

# Abstracts

## Cesarean Section Short- and Long-term Medical Implications

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The increasing rates of cesarean sections (C/section) are presently of intense medical interest and of public health importance. We are witnessing an extraordinary variation in the number of C/sections not only among countries but also among institutions. They range from 14 to over 65%.

This large discrepancy cannot be explained only on the basis of population differences. Of particular concern are elective C/sections before 39 weeks of gestation.<sup>1</sup>

Many studies indicate a high incidence of neonatal pathologies requiring several days of hospitalization in neonatal intensive care units.<sup>2</sup>

The most important immediate complications are of respiratory nature, including respiratory distress syndrome (RDS), transient tachypnea of newborn (TTN), need for ventilation, and prolonged oxygen requirements. Parental separation and delayed breastfeeding are further complications (Table 1).

Cesarean sections lead also to more frequent long-term risks. They include higher incidence of asthma, food allergies, diabetes, and neurodevelopmental difficulties.

A Norway study indicates a 52% increased risk for asthma following C/section *vs* spontaneous vaginal delivery (hazard ratio = 1.5).<sup>3</sup> The advanced reason is based on the "hygiene hypothesis," which assumes that the initial gut colonization takes place with the "wrong" microbes. The other reason relates to secondary complications following RDS, TTN, and ventilation.

There is also evidence of increased food allergies due to increased sensitization to antigen-specific immunoglobulin E following C/sections.<sup>4</sup>

Finally, neurodevelopment in infants born between 37 and 39 weeks is reported to be affected by an odds ratio of 1.16 (95% confidence interval, 1.12–1.20).<sup>5</sup>

It is also important to mention that high C/section rates do not guarantee low maternal and neonatal mortality, as proven by data from Latin America, where high C/section rates are the norm.

In conclusion, C/sections are on the rise and not always justified. Judicious C/sections undoubtedly have improved perinatal mortality and morbidity. It is now well-established that elective C/sections before 39 weeks of gestation carry unacceptable neonatal risks and the cost of hospitalizations is not negligible. Parents requesting C/sections should be made aware of the risks and benefits to the fetus and newborn.

**Table 1:** Elective C/section after 37 weeks (13,258)

Outcome	37 (n=834)	38 (n=3,909)	39 (n=6,512)	p trend
Any adverse	15.3%	11.0%	8.0%	<0.001
RDS+TTN	8.2%	5.5%	3.4%	<0.001
Ventilation	1.9%	0.9%	0.4%	<0.001
Hospital ≥ 5d	9.1%	5.7%	3.6%	<0.001

RDS: Respiratory distress syndrome; TTN: Transient tachypnea of newborn

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# Clinical and Social Issues of Noninvasive Prenatal Testing

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Cell-free deoxyribonucleic acid (cfDNA) analysis of maternal blood (noninvasive prenatal testing, NIPT) is the most advanced and efficient prenatal screening test for Trisomy 21, 18, and 13.<sup>1</sup>

The test is currently performed in high-risk population following 1st trimester screening.

Meta-analysis reported a detection rate of 99% for Trisomy 21, 96% for Trisomy 18, and 91% for Trisomy 13, with 0.35% false-positive rate.

Several limitations of the NIPT application, such as maternal obesity, aneuploidy and cancer, low DNA fraction, mosaicisms, and donor oocytes are reported. Patient's acceptability, nondefinitive results, patient's anxiety, and increase top have also been reported (Table 1).

Patients and doctors must also be careful for several aggressive commercial companies creating an increasing economic burden and prenatal policies disparity in access to genetic services.

The most important issue remains the genetic counseling about the accuracy and the efficacy of the NIPT<sup>2,3</sup> and the following necessity to undergo invasive prenatal diagnosis by chorionic villous sampling (CVS) and amniocentesis (Fig. 1).<sup>4</sup>

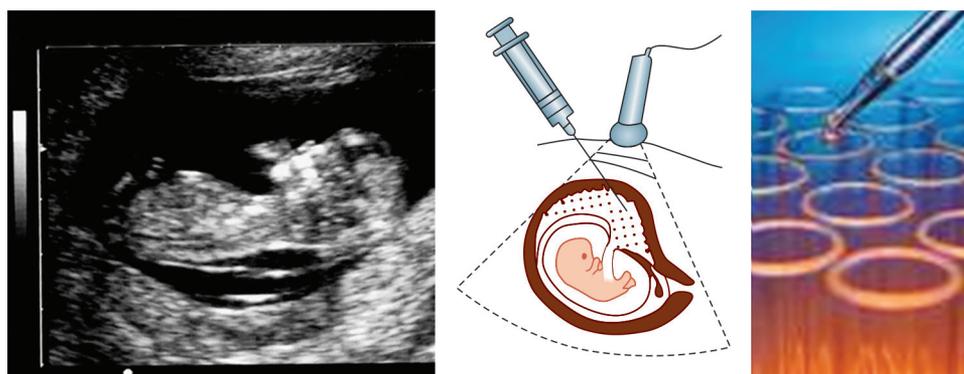
Since modern society is ever more-internet-web-based, patients must be aware that the easy access to information can prove misleading to their choices which should rather be counseled by a geneticist.

This article describes the clinical aspects as well as the social, economic, and legal issues related to NIPT.

**Table 1:** Prenatal diagnosis: Advantages and disadvantages

	CVS	Amniocentesis	NIPT
Gestational age	++	+	+
Multiple pregnancies	++	+	-
Safety (losses %)	0.1–0.5%	0.1–0.5%	+
Accuracy	++	++	+ only for T21
Days to obtain response	24–48 h	5–10 days	10 days
Repetition frequency	1%	0.5%	5%
Mendelian disease	++	+	-/+
Infections	++	+	-
Women's preference	?	?	?

CVS: Chorionic villous sampling; NIPT: Noninvasive prenatal testing



**Fig. 1:** Invasive prenatal diagnosis by CVS

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