



# THE CURREN SITUATION OF CESAREAN SECTION FOR NULLIPAROUS PREGNANCIES AT THE NATIONAL HOSPITAL OF TROPICAL DISEASES IN 2023

Thu Ha Nguyen Thi<sup>1</sup>, Vu Pham Quang<sup>1</sup>, Khanh Phuong Hoang Thi<sup>1</sup>,  
Hang Nguyen Thi<sup>1</sup>, Lang Ngo Van<sup>2</sup>, Lan Nguyen Phuong<sup>3</sup>, Hoang Lien Phi Thi<sup>4</sup>

*Objectives:* To review the indications and results of cesarean sections for nulliparous pregnancies at the National Hospital for Tropical Diseases in 2023.

*Subjects and methods:* A cross-sectional descriptive study combined with a retrospective review of medical records of pregnancies who delivered at  $\geq 28$  weeks gestational age at the National Hospital for Tropical Diseases from May 2021 to November 2023.

*Results:* Research on 200 medical records shows that the rate of cesarean sections for first-born babies accounted for 67% of the total cesarean sections. Indications for cesarean section were due to genital tract issues (13.5%), fetal position (25%), fetal-related reasons (75%), fetal appendages (5.5%), maternal pathology (4%), and social factors (2%). For fetal-related reasons, 52% were due to fetal distress, 32% to macrosomia, and 14.5% to breech presentation. The Apgar index after 1 minute  $> 7$  reached 98.5%, and after 5 minutes  $> 7$  reached 100%. 96.5% of cases had no complications during or after surgery. Complications included bleeding requiring stitches to stop the bleeding (2%) and surgical wound infection (1.5%).

*Conclusions:* The rate of cesarean sections for nulliparous pregnancies accounted for 67% of the total number of cesarean sections at the National Hospital for Tropical Diseases. The main cause of cesarean sections was fetal-related issues. The rate of postoperative complications was low, primarily consisting of bleeding that required stitches and surgical wound infections.

**Keywords:** Caesarean section, nulliparous pregnancies.

## INTRODUCTION

Cesarean section is the procedure in which the fetus and its associated structures are removed from the uterine cavity through an incision in the abdominal wall and the uterine wall. Over the past 20 years, The cesarean section rate has rapidly increased in many

countries around the world. Particularly, in developed countries, including Vietnam<sup>1,2</sup>. Currently, primary cesarean section is a concern among obstetricians because an increase in the rate of primary cesarean sections leads to a rise in complications associated with cesarean sections, such as placenta previa, placenta accreta (including increta and percreta), cesarean scar ectopic pregnancy, uterine rupture, and wound infection, and directly contributes to an increased rate of repeat cesarean sections<sup>3,4</sup>. Therefore, We conducted the study “An Analysis of Indications and Outcomes of Primary Cesarean Section at the National Hospital of Tropical Diseases in 2023” with objective to review the indications and results of cesarean sections for nulliparous pregnancies at the National Hospital for Tropical Diseases in 2023.

<sup>(1)</sup> National Hospital of Tropical Diseases

<sup>(2)</sup> Phenikaa University

<sup>(3)</sup> Vinmec International Hospital (Times City, Hanoi)

<sup>(4)</sup> Smile Kids Vaccination Center

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**Responsibility for the scientific content:** Nguyet Thu Ha Nguyen Thi, National Hospital of Tropical Diseases

Tel: 0974930648. Email: Vupham0210@gmail.com

## SUBJECTS AND METHODS

### Research subjects

#### Sample selection criteria

- Medical records of women undergoing their first cesarean section at the Obstetrics Department of the National Hospital for Tropical Diseases.

- Live fetus with a gestational age of  $\geq 28$  weeks.
- The medical records must contain all necessary information in accordance with the study's criteria.

#### Exclusion criteria

- Medical records of patients transferred from other institutions after having had a cesarean section for other reasons.

**Location and duration of study:** The study was conducted at the Obstetrics Department of the National Hospital of Tropical Diseases from May 2021 to November 2023.

### Research methods

**Study design:** A cross-sectional descriptive study combined with a retrospective study.

#### Sample size and sampling method

- Sample size: The sample size was calculated

based on the formula for determining a proportion, using relative error:

$$n = \frac{Z_{1-\frac{\alpha}{2}}^2 (1 - P)}{\epsilon^2 P}$$

Where:

- n: Minimum sample size for the study.
- Z: Statistical parameter, with a confidence level of  $\alpha = 95\%$ ,  $Z = 1.96$ .
- P: 0.39, the cesarean section rate due to fetal indications, based on the study by Nguyen Binh An (2020)5.
- $\epsilon$ : Relative error.  $\epsilon = 0.18$

The calculated sample size is:  $n = 186$ . The study included an additional 10% to account for incomplete medical records during data collection, resulting in a total sample size of  $n = 204$  medical records. Using the convenience sampling method, a total of 200 medical records were collected.

