Laparoscopic adjustable gastric bands and the effect of living in distant towns

Richard Flint, Grant Coulter, Ross Roberts

Abstract

Aim To investigate whether the results of laparoscopic adjustable gastric bands (LAGB) are adversely affected when patients live in towns distant from their surgeons.

Methods A retrospective observational cohort study was conducted of patients having LAGB at Christchurch, New Zealand between March 2009 and March 2011. Patient demographics, postoperative band adjustments, and weight loss were recorded. The results were compared between those patients living in Christchurch and those that reside outside this region.

Results There were 142 patients (123 female) with 97 (68%) living in Christchurch. These local patients were younger on average (mean age 45.6±11.3 years compared to 49.9±8.9 years; p=0.026) and of lesser size (mean BMI 43.1±7.1 kg/m² compared 55.0±12.3 kg/m²; p<0.001) than those living beyond this region. There was no significant difference in the number of postoperative band adjustments between the two groups (Christchurch mean of 7.8±4.5 adjustments compared to 6.5±4.2 adjustments; (p=0.156) nor in the final volume that the band was adjusted to (Christchurch mean 4.6±1.3 mL compared to 4.1±1.7 mL; p=0.069). There was no significant difference in the weight loss between the groups at 2 years (Christchurch mean 41.4±17.3% excess body weight lost (EBWL) compared to 42.5±15.2% EBWL; p=0.829).

Discussion This current study demonstrates that patients undergoing LAGB in Christchurch are not disadvantaged if they live in towns beyond this region.

Weight loss surgery is recognised as a viable option for those struggling with obesity as it can effect a long-term weight reduction that corresponds with improved health and survival.1 Perhaps the most popular form of surgery for obesity is the laparoscopic adjustable gastric band (LAGB) where a silicone collar is placed around the top of the stomach to partition it into a 30-millilitre (mL) pouch. This induces substantial weight loss that is greater and more durable than dieting alone.2

The success of this surgery is dependent on extent of postoperative management. Serial adjustments of the band over time leads to the so-called green zone, an optimal band volume where hunger and satiety is controlled with little restriction. Too little volume in the band leads to constant hunger that jeopardises weight loss, whereas too much volume leads to significant restriction that paradoxically sabotages weight reduction.

Because of the importance of postoperative band management, many surgeons prefer to restrict the use of LAGB to those patients living in the same town; the argument...
being that close proximity and easy access to their clinic is a surrogate for optimal band management.

Since 2009 Christchurch surgeons have offered LAGB regardless of the origin of each individual patient. The aim of this study is to investigate any differences in weight loss between patients who had LAGB and reside in the Christchurch region and those that live elsewhere.

Methods

All patients undergoing LAGB for obesity from March 2009 to March 2011 were selected for the study and identified from a prospective database. Patient demographics (age, gender, weight, and body mass index (BMI)) were sourced from the database, with missing data being recovered from a retrospective chart review. Patient follow-up was also accessed from the database and when required, patients were either called back to clinic or contacted by telephone.

Weight loss at 6 months, 1 year and 2 years from surgery was recorded. The number of band adjustments was recorded along with the final volume that the band was adjusted to. Visits that did not result in alteration of the band volume were not used in the final analysis.

Patients were defined as living in the Christchurch region if they reported that they could drive to the clinic from their home within 50 minutes. This definition was selected from the Canterbury District Health Board’s in-house study that identified time rather than distance as the predominant variable that determined a patients perception of accessibility to health care. In this sense 50 minutes was the maximal travel time patients deemed acceptable to get to medical treatment (data unpublished).

All patients had a comprehensive preoperative workup that involved consults with the operating surgeon, psychologist, dietician and an exercise specialist. A preoperative very low calorie diet (up to 800 kcal/day, OptiFast, Nestle New Zealand) was commenced at least 2 weeks before surgery. Laparoscopic adjustable gastric bands (LapBand AP system, Allergan, Irvine CA) were placed by the pars flaccida approach.

Postoperative band adjustments were scheduled to start 6 weeks after surgery and monthly thereafter until the optimal volume was reached. Dietician and exercise specialist follow-up was continued for at least a year after, and postoperative psychologist consults were scheduled on an as-needed basis.

All descriptive data is expressed as mean ± standard deviation. Weight loss is expressed as percentage of excess body weight lost (EBWL), with the ideal body weight being calculated by the Deitel & Greenstein formula, indirectly based on Metropolitan Life tables. All statistical analysis was performed by InStat version 3.0 software (GraphPad Software Inc., San Diego, USA.)

Student’s two-tailed t test (non-paired) was used to analyse all nonparametric data. A power calculation was performed to ensure adequate sample size and guard against a Type II error. A difference of 15% EBWL, a standard deviation of 15%, α=0.05, and power (1-β)=0.95 required a total sample size of 46 (G*Power version 3.1.2 software).

