**Case Report** 

# Adjusting the Monitor, Processor, and Operator Position Assists Facilitate ERCP in A Patient with Situs Inversus Totalis

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#### Abstract

Situs Inversus Totalis (SIT) is a rare condition that can do Endoscopic Retrograde Cholangiopancreatography (ERCP) difficult due to the left-right reversal of the visceral organs. A 28-year-old woman was referred for cholangitis. ERCP was performed by using adjusting the monitor processor and operator position to the conventional technique. In that position, the papilla was located on the right side, at the 2 'o'clock position, using rotatable sphincterotome completed sphincterotomy, and the stone showing ERCP was removed easily. Adjusting the ERCP's monitor, processor, and operator position may facilitate this procedure in SIT patients.

Keywords: Endoscopic retrograde cholangiopancreatography; Situs inversus totalis; Magnetic resonance cholangiography

#### Introduction

Situs Inversus Totalis (SIT) is an autosomal recessive rare congenital abnormality often detected incidentally and characterized by complete reverse transposition of the visceral organs [1]. Imaging methods are vital for planning endoscopic procedures. Endoscopic procedures are really challenging procedures in SIT patients due to the mirror effect. Since most endoscopists are right-handed, SIT procedures can be challenging [2].

SIT is a rare condition that can do Endoscopic Retrograde Cholangiopancreatography (ERCP) difficult due to the left-right reversal of the visceral organs [3-5]. Given the limited data available, there is no common consensus regarding the ERCP procedure in patients with SIT. Several case reports have been published based on the patient's and endoscopist's positions. Previous studies have recorded cases in patients with SIT in which the procedure was performed in the standard ERCP position (patient in the prone position and the endoscopist on the right of the table), as well as the patient in the left lateral, supine position, and the endoscopist to the right or left of the table [5-10].

Here, we present a successful ERCP by modifying the monitor processor and operator position to the standard ERCP technique in a patient with SIT.

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#### **Case Presentation**

A 28-year-old woman was referred with left upper quadrant pain, jaundice, and chills. On palpation, she experienced epigastric discomfort, Murphy's sign (upper left quadrant) was positive, and her body temperature was 37.9°C. Laboratory examinations showed alanine transaminase was 78 U/L, the aspartate transaminase was 64 U/L, total bilirubin was 2.8 mg/dL and direct bilirubin was 2.1 mg/dL. The alkaline phosphatase level was 202 IU/L and gamma-glutamyl transpeptidase was 91 U/dL. Magnetic resonance cholangiopancreatography showed transposition of the liver and bile ducts with stone to the left upper quadrant (Figure 1). Ceftriaxone 2000 mg/day parenteral, saline infusion was started.



 $\label{eq:Figure 1: Magnetic resonance cholangiopancreatography showing transposition of the liver and bile ducts with stone (white arrow).$ 

### Procedure

ERCP was performed with a side-viewing endoscope (Olympus TJF-Q180V, Tokyo, Japan), and by an experienced endoscopist. ERCP was performed by using adjusting the monitor processor and operator position to the conventional technique: the patient was lying in the usual left lateral prone position on the X-ray table, and the operator



Figure 2: (A). ERCP was performed while the patient was lying in the left lateral prone position, and the operator was on the right side of the table, but he was facing the patient's feet and (B) Rotated the duodenoscope 180°. (C) The processor and monitor were placed on the left-front site of the operator.

was on the right side of the table, but he was facing the patient's feet and rotated the duodenoscope 180° (extreme counterclockwise position) when reached the second part of the duodenum (Figure 2 A,B) for better and easier access, cannulation and sphincterotomy. Additionally, the processor and monitor were placed on the left-front side of the operator to allow for ease of viewing (Figure 2 C). In that position, the papilla was located on the right side, at the 2 'o'clock position (Figure 3), using rotatable sphincterotome completed sphincterotomy, and the stone showing with ERCP was removed easily (Figure 4). The total procedure time was 12 minutes.





**Figure 4**: Cholangiography showing transposition of the liver and dilated bile duct and duodenoscope with short position.

## Discussion

The need for ERCP in patients with SIT is extremely rare. There are only 14 publications on the subject in the Pub-med database (using the term "situs inversus totalis and ERCP"). All of them (except 1 study) are case reports [7]. Previous reports have detailed a variety of approaches, the patient was placed in the prone position and the operator performed ERCP from the right side of the table [8,11-13]. Patel et al. [3] reported that performed ERCP in a similar position and they demonstrated that a skilled endoscopist may successfully perform ERCP in the prone position on a patient with situs inversus without needing the mirror image technique. In another approach, the patient was placed in the supine position with the operator standing on the patient's left, and then the patient was repositioned to a prone position when the scope reached the descending duodenum [14]. However, to access the ampulla, cannulation is relatively difficult and requires challenging and time-consuming maneuvers in these techniques.

Ding et al. [7], the position of the patient and the endoscopist was left to the operator's preference, and in most cases, procedures were performed in the left lateral and right lateral positions. Compared to the conventional prone position, higher cannulation success was achieved in the lateral position.

In our presented case, the patient was positioned in the usual left lateral prone position on the X-ray table, and the operator was on the right side of the table and rotated the duodenoscope 180° (extreme counterclockwise position) when reached the second part of the duodenum. This method did not require the patient to change position during the procedure, making the procedure easier and shorter. Similar cases, also called as the "twist technique," have been reported to increase the success rate [3,8,11,14]. Additionally, we have also replaced the processor and monitor (shown in Figure 2c) for ease of viewing for the operator. We found no information any data on the placement of the monitor and processor in the studies.

## Conclusion

While prospective studies are needed in SIT patients, adjusting the monitor, processor, and operator position in the ERCP may be considered to facilitate this procedure in SIT patients.

## **Statement of Ethics**

The patient provided written informed consent for the publishing of this case report and any associated pictures.

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