



Best evidence topic

Is bariatric surgery in patients following renal transplantation safe and effective? A best evidence topic



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ABSTRACT

Obesity is common amongst patients with renal transplants (RT). It is associated not only with generic obesity-related complications including diabetes, but also with higher rates of graft rejection and loss. A Best Evidence Topic in surgery was written according to a structured protocol: this is a systematic review of the literature, suitable when the quality of available evidence is low. The question addressed was: is weight-loss surgery (WLS) safe and effective in patients that have had a previous renal transplant?

Three prospective case series and one multicentre retrospective study were identified, together reporting on a total of 112 patients who underwent WLS after RT. Eighty-seven patients underwent open WLS and 25 patients underwent laparoscopic operations of which 11 had sleeve gastrectomy and 14 RYGB. Percentage excess weight loss was highly variable between the studies, ranging from an average of 30.8%–75% at 12 months. One graft rejection occurred within 30 days of surgery. All studies were limited by lack of suitable comparison group, short follow-up and heterogeneity in type of bariatric procedure and approach.

To date, there is limited evidence to suggest that bariatric surgery is safe and has good short-term outcomes for selected obese patients post-renal transplant.

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1. Introduction

Obesity is highly prevalent among patients with renal transplants [1]. It is associated with increased risk of overall mortality, obesity-related complications such as diabetes, increased renal graft loss rates and shortened graft survival [2].

In non-transplant patients, bariatric surgery is currently the gold standard treatment for morbid obesity [3]. Conservative weight-loss strategies rarely lead to meaningful weight loss and lack long term efficacy. Nonetheless, weight loss surgery (WLS) can be associated with complications, particularly in high-risk cohorts.

In order to investigate the safety and efficacy of bariatric surgery in post-renal transplant patients, a Best Evidence topic was constructed in accordance with the methodology previously described. A Best BET is a systematic method of summarising and critically appraising the available evidence to answer a clinically relevant

question. It is particularly useful in situations where evidence is limited [4].

2. Clinical scenario

A 45 year old female underwent a deceased donor renal transplant for end-stage renal disease secondary to long standing hypertension, four years previously. Her kidney is functioning well but she has a BMI of 43. She visits you in a bariatric surgery clinic as she has found it difficult to lose weight despite changing her lifestyle and trying multiple diets. She asks you whether bariatric surgery is safe for her.

3. Three part question

In patients post-renal transplantation, is bariatric surgery safe and effective?

4. Search strategy

A standardised literature search was performed on the Medline

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database (1995–January 2016) using Ovid interface. The search terms were as follow: (Bariatric OR obesity) AND surgery AND (renal OR Kidney) AND (transplant OR Graft) AND (post OR after). The search was limited to English papers to include case series, prospective studies, retrospective studies, randomised controlled trials, comparative studies and systematic reviews. In addition reference lists of above papers were searched. The search was current as of 29th January 2016.

5. Search outcome

Five hundred and one titles were identified using the search described in the previous section. Twenty-three abstracts were from conference proceedings and hence excluded. A further 447 abstracts were unrelated to the topic. Ten were based on obesity and transplant without a focus on bariatric surgery and eleven articles looked at WLS in pre-transplant patients only. Ten papers were relevant to bariatric surgery in post-renal transplant patients. Of these, two papers were comments to the editor, two case reports, one retrospective study which combined outcomes from different types of solid organ transplantations and one was an interim analysis of data that was later published in another paper with longer follow-up. Four papers were therefore judged as containing the best evidence regarding this topic: one case series, two prospective studies and one large retrospective analysis of the United States Renal Data System. The latter study included patients undergoing bariatric surgery before and after renal transplant, but the outcomes of the two groups were given separately, allowing us to focus on the post-RT patients only for the purposes of this review.

The authors, date, country, type of study, length of follow up, patient group, outcomes measured and key results are summarised in [Table 1](#).

6. Results

See [Table 1](#).

7. Discussion

Overweight and obesity are very prevalent at the time of kidney transplantation [5]. At the same time, weight gain after transplantation is common, affecting up to 50% of patients [6]. Post-transplantation weight gain is associated with development of hypertension, new onset diabetes mellitus (NODAM), hypercholesterolaemia, acute biopsy proven transplant rejection and reduced graft survival [3,5,7]. Given these complications, effective and sustained weight reduction is an important goal for affected patients.

