



## Case report

# Laparoscopic Sleeve gastrectomy in Situs Inversus Totalis (video).

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### Publication data:

Submitted: January 10 ,2018

Accepted: January 27,2018

Available Online: January31,2018

This article was subject to full peer-review.

## Introduction:

Situs inversus totalis (SIT) is a rare autosomal recessive entity defined as the transposition of thoracic and intraabdominal organs forming a mirror image to the normal anatomy. Laparoscopic procedures are technically more challenging for the surgeons in case of SIT. We hereby report two cases of successful laparoscopic gastric sleeve in SIT patients.

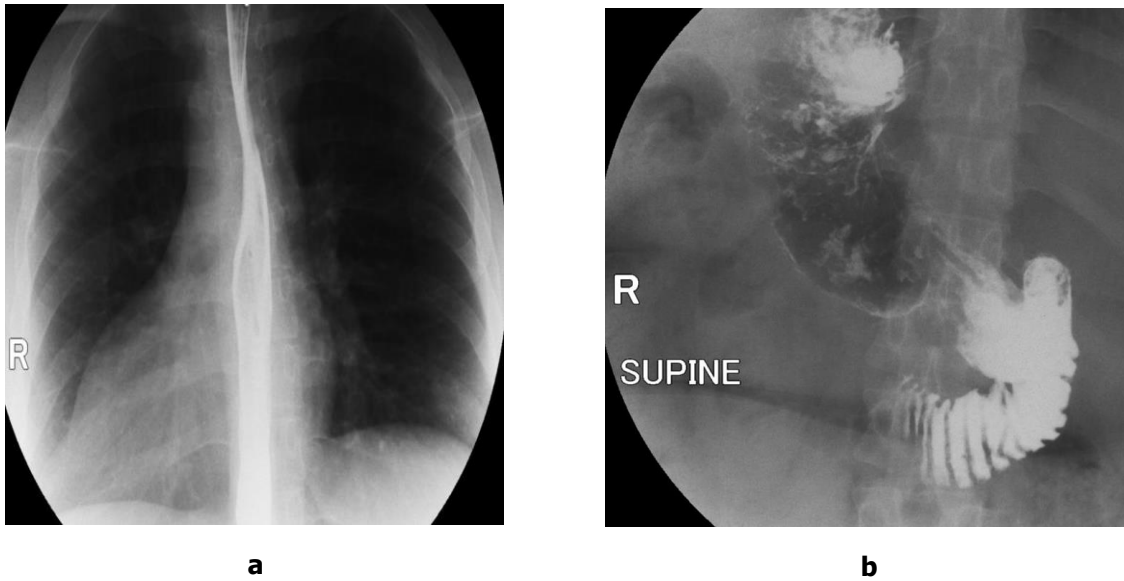
## Case presentation:

### Case 1

A 33-year-old morbidly obese female patient (body mass index (BMI): 42.7 kg/m<sup>2</sup>) was admitted for bariatric surgery. She is known to have Situs Inversus Totalis, but no chronic disease neither history previous surgery. Preoperative Chest X-ray Showed dextrocardia, Barium swallow showed the stomach and duodenum in mirror position (figure1). A Laparoscopic sleeve gastrectomy was performed successfully under general anesthesia in supine position and surgeon on the left side and assistant on the right side of the patient. The postoperative courses were uneventful; patient was discharged on the 2nd postoperative day.

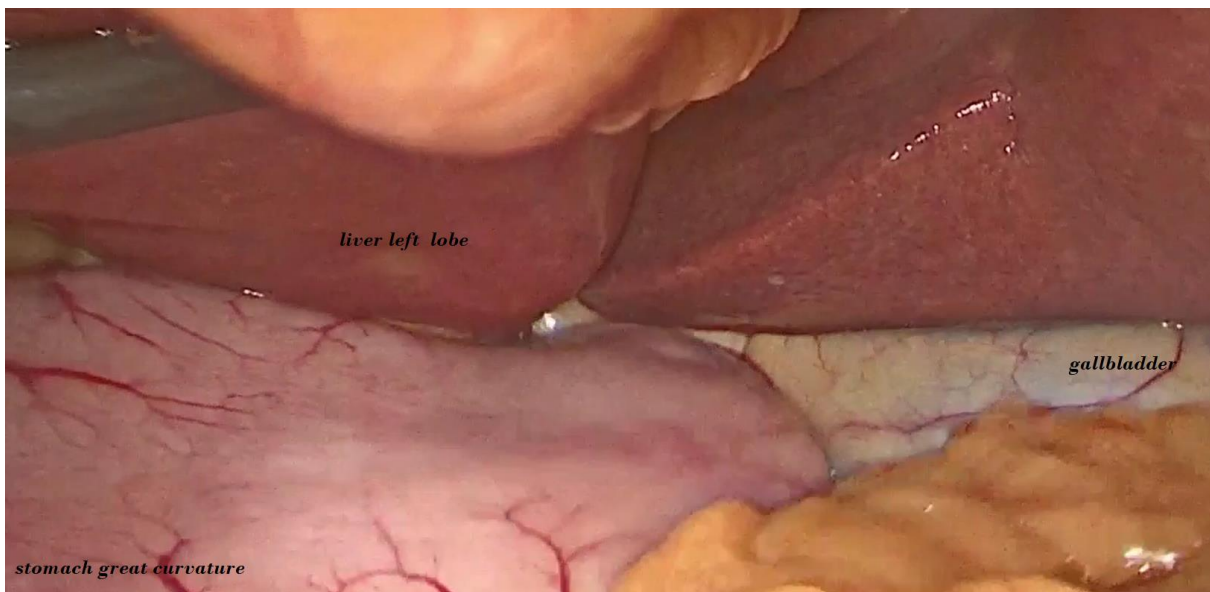
### Case 2

A 41 -year-old morbidly obese female patient (BMI: 41.7 kg/m<sup>2</sup>) was admitted for bariatric surgery. She was Asthmatic with no history of previous abdominal procedures. The preoperative investigations confirmed the SIT. Intraoperative exploration showed mirror transposition of all the intraabdominal organs (figure 2). A standard Laparoscopic gastric sleeve was performed successfully with uneventful postoperative courses.