The New Zealand Health and Disability Commissioner Ethics Committee approved this study.

Results

There were 142 consecutive patients (123 female) who had LAGB between March 2009 and March 2011. All patients were from the South Island, with 97 patients living in the Christchurch region and 45 patients travelling from other parts of the mainland. There was a significant difference in the demographics between these two groups; patients from Christchurch were younger on average (mean age 45.6±11.3 years compared to 49.9±8.9 years; p=0.026) and of lesser size (mean BMI 43.1±7.1 kg/m² compared 55.0±12.3 kg/m²; p<0.001). Follow-up was complete for 89% at 6 months, 79% at 1 year, and 70% at 2 years.

There was no significant difference in the number of postoperative band adjustments between the two groups. Patients from Christchurch had a mean of 7.8±4.5
adjustments compared to those outside of Christchurch who had a mean of 6.5±4.2 adjustments (p=0.156). Nor was there a significant difference in the final volume that the band was adjusted to, despite a tendency for local patients to have more volume (Christchurch patients had mean 4.6±1.3 mL compared to 4.1±1.7 mL; p=0.069).

Weight loss at 6 months was less for those living in Christchurch (mean 24.7±8.9 % compared to 34.2±9.6 excess body weight loss; p<0.001) but became similar between both groups by 1 year (Christchurch patients had mean 37.3±15.4% EBWL compared to 38.1±15.2% EBWL; p=0.816). There was no significant difference in the weight loss between the groups at 2 years (Christchurch patients mean 41.4±17.3% EBWL compared to 42.5±15.2% EBWL; p=0.829). This equated to an absolute weight loss of mean 23.2±9.9 kg at 2 years for those living in Christchurch compared to 24.5±8.4 kg (p=0.447).

Conclusions

This current study demonstrates that patients undergoing LAGB in the South Island are not disadvantaged if they reside in towns distant from their operating surgeon. In this analysis of a single Christchurch practice, patients had a similar number of postoperative visits and volume in their bands as those living locally. Furthermore, weight loss was similar at 1 and 2 years following surgery.

Adjustable gastric bands are arguably the most popular form of weight loss with patients being attracted to its long-term efficacy and favourable safety profile. Integral to its success is the extent of postoperative band management that necessitates frequent clinic visits and serial band adjustments. Hence it is thought that difficult access to the clinic may jeopardise the results.

In a review of the results of Norwich’s LAGB the authors identified distance from the hospital as a reason for reduced attendance, but this did not equate to a reduced weight loss. Likewise, the surgeons in Brisbane intimated (but did not demonstrate) that the vast distances of greater Queensland might have limited the results of their LAGB.

The results of this current study suggest that proximity to the surgeon is not an issue in the New Zealand environment. One explanation may be that Christchurch is a central airline hub with frequent flights to most major towns in the South Island hence time patients have to invest away from their routine activities may be minimal.

Another explanation for the lack of difference in the present study is that issues other than the patient’s location are of higher importance to the result. Other factors that need to be considered are proper patient selection, technically sound surgery, and intensive multidisciplinary follow-up. International guidelines emphasise these points when defining the essentials of a weight-loss surgery practise. The surgeons in this current study use these guidelines to base their practise and oversee a team of dieticians, psychologists, exercise consultants, and practise nurses. Access to the clinic is readily available and virtual clinics have been utilised (using phone or video-link) for those that live in distant towns. As a result travel is reserved for when adjustments are required so reducing the burden of unnecessary journeys.
It should be emphasised that an analysis on the effect of distance as a continuous variable was not attempted in this study which is in variance to other studies on this issue. This is because distance is often used as a surrogate for ease of access. Local, unpublished data from the Canterbury District Health Board has identified the time spent travelling rather than the distance travelled as the main influence of the perception patients have for ease of access. For example a 60 minute airplane flight may be favoured over a 90 minute car trip, despite the differences in distance being considerable.

However, some limitations need to be considered when interpreting the results of this current study. It is conceivable that some of the patients that lived in towns distant from Christchurch had ad hoc adjustments from their local doctor therefore underreporting the burden of postoperative follow-up commitments in these patients. Furthermore there is no discussion of management of complications as the authors are unable to source objective measures of emergency visits for those distant from Christchurch. This would make it difficult to transfer the results of this study to other communities that do not have ready access to local doctors confident in LAGB. Finally there has been no attempt to compare quality of life data between the two groups to determine whether satisfaction rates differ.

In conclusion, the success of LAGB does not appear to be determined by proximity to the operating surgeon. A comprehensive, multidisciplinary approach can overcome the limitations caused by long travel in patients who live in distant towns.

Competing interests: Nil.

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