As detailed in [Table 1](#), best evidence regarding weight loss surgery (WLS) in renal transplant recipients comprises of one multi-centre retrospective study, two prospective studies and one case series. Modanlou et al. [8] from a nationwide database study identified 87 patients undergoing WLS post-RT. Patients had a mean pre-bariatric surgery BMI of 46.6; of the 43 available for follow-up at 12 months, median %EWL was 30.8%. Golomb et al. [9] studied the outcomes of laparoscopic sleeve gastrectomy (LSG) in ten renal transplant recipients, in the only study to take place outside of the USA (Israel). The patients were of mean age 57 years with a preoperative BMI of 42 and were followed-up for 14 months postoperatively. The median %EWL was 57% at 6 months and 75% at 1 year. Two of the ten patients encountered early major complications treated by revised surgery (biliopancreatic diversion and RYGBP). Alexander et al. [10] performed open gastric bypass surgery (GBP) in 10 patients. GBP was undertaken on average 5.3 years

after transplantation and mean %EWL was 70.5% at 1-year follow-up. Szomstein et al. [11] reported a case series of 5 renal transplant patients who underwent WLS post-transplant (4 patients laparoscopic Roux-en-Y gastric bypass (LYRGB) and 1 patient LSG), of whom all lost >50% of excess weight at a median of 2 years follow-up.

Overall, taking account that 44 patients were lost in 12 month follow up, the four papers document a total of 68 cases undergoing WLS following renal transplant with 12 month or longer follow up. All studies reported a reduction in percentage excess weight loss (%EWL) following bariatric surgery, ranging from an average of 30–75% at 1 year. This variability is likely to be due to a number of factors, including small numbers of patients in each study and the use of different types of bariatric procedure. Given this variability and that none of the studies included a comparator group of patients without renal transplant, it is not yet clear whether expected %EWL for patients with a renal transplant undergoing bariatric surgery is similar to that for patients without renal transplants.

Malabsorptive procedures, for example Roux-en-Y gastric bypass, may affect the pharmacokinetics of certain drugs, which is of particular importance for immunosuppressant drugs required by patients post-transplant to avoid graft rejection. Szomstein et al. [11] did not report any alterations to immunosuppressive doses in transplant patients post-WLS; while Golomb et al. [9] found that two patients required an increased dose of tacrolimus, and one patient required a decrease. These findings may indicate that effect of bariatric surgery on need for immunosuppression in renal transplant patients is variable between individuals. Close follow-up and immunosuppressant dose adjustment of patients is warranted in the early post-operative period, and until weight has stabilised.

There are several limitations of this study. The best evidence to answer the question posed concerns studies of small groups of patients, with short follow-up and no comparator groups. Clear evidence of the positive effect of bariatric surgery in terms of sustained weight loss, graft survival and improvement in co-morbidities will require carefully constructed studies with greater numbers of patients and longer, thorough, follow up. Furthermore, the studies selected include patients undergoing different types of bariatric surgery, both open and laparoscopic; this in part explains the wide variability of outcomes. As yet there is no evidence that one type of bariatric surgery is superior to another for this cohort of patients. Another limitation of the studies is that patients were selected for surgery and therefore conclusions cannot be generalised to all-comers, in particular the elderly and severely obese. Nonetheless, this is a summary of the best available evidence at the present time regarding the safety and efficacy of bariatric surgery post renal transplant.

Prospective comparative studies regarding this topic are clearly warranted. Important aims would be to compare long-term outcomes of medically-managed obese renal transplant patients with post-WLS renal transplant patients; to compare different types of WLS (for example sleeve gastrectomy and gastric bypass) for safety and efficacy; and to determine the optimum timing of bariatric surgery for obese patients with ESRF: before or after renal transplant.

8. Clinical bottom line

Limited evidence suggests that bariatric surgery is safe and feasible for selected obese patients post-renal transplant. It is associated with good, if variable, short-term excess weight loss and resolution of co-morbidities. Further studies are required to determine long-term and quality of life outcomes, as well as optimum type and timing of bariatric operation post RT.

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