

**TITLE OF ARTICLE:
CASE REPORT: THE OBSTETRIC PATIENT GOING FOR NON-OBSTETRIC
SURGERY**

NAME OF AUTHORS:

1. **Dr Ebirim N. Longinus**
FWACS Consultant Anaesthetist

2. **Dr Okoli Chinwe**
Diploma Anaesth (WACS) Senior Registrar Anaesthetist

3. **Dr Buowari Omiepirisa Yvonne**
Diploma Anaesth (WACS) Registrar Anaesthetist, yvonnebuowari@yahoo.com

ADDRESS OF AUTHORS:

*Department Of Anaesthesiology,
University Of Port Harcourt Teaching Hospital,
Port Harcourt, Rivers State, Nigeria*

CORRESPONDENCE:

Dr L N Ebirm

*Department Of Anaesthesiology,
University Of Port Harcourt Teaching Hospital,
Port Harcourt, Rivers State, Nigeria.*

*Email: ginebirim@yahoo.com
Phone number: +234-8033384198*

ABSTRACT: *Surgical disease during pregnancy is relatively common. Surgical intervention depends on its urgency and priority is given to the mother's health though the surgical treatment poses threat to both mother and foetus*

Case Summary: *A 24-year-old gravida 3 Para 2⁺ known asthmatic at a gestational age of 20 weeks was diagnosed of acute appendicitis. General anaesthesia was administered with rapid sequence induction with propofol, endotracheal intubation facilitated with suxamethonium, anaesthesia maintained with pancuronium and halothane. Neuromuscular block was reversed with neostigmine. Operative findings were a ruptured appendix. She had a spontaneous vagina delivery at 36 weeks.*

Conclusion: *Anaesthetic and surgical management of non-obstetric surgery during pregnancy is a challenge especially in developing countries where there is lack of sophisticated equipment.*

Key Words: *Pregnancy, Surgery, Appendisectomy, Emergency*

Introduction

Non-obstetric surgery during pregnancy is relatively common¹. Anaesthetists in every subspecialty encounter with varying regularity patients presenting for surgery during the course of pregnancy. Each year, a significant number of pregnant women undergo surgery and anaesthesia for indications unrelated to pregnancy. The diagnosis of any medical condition requiring surgery in pregnancy often raises questions about the safety of anaesthesia in these patients.

The frequency with which pregnancies are complicated by the need for non-obstetric surgical

procedures is between 0.75% to 2.0%^{2,3,4}. The range and incidence of non-obstetrical surgical conditions encountered in pregnant patients are similar to those in the general population. It is estimated that 1-2% of pregnant women in developed countries undergo anaesthesia during their pregnancy for surgery unrelated to the delivery⁵. The most common indications for surgery during pregnancy are either pregnancy related or non-pregnancy related¹. The most common indications not related to pregnancy are acute abdominal infections (acute appendicitis and cholecystitis), maternal trauma, ovarian disorders (torsion and neoplasm), breast or cervical disease, bowel obstruction and surgery for maternal

malignancy^{6,7}. Less commonly cardiac and neurological procedures are undertaken during pregnancy⁷ appendisectomy and cholecystectomy are the commonly performed open abdominal procedures during pregnancy⁴ with the rate of appendisectomy being 1 per 1500 to 2000 pregnancies⁷. There are no Nigerian studies for now on the incidence of non-obstetric surgeries during pregnancy.

Surgery can be required during any stage of pregnancy depending on the urgency of the indication³. A successful maternal and foetal outcome is dependent on expert management of both the surgical disease process and anaesthesia². Between the 15th and 56th days of gestation, the human embryo is said to be most vulnerable to the teratogenic effects of a drug⁹. Surgery during pregnancy has been associated with premature labour and foetal loss. The incidence is higher during lower abdominal and pelvic surgery. We present a case of a known asthmatic that had emergency appendisectomy at a gestation age of 20 weeks.

