Research article

# Upper gastro intestinal endoscopy in pregnancy: A single centre experience

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## Abstract

**Introdction:** Upper gastro intestinal (GI) endoscopy is advisable to perform when strongly indicated during pregnancy. This study was to evaluate the outcomes of upper GI endoscopy during pregnancy.

**Methods:** A single centre retrospective study was carried out. Randomly selected 500 medical records of the pregnant mothers who were referred as out patients and hospitalized from 2012 to 2022 were retrieved. Inclusion criteria for retrieving data of the patients who underwent upper GI endoscopy were; Major or continued bleeding, severe or refractory nausea and vomiting or abdominal pain, dysphagia or odynophagia. Endoscopic findings were recorded in a computer based database. Ethical approval was obtained from the Ethical Review Committee of Nawaloka Hospitals of Sri Lanka. No conflict of interest.

**Results:** A total of 16 records of patients underwent upper GI endoscopy were retrieved during 2012 to 2022. The mean age of the patients was 25.48 ± 6.5 years. Ten patients (62.5%:10/16) were primigravida. During the first, second and third trimester of pregnancy, number of patients who underwent upper GI endoscopy were 8 (50%), 4 (25%), and 4 (25%) respectively. The major indication was persistence epigastric pain (75%: 12/16) followed by dysphagia (18.7%:3/16) and hematemesis in one patient. All patients had undergone conservative treatment without any therapeutic upper GI endoscopy. There were no records that were found to have ERCP, capsular endoscopy or enteroscopy during pregnancy among our patients. No records were found of having endoscopy related adverse effects on mothers or foetuses.

**Conclusion:** The upper GI endoscopy especially oesophago-gastro-dudenoscopy (OGD) may be performed without a major risk to the mother and the baby. However, further prospective multicentre research studies are strongly recommended.

**Key words:** pregnancy, bleeding, dyspepsia, cancer, peptic ulcer

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## Introduction

Upper gastrointestinal (GI) endoscopy is usually safe, however, the safety and outcomes of this procedure during pregnancy needs further evaluation. Upper GI endoscopy is a safe alternative to that of interventional radiology and surgery, when therapeutic intervention is necessary in specific clinical conditions during pregnancy[1]. Some of the common complications which are associated with upper GI endoscopy during pregnancy are, sedation induced maternal hypotension, maternal hypoxia, foetal hypoxia, exposure of foetus to potentially teratogenic drugs, radiation and premature birth[1-6].

The best time to perform upper GI endoscopy would be in third trimester or after delivery; however, pregnant patients may develop conditions that require urgent upper endoscopy. The commonest indications for upper GI endoscopy in pregnancy are major or continued GI haemorrhage, dysphagia, persistent abdominal pain, refractory dyspepsia, nausea and vomiting. Therefore upper GI endoscopy is advisable to perform when strongly indicated during pregnancy[1-6]. This study was to evaluate the outcomes of upper GI endoscopy during pregnancy.

## Methods

A single centre retrospective study was carried out. Randomly selected 500 medical records of the pregnant mothers who were referred as out patients and hospitalized from 2012 to 2022 were retrieved. Inclusion criteria for retrieving data of the patients who underwent upper GI endoscopy were; Major or continued bleeding, severe or refractory nausea and vomiting or abdominal pain, dysphagia or odynophagia. The procedure had been performed with the patient in the left lateral position, and a standard 100-cm fibreoptic flexible endoscope (Olympus CFP20S; Olympus Optical Co., Ltd., Tokyo, Japan) was used. Requirement of sedation was decided based on an individual case. Endoscopic findings were recorded in a computer based database. The procedures were performed by a consultant surgeon. Ethical approval was obtained from the Ethical Review Committee of Nawaloka Hospitals of Sri Lanka. All patients gave informed written consent to participate in this study. No conflict of interest.

## Statistical analysis

The data analysis was carried out using the Statistical Package for Social Sciences (SPSS®) software, version 20.0 (IBM® Corp., Armonk, NY, USA). The driscriptive statistics were expressed as mean ± standard deviation or number (percentage). A p-value of less than 0.05 was considered statistically significant.

## Results

A total of 16 records of patients underwent upper GI endoscopy were retrieved during 2012 to 2022. The mean age of the patients was 25.48 ± 6.5 years. Ten patients (62.5%: 10/16) were primigravida, the rest were multigravida. During the first, second and third trimester of pregnancy, number of patients who underwent upper GI endoscopy 8(50%), 4(25%), and 4 (25%) respectively. The mean gestational age at the time of procedure was 16 weeks (range 6-32 weeks). Table 1 shows major indication for OGD was persistence epigastric pain (75%: 12/16) followed by dysphagia (18.7%: 3/16) and hematemesis in one patient.

The 83.3% (10/12) patients who had persistent abdominal pain complained of having pain in the epigastrium whereas two had epigastrium and right hypochondrial (RHC) pain. Majority 91.6% (11/12) had pangastritis and one found to have pangastritis and hiatus hernia as well. The three patients who had dysphagia found to have reflux oesophagitis. The patient who had haematemesis found to have a Mallory-Weiss tear in the gastro oesophageal junction.

All patients had undergone conservative treatment without any therapeutic upper GI endoscopy. There were no records that were found to have ERCP, capsular endoscopy or enteroscopy during pregnancy among our patients. The records did not reviled any patients who had peptic ulcers with bleeding, cirrhosis, oesophageal or gastric varices, malignant lesions in the upper gastro intestine. None of the patients had complications related to the upper GI endoscopy. No records were found of having endoscopy related adverse effects on foetus. No patient had sedation during the procedure except for the throat spray with Lignocaine.

