

REVIEW ARTICLE

Elective and Emergency Cesarean Sections: Risks, Complications, Catastrophes, and Management

Shri Gopal Kabra¹, Vivekanshu Verma²

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ABSTRACT

Background: Cesarean section (C-section) is a lifesaving surgical intervention in obstetrics. However, rising rates of both elective and emergency procedures have raised concerns about maternal and neonatal risks, complications, and catastrophic outcomes. Understanding these risks and establishing clear management protocols is essential for improving outcomes.

Objectives: To analyze the causes, complications, and contributory factors associated with elective and emergency cesarean sections, and to outline stepwise management strategies for major complications such as postpartum hemorrhage, acute kidney injury, and anesthesia-related risks.

Methods: A narrative review of clinical literature, institutional data, and reported maternal outcomes was conducted. Key areas of focus included surgical complications, anesthesia risks, nosocomial infections, and rare but catastrophic events such as amniotic fluid embolism. Preventive and management protocols were synthesized into structured flowcharts and stratification charts.

Results: Elective cesarean sections generally carry lower risks due to preparation and controlled conditions, while emergency cesareans are associated with higher rates of hemorrhage, infection, organ injury, and neonatal distress. Contributory factors such as anemia, hypertensive disorders, coagulopathies, and prolonged labor significantly increase maternal morbidity and mortality. Stepwise management protocols for PPH, AKI, and anesthesia complications emphasize early recognition, resuscitation, and escalation to advanced interventions.

AUTHOR'S AFFILIATION:

¹ Director Legal Affairs and Medical Audit, SDMH, Jaipur, Rajasthan, India.

² Associate Consultant, Department of Emergency, Medanta Hospital, Gurugram, Haryana, India.

CORRESPONDING AUTHOR:

Vivekanshu Verma, Associate Consultant, Department of Emergency, Medanta Hospital, Gurugram, Haryana, India.

E-mail: vivekanshuv@gmail.com

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Conclusion: Cesarean sections, though often necessary, carry significant risks that vary between elective and emergency contexts. Rising rates of cesarean deliveries highlight the need for balanced policies that respect maternal autonomy while minimizing unnecessary surgical exposure. Structured management protocols and preventive strategies are critical to reducing maternal and neonatal morbidity and mortality.

KEYWORDS

- Cesarean Section • Elective Lscs • Emergency Lscs • Postpartum Hemorrhage
- Acute Kidney Injury • Amniotic Fluid Embolism • Anesthesia Complications
- Nosocomial Infection • Maternal Morbidity • Bodily Autonomy

INTRODUCTION

Over the last few decades, the utilization of lower segment cesarean section (LSCS) has undergone a dramatic transformation worldwide, shifting from an infrequently used, life-saving measure to one of the most frequently performed major surgical procedures in contemporary medicine.¹ In 1985, an expert consensus convened by the World Health Organization (WHO) posited that population-level cesarean delivery rates exceeding 10% to 15% provide no justifiable benefit in lowering maternal or neonatal mortality.² Despite this long-standing clinical benchmark, global rates have steadily scaled to a global average of 21.1%, and projections indicate that by 2030, nearly one-third of all global births will occur via surgical incision.³ This escalation is particularly acute in developing nations like India, where national averages have surged past 21.5%, driven heavily by private sector rates that often fluctuate between 40% and 47%.⁴

While the technical optimization of surgery and anesthesia has significantly improved the safety profile of planned deliveries, the procedure is not devoid of severe maternal and neonatal risk. Crucially, the clinical reality diverges starkly between elective (planned) and emergency (unplanned) settings. Elective procedures occur within an optimized, highly regulated environment, yet they are increasingly influenced by complex socio-cultural demands and legal concepts of maternal “cesarean on demand” or “cesarean by choice” rooted in bodily autonomy. Conversely, emergency cesarean delivery represents a high-stakes, time-compressed intervention necessitated by sudden obstetric catastrophes. In these emergency settings, the absence of sufficient preoperative

optimization—frequently exacerbated by systemic comorbidities such as severe anemia, severe pre-eclampsia, or prolonged obstructed labor—exponentially amplifies the rate of severe adverse outcomes, including catastrophic hemorrhage, acute kidney injury (AKI), or multi-organ dysfunction syndrome.⁵

This comprehensive paper aims to explore the deep clinical dichotomies between elective and emergency cesarean deliveries. By categorizing their respective indications, mapping immediate and delayed systemic complications, and contextualizing the socioeconomic factors driving their use, this paper offers structured, actionable, evidence-based management frameworks designed to mitigate morbidity and stabilize maternal outcomes.

