record in these sheets. The information in the sheets should be revised.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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