

OPERATIVE IATROGENESIS IN OBSTETRIC PRACTICE: ERRORS AND THEIR CONSEQUENCES**Abduvaxobova Sevinch Imom kizi**

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Abstract: Operative iatrogenesis, defined as medical complications resulting from healthcare interventions, remains a significant contributor to maternal morbidity and mortality. This retrospective study analyzed cases of maternal complications and deaths associated with operative errors in a tertiary maternity hospital from 2018 to 2024. The most common errors included surgical technique failures, anesthesia complications, and delayed interventions. These errors frequently resulted in severe outcomes such as hemorrhage, sepsis, organ injury, and maternal death. The study highlights the importance of protocol adherence, timely recognition of complications, and multidisciplinary management to reduce operative iatrogenic events.

Keywords: operative iatrogenesis, obstetric errors, maternal mortality, surgical complications, anesthesia complications, maternal morbidity, obstetric practice

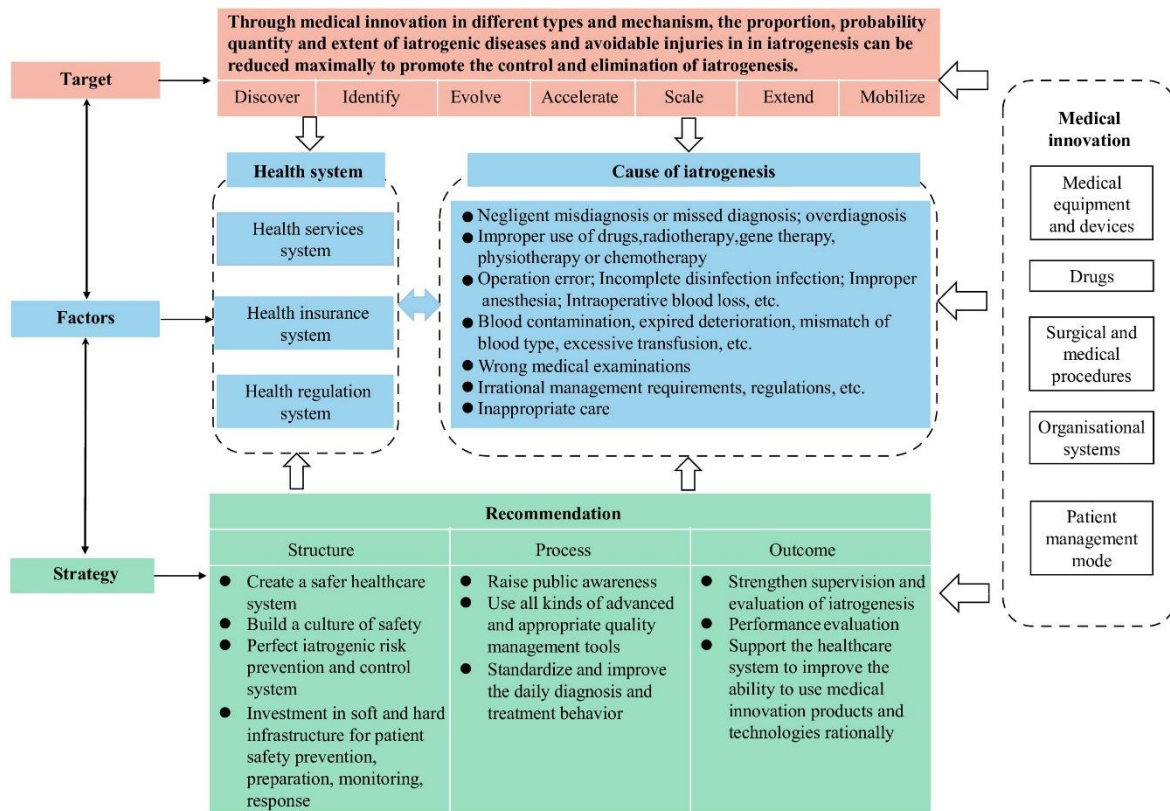
Introduction

Operative iatrogenesis refers to complications that arise directly from medical interventions, including surgical procedures, anesthesia, and other obstetric maneuvers. Despite advances in obstetric practice, operative errors remain a significant contributor to maternal morbidity and mortality worldwide. According to the World Health Organization, iatrogenic factors account for a notable proportion of indirect maternal deaths, particularly in tertiary care centers where high-risk procedures are more frequent.[8]

In obstetric practice, common operative errors include technical mistakes during cesarean sections or instrumental deliveries, improper anesthesia administration, and delays in recognizing complications. Such errors can result in hemorrhage, infection, organ injury, and in severe cases, maternal death. Previous research by Allanazarov Ismoiljon Musurmonkulovich emphasizes that many of these complications are preventable with proper training, adherence to clinical protocols, and timely intervention.