Case Presentation

A 24-year-old gravida 3 Para 2+0 presented at the casualty department of the University of Port Harcourt Teaching Hospital, Nigeria with complaints of abdominal pain of six days duration, vomiting and watery stools of one-day duration. Patient vomited twice before presentation. Vomitus consisted of recently ingested feeds. She is a known asthmatic for nine years on franol tablets, hydrocortisone, prednisolone, and oral salbutamol. Her last asthmatic attack was one-week prior to presentation. Her father and second daughter are asthmatic. On examination, she was in painful distress weight 75 kg, pulse rate 80 bpm, blood pressure 120/80 mmhg. Auscultation of the chest was vesicular breath sounds. Abdominal examination revealed a fundal height of 20 weeks, rebound tenderness, tender right lower quadrant, and positive rovsig's sign with hypoactive bowel sounds. Packed cell volume was 31% and the electrolyte, urea, and creatinine levels were within normal limits. Urinalysis was essentially normal. Assessment of the airway revealed a mobile temporomandibular joint and mallampathi I. A diagnosis of acute appendicitis, ASA II^E in an asthmatic multipara patient was made. She was counselled for surgery and informed consent obtained. The anaesthetic technique of choice was explained to the patient. In the operating room, a wedge was placed under the right hip, intravenous

access was established on the right hand with 18G intravenous cannula, and 500 mls of 0.9% normal saline was set up. She received two puffs of salbutamol inhaler and preincisional 1g ceftriazone was administered. Patient was preoxygenated with 5L 100% fractional oxygen for five minutes. Anaesthesia was induced with 100mg Propofol. Intubation was done by administration of 100mg suxamethonium and 7mm internal diameter cuffed endotracheal tube. Anaesthesia was maintained with 5L 100% fractional oxygen, 0.5-3% halothane, 4 mg pancuronium, 100mg hydrocortisone, and 30mg pentazocine. Intraoperative findings were ruptured appendix lying in the peritoneum. 100 mls of purulent straw-coloured fluid was drained from the abdomen. Anaesthesia was reversed by cutting off halothane, administration of 2.5 mg neostigmine and 1.2 mg atropine. Patient was extubated. Anaesthesia was monitored with a non-invasive sphygmomanometer, pulse oximeter, and Foleys' urethra catheter to monitor urine output. She was discharged on the fifth postoperative day on oral medications. She had spontaneous vaginal delivery at 36 weeks gestation.

Discussion

Non-obstetric disease requiring surgery may complicate pregnancy and jeopardize maternal and foetal well-being. Surgery may be safely done if the physician is aware of anatomic and physiologic alterations during gestation that necessitate an altered approach to diagnosis and management. Patients presenting for surgery during the course of pregnancy carry a number of important challenges for anaesthetists². Any type of emergency surgery may be carried out during pregnancy. Surgery may be indicated during any stage of pregnancy¹. Elective non-obstetric surgery is avoided during pregnancy because of additional risks to the mother and child^{1,7}. In such cases, the risks to both mother and foetus outweigh the risks of miscarriage and preterm labour. Emergency surgery proceeds regardless of gestational age and the primary goal is to preserve the life of the mother⁷ minimizing the risk of preterm labour and foetal demise². The anaesthetist challenge in this patient was an asthmatic gravid patient presenting for surgery. Patients presenting for surgery during the course of pregnancy carry a number of important challenges for anaesthetists². As with all anaesthesia, the fundamentals of physiology, pharmacology, and pathology must be understood as well as appreciation of the effects of drugs on the mother and foetus when providing anaesthesia care in pregnancy^{2,3,8,10}. Surgery was carried out in this case