PLANNED OR ELECTIVE CESAREAN SECTION

Definition & Clinical Overview

A planned or elective cesarean section is a surgical delivery scheduled in advance—ideally at or after 39 weeks of gestation—rather than performed urgently during active labor. Conducting the procedure at this threshold minimizes the risk of neonatal respiratory distress syndrome and other transitional pulmonary complications. Planned cesareans occur in a calm, highly controlled clinical environment, distinguishing them completely from the chaotic nature of emergency intrapartum interventions.

Medical Indications

Obstetricians recommend an elective cesarean delivery when a vaginal birth poses predictable, demonstrable risks to the mother, the fetus, or both. These indications are broadly categorized as follows:

- **Fetal Factors:**

- *Malpresentation:* Breech presentation (feet or buttocks presenting first) or transverse/unstable lie where the fetus shifts sideways.
- *Fetal Macrosomia:* Excessively large baby where vaginal passage carries an unacceptable risk of shoulder dystocia or permanent brachial plexus birth trauma.

- **Placental Conditions:**

- *Placenta Previa:* The placenta partially or completely covers the internal cervical os, rendering vaginal birth structurally impossible and life-threatening.
- *Placental Abruptio:* Stable or chronic configurations of premature detachment evaluated before acute labor begins.

- **Maternal Health Conditions:**

- *Uterine Scars:* Prior classical cesarean deliveries or transmurals myomectomies that predispose the patient to catastrophic uterine rupture during labor.
- *Severe Systemic Illness:* Maternal cardiac disease (e.g., severe cardiomyopathy), advanced uncompensated diabetes, or fragile hypertensive states.
- *Active Genital Infections:* Untreated High Viral Load HIV or active primary herpes simplex virus (HSV) lesions near term, where surgical bypass prevents vertical transmission.

- **Pregnancy-Related or Previous Trauma Complications:**

- *Multiple Gestations:* Higher-order multiples (triplets or quadruplets) or twin configurations where the first twin is non-vertex.
- *Historical Birth Trauma:* A maternal history of severe third- or fourth-degree perineal tears or prior traumatic shoulder dystocia.
- *Maternal Request:* Cesarean delivery performed in the absence of medical indications, frequently driven by severe tokophobia (fear of childbirth) or past traumatic obstetric experiences.

Risks & Long-Term Considerations

Although elective cesareans are highly controlled, they remain major intra-abdominal operations that carry inherently higher baseline complications than uncomplicated vaginal deliveries. These include postoperative infection, major vascular bleeding, longer recovery trajectories, and elevated risks in future reproductive cycles—such as dense pelvic adhesion formation, uterine rupture, and highly morbid placenta accreta spectrum (PAS) disorders.

UNPLANNED OR EMERGENCY CESAREAN SECTION

Definition & Clinical Overview

An unplanned or emergency cesarean section is an urgent, highly expedited surgical delivery performed in response to acute, unexpected complications arising during pregnancy or active labor. Unlike scheduled operations, these procedures are executed as rapidly as possible to prevent imminent maternal or fetal death or irreversible morbidity.

