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One stage laparoscopic left adrenalectomy and sleeve gastrectomy by direct supragastric approach

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ABSTRACT

INTRODUCTION: The advances in laparoscopic surgical technique and the greater experience of surgical teams have enabled the combination of different surgical techniques in a single procedure. This paper presents a case of a sleeve gastrectomy and a left adrenalectomy by laparoscopy for a morbidly obese patient with Cushing's syndrome.
PRESENTATION OF CASE: A 52 year-old male patient with a BMI of 53 kg/m^2 was diagnosed as having Cushing's syndrome caused by a left adrenal tumor. Sleeve gastrectomy was performed according to the usual technique. The adrenalectomy was performed at the same time by a left supragastric approach. The evolution was favorable, with 52% of excess weight loss observed after six months. Plasma and urinary cortisol at the 3- and 6-month follow-ups were under normal range and the patient required glucocorticoid therapy, confirming the cure of Cushing's syndrome.
DISCUSSION: Teams with experience of advanced laparoscopic surgery can successfully combine complex procedures in one surgical period. The approach we used for the adrenalectomy proved itself to be feasible after the sleeve gastrectomy.
CONCLUSION: Both procedures can be safely done in experience teams. Sleeve gastrectomy facilitates the direct supragastric approach.

1. Introduction

Morbid obesity is a growing problem in the third world.[1] Despite its growing incidence, only a small percentage of patients have a medical problem such as Cushing's syndrome, which could in fact be its cause.[2,3]

Both bariatric surgery[4] and adrenalectomy[5] have a clear indication for a laparoscopic approach. The association of both procedures at a single stage may be debatable due to the increased risk of performing both complex procedures and to the surgical risk of a morbidly obese patient with such a endocrinological comorbidity.[6,7]

Here we present the case of a 52 year-old man diagnosed with Cushing's syndrome during the preoperative screening for bariatric surgery. A sleeve gastrectomy and left adrenalectomy were performed using a laparoscopic approach at the same time.

2. Presentation of case

A 52 year-old man was referred to our Department for the assessment of morbid obesity. He had a 10 year history of hypertension which had worsened in the last few months and was being treated with 3 antihypertensive agents. He had a recent history of type 2 diabetes that was controlled with diet, hyperlipidemia under pharmacological treatment and sleep apnea treated with continuous positive airway pressure support. In our Center patients with obesity are studied to exclude endocrine causes of obesity and laboratory tests to screen for hypothyroidism and Cushing' syndrome are routinely performed.

He referred a 20 kg weight increase in 2 years with no history of alcohol drinking or intake of exogenous glucocorticoid drugs. Moreover, the patient complained of fatigue and proximal muscle weakness. His physical examination showed a weight of 153 kg with body mass index of 53.8 kg/m^2 at the first visit in the outpatients' clinic. Morning orthostatic blood pressure was 150/90 despite medical therapy. A central distribution of fat with a waist circumference of 150 cm and cervical and dorsocervical fat pad (buffalo hump) were observed. No purple striae or easy bruising were present.

Suspected hypercortisolism was confirmed by a failure to suppress the level of cortisol after 1 mg dexamethasone (DST). The

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Table 1
Biochemical screening.

Cushing' disease biochemical screening				
Data	Determination	Value	Unit	Normal range
Preoperative workup	Base values			
	24 h urinary free cortisol	3010	mcg/d	20–90
	Plasmatic cortisol	395	nmol/L	138–690
	ACTH	6	nmol/L	9–52
	Low dose DST			
	24 h urinary free cortisol	196	mcg/d	20–90
	Plasmatic cortisol	475	nmol/L	138–690
	ACTH	<6	nmol/L	9–52
	High dose DST			
	Plasmatic cortisol	475	nmol/L	138–690
	ACTH	<6	nmol/L	9–52
6 months after surgery	Base values			
	Plasmatic cortisol	47	nmol/L	138–690
	ACTH	3.6	nmol/L	9–52

DST: dexametasone.
ACTH: adrenocortical hormone.

measurement of ACTH levels showed suppressed ACTH indicating an ACTH independent disease. An overnight low dose followed by a high dose DST suppression test was performed. Serum and urinary cortisol were not suppressed in response to either the low dose or the high-dose confirming an ACTH independent disease. The initial and subsequent laboratory examinations are resumed in Table 1.

Adrenal computed tomography was performed and a well-defined left adrenal mass measuring 3 cm and suggestive of adenoma was observed (Fig. 1).

For the surgery, the patient was positioned in the lithotomy position and tilted-up 40° under general anesthesia. The main surgeon was positioned between the legs of the patient. Five 12 mm ports were placed. A 30° oblique laparoscope was used. Ports were placed in the same way we use for the sleeve gastrectomy (Fig. 2). Once the pneumoperitoneum was achieved, the lesser sac was opened and the sleeve gastrectomy was performed, guided by a 36F tube.

For the adrenalectomy, an anterior supragastric approach was used. Fig. 3 shows the exposure of the surgical field before the adrenalectomy. With this supragastric approach described by Basso et al. in 1999,[8] the key point consists in identifying the diaphragmatic–adrenal channel which runs on the left crus and crosses the middle adrenal artery and joins the adrenal vein. The left diaphragmatic vein was dissected and followed caudally until the left adrenal gland vein was found (Fig. 4). Once the vein was clipped and cut, the rest of the gland was carefully dissected in an

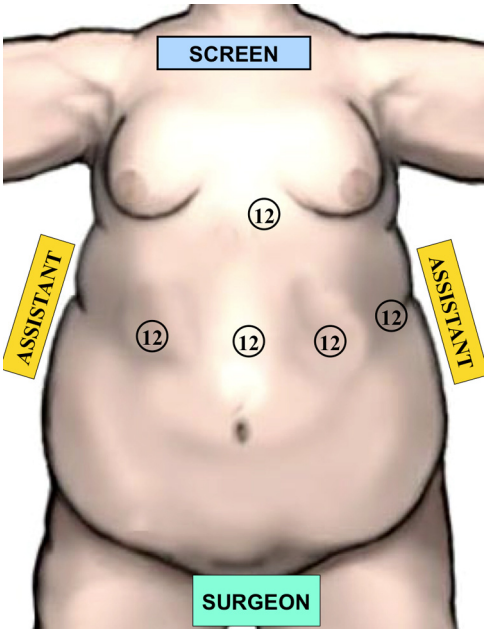

Fig. 2. Trocar position for the procedure.

Fig. 1. CT-scans show the abnormal left adrenal gland.

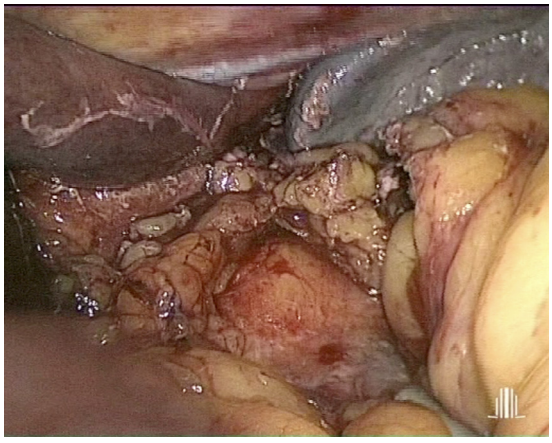

Fig. 3. Surgical field after the sleeve gastrectomy and prior to the adrenalectomy.