**Figure 1. a: Dextrocardia**

**b: Stomach and duodenum in mirror position**



**Figure 2. mirror presentation of the intraabdominal organs**

## Discussion:

Situs Inversus is a rare congenital developmental anomaly with autosomal recessive inheritance. This entity is characterized by a reversed chest and abdomen organs position along a sagittal plane. The incidence of partial situs inversus is less than 1 in 22000. Partial presentations were also described. The diagnosis of situs inversus can be made through, X-rays, ultrasounds, barium enema, and abdominal computed tomography [1-5].

Laparoscopic surgery in situs inversus has been reported in few cases of gastric sleeve. Some other procedures have been successfully performed such as laparoscopic gastric banding, and laparoscopic gastric bypass [6,7].

The most important issue on which almost all the surgeons who presented their experiences focused was the intraoperative management since most of the patients are known to have SIT at the moment of the bariatric procedure [8].

Gastric sleeve and other bariatric surgeries are always challenging but no major complications related to the mirror anatomy presentation have been reported. However, it is recommended that an experienced laparoscopic surgeon carry out the procedure [9-13]. A summary of the described case of bariatric procedures done in patients with SIT is showed in table 1.

**Table1:** A brief review of the studies of Bariatric Surgery with Situs Inversus Totalis

	Age/ gender	Body mass index (BMI) before operation (kg/m <sup>2</sup> )	Preoperative diagnostic method	Operation time (mean operation time)	Previous operation	Surgical procedure	Postoperative complications
Wittgrove et al. (1998) [1]	38/F	47.8 kg/m <sup>2</sup>	ECG/X- ray chest	300 min (159)	No	LRYGB	No
Ahmed et al. (2006) [2]	47/F	58.1 kg/m <sup>2</sup>	ECG/X- ray chest/CT scan	160 min (105)	No	LRYGB	No
Tsepelidis et al. (2015) [3]	51/F	43 kg/m <sup>2</sup>	NA	120 min (NA)	No	LRYGB	No
Stier et al. (2014) [4]	39/M	44 kg/m <sup>2</sup>	USG/X-ray chest/gastroscopy/ ECG	76 min (50–93)	No	LRYGB	No
Stier et al. (2014) [4]	51/F	54.2 kg/m <sup>2</sup>	USG/X-ray chest/gastroscopy/ ECG	61 min (16–87)	No	LSG	No
Catheline et al. (2006) [5]	19/M	76 kg/m <sup>2</sup>	ECG/gastroscopy/X-ray chest/ USG	NA	No	LSG	No
Deutsch et al. (2012) [6]	39/F	42 kg/m <sup>2</sup>	Abdominal CT	NA	Open gastric banding	LSG	Suture line leakage
Genser et al. (2015) [7]	52/F	49 kg/m <sup>2</sup>	ECG/X- ray chest/CT scan	52 min (45–60)	No	LSG	No
Samaan et al. (2008) [9]	29/M	56 kg/m <sup>2</sup>	ECG	NA	No	LAGB	Band erosion
Matar et al. (2008) [10]	28/M	51 kg/m <sup>2</sup>	ECG/Barium graphy/X-ray chest/USG	NA	No	LAGB	No
Taskin et al. (2008) [11]	20/F	44.9 kg/m <sup>2</sup>	ECG/X-ray chest/USG	90 min	BIB	LAGB+LC	No
Pauli et al. (2008) [12]	47/F	60 kg/m <sup>2</sup>	X-ray chest/chest and abdominal CT scan	105 min	No	LAGB	No
Ersoy et al. (2005) [8]	33/F	53 kg/m <sup>2</sup>	ECG/gastroscopy/X-ray chest/ USG	NA	No	LAGB	No
Yazar et al. (2015) [13]	21/F	41.8 kg/m <sup>2</sup>	ECG/ gastroscopy/X-ray chest/ USG	78 min (28–60)	No	LSG	No
Current study (2017)	33/F	42.7 kg/m <sup>2</sup>	ECG/Barium graphy/X-ray chest	50 min	No	LSG	No
	41/F	41.7 kg/m <sup>2</sup>	ECG/Barium graphy/X-ray chest	75 min	No	LSG	No

BIB: bioenteric intragastric balloon, BMI: body mass index, CT: computed tomography, DM: diabetes mellitus, ECG:electrocardiography, HT: hypertension, LAGB: laparoscopic adjustable gastric banding, LC: laparoscopic cholecystectomy, LRYGB laparoscopic Roux-en-Y gastric bypass, LSG: laparoscopic sleeve gastrectomy, NA: not available, OSAS: obstructive sleep apnea syndrome, SILSG: single incision laparoscopic sleeve gastrectomy, USG: abdominal ultrasonography

**Conflict of interest:** none

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