IEF Position Statement on
“Laparoscopic Adjustable Gastric Banded Plication (LAGBP)”

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11. Pamela Youde Nethersole Eastern Hospital, Hong Kong
12. Peking Union Medical College Medical Hospital, China
13. The First Affiliated Hospital of Chongqing Medical University, China
14. Yotsuya Medical Cube, Japan
15. St. George Private Hospital, Australia
16. The First Affiliated Hospital of Nanjing Medical University, China
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Introduction

Accumulating evidence is now in favor of Bariatric Surgery as an emerging and powerful tool in the treatment of morbid obesity and associated metabolic syndrome.¹ Those results and lessons learned from those of the already existing bariatric surgical procedures have paved the path for the development of more novel procedures. Such novel procedures are often the product of the pioneering work of surgeons with a view to improve outcomes or make procedures less complex and accepted by patients.

*Laparoscopic gastric plication*, has recently emerged as a new bariatric procedure with promising early results.² This paved the path for further innovation and conception of a new procedure known as “*Laparoscopic Adjustable Gastric Banded Plication*”.

The following position statement, proposed and agreed by most Asia–pacific region surgeons who attending I.E.F (International Excellence Federation for Bariatric & Metabolic Surgery) meeting in 11ᵗʰ, April, 2013, Kaohsiung, Taiwan. It defines the current status of “Laparoscopic Adjustable Gastric Banded Plication (LAGBP)” as a treatment option for morbid obesity. The recommendation is based on published scientific evidence currently available and expert opinion. The statement is not intended and should not be interpreted as, stating or establishing a standard of care at any level.

Rationale and evolution of technique

“*Laparoscopic Adjustable Gastric Banded Plication (LAGBP)*” is a new bariatric procedure which was inspired from laparoscopic gastric plication, which has the same restrictive concept as laparoscopic sleeve gastrectomy (LSG).³⁴

The technique involves suture plication of the greater curvature of the stomach to form a narrow calibrated sleeve gastric tube. The second part of the surgery entails placement of an adjustable gastric band over the plicated stomach. The entire procedure could be completely performed laparoscopically.

The rationale behind this surgery is that the plication “switches on” the initial weight loss process. Then adjustment of band further initiates the second phase of weight loss and maintains the success through serial adjustments. In addition to quicker weight loss from gastric plication, far less adjustments are required
than with just having the band alone. It might also decrease complications associated with the band since many of band’s complications are related to adjustments. Eventually, LAGBP could provide the benefits of both band and plication.

Data

A literature search on Pubmed for ‘gastric plication’ will yield a total of 10 clinical studies on humans (6 laparoscopic gastric plication and 4 laparoscopic gastric banded plication: details in figure 1 and table 1).

Table 1. Clinical studies on humans

<table>
<thead>
<tr>
<th>Author</th>
<th>Procedure</th>
<th>Year Published</th>
<th>Number of Cases</th>
</tr>
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<tbody>
<tr>
<td>Talebpour M et al</td>
<td>LGP</td>
<td>2007</td>
<td>100</td>
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<tr>
<td>Ramos et al</td>
<td>LGP</td>
<td>2010</td>
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<td>Brethauer SA et al</td>
<td>LGP</td>
<td>2011</td>
<td>13</td>
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<td>Skrekas G et al</td>
<td>LGP</td>
<td>2011</td>
<td>135</td>
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<td>Gebelli J Pet al</td>
<td>LGP</td>
<td>2011</td>
<td>15</td>
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<tr>
<td>Hii MW et al</td>
<td>LGP</td>
<td>2012</td>
<td>1</td>
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<tr>
<td>Huang CK et al</td>
<td>LABGP</td>
<td>2011</td>
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<td>Rajat Goel et al</td>
<td>LABGP</td>
<td>2012</td>
<td>2</td>
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<tr>
<td>Huang CK et al</td>
<td>LAGBP</td>
<td>2013</td>
<td>30</td>
</tr>
</tbody>
</table>

LGP=laparoscopic gastric plication; LABGP=laparoscopic adjustable gastric banded plication
Laparoscopic Gastric Plication:

Gastric plication is a new and effective procedure in the early result and has the advantage of avoiding resection, anastomosis and use of use of prosthetic materials. The results from the recently reported studies are encouraging (% EWL raging from 60% to 67.1% at 1 year), with few complications.

Laparoscopic Adjusted Gastric Banded Plication:

There were two literatures of LAGBP conveyed in reports of Huang et al. \(^4\),\(^11\). Firstly, in 2012, twenty six patients achieved satisfactory weight loss in the first year with only one complication reported. The surgical results of 80 LAGBP patients presented at the 2\(^{nd}\) International Excellence Forum for Bariatric & Metabolic Surgery (I.E.F Forum), Taiwan, 2012 were encouraging. The band-first technique was used for 50 patients from May 2009 to June 2011 and was then changed to the plication-first technique from July 2011 to October 2011. 26 men and 54 women with a mean age of 30.75±8.68 years and a mean BMI of 38.05±4.73 kg/m\(^2\) were evaluated with a mean follow-up for 10.52 (1-24) months. Average operation and hospitalization times were 92.85±35.86 minutes and 1.73±1.04 days, respectively, and there were no intra-operative complications or surgical mortality. There were 4 (8%) postoperative complications with the band-first technique; gastro–gastric intussusception (1), perforation of fundus (2), and band failure (1). Only one complication was noted with the plication-first technique; umbilical hernia (3%). Mean percentage excess weight loss at 3, 6, 12, 18, and 24 months were 34.73±10.42, 42.59±13.67, 56.38±19.89, 57.59±19.88, and 65.84±17.36, respectively. Band adjustment frequency was only 2.44±2.21 times in 2 years. 3 of 4 complications in band-first technique were observed to be derived from herniated fundus, being associated with the incomplete plication of fundus. The reversibility of plication made the complication easier to reverse, perforation repair, or conversion to sleeve gastrectomy. \(^9\)