Acute Emergency Indications

Emergency interventions are dictated by immediate, life-threatening developments that render a planned or ongoing vaginal delivery unsafe:

- **Fetal Distress:** Acute, profound fetal hypoxia marked by persistent, severe fetal bradycardia, prolonged sinusoidal heart patterns, or deep late decelerations on electronic fetal monitoring.
- **Labor Arrest & Obstructed Progress:** Failure to progress or failure to descend despite adequate uterine contraction patterns, often caused by true cephalopelvic disproportion (CPD) or absolute deep transverse arrest.
- **Umbilical Cord Emergencies:** Overt umbilical cord prolapse, where the cord slips through the cervix ahead of the fetus, causing immediate mechanical compression of the umbilical vessels and total cessation of fetal oxygen supply.
- **Placental Catastrophes:** Acute, massive placental abruption causing large-scale retroplacental hemorrhage and fetal asphyxia.

- **Maternal Crises:**

- Acute, unmanageable postpartum or intrapartum hemorrhage.
- Full-scale uterine rupture, characterized by a sudden loss of intrauterine pressure and extrusion of fetal parts into the peritoneal cavity.
- Severe pre-eclampsia progressing into eclampsia, marked by life-threatening maternal tonic-clonic seizures, stroke,

or multi-organ failure.

COMPLICATIONS OF LOWER SEGMENT CESAREAN SECTION (LSCS)

Standard Complications Matrix

While the modern lower segment transverse incision has reduced the risk of structural failure compared to old classical vertical incisions, it continues to bear substantial procedural risks.

Category	Elective LSCS (Planned)	Emergency LSCS (Unplanned)
Timing & Preparation	Scheduled; permits comprehensive preoperative optimization and metabolic stabilization.	Performed urgently, often with highly limited preparation time or unstable vitals.
Hemorrhage Risk	Lower; controlled surgical field with optimal baseline hemoglobin.	Significantly higher; magnified by uterine atony, placental abruptions, or tissue trauma.
Infection Risk	Minimal; sterile environment with timely prophylactic antibiotic administration.	High; exacerbated by prolonged rupture of membranes, multiple exams, or chorioamnionitis.
Anesthetic Risk	Well-planned regional anesthesia (spinal or epidural); stable maternal airway.	Higher frequency of emergency general anesthesia; high risk of aspiration and failed intubation.
Organ Injury	Rare; clear anatomical planes and controlled dissection field.	Elevated; distorted pelvic anatomy from deep engagement, prolonged labor, or scar tissue.
Thromboembolism	Baseline risk managed effectively via scheduled pharmacological or mechanical prophylaxis.	High; amplified by systemic inflammation, emergency immobility, and tissue trauma.
Maternal Mortality	Significantly lower absolute mortality.	Multi-fold increase in mortality due to shock, sepsis, or advanced underlying pathology.
Neonatal Outcomes	Excellent; baby delivered under controlled, non-hypoxic conditions at term.	Higher incidence of birth trauma, profound metabolic acidosis, hypoxia, and NICU admission.
Future Pregnancies	Baseline risk of scar rupture and placenta previa or accreta in subsequent gestations.	Compounded future risk due to compromised, asymmetrical, or infected primary uterine scars.

Preoperative Conditions Aggravating Emergency Outcomes

The elevated morbidity associated with emergency LSCS is intimately tied to uncorrected maternal anomalies present at the time of incision. These include:

- **Severe Chronic Anemia:** Dramatically reduces systemic oxygen delivery, destroys myocardial reserve, and leads to rapid hypovolemic shock with minimal blood loss.
- **Hypertensive Crises (HELLP Syndrome):** Endothelial dysfunction and profound thrombocytopenia predispose the patient to intracranial hemorrhage, subcapsular hepatic hematomas, and uncontrollable microvascular bleeding.
- **Disseminated Intravascular Coagulation (DIC):** Coagulative depletion that converts

minor surgical incisions into catastrophic, non-clotting systemic bleeds.

- **Prolonged Obstructed Labor:** Causes severe physical exhaustion, metabolic ketoacidosis, tissue edema, and thin, friable lower uterine segments prone to macro-tearing into the broad ligaments.
- **Chorioamnionitis:** Established intrauterine bacterial infection that acts as a direct launchpad for generalized postoperative peritonitis, pelvic abscesses, and toxic septic shock.

