



ELSEVIER

Surgery for Obesity and Related Diseases ■ (2016) 00–00

SURGERY FOR OBESITY  
AND RELATED DISEASES

Original article

# Long-term effects of laparoscopic Roux-en-Y gastric bypass on metabolic syndrome in patients with morbid obesity

Kamran Shah, M.D., Bent Johnny Nergard, M.D., Katinka Stray Frazier, M.Sc., R.D.,  
Björn Geir Leifsson, M.D., Ebrahim Aghajani, M.D., Ph.D., Hjörtur Gislason, M.D., Ph.D.\*

*Aleris Obesity Clinic and Department of Surgery, Aleris Hospital, Oslo, Norway*

Received January 22, 2016; accepted March 15, 2016

## Abstract

**Background:** Diseases associated with obesity such as type 2 diabetes (T2D), hypertension, and dyslipidemia are common and together are defined as metabolic syndrome (MetS). The aim of this study was to evaluate long-term effects of laparoscopic Roux-en-Y gastric bypass (LRYGB) in morbidly obese patients with MetS.

**Methods:** This was a retrospective study of data from a prospective database in a single center from 2005 to 2013 including 3795 LRYGB operated obese patients. Metabolic syndrome was defined according to the International Diabetes Federation Consensus Definition of Metabolic Syndrome from 2006.

**Results:** In the study population, 79% of the patients were women, the preoperative median age was 42.4 years, and median body mass index (BMI, kg/m<sup>2</sup>) was 40.9. MetS was diagnosed in 60% of the patients (2275/3795), with increased frequency in men and in those with higher age, higher BMI, and greater waist circumference; 27.5% of patients had impaired glucose metabolism, 40% hypertension, and 30% dyslipidemia.

Postoperative follow-up rate > 5 years was 71% (595/839). We found that 86.2% had resolution of MetS. After 5–9 years, complete remission of T2D was achieved in 78%, hypertension in 51%, and dyslipidemia in 89%. Mean excess BMI loss was significantly lower for patients with MetS (73.1%) compared with patients without MetS (75.6%) ( $P < .01$ ). Early complications (leakage or hemorrhage) occurred in 1.2% (48/3975) and internal hernia in 7.8% (310/3975). Presence of MetS did not increase complication rates.

**Conclusion:** LRYGB in obese patients is associated with a significant and sustained reduction in excessive weight. In the present study, 86.2% of patients with MetS achieved complete remission and complication rates were low. Early bariatric surgery should be considered in patients with obesity and concurrent MetS. (*Surg Obes Relat Dis* 2016;■:00–00.) © 2016 American Society for Metabolic and Bariatric Surgery. All rights reserved.

**Keywords:** Roux-en-Y gastric bypass; Metabolic syndrome; Remission

Obesity is an increasing global problem in developed countries and has nearly doubled since 1980 [1]. The correlation between central obesity and several diseases has been well established, particularly the association with

changes in metabolism of glucose, dyslipidemia, and hypertension [2,3]. Central obesity in association with the above mentioned metabolic changes has been defined by the World Health Organization as the clinical unit metabolic syndrome (MetS) [3].

Studies have found that > 50% of individuals with morbid obesity meet the MetS criteria [4–6], and approximately 80% of patients with type 2 diabetes (T2D) and

\*Correspondence: H. Gislason, Department of Surgery, Aleris Hospital, Fredrik-Stangsgate 11–13, 0264 Oslo, Norway.

E-mail: [hjortur.gislason@aleris.no](mailto:hjortur.gislason@aleris.no)

<http://dx.doi.org/10.1016/j.soard.2016.03.017>

1550-7289/© 2016 American Society for Metabolic and Bariatric Surgery. All rights reserved.

concurrent obesity have MetS [7]. Several studies have confirmed that MetS is strongly associated with increased prevalence of cardiovascular disease and mortality [8,9].

Weight loss leads to better metabolic control, but because of the absence of long-term weight loss with conservative measures, the syndrome progresses. Bariatric surgery has proven to be the only effective and durable lasting treatment of obesity and hence MetS [10] and reduces mortality in obese patients [11,12].

The aim of this study was to assess the prevalence of MetS in morbidly obese patients who underwent surgery in our department and to investigate the efficacy and safety profile of Roux-en-Y gastric bypass (RYGB) in treating MetS within the first 9 years after surgery.