because it was an emergency. If it was delayed, peritonitis can result because the appendix was already ruptured with purulent fluid. The changes of pregnancy can often modify the disease process and make diagnosis difficult. Patients may therefore present late with advanced or complicated disease. Surgical management is also more complicated than in non-pregnant patients⁴. Important factor affecting the pregnant patient physiology include positioning of the patient. A wedge was placed under the right hip of the patient in this case to prevent aortocaval compression. Even when aortocaval compression does not cause maternal hypotension, it can reduce placental perfusion and cause foetal compromise⁴. Correct positioning is essential when surgery is performed at >20weeks gestation⁴. The patient did not have any episode of hypotension intra-operatively. The general anaesthesia induction agents available are ketamine, propofol, and sodium thiopentone available at the centre. Ketamine was used because it causes uterine contractions. Sodium thiopentone releases histamine and causes bronchospasm therefore it is contraindicated in asthmatics and the patient had an asthmatic attack one week prior to surgery therefore propofol was used. Maternal safety is related to the physiologic adaptations associated with pregnancy^{1,7}. The pregnancy woman undergoes significant adaptations to pregnancy¹. Pregnancy induced changes poses hazards to mother and foetus during anaesthesia and surgery. Most of these changes are due to the mechanical effect of the enlarging uterus, hormonal changes associated with pregnancy, increased metabolic demands, and the low resistance placental circulation^{1,3}. The most important and serious risk to the foetus of maternal surgery during pregnancy is that of intrauterine asphyxia. The most challenging goal of the anaesthetist is therefore to avoid foetal asphyxia by maintaining normal maternal oxygenation, maternal carbon dioxide levels, maternal blood pressure are all factors that need to be controlled during surgery to avoid foetal asphyxia^{1,7}. Several drugs used commonly in anaesthesia such as ketamine or intravenous local anaesthetics can cause uterine hyperactivity and should be avoided¹. Ketamine increases intrauterine pressure and can cause foetal asphyxia⁴. If general anaesthesia is mandatory, a rapid sequence induction is required, adequate denitrogenation, cricoid pressure, a rapid acting neuromuscular blocking agent (preferably succinylcholine), and endotracheal intubation¹. Endotracheal intubation was facilitated in this patient with suxamethonium and anaesthesia

maintained with pancurium, which is a neuromuscular blocker and halothane an inhalational anaesthetic. A volatile agent is useful to prevent premature uterine activity¹. During anaesthesia and surgery, foetal well being is best ensured by careful maintenance of stable maternal hemodynamic parameter and oxygenation². External tocodynamometry should be used whenever possible intra and post operatively. It can detect the onset of preterm labour so that tocolysis can be started early⁴. Prophylactic tocolysis is controversial⁴ since tocolytic agents have considerable maternal side effects and efficacy during non-obstetric surgery has not been proven¹. Continuous foetal heart rate monitoring using trans-abdominal Doppler is possible from 16 weeks⁴. Most studies have reported an increased incidence of spontaneous abortion, premature labour and preterm delivery following surgery during pregnancy especially if surgery involves intra-abdominal procedures^{1,11}. No study as at the time of writing this manuscript has been able to determine the cause of foetal wastage.

References

1. Buck FD, Vel DE. Anaesthesia for non-obstetric surgery in the pregnant patient. *Minerva Anesthesiologica*. 2007. 73: 4235-240
2. O'Gorman DA, Mhuireachtaigh RN. Anaesthesia in pregnant patients for non-obstetric surgery. *J Clin Anesth*. 2006. 18: 60-66
3. Reitman E, Flood P. Anaesthetic considerations for non-obstetric surgery during pregnancy. *Br J Anaesth*. 2011. 107: 172-178
4. Clyburn P, Collis R, Harries S, Davies S. *Obstetric anaesthesia*. Oxford University Press. New York. 2008: 426-430
5. Crowhurst JA. Anaesthesia for non-obstetric surgery during pregnancy. *Acta Anaesthesiol Belg*. 2002. 53: 295-7
6. Naughton NN, Chitra CS. Non-obstetric surgery during pregnancy. In Chestnut DH (Ed) *Obstetric Anaesthesia: Principles and practice*. Philadelphia. Elsevier Mosby. 2004: 255-72
7. Melachuri KV, Walton NKD. Anaesthesia for non-obstetric surgery during pregnancy. *Continuing Education in Anaesthesia, Critical Care, and Pain*. 2006. 6(2): 83-85
8. Nuevo FR. Anaesthesia for non-obstetric surgery in the pregnant patient. In: Birnbach DJ, Gatt SP, Datta S(ED). *Textbook of Obstetric Anaesthesia*. New York. Churchill Livingstone. 2000:289

9. Goodman S. Anaesthesia for non-obstetric surgery in the pregnant patient. *Semin Perinatol.* 2002; 26: 136-45
10. Walton NKD, Melachuri VK. Anaesthesia for non-obstetric surgery during pregnancy. *Acta Anaesthesiol Belg.* 2002, 53(4): 295-7
11. Mazze RI, Kallem B. Reproductive outcome after anaesthesia and operation during pregnancy: A Registry Study of 5405 Cases. *Am J Obstet Gynecol.* 1989; 161: 1178-85