Secondly, in 2013, we retrospectively analyzed data of 60 patients: 30 each receiving LSG and LAGBP between May 2009 to October 2010. Demographics, operative data, complications, % EWL, and
resolution of comorbidities were analyzed and compared. All the patients were followed for at least 1 year. LSG and LAGBP were matched for age, sex, body mass index and comorbidity ratio. Mean operative time was significantly longer in LAGBP: 62.45±30.1 vs. 86.01±21.88 (p=0.001). Both groups had similar complication rates (6.67 %) and most of the patients achieved significant resolution of comorbidities. The mean %EWL was statistically significant for LSG till 18 months follow-up as compared to LAGBP, but there was no difference at 2 years (p=0.971). Mean frequency of band adjustment after LAGBP in 2 years was 1.50±1.51. There was no significant difference in comorbidity resolution in both groups. LAGBP is a dual restrictive bariatric procedure offering similar results with LSG at 2 years in terms of complications, % EWL, and comorbidity resolution with potential of continual weight loss due to band.

Although the procedure requires no resection or anastomosis, it is still technically challenging as it requires laparoscopic suturing skills for plication of the stomach. And adequate prior experience and skill with placements of adjustable bands is also essential. And the surgical steps were suggested to start full plication of greater curvature first after dividing omentum and subsequently place adjustable gastric band with pars flaccid method.

As these are new procedures the potential complications are less known. The reported complications of gastric plication include nausea, prolonged vomiting gastric obstruction, increased salivation, hemorrhage, gastric herniation between sutures, infection, leaks, peritonitis and mesenteric venous thrombosis. The complications associated with the adjustable gastric band include band rupture, migration, erosion, flippage etc. Therefore as the LAGBP combines the gastric band with gastric plication, there is every possibility that it may have the cumulative complications of both these procedures, which is yet to be seen. Moreover a previous experience of dealing with complications associated with gastric bands is definitely necessary to deal with unforeseen issues. As such the LAGBP may not be the appropriate procedure for the less experienced bariatric surgeon or in centers with lesser volumes of bariatric case load.

Still in its infancy, there has yet to be a standardization of the various steps in LAGBP. A standardization of surgical technique is expected to improve the postoperative outcome and enable comparison
between different centers. We encourage surgeons to develop standardized surgical steps in this novel procedure, including suture materials, gastric volume of plication, layers of plication, vessel dissection and adjustment frequency of adjustable gastric band.

Proposed benefits of LAGBP could be outlined as follows

1. **Potentially Reversible**
2. **Obviates the need for GI resection or anastomosis**
3. **Obviates the need for intestinal bypass and future mal-absorption**
4. **Can provide a bi-phasic” restrictive effect**
5. **Combines benefits of adjustability of gastric band and quick weight loss of gastric plication**
6. **Reduces the need of frequent band adjustments**

Conclusion

Till now, it is still inadequate to illustrate any definitive conclusions regarding the safety and efficacy of these procedures as for now, owing to the limited amount of the data available. Therefore “Laparoscopic Adjustable Gastric Banded Plication” should still be considered investigational until further evidence is available.

The current recommendations for laparoscopic adjustable banded plication as a surgical option for treating morbid obesity would be as follows-
1. Laparoscopic Adjustable Gastric Banded Plication (LAGBP) is a novel and investigational procedure at this time.

2. Surgical indication should be adhered to NIH guideline for morbid obesity or Asia-Pacific guideline for morbid obesity. It should not be considered as one option of metabolic surgery in lower BMI patients at present.

3. More evidence regarding the technique and outcomes should be encouraged and gathered by scientific publications and presentations.

4. The procedure should be performed as a supervised multi-disciplinary program adhering to regulations of the ethical committee and institutional review board.

5. Surgeons intending to start the procedures should search for training programs from surgeons, having more than 30 cases of gastric plication and band experience individually.

This position statement has been prepared based on best available evidence from the World Literature. It represents the effort of The I.E.F (International Excellence Federation for Bariatric and Metabolic Surgery) in providing an up-to-date information about the novel technique and its current status. This does not represent an established method of treatment. The key purpose is to provide current information a scientific manner based on which the practitioners can tailor their treatment decisions. The final decision regarding the treatment of each patient should be individually tailored to the prevailing circumstances.
Figure 1

Pubmed/Medline Search
Key Words - Laparoscopic Gastric Band Plication

Total of 35 articles
Laparoscopic Gastric plication - 7 articles
Laparoscopic Gastric banded plication - 5

Laparoscopic Gastric plication - (7)
- Animal studies - 1
- Human studies - 6

Laparoscopic Gastric banded plication - (5)
- Research articles - 2
- Case report - 2
- Commentary - 1