**Table 1. The characteristics of the study sample**

| Variable | Number or mean±SD | % |
|---|---|---|
| Mean age | 25.48 ± 6.5 | - |
| Mean gestational age | 16± weeks (range 6-32 weeks) | - |
| **Gravid** | | |
| Primigravida | 10/16 | 62.5 |
| Multigravida | 06 /16 | 37.5 |
| **Persistent abdominal pain** | | |
| Epigastrium | 10/12 | 83.3 |
| Epigastrium and RHC | 2/12 | 16.6 |
| **Trimester** | | |
| 1st trimester | 8/16 | 50 |
| 2nd trimester | 4/ 16 | 25 |
| 3rd trimester | 4/ 16 | 25 |
| **Dysphagia** | 3/16 | 18.7 |
| **Haematemesis** | 1/16 | 6.2 |

## Discussion

Upper GI endoscopy is unique during pregnancy because it needs the evaluation of risk of two lives, the foetal risk of medications and anaesthesia used, patient position in terms of placental blood flow, blood pressure fluctuations and placental perfusion, risk of aspiration in later pregnancy, comorbidities such as hyperemesis gravidarum, gestational diabetes, third trimester liver syndromes-HELLP syndrome, etc., which are specific to pregnancy, decision on delaying the procedure ideally until second trimester to postpartum, with possible expedited delivery, duration of procedure, obstetric monitoring, avoidance of radiation-based and interventional ancillary procedures and monopolar electrocautery may harm foetus[1-5].

The main indications for upper GI endoscopy are major or continued bleeding, Severe or refractory nausea and vomiting or abdominal pain and dysphagia or odynophagia. The use of medications during upper GI endoscopy such as narcotics, general anaesthetics, sedatives and reversing agents has limited data[1-3, 6-8]. It is stated that there effects during pregnancy, especially to foetus needs further trials and risks are not completely ruled out. Oesophago-gastro-dudenoscopy (OGD) is the most commonly performed endoscopic procedure during pregnancy. According to literature, it is favourable during pregnancy and outcomes[9-11]. The commonest indications were GI haemorrhage, abdominal pain and on suspicion of malignancy such as recent onset persisting for more than seven days dysphagia. Overall the studies showed that the commonest diagnosis was reflux esophagitis which occurred in pregnancy, followed by peptic ulcer disease and Mallory-Weiss tears[8-12].

Even though literature showed that the OGD was safe some would argue the empirical treatment with proton

pump inhibitors except for Omeprazole was beneficial without subjecting the patient and foetus to the risks of endoscopy. Furthermore, although possibly associated with hyperemesis gravidarum, *H. pylori* infection can be reliably diagnosed noninvasively by serum antibodies or stool antigen tests. Therefore, OGD can be deferred for symptoms of hyperemesis gravidarum with administration of empirical therapy comprising antiemetics and proton-pump inhibitors[10-14].

According to literature there is an extremely limited data on therapeutic endoscopy for haemorrhage from peptic ulcers, varices or Mallory-Weiss tears. However, they may suggest good maternal and foetal outcomes provided haemostasis is achieved[5,16]. The current data are insufficient to recommend specific endoscopic therapies during pregnancy, among the options of banding, hemoclips, sclerotherapy, thermocoagulation, argon plasma coagulation (APC), or electrocoagulation. Capsule endoscopy is generally considered contra-indicated during pregnancy, due to no clinical trials performed in pregnant patients[1-3, 15-17]. Deep enteroscopy, including single or double balloon enteroscopy has not been reported during pregnancy.

In our study group the patients who had upper GI endoscopy were equally distributed in the first trimester over the second and third trimester. None of them had comorbidities related to the pregnancy. The main indication for OGD in our patients was persistence epigastric pain followed by dysphagia and hematemesis in one patient. None of the patients had therapeutic endoscopic procedures and no systemic drug administrations were carried out during upper GI endoscopy. Majority had pangastritis and one found to have pangastritis and a hiatus hernia as well. The three patients who had dysphagia found to have reflux oesophagitis. The patient who had haematemesis found to have a Mallory-Weiss tear in the gastro oesophageal junction. The records did not reveal any patients who had peptic ulcers with bleeding, cirrhosis with oesophageal or gastric varices, malignant lesions in the upper gastro intestine. There were no records that were found to have ERCP, capsular endoscopy or enteroscopy during pregnancy among our patients. None of the patients had complications related to the upper GI endoscopy. No records were found of having endoscopy related adverse effects on foetus. The major limitation of our study was that, it was a retrospective and single centre study. Though it was a small case series and the results cannot be generalized, it will be helpful in planning prospective studies in upper GI endoscopy in pregnancy.

## Conclusion

The upper GI endoscopy especially OGD may be performed safely in pregnant patients in the presence of a definitive indication, without posing major risk to the mother and the baby. It has a good diagnostic yield. However, further prospective multicentre research studies are strongly recommended.

## Authors contributions

VA, HD and LC formulated the concept and design of study, acquisition of data and analysis and drafting the article. Contributed to design and concept of study, revising it critically for important intellectual content and approval of the final version to be published. All authors read and approved the final manuscript.

## Funding

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## Availability of data and materials

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

## Ethics approval and consent to participate

Ethical approval was obtained from the Ethical Review Committee of Nawaloka Hospitals of Sri Lanka to conduct the study.

## Competing interests

The authors declare that they have no competing interests.

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