**Data processing and analysis:** Data were processed using SPSS software version 22.0. A statistically significant difference was defined as  $p < 0.05$ .

## RESULTS

**Table 1.** Rate of cesarean sections in nulliparous pregnancies

Cesarean section type	Number (n)	Percentage (%)
Nulliparous pregnancies	134	67
Multiparous pregnancies	66	33
Total	200	100

**Remarks:** The majority of the cases were cesarean sections in nulliparous pregnancies (134 cases, accounting for 67%).

**Table 2.** Distribution of causes for cesarean sections in nulliparous pregnancies

Cause of cesarean section			Number (n)	Percentage (%)	Total	
					n	%
Due to genital tract issues	Pelvic issues	Cephalopelvicdisproportion	5	2.5	27	13.5
		Borderline pelvis	3	1.5		
		Abnormal pelvic shape	0	0		
	Uterine issues	Uterine hypertonus	2	1		
		Previous uterine surgery	0	0		
		Uterine malformation	0	0		
		Threatened uterine rupture	1	0.5		
	Arrest of cervical dilatation		16	8		
	Obstructive tumors		0	0		
Other issues with vagina, cervix, perineum, or other conditions		0	0			
Due to fetal issues	Fetal malpresentation	Breech presentation	29	14.5	150	75
		Anterior fontanelle presentation	7	3.5		
		Brow presentation	7	3.5		
		Face presentation	1	0.5		
		Transverse lie	6	3		
	Macrosomia		32	16		
	Post-term pregnancy		1	0.5		
	Multiple gestation		5	2.5		
	Fetal distress		52	26		
	Failure of fetal head engagement		10	5		
	Intrauterine growth restriction (IUGR)		0	0		
Due to fetal appendages	Placenta previa		1	0.5	11	5.5
	Placental abruption		1	0.5		
	Nuchal cord		0	0		
	Umbilical cord prolapse		0	0		
	Oligohydramnios		9	4.5		
	Premature rupture of membranes		0	0		
	Prelabor rupture of membranes		0	0		

Cause of cesarean section		Number (n)	Percentage (%)	Total	
				n	%
Due to maternal conditions	Cardiovascular disease	3	1.5	8	4
	Diabetes mellitus	0	0		
	Anemia	0	0		
	Graves' disease	0	0		
	Cardiovascular disease	0	0		
	Severe obstetric history	0	0		
	Other diseases	5	2.5		
Social reasons	Advanced maternal age	1	0.5	4	2
	Elective cesarean section	0	0		
	Infertility, precious pregnancy, IVF	3	1.5		
	Prolonged labor	0	0		

**Remarks:** The majority of cesarean sections were due to fetal issues (75%), with fetal distress (26%) and macrosomia (16%) being the most common reasons. Cesarean sections due to genital tract issues in the mother accounted for 13.5%. The lowest rate of cesarean sections was due to social reasons (2%), including advanced maternal age and precious pregnancy, IVF.

**Table 3.** Apgar scores at 1 minute and 5 minutes after birth

Apgar score		< 4	4 - 7	> 7
After 1 minute	n	0	3	202
	%	0	1.5	98.5
After 5 minutes	n	0	0	205
	%	0	0	100

**Remarks:** At 1 minute, 98.5% of infants had an Apgar score above 7. At 5 minutes, 100% of infants had an Apgar score above 7.

**Table 4.** Intraoperative and postoperative complications

Complications	Number (n)	Percentage (%)
Hemorrhage requiring suturing	4	2
Surgical site infection	3	1.5
Uterine atony, hysterectomy during surgery	0	0
Bowel injury or bladder rupture	0	0
Re-operation	0	0
No complications	193	96.5
Total	200	100

**Remarks:** The majority of cases did not encounter intraoperative or postoperative complications (96.5%). The remaining cases included hemorrhage requiring suturing (2%) and surgical site infection (1.5%).



## DISCUSSION

Our results show that the rate of cesarean sections for nulliparous pregnancies accounts for 67% of all cesarean deliveries. This result is higher than the study by Nguyen Binh An in 2020 at the Hospital of Post and Telecommunications, where the rate of cesarean sections for nulliparous pregnancies was 46.3%<sup>5</sup>.