ANALYSIS OF MATERNAL MORTALITY

Primary Direct and Indirect Obstetric Causes

Maternal mortality during or immediately following a cesarean section stems from an interplay of direct surgical complications and indirect medical conditions:

1. **Massive Hemorrhage:** Driven by irreversible uterine atony, extensive surgical lacerations across the uterine artery network, or morbidly adherent placental syndromes.
2. **Sepsis and Septicemia:** Originating from untreated pelvic infections, infected laparotomy wounds, or nosocomial peritonitis that escalates into severe septic shock.
3. **Thromboembolic Disease:** Deep vein thrombosis (DVT) detaching to form a massive obstructive pulmonary embolism (PE).
4. **Anesthesia Catastrophes:** Failed endotracheal intubation, fatal aspiration of highly acidic gastric contents (Mendelson's syndrome), or complete cardiovascular collapse from an accidental high spinal block.
5. **Amniotic Fluid Embolism (AFE):** A rare but catastrophic systemic immune response that triggers immediate cardiopulmonary collapse.⁶

RISK STRATIFICATION MATRIX

The following table details the risk landscape for maternal mortality during cesarean deliveries based on contributing factors:

Contributory Factor	Mechanism of Risk	Impact on Complications	Relative Risk Level
Severe Anemia	Destruction of oxygen-carrying capacity; minimal tolerance for standard operative blood loss.	Exacerbates severe tissue hypoxemia, early hypovolemic shock, and poor wound healing.	• High
Hypertensive Disorders	Widespread endothelial damage, vasospasm, and hyper-reflexia.	Increases rate of abrupt strokes, acute renal shutdown, and eclamptic seizures.	• High
Coagulopathies (DIC/HELLP)	Total depletion of vital clotting factors and platelet reserves.	Leads to rapid, diffuse, uncontrollable hemorrhage across all raw surgical surfaces.	• High
Placental Pathology	Highly invasive, vascularized, and abnormal placental attachments.	Triggers massive, sudden exsanguination and hypovolemic cardiac arrest.	• High
Delayed Access to Care	Prolonged intervals of severe uncorrected tissue hypoxia or ongoing internal bleeding.	Severe metabolic acidosis, Multi-Organ Dysfunction Syndrome (MODS), and fetal demise.	• High
Prolonged Labor	Mechanical exhaustion of the myometrium and structural thinning of tissues.	Enhances rate of uterine rupture, massive bladder lacerations, and atonic bleeding.	• Moderate-High
Chorioamnionitis	Massive bacterial proliferation inside the uterine cavity.	Causes overwhelming postoperative bacteremia, pelvic peritonitis, and septic shock.	• Moderate
Previous Uterine Scar	Distorted anatomy encased in avascular, dense scar and fibrotic adhesions.	Elevates the incidence of direct bladder/ureteral transection and spontaneous rupture.	• Moderate
Maternal Comorbidities	Baseline physiological strain (e.g., morbid obesity, brittle diabetes, cardiac lesions).	Higher rates of deep vein thrombosis, wound disruption, and airway loss.	• Moderate

CRITICAL EMERGENCY MANAGEMENT PROTOCOLS

Stepwise Protocol for Post-Cesarean Postpartum Hemorrhage (PPH)

When excessive, uncontrollable bleeding occurs during or after an LSCS, the clinical team must advance through a structured, stepwise escalation pathway to achieve rapid hemostasis:

[01. CALL FOR HELP & ASSESSMENT]

— Activate Obstetric Emergency Team, Anesthesiologist, & Blood Bank.

— Establish 2 large-bore IV lines, type/crossmatch blood, and monitor continuous vitals.



[02. UTERINE MASSAGE & INITIAL UTEROTONICS]

— Perform bimanual uterine massage.

— Administer Oxytocin (IV infusion) +

Ergometrine (IM/IV unless hypertensive).

└ Supplement with Carboprost (IM) or Misoprostol (PR/Sublingual).



[03. AGGRESSIVE RESUSCITATION & TRANSFUSION]

└ Infuse warmed crystalloids rapidly.