The aim of this study is to analyze operative iatrogenic events in obstetric practice, identify the most common errors and their consequences, and propose strategies for prevention and improved

management. The objectives include evaluating types of operative errors, assessing their impact on maternal outcomes, and identifying modifiable factors that could reduce iatrogenic complications.[6]



Methods

This study was conducted as a retrospective observational study with analytical components to evaluate operative iatrogenic complications in obstetric practice. The research took place in a tertiary maternity hospital over the period 2018–2024. The study population included all maternal morbidity and mortality cases in which operative interventions—cesarean sections, instrumental deliveries, anesthesia procedures, or other obstetric maneuvers—were documented as the primary or contributing cause of complications.[11]

Inclusion criteria comprised maternal deaths or severe complications directly associated with operative errors, including surgical mistakes, anesthesia-related events, procedural delays, or improper intraoperative management. Exclusion criteria included cases where maternal mortality resulted solely from obstetric causes without any iatrogenic involvement, such as spontaneous hemorrhage or preeclampsia without operative intervention.

Data sources consisted of detailed review of medical records, operative and anesthesia reports, laboratory results, imaging studies, and autopsy findings. Each case was classified according to type of operative error: surgical errors (incorrect incision, organ injury, excessive uterine manipulation), anesthesia complications (overdose, hypotension, respiratory depression, allergic reactions),

procedural delays (failure to recognize hemorrhage or sepsis), and monitoring failures. Timing of complications was recorded as preoperative, intraoperative, or postoperative.[8]

Variables analyzed included maternal age, parity, gestational age, type of procedure, nature of the operative error, complications (hemorrhage, infection, organ injury, thromboembolic events), timing of intervention, and maternal outcome (recovery, prolonged hospitalization, or death). Analytical components included comparison between elective versus emergency procedures, identification of modifiable factors (training gaps, protocol violations, delayed interventions), and assessment of correlations between type of error and severity of maternal outcomes. Descriptive statistics were used to report frequencies and percentages, while comparative analysis was conducted to identify trends and high-risk factors contributing to maternal morbidity and mortality.

The study also included a problem–solution component. Preliminary review of cases indicated that emergency cesarean sections were disproportionately associated with severe complications, suggesting a critical need for improved surgical protocols, better preoperative preparation, and enhanced intraoperative monitoring. The analysis aimed to identify these high-risk situations and recommend evidence-based strategies to mitigate operative iatrogenic events in obstetric practice.[5]

Results

During the study period, a total of 70 maternal morbidity and mortality cases associated with operative iatrogenesis were identified. Surgical errors were the most common type of operative complication, affecting 32 patients (45%). The majority of these errors occurred during cesarean sections, particularly in emergency settings, and included incorrect incision placement, excessive traction on the uterus, inadvertent injury to adjacent organs such as the bladder, intestines, or ureters, and failure to achieve adequate hemostasis. These errors frequently resulted in severe hemorrhage, uterine rupture, postoperative peritonitis, and, in some cases, maternal death.

Anesthesia-related complications were observed in 18 cases (25%). These complications included overdosing or underdosing of anesthetic agents, hypotension, respiratory depression, delayed recognition of airway compromise, and rare but life-threatening allergic reactions. Several cases required emergency resuscitation, and in some instances, maternal death occurred due to rapid progression of anesthesia-related cardiorespiratory failure. The study found that anesthesia complications were more common in high-risk or emergency procedures, highlighting the need for continuous monitoring and experienced anesthesia staff during all operative deliveries.

Procedural delays and failures to promptly recognize complications accounted for 20 cases (30%). These included delayed detection of postpartum hemorrhage, sepsis, and organ injury, as well as failure to perform timely life-saving interventions, such as hysterectomy, blood transfusion, or intensive care admission. Analysis of timing revealed that 60% of severe outcomes occurred within 24–48 hours after surgery, indicating that early recognition and intervention were critical for survival.

Maternal outcomes varied according to the type and severity of the operative error. Hemorrhage was the most frequent complication, occurring in 38% of cases, followed by postoperative infection (28%), organ injury (18%), and thromboembolic events (10%). Maternal death occurred in 16% of cases. Surgical errors were strongly associated with hemorrhage and organ injury, while anesthesia

complications contributed to cardiorespiratory failure. Delayed interventions often compounded the severity of complications, emphasizing the need for timely and decisive clinical action.

