

Laparoscopic Adjustable Gastric Banding in Patients ≥ 60 Years Old: Is it Worthwhile?

Craig John Taylor, MBBS, FRACS; Laurent Layani, MD(Paris), FRACS

Obesity Surgery Centre, John Flynn Hospital, Queensland, Australia

Background: Laparoscopic adjustable gastric banding (LAGB) is an effective treatment for morbid obesity in younger patients, leading to improvements in related co-morbidities and quality of life. Currently, little is known how these improvements apply to older patients.

Methods: A prospective review was conducted of patients ≥ 60 years old undergoing LAGB. Weight loss, complications, changes in Short Form-36 (SF-36) scores, and a comprehensive postoperative co-morbidity, medication and quality of life questionnaire were used to assess performance.

Results: 40 patients with mean age 65.8 years (range 60-72) and preoperative mean BMI of 42.2 kg/m² (range 33-54) underwent LAGB from February 2000 to September 2005. Mean excess weight lost at 2 years was 54%. 3 complications (7.5%) occurred (1 slippage and 2 access-port infections). There were no perforations, erosions or deaths. After a mean post-operative interval of 27 months, SF-36 scores improved significantly in 4 of 8 components and exceeded age-matched population controls in 3 components. Co-morbidity improvement was reported in 80% of patients with diabetes, 79% with dyslipidemia, 75% with obstructive sleep apnea, 72% with heartburn, 69% with hypertension, 60% with musculoskeletal pain, and 56% with anxiety/depression. Medication requirements reduced or ceased in 66% who required musculoskeletal analgesics, 43% of diabetics, 33% using bronchodilators, and 29% with hypertension. Sleep improved in 48%, self-esteem increased in 70%, and 72% had a better outlook on life. 82% were happy that they had undergone LAGB, and 91% would recommend LAGB to other older people.

Conclusion: LAGB offers safe and effective weight loss, and improvement in co-morbidities and in quality of life in morbidly obese patients aged ≥ 60 years.

Key words: Morbid obesity, bariatric surgery, gastric banding, aged, quality of life, co-morbidities

Reprint requests to: Dr. Craig Taylor, John Flynn Hospital, 42 Inland Drive, Tugun, 4224 Queensland, Australia.
E-mail: ctaylor@keyholesurgery.org.au or craigtaylor_007@hotmail.com

Introduction

Obesity is emerging as the major health challenge of the 21st Century, and has become a leading cause of preventable death in developed nations.^{1,2} Obesity affects people of all ages, including the older patient over age 60 years, who has traditionally been discouraged from surgical obesity management. Laparoscopic adjustable gastric banding (LAGB) has been shown in numerous studies to be an effective treatment for morbid obesity, leading to improvements in obesity-related co-morbidities and quality of life.²⁻⁵ Currently little is known how these improvements apply to the older morbidly obese patient, for whom quality of life issues may hold even greater importance. This study explores the performance of LAGB in patients aged ≥ 60 years.

Methods

A prospective review was conducted of all consecutive patients aged ≥ 60 years who underwent LAGB (34 Lap-band[®], Inamed/Allergan; 6 Swedish band, Ethicon Endo-Surgery) by one surgeon (LL) between February 2000 and September 2005. All patients were assessed within a multidisciplinary clinic comprising a dedicated bariatric nurse, dietitian, psychologist, experienced bariatric surgeon and anesthetist. Specialist cardiology and internal medicine physicians who also work closely with the clinic were consulted when needed. Inclusion criteria were obese patients with a body mass index (BMI) >40 kg/m², or >33 kg/m² in the presence of significant obesity-related co-morbidities. Patients with non-obesity related co-morbidity that placed

Taylor and Layani

them at unacceptable peri-operative risk, such as heart failure or stroke, were excluded. Patients were also excluded with a history of malignancy within the past 5 years, poorly controlled psychiatric illness, drug or alcohol addiction, or who were unwilling to participate in a program of ongoing postoperative follow-up.

As part of routine preoperative work-up, all patients completed a detailed preoperative quality of life assessment, the Medical Outcomes Study Short Form-36 (SF-36).⁶ Patients were encouraged to attend regular postoperative review and band adjustment every 8 weeks, allowing weight loss and any complications to be recorded on a dedicated database (LapBase2000, Access Med). During October 2005, patients were again asked to participate in a detailed postoperative questionnaire package consisting of:

1) Post-operative SF-36 quality of life re-assessment, with scores compared with those of the age-matched general Australian population.⁷

2) Purpose-designed co-morbidity and medication survey, seeking information concerning change in 11 common obesity-related co-morbidities and medication requirements (diabetes, hypertension, angina, dyslipidemia, sleep apnea, gastroesophageal reflux, back pain, knee/hip pain, chronic respiratory disease, depression/anxiety, urinary incontinence). Patients were asked to indicate which of 5 options (much worse/worse/same/better/much better) most accurately described changes in these co-morbidities following LAGB. Changes in medication requirements were also sought (stopped taking/use less/use same/use more/started taking).