└ Initiate Massive Transfusion Protocol (MTP): Pack Red Blood Cells (PRBCs),

Fresh Frozen Plasma (FFP), and Platelets in a 1:1:1 ratio to avoid dilutional coagulopathy.



[04. MECHANICAL & CONSERVATIVE MEASURES]

└ If bleeding is intraoperative: Apply uterine compression sutures (e.g., B-Lynch, Hayman).

└ If bleeding is postoperative intracavitary: Insert a Bakri Uterine Balloon Tamponade.



[05. INTERVENTIONAL RADIOLOGY (If Stable)]

└ If the patient is hemodynamically stable and resources exist:

Perform urgent percutaneous Uterine Artery Embolization (UAE).



[06. ADVANCED SURGICAL INTERVENTIONS]

└ Re-laparotomy / Direct surgical inspection.

└ Execute Stepwise Uterine Devascularization: Ligate bilateral uterine and ovarian arteries.

└ If trained and anatomy permits: Ligate Internal Iliac (Hypogastric) Arteries.



[07. DEFINITIVE LIFE-SAVING SURGERY]

└ If bleeding remains completely refractory to all measures:

Stepwise Management Protocol for Suspected Amniotic Fluid Embolism (AFE)

Amniotic fluid embolism is an unpredictable, non-mechanical anaphylactoid catastrophe with a high mortality rate.⁶ Treatment must be immediate and supportive:

1. **Immediate Recognition:** Identify sudden, unprompted hypoxia, profound hypotension, cyanosis, sudden cardiac arrest, or severe coagulopathy occurring during or within 30 minutes of delivery.
2. **Stat Activation:** Call for an immediate multidisciplinary crash team, including senior obstetricians, cardiac anesthesiologists, intensivists, and hematologists.
3. **Cardiopulmonary Resuscitation (CPR) & Airway Control:** Initiate high-quality CPR with left uterine displacement to relieve aortocaval compression if the fetus is undelivered. Secure the airway via immediate endotracheal intubation and deliver 100% high-flow oxygen.
4. **Aggressive Inotropic/Vasopressor Support:** Correct acute right-heart strain and severe cardiogenic shock. Initiate early, titrated infusions of norepinephrine and epinephrine to sustain systemic vascular resistance, and consider milrinone or dobutamine for inotropic support.⁷
5. **Targeted Hemostatic Correction:** AFE triggers consumption coagulopathy.⁸ Administer early, empirical volumes of cryoprecipitate (to restore fibrinogen), FFP, packed red cells, and tranexamic acid, guided by thromboelastography (TEG) or rotational thromboelastometry (ROTEM).
6. **Advanced Extracorporeal Support:** In cases of severe, refractory cardiac or respiratory failure, mobilize Extracorporeal Membrane Oxygenation (ECMO) or an Intra-Aortic Balloon Pump (IABP) as a bridge to recovery.
7. **Surgical Control of Secondary Bleeding:** If severe DIC causes uncontrollable uterine hemorrhage, perform an emergency hysterectomy or pack the pelvis once the patient's cardiorespiratory status is stabilized.

Stepwise Management Protocol for Post-Cesarean Acute Kidney Injury (AKI)

Acute kidney injury following an emergency cesarean is typically secondary to uncorrected hypovolemic shock, severe pre-eclampsia, or septicemia. Management involves a systematic approach:

[01. STABILIZE AIRWAY & SYSTEMIC CIRCULATION]

- └─ Maintain adequate oxygenation.
- └─ Restore global blood pressure and central venous volume using blood products and targeted fluids.



[02. ELIMINATE THE PRIMARY UNDERLYING PRECIPITANT]

- └─ Eradicate ongoing pelvic sepsis via aggressive broad-spectrum antibiotics and source control.
- └─ Aggressively manage ongoing PPH or terminate severe pre-eclamptic vasospasm.