The causes of cesarean sections were categorized into five groups in our study. Among these, the highest percentage was due to fetal reasons, accounting for 75%; social reasons were the lowest (2%); and reasons due to the genital tract, adnexa, and maternal pathology were 13.5%, 5.5%, and 4%, respectively. Out of the 150 cases performed due to fetal distress, it represents 34.7% of the fetal reasons and 26% of the total reasons for cesarean sections. This result is comparable to the study by Vu Manh Cuong, where fetal distress accounted for 37.2% of the fetal reasons and 18.1% of the total cesarean reasons<sup>6</sup>. The high rate of fetal distress may be due to first-time mothers' lack of experience in monitoring pregnancy, assessing risk factors for fetal distress such as oligohydramnios, uterine artery pathologies causing poor fetal nourishment, and inadequate knowledge of breathing and pushing techniques during labor, leading to acute fetal distress. There were 32 cases of fetal macrosomia, representing 32% of the cesarean sections due to fetal reasons. Globally, fetal macrosomia is diagnosed when the fetal weight is greater than 4000g, while in Vietnam, this threshold is 3500g. However, there are cases where cesarean sections are performed even though the fetus is not truly macrosomic. Vu Manh Cuong's study shows that 11.1% of cases where cesarean was performed for macrosomia had an actual fetal weight of < 3500g<sup>6</sup>. Therefore, for fetuses over 3500g, clinical examination and possibly a pelvic examination should be conducted for assessment. Our study results show that 25% of cesarean sections were due to fetal presentation, with 29 cases of breech presentation accounting for 58% of cesarean sections due to fetal presentation. The high rate of cesarean sections for breech presentation may be due to the following reasons: Doctors view cesarean sections as a safer

option to avoid breech delivery, thereby reducing trauma to the fetus and mother. Ultrasound allows for the assessment of fetal weight and biparietal diameter, leading to proactive cesarean sections to prevent complications. Increasingly, nulliparous women have fetuses weighing over 3000g.

Among the 205 newborns delivered, there were 5 cases of twins, 3 cases with Apgar scores of 4 - 7 at one minute, accounting for 1.5%, and no newborns with Apgar scores below 4. After 5 minutes, 100% of newborns achieved Apgar scores > 7. This rate is similar to the study by Do Thi Nhu Quynh in 2021 at Hanoi Obstetrics and Gynecology Hospital, where 1.5% of newborns had Apgar scores of 4 - 7 at one minute, and no newborns had Apgar scores below 4. After 5 minutes, the rate of Apgar scores of 4 - 7 decreased to 0.6%<sup>7</sup>. Our results are therefore relatively good.

There were 7 maternal complications during and after surgery, accounting for 3.5% of cesarean cases. Among these, 4 cases involved bleeding that required hemostatic sutures and 3 cases involved infection of the incision, accounting for 2% and 1.5%, respectively. The rate of these complications in Nguyen Xuan Duong's study was 38.6%, with 7% requiring blood transfusions<sup>8</sup>. According to Nguyen Duy Anh's study at Hanoi Obstetrics and Gynecology Hospital in 2007 and 2008, the rate was 84.6%<sup>9</sup>. Infection of the incision is also a common complication in cesarean sections. Nguyen Xuan Duong's study indicates that post-operative infections often occur in obese women with a BMI > 30, those with gestational diabetes, or in surgeries lasting > 60 minutes. While cesarean complications are rare, they are often unpredictable. Some risk factors that increase the likelihood of complications include maternal age over 35, advanced or preterm pregnancy, multiple previous births, maternal obesity, poor maternal condition, fetal macrosomia, maternal allergies, or other comorbid conditions<sup>8</sup>.

## CONCLUSIONS

- The rate of cesarean sections for nulliparous pregnancies accounts for 67% of all cesarean

deliveries at the National Hospital for Tropical Diseases.

- The primary cause of cesarean sections is due to fetal reasons.

- The rate of post-operative complications is low, primarily involving bleeding requiring hemostatic sutures and infection of the incision.

## REFERENCES

1. Martin JA, et al.(2005). "Preliminary births for 2004: infant and maternal health", Health E-stats. Hyattsville, MD: National Center for Health Statistics. Released November. 15(2005).

2. Do Quang Mai (2007). A study on the situation of cesarean sections in nulliparous women at the Central Obstetrics and Gynecology Hospital in 1996 and 2006. Hanoi Medical University.

3. Clark SL (1985). Placenta previa accrete and prior cesarean section. *Obstet and Gynecol.* 66 (89-92).

4. Pham Truong Duyet (1998). History of cesarean section. Hanoi Medical Publishing House.

5. Nguyen Binh An (2020). A study on the indications for cesarean sections in nulliparous women at the Hospital of Post and Telecommunications. Master's thesis, Hanoi Medical University.

6. Vu Manh Cuong (2016). A study on the indications and complications of cesarean sections in nulliparous women at Thai Binh Obstetrics and Gynecology Hospital. Hanoi Medical University.

7. Do Thi Nhu Quynh (2021). A study on the indications for cesarean sections in nulliparous women at Hanoi Obstetrics and Gynecology Hospital in 2021. Vietnam National University.

8. Nguyen Xuan Duong (2023). Results of first-time cesarean sections at Ha Hoa District Medical Center - Phu Tho. Master's thesis, Hanoi Medical University.

9. Nguyen Duy Anh (2016). A study on complications of cesarean sections at Hanoi Obstetrics and Gynecology Hospital in 2007-2008.