3) Questions regarding changes in sleep, self-esteem, outlook, and overall satisfaction following surgery.

Results

Forty of 907 consecutive patients who underwent LAGB during the study period were aged ≥ 60 years (4.4%). This cohort of patients had a mean age and preoperative BMI of 65.8 years (range 60-72) and 42.2 kg/m² (range 33-54), respectively. Thirty-two patients were female (80%). Thirty-five patients (88%) maintained regular ongoing clinic attendance and participated in the questionnaire package at a mean interval of 27 months (range 3-49 months) fol-

lowing the LAGB operation. Five patients (12%) did not continue ongoing clinical review (uncontactable/changed address-2, unwilling-2, deceased-1).

Weight Loss

The mean change in BMI was -9.3 kg/m² (range -1.8 to -13.4 kg/m²) at 48 months following surgery, corresponding to a mean change in body weight from 119 kg to 92.7 kg. This represents 54% excess weight loss (EWL, based on ideal mid-frame weight from Metropolitan Life Tables⁸) after 2 years. When all 907 LAGB patients were considered, the mean change in whole-group BMI was -14.3 kg/m² from a mean preoperative BMI of 44.5 kg/m² (Figure 1).

Complications

There were no peri-operative complications. Three late complications occurred (7.5%) consisting of one band slippage (2.5%) treated by laparoscopic band revision and two access-port infections (5%) requiring temporary port removal. One band was removed at the patient's request (he did not like having his intake restricted). There were no in-hospital deaths. One patient died at 18 months following surgery from breast cancer. There were no LAGB-related deaths.

Co-morbidity Improvement

At least one obesity-related co-morbidity was identified in 82.5% of patients. The number of patients suffering from each of the 11 questionnaire co-morbidi-

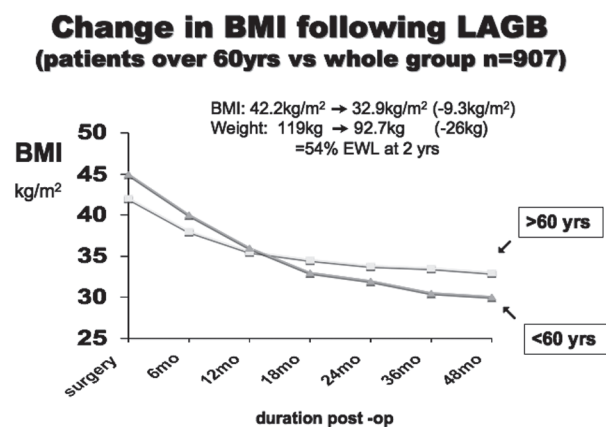


Figure 1. Change in BMI following LAGB, ≥ 60 years subgroup vs whole group.

ties as well as any changes in the condition or control of that co-morbidity following LAGB is displayed in Table 1. Between 44-90% (median 70%) of patients reported their co-morbidity being either better or much better following LAGB. Reduction or cessation of associated medication requirements were reported by 0-66% (median 28%) and are displayed in Table 2.

Quality of Life

SF-36 scores improved in 7 of the 8 components of mental and physical well-being at a mean of 27 months following LAGB, with statistically significant improvement reached for components dealing with physical functioning, general health, mental health and energy levels. Eighty-six percent of patient's rated their health-in-general as much better following LAGB (SF-36 question 2: 'health change'). When compared with the general age-

matched population,⁸ component scores from LAGB patients were significantly higher for 'general health', 'mental health', 'energy levels' and 'health change' (Table 3).

Sleep improved in 48%, self-esteem increased in 70%, and 72% had a better outlook on life. Eighty-two percent were happy that they had undergone LAGB, and 91% had or would recommend LAGB to other older people.

Discussion

Obesity is well known to be associated with reduced quality of life in older people, many of whom also struggle with clinically evident obesity-related comorbidities.⁹ Despite this, older morbidly obese patients have traditionally been discouraged from