[03. OPTIMIZE AND TITRATE METICULOUS FLUID BALANCE]

- └─ Place a Foley catheter for strict hourly urine output tracking.
- └─ Maintain precise fluid titration to maximize renal perfusion while avoiding pulmonary edema.



[04. COMPLETE ELIMINATION OF ALL NEPHROTOXINS]

- └─ Discontinue and ban all Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).
- └─ Stop aminoglycosides, iodinated contrast agents, and other nephrotoxic medications.



[05. METABOLIC & INTRINSIC RENAL SUPPORT]

- └─ Correct metabolic acidosis and track serum potassium closely.
- └─ Administer careful loop diuretic trials (e.g., Furosemide) ONLY if volume-overloaded.



[06. RENAL REPLACEMENT THERAPY (RRT)]

- └─ If refractory hyperkalemia, severe anuric volume overload, or uremic encephalopathy occurs:
Initiate immediate Hemodialysis or Continuous Renal Replacement Therapy (CRRT).



[07. CONTINUOUS MULTIDISCIPLINARY CO-MANAGEMENT]

- └─ Establish shared daily care rounds between Obstetricians, Intensivists, and Nephrologists.

ANESTHESIA IN CESAREAN SECTION

Modes of Anesthesia and Comparative Profiles

The selection of anesthesia is tailored to the urgency of the clinical scenario, maternal airway anatomy, and underlying co-morbidities.

Aspect	Spinal Anesthesia	Epidural Anesthesia	General Anesthesia
Onset of Action	Rapid and definitive (2–5 minutes).	Slower, incremental titration (10–20 minutes).	Instantaneous (seconds).
Safety Profile	Highly favorable; preferred standard for elective surgeries.	High safety profile; optimal for extending into postoperative analgesia.	Highest relative maternal risk profile; reserved for emergency situations.
Maternal Risks	Acute hypotension via sympathetic blockade; post-dural puncture headache (PDPH); rare high spinal block.	Patchy or incomplete block; accidental intravascular injection; epidural hematoma (rare).	Failed intubation/airway loss; gastric aspiration; awareness under anesthesia; severe drug reactions.
Neonatal Effects	Negligible; minimal drug transfer; optimal fetal Apgar scores.	Negligible; minimal systemic drug transfer; safe for the neonate.	Risk of transient neonatal respiratory depression due to rapid placental transfer of induction agents.
Primary Advantage	Rapid establishment of a dense block; mother remains awake; completely bypasses the airway.	Flexible dosing; easily titrated; allows prolonged anesthesia and continuous post-op pain control.	Rapid induction; useful when neuraxial routes are contraindicated (e.g., severe coagulopathy) or during acute fetal distress.
Primary Disadvantage	Fixed, finite duration of action; high incidence of acute maternal hypotension.	Requires advanced technical placement; slower onset limits utility in crash deliveries.	Exposes the patient to serious airway management risks and systemic medication side effects.

SOCIO-CULTURAL TRENDS AND NOSOCOMIAL RISKS

Driving Forces of the Global Cesarean Surge

The escalation in cesarean section rates beyond the WHO-recommended threshold of 10–15% is driven by medical, systemic, and cultural factors:

- **Clinical and Demographic Shifts:** Advanced maternal age, higher baseline rates of maternal obesity, and metabolic syndrome create high-risk pregnancies that lower the threshold for surgical intervention. Additionally, a history of prior cesarean delivery often leads to scheduled repeat procedures to avoid the risks of uterine rupture associated with a trial of labor.
- **Defensive Medicine and Institutional Factors:** Obstetricians increasingly utilize defensive medicine, choosing surgical delivery to reduce litigation risks associated with hypoxic-ischemic events during vaginal trials. Systemic factors, particularly in private healthcare systems, create financial incentives and scheduling efficiencies that favor cesarean sections over prolonged, unpredictable labor management.
- **“Cesarean on Demand” and Bodily Autonomy:** Maternal request for cesarean delivery in the absence of medical indications is increasingly framed as a fundamental tenet of reproductive autonomy and bodily self-determination. While ethical frameworks support a woman’s right to choose her delivery modality, this choice must be balanced against the risk of unnecessary surgical exposure and its implications for future pregnancies.