## Methods

All 3795 morbid obese patients who underwent RYGB (primary operation) at the Centre of Bariatric Surgery, Aleris Hospital Oslo, Norway, from September 2005 to January 2014 were included. Data were prospectively collected and registered in our database (Filemaker 11) as part of our routine patient record system and was approved by the Norwegian Data Protection Authority. All data regarding weight loss, metabolic status, and postoperative changes as well as complications were registered continuously.

According to the International Diabetes Federation [3], MetS is defined as central obesity with waist circumference  $\geq 94$  cm for men and  $\geq 80$  cm for women.

In addition, any 2 of the following 4 factors should be present:

1. Fasting triglycerides  $\geq 1.7$  mmol/L
2. Fasting HDL cholesterol  $< 1.0$  mmol/L in men and  $< 1.3$  mmol/L in women
3. Blood pressure  $\geq 130/\geq 85$  mm Hg or treatment of previously diagnosed hypertension (HT)
4. Fasting plasma glucose (FPG)  $\geq 5.6$  mmol/L or previously diagnosed T2D

According to the consensus statement from 2009 [13], remission of T2D is defined as follows:

*Complete remission:* FPG  $< 5.6$  mmol/L and glycosylated hemoglobin (A1C)  $< 6\%$  ( $< 42$  mmol/mol) of at least 1 year duration in the absence of active pharmacologic therapy or ongoing procedures.

*Partial remission:* FPG 5.6–6.9 mmol/L and A1C 6%–6.5% (42–48 mmol/mol) of at least 1 year duration in the absence of active pharmacologic therapy or ongoing procedures.

In the present study, remission of T2D was defined as either partial or complete remission.

Remission of HT [3] is defined as follows:

*Complete remission:* Blood pressure  $\leq 130/85$  mm Hg in the absence of active pharmacologic therapy.

*Partial remission:* Normal blood pressure with 50% reduction in ongoing active pharmacologic therapy.

Remission of dyslipidemia [14] is defined as fasting HDL  $\geq 1.0$  in men and  $\geq 1.3$  mmol/L in women and fasting triglycerides  $< 1.7$  mmol/L in the absence of active pharmacologic therapy.

Preoperatively the patients were enrolled in a whole-day seminar with a multidisciplinary approach and received information about the advantages and disadvantages of the operation, possible complications, and the necessity and requirement of lifelong metabolic follow-up. Written informed consent for participation in research was obtained. Preoperative fasting blood analyses were taken before initiation of intensive dietary and nutritional regimes. The patients were operated with RYGB with a small gastric pouch (10–15 mL); antecolic, antegastric alimentary limb; and linear stapling of both anastomoses. Before June 2010 the mesenteric defects were not closed (2472 patients), but since then the defects have been closed by using the Endo Universal™ 4.8 mm stapler as described in detail elsewhere [15,16]. Most of the patients with body mass index (BMI)  $> 48$  underwent operation with a 2-m biliopancreatic limb. Indication for operation was in accordance with the guidelines from Interdisciplinary European Guidelines on Surgery for Severe Obesity [17].

## Statistical methods

Statistical analyses were performed using SPSS for Macintosh, version 22.0 (IBM Corp., Armonk, NY, USA). Values were reported as mean  $\pm$  standard deviation if not mentioned otherwise. Comparison between groups was made with 1-way analysis of variance, *t* test, or  $\chi^2$  test. A *P* value  $< .05$  was considered statistically significant. Risk ratio estimates were calculated using the binomial regression model and results presented as risk ratio (RR) with the 95% CI.

## Results

### Preoperative status

Mean age of patients at the time of operation was 42.4 years (range, 18–73 yr), and 79% were female (M:F = 791:3004). During preoperative preparation, patients lost 5.7 kg, and mean BMI at the time of operation was 41.4 Kg/m<sup>2</sup> (range, 30–81).

Sixty percent of the patients were diagnosed with MetS. It was more common in men (*P*  $< .05$ ) and with increasing age (*P*  $< .001$ ), higher BMI (*P*  $< .001$ ), and greater waist circumference (*P*  $< .01$ ) compared with patients without MetS (Table 1). All patients met the criteria of central obesity. Table 2 shows the distribution of the MetS criteria in the patient population.

Download English Version:

<https://daneshyari.com/en/article/5661676>

Download Persian Version:

<https://daneshyari.com/article/5661676>

[Daneshyari.com](https://daneshyari.com)