

# Gastric Volvulus Complicates the Hepatectomy for Living Donor Liver Transplantation

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Received November 8, 2011; revised December 27, 2011; accepted January 10, 2012

## ABSTRACT

Donor safety is the major concern in living donor liver transplantation (LDLT), and a constant aware of postoperative morbidity should be emphasized. Between March 2002 and May 2011 we performed 435 liver transplantations at an our center, one hundred forty eight with living donors. Among them left lobectomy or left lateral resections were conducted in 68 cases. Symptoms of gastric obstruction were recognized in 3 out of 68 patients that underwent left lateral resection (4.4%). The patients were readmitted because of severe symptoms of vomiting and abdominal pain. An upper endoscopy was performed and revealed pyloroantral obstruction due to gastric volvulus (GV). Endoscopic therapy correction was successfully performed in all patients. Reviewing the literature, one article has reported GV in 13 out of 115 donors (11.3%), all patients were submitted to a left resection. The mechanisms underlying this complication, in LDLT scenario, have not been fully elucidated. Nevertheless, clinicians should be aware of this possible association, which could make the diagnosis of GV more likely if a living donor comes back with typical symptoms.

**Keywords:** Living Donors; Hepatectomy; Postoperative Complications; Liver Transplantation; Gastric Volvulus

## 1. Introduction

Living donor liver transplantation (LDLT) has emerged as an essential surgical approach to minimize mortality of patients awaiting transplantation. Donor safety is the most important issue related to LDLT, and the selection of a donor for LDLT is one of the most dedicated features of this procedure [1,2]. Postoperative follow-up complication must be as thorough as the extensive preoperative selection evaluation. In the literature reports, the overall donor complication rates, ranges between 13% to 75% [3], according to the classification proposed by Clavien-Dindo [4]. The main reasons are linked to wound infections and bile leaks. Until now, there is only one publication addressing the issue of gastric volvulus after left lateral resection for LDLT [5].

Gastric volvulus (GV) is a rare condition, defined as a rotation of the stomach producing obstruction. Sometimes it can be classified as secondary due to abdominal operations, trauma or phrenic nerve palsy. Our objective was to describe three cases of gastric volvulus complicating living donor hepatectomy.

## 2. Case Presentations

Between March 2002 and May 2011 we performed 435

liver transplantations, one hundred forty eight with living donors. Among them, left lobectomy or left lateral segmentectomy (LLS) were conducted in 68 cases. Our donor evaluation protocol has been described elsewhere as a stepwise procedure [2]. Liver parenchyma section was performed with an ultrasonic dissector. All donors underwent routine intraoperative cholangiography. Once the hepatectomy had been completed, methylene blue with saline solution was injected through the cholangiography catheter to test for bile leakage. The surgical technique used in the living donors at our center has been described previously [6]. After surgery, all donors received analgesia by peridural pump infusion for at least 72 hours. Nasogastric tube was removed at the operation room and a liquid oral intake was started within 24 hours after surgery.

A literature review was conducted as a search of the MEDLINE databases using the terms “liver transplantation” and “gastric volvulus” or “living donor” and “gastric volvulus”.

## 3. Results

Symptoms of stomach obstruction were recognized in 3 out of 68 patients that underwent LLS (4.4%). All pa-

tients were discharged until the 5<sup>th</sup> postoperative day. The obstructions were diagnosed between 6<sup>th</sup> and 8<sup>th</sup> day after surgery. The patients were readmitted because of severe dyspeptic symptoms like nausea, vomiting and abdominal pain. An upper endoscopy was performed and revealed pyloroantral obstruction with abnormal rotation of the stomach and an erythematous mucosa with ischemic-appearing ulcers. Therapeutic endoscopy therapy correction was successfully performed in all three patients without recurrence. They were discharged between the first and third day after the endoscopic therapy. There was no significant correlation between age or gender, and the occurrence of gastric volvulus.

#### 4. Discussion

Gastric volvulus is a very rare entity. It can be hypothesized that the absence of the gastrohepatic ligament resulted in abnormal mobility of the stomach. The stomach has many ligamentous fastenings: the gastrosplenic, gastrophrenic, gastrohepatic, and gastroduodenal ligaments. When LLS are performed, the gastrohepatic and gastroduodenal attachments are cut. A second hypothetical justification for the occurrence of GV may be that the dead space caused by the LLS might allow the stomach an excessive mobility. Nevertheless, this complication is not prevalent in patients who are submitted to LLS for reasons other than left liver donation. In the literature, only one article has reported GV in 13 out of 115 donors (11.3%) at a single center [5]. All patients were submitted to a left resection. Thirteen donors underwent endoscopic correction and surgery was not required.

Furthermore, we believe that other prevention procedure, like refixation of the stomach, should be considered when left hepatectomy or LLS is performed.

In summary, we have described three cases of GV that

occurred in LDLT. Nevertheless, clinicians should be aware of this possible association, which could make the diagnosis of GV more likely if a living donor who has been recently undergone LDLT, comes back with typical symptoms.

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