Heightened Risk of Resistant Nosocomial Infections

Cesarean sections carry a risk of hospital-acquired (nosocomial) infections, often involving highly resistant pathogens like Methicillin-Resistant *Staphylococcus aureus* (MRSA), Extended-Spectrum Beta-Lactamase (ESBL)-producing *Enterobacteriaceae*, or multi-drug resistant *Klebsiella*. Emergency procedures carry a higher risk profile due to incomplete preoperative skin preparation, prolonged rupture of membranes, and repeated digital examinations during labor.

Distinguishing Nosocomial from Community-Acquired Infections

To ensure appropriate antimicrobial stewardship and effective source control, clinicians must distinguish hospital-acquired infections from pre-existing community-acquired conditions:

- **Nosocomial Infection:** Typically presents ≥ 48 hours post-admission or within 30 days post-surgery. These infections are often caused by resistant hospital flora (e.g., MRSA, ESBL *E. coli*, *Pseudomonas*) and are associated with risk factors like indwelling catheters, mechanical ventilation, or emergency surgical re-entry. They tend to follow a severe clinical course requiring advanced, culture-targeted antimicrobial therapy.
- **Community-Acquired Infection:** Present at admission or manifests within the initial 48 hours of hospitalization. These infections are generally caused by sensitive, wild-type community pathogens (e.g., Methicillin-Susceptible *Staphylococcus aureus*, non-ESBL *E. coli*, *Streptococcus* species) and are typically responsive to standard first-line antibiotic regimens.

DISCUSSION

The clinical and epidemiological data synthesized in this review underscore a clear dichotomy in contemporary obstetrics: while a cesarean section remains a vital, life-saving intervention, its rising utilization poses challenges for healthcare systems worldwide. The global rise in cesarean rates reflects a multifactorial landscape where clinical necessity intersects with defensive medical practices, institutional financial incentives, and evolving cultural perceptions of childbirth. This trend is illustrated by the significant variation between public and private healthcare facilities, with private sectors consistently reporting higher surgical rates.

From a clinical standpoint, differentiating between the risk profiles of elective and emergency cesarean sections is critical for patient counseling and resource allocation. Elective procedures allow for preoperative optimization, resulting in a lower incidence of direct surgical complications. Conversely, emergency cesarean deliveries are often

performed under time constraints on patients with uncorrected comorbidities, such as severe anemia or hypertensive disorders, which significantly amplifies the risk of adverse outcomes like postpartum hemorrhage, acute kidney injury, or sepsis.

This risk differential highlights the importance of implementing structured, evidence-based management algorithms. Early recognition and a systematic approach to complications such as postpartum hemorrhage—moving from uterotonics to compression sutures and, when necessary, life-saving hysterectomy—are key to mitigating maternal morbidity. Similarly, addressing rare but catastrophic events like amniotic fluid embolism or acute kidney injury requires standardized, multi-disciplinary intervention strategies to optimize patient safety.

Furthermore, the growing trend of “cesarean on demand” requires a balanced approach that respects maternal autonomy while ensuring patients are fully informed of the short- and long-term surgical risks. This choice must be contextualized within a broader public health framework, particularly regarding its impact on future reproductive health, including risks of placental adhesion disorders or uterine rupture in subsequent pregnancies.

CONCLUSION

Cesarean sections are a cornerstone of modern obstetric care, yet the divergence in outcomes between elective and emergency procedures emphasizes the need for targeted clinical approaches. Managing the rising global rate of surgical deliveries requires a multifaceted strategy: implementing strict, evidence-based criteria for medical indications; addressing the systemic and institutional drivers of unnecessary surgeries; and utilizing standardized, multi-disciplinary protocols for intraoperative and postoperative complications. By focusing clinical efforts on optimizing emergency preparedness, ensuring timely access to care, and supporting informed maternal choices, healthcare systems can better balance patient autonomy with clinical safety, ultimately working to improve maternal and neonatal outcomes.

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