

Roux-En-Y Gastric Bypass

Gastric bypass operations are increasing with the number performed in Australia now surpassing gastric banding (Bariatric Surgical Registry Data 2016-2017). Gastric bypass is considered by some, to be the gold standard that we measure other operations against (ASMBS, 2005). Roux-en-Y gastric bypass is the most commonly performed bypass operation in Australia.

This operation combines both restriction and metabolic weight loss. Malabsorption is not a major mechanism of weight loss as it is felt that after a few months, the gut adapts and malabsorption of fat and carbohydrate ceases (C.W Le Roux 2005). Gastric bypass involves formation of a small gastric pouch that is directly joined to the proximal (upper) small bowel. The bypassed stomach, duodenum and top of the jejunum are then joined onto the jejunum lower down with a second anastomosis or join. There are accepted variations of the Roux-en-y gastric bypass including banded gastric bypass. This involves adding a fixed band or ring to the gastric pouch to increase the restrictive element of the operation.

First performed in 1967 by Professor E.E Mason and Professor Ito, it was used for weight loss after it was observed that people who had partial stomach removal for peptic ulcer lost weight (Mason E. E 1967). Originally thought to work by malabsorption, it is now thought to work by more complex means (ASMBS, 2005). The current theory involves the effects of reduced gastric volume but also a variety of changes to gut hormones that occur with more rapid transit of food into the small bowel (C.W Le Roux 2005). Hormones such as Ghrelin, Peptide YY (PYY), GIP and GLP 1 are thought to be important in reducing appetite and increasing satiety (Korner 2005). Restriction or decrease in food intake is an important element to the operation and is due to the size of the gastric pouch and also the size of the join between the stomach and small bowel (gastro jejunostomy).

Weight loss is thought to be most durable with gastric bypass in comparison to gastric band. Gastric sleeve has not been adequately evaluated in long-term series to make a definitive claim of better or worse durability. A 2017 long term study looking at 12 years of follow up of Gastric bypass patients (Kothari 2017), showed that maximum weight loss occurred at 18 months (79% excess weight loss). Excess weight loss was still at 57% at 12 years with 83% follow up of patients. A veteran's study in the United States with 31% 10-year follow up confirmed a 56.4% excess weight loss. Biertho et al also showed a 74.6% excess weight loss at 18 months compared with 40.4% with gastric banding (Biertho, 2003).

Diabetic remission rates are high after Roux-en-Y gastric bypass. Remission rates are higher than gastric band and gastric sleeve. The STAMPEDE trial (Schauer, 2017) looked prospectively at matched groups with BMI between 27kg/m² and 43 kg/m². There was a remission rate of 45% in the gastric bypass cohort compared with 2% in the medically treated cohort. Other conditions that improve significantly after gastric bypass include hypertension, dyslipidaemia and gastroesophageal reflux disease. The STAMPEDE trial

showed that surgical treatment was also more beneficial in these conditions than stand alone medical therapy.

Laparoscopic gastric bypass surgery is considered a relatively safe procedure with a 30-day mortality of .38%-.72% (Irene T Ma, 2015). This has been confirmed by a number of other studies. Mortality rates have been shown to be higher in low volume centres (ASMBS, 2005). Mortality rates have dropped dramatically from around 2% in 1993 (Irene T Ma, 2015) to the current levels with the advances in Laparoscopic surgery.

30 day morbidity can be due to complications such as anastomotic leak, bleeding and pulmonary embolus. Leak rates have been described from .1-5.6% (Jacobsen 2014).

Long term re operation rates of 3%-20% of patients after RYGB has been described (Daellenbach, 2011). Complications that may require re operation include anastomotic stricture, marginal ulcer, intestinal obstruction and internal hernia. Revision is also possible for pouch dilatation and other anatomical issues that may occur. Dumping and transient hypoglycaemia are other side effects of surgery that may require further treatment or surgery.

Regular follow up is recommended for postoperative RYGB patients. Although its mechanism of action is not thought to be by malabsorption, there is some micronutrient malabsorption due to bypass of the stomach, duodenum and proximal jejunum, in particular, vitamin B12, calcium and iron. In a recent study, 21% of patients developed an iron deficiency in the first 12 months post RYGB (Obinwanne, 2014). Therefore, careful monitoring of patients is expected for life.

Gastric Bypass has evolved into a safe and effective option for patients with obesity and also in the treatment of medical conditions associated for obesity. It should be offered to patients with morbid obesity but also it can be argued that lower BMI patients with significant medical issues such as type II diabetes, should be offered RYGB. Life long follow up is recommended.

Works Cited

- ASMBS. "story of obesity surgery." *ASMBS Consensus Statement*, 2005.
- Biertho . "Laparoscopic gastric bypass vs Laparoscopic adjustable gastric banding a comparative study of 1200 cases." *Journal of American College of Surgeons*, 2003: 536-544.
- C.W Le Roux, S.R Bloom. "Why Do Patients Lose Weight After Roux En Y Gastric Bypass." *JCEM*, January 2005: 591-592.
- Daellenbach, Suter. "Jejuno Jejuno Intussuception after RYGB - a review." *Obesity Surgery*, 2011: 253-263.
- HIGA, Boon. "Laparoscopic gastric bypass technique and 3 year follow up." *laparos endoscopic adv surgical techniques*, 2001: 377-382.
- Irene T Ma, James A Madura. "Gastro Intestinal Complications after Bariatric Surgery." *Gastro enterology and Hepatology*, August 2015: 526-535.

Jacobsen. "Management of suspected anastomotic leak after bariatric RYGB." *British Journal of surgery*, 2014: 417-423.

Korner. "Effects of gastric bypass on fasting and post prandial levels of Ghrelin, PYY and Insulin." *Journal of clinical endocrinology metab*, 2005: 359-365.

Kothari. "Long term outcomes (>10 years) after Roux en Y Gastric Bypass." *Surgery of Obesity and Related Diseases*, June 2017: 972-978.

Mason E. E, C Ito. "Gastric Bypass in Obesity." *Surg Clinics of Nth America*, 1967: 1345-51.

Obinwanne KM. "Incidence, treatment and outcomes of iron deficiency after laparoscopic RYGB- a 10 year analysis." *J Am Coll Surgeons*, Feb 2014: 246-252.

Schauer. "Bariatric surgery vs intensive medical therapy for diabetes - 5 year study." *NEJM*, feb 2017: 641-651.