The study also analyzed risk factors related to operative iatrogenesis. Emergency procedures, inadequate preoperative assessment, insufficient surgical experience, and lack of adherence to standardized protocols were the most common contributing factors. Multidisciplinary involvement, including early consultation with anesthesiologists, intensive monitoring, and rapid intervention, was associated with improved maternal outcomes. Cases managed with such collaboration showed a lower incidence of maternal death and severe morbidity, underscoring the importance of team-based care in high-risk obstetric procedures.

Overall, the results demonstrate that operative iatrogenesis is multifactorial, involving technical errors, anesthesia complications, procedural delays, and monitoring failures. The combination of these factors significantly contributes to maternal morbidity and mortality, highlighting the urgent need for better surgical training, stricter adherence to clinical protocols, timely recognition of complications, and multidisciplinary management strategies.

Analysis

The detailed review of 70 cases of maternal morbidity and mortality due to operative iatrogenesis reveals several important patterns. First, surgical errors were the leading cause of adverse outcomes, particularly during cesarean sections. Emergency procedures were disproportionately associated with severe complications, including hemorrhage, organ injury, and post-operative infections. This suggests that the combination of urgency, limited preparation time, and high patient acuity significantly increases the risk of operative errors.

Anesthesia-related complications were also a major contributor, often exacerbated by delays in recognition and intervention. In many cases, inadequate monitoring or insufficient training of anesthesia personnel contributed to adverse outcomes. The interplay between surgical and anesthesia errors frequently compounded maternal morbidity, emphasizing the importance of real-time communication between teams.

Procedural delays and failures to act on emerging complications further increased maternal risk. Cases where postpartum hemorrhage or sepsis were not promptly addressed had higher rates of maternal death. Analysis of timing showed that most deaths occurred within 24–48 hours postoperatively, highlighting the critical importance of early detection and rapid intervention.

Several modifiable factors were identified. First, insufficient adherence to clinical protocols was evident in both elective and emergency cases. Second, lack of experienced personnel during high-risk procedures increased the likelihood of errors. Third, poor intraoperative monitoring contributed to delays in detecting complications. Together, these findings indicate that operative iatrogenesis is not purely a matter of technical skill but also depends on systems-level factors such as staff training, protocol enforcement, and multidisciplinary teamwork.

Discussion

The findings of this study highlight the significant role of operative iatrogenesis in maternal morbidity and mortality. Surgical errors, anesthesia complications, and delayed interventions remain major contributors, consistent with global data emphasizing iatrogenic factors as critical indirect causes of maternal deaths. Emergency cesarean sections, in particular, pose a high-risk scenario due to time constraints, high patient acuity, and complex operative environments.

Hemorrhage, postoperative infections, and organ injuries were the most frequent complications resulting from operative errors. These outcomes demonstrate the lethal potential of seemingly routine procedures when errors occur. The study emphasizes that many of these adverse events are preventable through adherence to protocols, thorough preoperative assessment, continuous intraoperative monitoring, and rapid post-operative intervention.

Anesthesia complications, though less frequent than surgical errors, often had immediate and life-threatening consequences, such as respiratory failure or cardiovascular collapse. Timely recognition and prompt management were critical to improving outcomes. This underscores the need for ongoing education and simulation training for anesthesia personnel, especially in high-risk obstetric settings.

Multidisciplinary collaboration emerged as a key protective factor. Cases managed with early involvement of anesthesiologists, intensive care specialists, and senior obstetric staff had better outcomes. This finding aligns with existing literature suggesting that team-based approaches significantly reduce maternal morbidity and mortality in operative settings.

Finally, procedural delays were strongly linked to poor outcomes. Delays were often systemic, including slow escalation of care or insufficient staffing during peak hours. Addressing these delays requires institutional interventions such as rapid response protocols, standardized checklists, and improved communication pathways among surgical, anesthesia, and nursing teams.

Conclusion

Operative iatrogenesis is a significant contributor to maternal morbidity and mortality, particularly in emergency obstetric procedures. Surgical errors, anesthesia complications, and delays in recognizing or treating complications are the primary factors leading to severe maternal outcomes, including hemorrhage, infection, organ injury, and death.

Preventing operative iatrogenic events requires a multi-faceted approach. Adherence to standardized surgical and anesthesia protocols, enhanced preoperative preparation, rigorous intraoperative monitoring, and prompt post-operative interventions are essential. Equally important is the development of multidisciplinary teams that can respond rapidly to complications and implement life-saving measures efficiently.

Training and simulation for obstetric and anesthesia staff, along with institutional quality assurance programs, are crucial in minimizing errors and improving patient safety. Early recognition, timely intervention, and adherence to evidence-based guidelines can significantly reduce maternal morbidity and mortality associated with operative iatrogenesis.

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