
Debunking Old Beliefs: Endoscopic Retrograde Cholangiopancreatography in Pregnancy

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ABSTRACT

Pregnancy is a state associated with an increased risk of lithogenesis on the gallbladder. Cholelithiasis during pregnancy has an incidence of 12%, with pregnancy being an important risk factor for gallstones. The delayed endoscopic intervention has been associated with an increased risk of adverse events. Using the resource of ERCP in pregnancy is valuable in diseases of the biliary tract. The use of measures to reduce exposure to radiation should be the norm and the delay of this procedure should not be carried out when there are precise indications for it.

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INTRODUCTION

Pregnancy is a state associated with an increased risk of lithogenesis on the gallbladder. For pregnant women with this condition on the biliary tract associated with cholangitis or choledocholithiasis, endoscopic retrograde cholangiopancreatography (ERCP) intervention can be performed successfully and in a safe way. Cholelithiasis during pregnancy has an incidence of 12%, with pregnancy being an important risk factor for gallstones. Patients with choledocholithiasis can experience serious complications, such as obstructive jaundice, cholangitis, and pancreatitis, which may be detrimental to both mother and fetus^{1,2}. In addition, bile duct disease represents one of the most frequent indications of non-obstetric surgery during pregnancy³. The objective of this review article is to talk about ERCP in pregnancy.

THEORETICAL FRAMEWORK

For most patients with gallstone disease and suspected choledocholithiasis, pre-surgical evaluation includes radiographic imaging to confirm the diagnosis. If the diagnosis remains uncertain and/or MRCP cannot be performed or is wrong, endoscopic ultrasound (EUS) is reasonable. EUS can be performed immediately before ERCP, and if gallstones are not identified, ERCP may not be necessary⁴. For patients in whom choledocholithiasis diagnosis is confirmed with EUS, the characteristics of the

stones can be assessed to facilitate the ERCP procedure. ERCP should not be delayed in pregnant patients when indicated (e.g., symptomatic choledocholithiasis, cholangitis), due endoscopic intervention is associated with better outcomes^{2,5-10}.

Radiation exposure associated with ERCP: Fluoroscopy is used during ERCP to perform cholangiography and guide biliary cannulation and therapeutic interventions. Fetal radiation exposure during ERCP ranges from <0.0001 to 0.0057 Gy (0.1 to 5.77 mGy). Imaging studies that expose the fetus to <0.05 Gy (50 mGy, 5 rads) have not been associated with an increased risk of deterministic effects of ionizing radiation at this dose level. However, the stochastic effects of radiation do not present any threshold dose. Therefore, it is possible that smaller doses may increase the risk of childhood cancer, and long-term follow-up studies on radiation-related adverse effects are limited^{11,12}.

Strategies to minimize radiation exposure: Adequate shielding minimize radiation exposure to the uterus. A radiation protection apron shield, if used, should be placed **under** the patient and not covered over the abdomen, as the radiation source is usually located under the patient when using the standard fluoroscopy C arm. However, external shielding cannot eliminate fetal exposure due to internal scattered radiation. The uterus should be placed outside the primary X-ray beam. After about 20 weeks of pregnancy, the patient's prone positioning for ERCP is often not possible due

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to the gravid uterus. Therefore, the position of the left lateral decubitus, or left pelvic tilt, is required to avoid vena cava or aortic compression^{3,13,14}.

The following measures will help limit the total fluoroscopy time and radiation dose^{9,10,12,15}:

- Obtain static (point) films instead of using continuous fluoroscopy
- Minimize fluoroscopic image magnification
- Collimating the X-ray beam to the smallest possible field and using other protocols for low-dose radiation (e.g., increasing the tube voltage, using a low frame rate)
- Use the "last image retention" feature to review images instead of using additional fluoroscopy
- Place the image intensifier as close to the patient as possible and place the X-ray tube as far away from the patient as possible.

DISCUSSION

Data from mostly smaller retrospective studies suggest that ERCP during pregnancy is safe for both mother and fetus⁴⁻⁷. The delayed endoscopic intervention has been associated with an increased risk of adverse events². Therefore, pregnant patients requiring ERCP should be advised to proceed and avoid delays. Data suggest that pregnancy may be a risk factor for post-ERCP pancreatitis. It is not known whether there is a physiological basis for an increased risk of post-ERCP pancreatitis during pregnancy, although some prophylactic strategies (e.g. NSAIDs) that are used for non-pregnant patients are not typically used during pregnancy. Maternal death related to ERCP is rare. Pregnancy does not appear to increase other ERCP-related events (e.g., perforation, gastrointestinal bleeding, cholangitis, need for percutaneous drainage). ERCP during pregnancy has not been associated with an overall increased risk of adverse obstetric or fetal outcomes. However, the studies are mainly limited to pregnancy and the immediate postpartum period and do not include longer-term follow-up. ERCP does not appear to be associated with fetal distress or fetal loss. ERCP also does not appear to be associated with an increased risk of preterm birth and/or birth. Neonatal death is rare, but data are limited. In a series that included 23 pregnant patients undergoing ERCP, the only neonatal death was reported in a patient who had three ERCPs during the same pregnancy with lesser papilla sphincterotomy and stenting^{1,3,11,13,15,16}.

CONCLUSION

For years, ERCP was avoided during pregnancy given the concerns regarding the adverse effects related to radiation. Using the resource of ERCP in pregnancy is valuable in diseases of the biliary tract. The use of measures to reduce exposure to radiation should be the norm and the delay of this procedure should not be carried out when there are precise

indications for it. Timely intervention prevents poor maternal and fetal outcomes.

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