Table 1. Change in obesity-related co-morbidity following LAGB

| Obesity-related co-morbidity | | Situation now compared with before Lap-band® surgery | | | | | Better off |
|------------------------------|----------------------|--|-------|------|--------|-------------|------------|
| | | Much worse | Worse | Same | Better | Much better | |
| n = 15 | Diabetes | 0 | 0 | 3 | 3 | 9 | 80% |
| n = 28 | Hypertension | 0 | 3 | 6 | 10 | 9 | 69% |
| n = 22 | Back pain | 0 | 3 | 6 | 7 | 6 | 59% |
| n = 16 | Hip or knee pain | 0 | 3 | 6 | 1 | 6 | 44% |
| n = 21 | dyslipidemia | 1 | 0 | 3 | 11 | 6 | 79% |
| n = 12 | Snoring /sleep apnea | 0 | 0 | 3 | 1 | 8 | 75% |
| n = 12 | Chronic lung disease | 0 | 1 | 5 | 3 | 3 | 50% |
| n = 13 | Anxiety / depression | 2 | 1 | 3 | 3 | 4 | 54% |
| n = 10 | Angina | 0 | 0 | 1 | 3 | 6 | 90% |
| n = 11 | Esophageal reflux | 1 | 1 | 1 | 0 | 7 | 70% |
| n = 5 | Urinary incontinence | 0 | 0 | 1 | 3 | 1 | 80% |

Table 2. Change in medication requirements following LAGB

| Medication | | Amount required now compared to before surgery | | | | | Better off |
|------------|--------------------|--|----------|-------------|----------|----------------|------------|
| | | Started taking | Use more | Same amount | Use less | Stopped taking | |
| n = 11 | Hypoglycemic | 0 | 0 | 6 | 5 | 0 | 45% |
| n = 29 | Antihypertensive | 1 | 1 | 19 | 4 | 4 | 28% |
| n = 18 | Regular analgesics | 1 | 0 | 5 | 8 | 4 | 66% |
| n = 16 | Anti-lipid agents | 0 | 1 | 13 | 0 | 2 | 13% |
| n = 6 | Anti-reflux agents | 1 | 1 | 3 | 0 | 1 | 20% |
| n = 3 | Bronchodilators | 0 | 0 | 2 | 0 | 1 | 33% |
| n = 3 | Antidepressants | 0 | 0 | 3 | 0 | 0 | 0% |

Taylor and Layani

Table 3. Mean SF-36 scores in all components before and after LAGB (with *P*-values) and comparison with age-matched population controls. Scores range between 0 and 100, where higher scores represent better well-being

| SF-36 Component | Pre-op → Post-op | <i>P</i> -value | Age-matched Population |
|-----------------------|------------------|-----------------|------------------------|
| Physical functioning | 43 → 67 | 0.04 | 66 (ns) |
| Health limitations | 56 → 69 | 0.18 | 62 (ns) |
| Bodily pain | 61 → 68 | 0.59 | 69 (ns) |
| General health | 47 → 73 | 0.009 | 62 (s) |
| Social functioning | 78 → 89 | 0.24 | 82 (ns) |
| Emotional limitations | 83 → 82 | 0.85 | 76 (ns) |
| Mental Health | 70 → 85 | 0.05 | 77 (s) |
| Energy levels | 39 → 72 | 0.001 | 61 (s) |
| Health change | 53 → 85 | 0.0001 | 59 (s) |

ns/s: not significant/significant, refers to difference between post-op scores and age-matched population.

seeking surgical options, despite the overwhelming evidence for the effectiveness of LAGB in improving overweight-related co-morbidities and quality of life.²⁻⁵ This may be due to a perception that surgery for obesity in older patients is unsafe and/or is unlikely to provide significant benefits.

Of paramount importance to older people is the quality of their remaining lifespan. The SF-36 consists of 36 questions which assess 8 core components of well-being, 4 of which relate to physical health and 4 to mental health. Higher scores reflect better well-being. It is a well validated, accurate and reproducible assessment of quality of life.^{6,10} Predictably, the patients in this study had lower scores in most components preoperatively than other people of the same age from the general population. However, following LAGB, SF-36 scores not only improved, but exceeded those of age-matched controls in several components. Other markers of quality of life including self-esteem and outlook also improved for most patients. As further indirect evidence for the improvement gained from LAGB, the majority were pleased with their decision to undergo LAGB, and would or had already recommended it to other obese older people.

The measure of improvement in co-morbidity used in this study involved patients' own perception of their disease condition, rather than using more objective parameters such as biochemical or clinical markers. While accepting this as a possible limitation of the study, quality of life is probably more closely related to subjective perception of one's health than objective clinical and biochemical parameters.

It is noteworthy that despite the majority of patients reporting improvement in obesity-related co-morbidities, this did not correlate well with medication reduction or cessation in this study, with many patients continuing to use the same amount of medication after LAGB. In contrast, medication requirements have been observed to decrease markedly in younger obese patients following weight-loss surgery.² Obesity-related co-morbidities are likely to be more established in older obese patients following many years of uncorrected obesity, reducing the likelihood of disease cure or major improvement compared with similar intervention in younger patients. It is well recognized, for instance, that the likelihood of a type 2 diabetic no-longer requiring hypoglycemic medication after weight loss is inversely related to how long the diabetes has been present.¹¹ Additionally, there may be a reluctance by primary care physicians to remove or reduce medication, particularly cardiac, in older patients who remain at increased risk of illness despite weight loss. However, approximately one-third of patients used less medication following LAGB, with the greatest reduction being for analgesics. This alone has potential for improved quality of life through relief from side-effects associated with analgesic use including drowsiness and constipation.

The amount of weight lost following surgery was more modest than that observed in the total LAGB group. Despite this, significant health benefits have been observed with the loss of just 10-15% of excess weight.^{12,1}

While the present study was not powered to provide an estimate of the risk of complications including death in older patients undergoing LAGB, two comprehensive systematic independent reviews by the Australian Safety and Efficacy Register for New Interventional Procedures-Surgical (ASERNIP-S) and the Cochrane Collaboration found it to be a relatively safe procedure with a lower risk of major complications compared with gastric bypass and vertical banded gastroplasty.^{14,15} While these other forms of weight-loss surgery may result in higher average weight reduction, the greater safety margin of LAGB may better suit the older patient who has a greater risk of poor outcomes following abdominal surgery.¹⁶ In addition to standard contra-indications,¹⁷ older patients in whom obesity surgery may not be suitable include those with co-morbidities that are unlikely to improve with weight loss but significantly elevate peri-operative dangers. Examples include patients suffering from moderate to severe chronic obstructive airway disease, heart, liver or kidney failure and stroke, and who were not offered LAGB in the present study.

Conclusion

LAGB in morbidly obese patients ≥ 60 years old is safe, achieves effective weight loss, improves related co-morbidities and leads to better quality of life. However, the improvement in BMI and medication requirements may be more modest than following LAGB in younger patients. Denial of weight-loss surgery to older morbidly obese patients based on a perceived lack of benefit or unacceptable risk is unfounded, but, as for interventions in patients of any age, careful selection remains important.

References

1. Washington Post, March 10, 2004; Page A01.
2. O'Brien PE, Brown WA, Dixon JB. Obesity, weight loss and bariatric surgery. *Med J Aust* 2005; 183: 310-4.
3. Pontiroli AE, Folli F, Paganelli M, et al. Laparoscopic gastric banding prevents type 2 diabetes and arterial hypertension and induces their remission in morbid obesity: a 4-year case-controlled study. *Diabetes Care* 2005; 28: 2703-9.
4. Dixon JB, O'Brien PE. Changes in comorbidities and improvements in quality of life after LAP-BAND placement. *Am J Surg* 2002; 184: 51S-54S
5. Korenkov M, Sauerland S, Junginger T. Surgery for obesity. *Curr Opin Gastroenterol* 2005; 21: 679-83.
6. Ware JE, Sherbourne CD. The MOS 36 item Short-Form Health Survey (SF-36): Conceptual framework and item selection. *Medical Care* 1992; 30: 473-83.
7. Australian Bureau of Statistics National Health Survey SF-36. Population norms 1995. 4399.0 Canberra ABS 1997.
8. Robinett-Weiss N, Hixson ML, Keir B et al. The Metropolitan Height-Weight Tables: perspectives for use. *J Am Diet Assoc* 1984; 84: 1480-1.
9. Yan II, Daviglius ML, Lui K et al. BMI and health related quality of life in adults 65 years and older. *Obes Res* 2004; 12: 69-76
10. Marosszeky N. Australian Health Outcomes Collaboration (AHOC) instrument review: SF-36 Health Survey. University of Wollongong May 2005.
11. Ponce J, Haynes B, Paynter S et al. Effect of Lap-Band[®]-induced weight loss on type 2 diabetes mellitus and hypertension. *Obes Surg* 2004; 14: 1335-42.
12. Dhabuwala A, Cannan RJ, Stubbs RS. Improvement in co-morbidities following weight loss from gastric bypass surgery. *Obes Surg* 2000; 10: 428-35.
13. Frigg A, Peterli R, Peters T et al. Reduction in co-morbidities 4 years after laparoscopic adjustable gastric banding. *Obes Surg* 2004; 14: 216-23.
14. Colquitt J, Clegg A, Loveman E et al. Surgery for morbid obesity. *Cochrane Database Syst Rev* 2005; (4): CD003641.
15. Chapman AE, Kiroff G, Game P et al. Laparoscopic adjustable gastric banding in the treatment of obesity: a systematic literature review. *Surgery* 2004; 135: 326-51.
16. Crandon IW, Harding H, Carpenter R et al. Surgery in the elderly: is age a risk factor? *West Indian Med J* 2005; 54: 171-5.
17. Product advice Bioenterics LapBand candidates for LAGB: indications and contraindications. <http://www.lapband.com.au/lapcan.html>

(Received June 15, 2006; accepted July 12, 2006)