

## Wrap choice during fundoplication

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**Author contributions:** Bramhall SR and Mourad MM contributed to concept of manuscript, manuscript review, accuracy check; Bramhall SR wrote the manuscript.

**Conflict-of-interest statement:** Neither Dr. Bramhall or Dr. Mourad has nothing to disclose.

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**Manuscript source:** Invited manuscript

**Received:** October 21, 2019

**Peer-review started:** October 21, 2019

**First decision:** November 26, 2019

**Revised:** December 3, 2019

**Accepted:** December 22, 2019

**Article in press:** December 22, 2019

**Published online:** December 28, 2019

**P-Reviewer:** Armellini E, Martini F, Mayol J, Savarino V, Schietroma M

**S-Editor:** Gong ZM

**L-Editor:** A

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### Abstract

Gastro-oesophageal reflux disease is an increasing health burden. The mainstay of treatment has conventionally been medical therapy but since the introduction of laparoscopic surgery laparoscopic anti-reflux surgery has been increasingly used for intractable symptoms or in patients unwilling to take long term medication. The Nissen 360 degree wrap has traditionally been considered the gold standard operation but can be associated with significant complications. These complications include "gas bloat" and dysphagia and can occur relatively frequently. Various modifications have been described to the original operation and some of these have been described. In addition alternative wraps have been described which seem to have a reduced incidence of complications associated with their use. This editorial discusses the various types of wrap that can be performed and the minimum requirements of the surgical technique. The evidence from a recent meta-analysis of the randomised data has suggested that an anterior wrap is associated with a lower rate of complications and gives just as good control of reflux symptoms. The advantages and disadvantages of an anterior wrap are discussed. The lack of long term follow up data concerns some practitioners and at the moment the choice of wrap carried out still rests with the individual surgeon.

**Key words:** Fundoplication; Wrap; Laparoscopic; Reflux disease; Choice

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**Core tip:** The type of wrap chosen during a laparoscopic fundoplication will be decided by the surgeon but the evidence suggests that an anterior wrap is associated with less complications than a full posterior wrap and gives just as good control of reflux.

**Citation:** Bramhall SR, Mourad MM. Wrap choice during fundoplication. *World J Gastroenterol* 2019; 25(48): 6876-6879

E-Editor: Ma YJ

URL: <https://www.wjgnet.com/1007-9327/full/v25/i48/6876.htm>DOI: <https://dx.doi.org/10.3748/wjg.v25.i48.6876>

## INTRODUCTION

Gastro-oesophageal reflux disease (GORD) is a common disorder and the prevalence is increasing. GORD represents a considerable healthcare burden and has significant effects on patients quality of life.

Since the first laparoscopic Nissen fundoplication (LNF) was described in 1991<sup>[1]</sup> there have been many studies of antireflux surgery reported and laparoscopic fundoplication is now an established treatment of GORD<sup>[2]</sup>. Anti-reflux surgery has evolved over the years with increasing practitioner experience and advances in laparoscopic techniques. These advances have led to a safer and more satisfactory outcome for many patients, with a reduction in requirements for open surgery, shorter length of stay and more cost effective healthcare.

## SURGICAL OPTIONS

LNF is considered the gold standard surgical procedure and is the most widely used fundoplication variant for the treatment of gastro-oesophageal reflux disease but it is complicated by a number of unwanted functional disorders such as dysphagia and gas bloat syndrome. These symptoms have been reported to occur at very high rates in the initial post-operative period, although troublesome dysphagia persists in up to 10% of patients at a year<sup>[3-5]</sup> and only between 1% and 10% of patients require reoperation with up to 25% requiring balloon dilation at endoscopy<sup>[4,6]</sup>.

In an attempt to reduce the incidence of these complications post fundoplication a number of modifications and variants have been suggested. Some authors have reported routine division of the short gastric vessels but randomized controlled data has suggested no difference in dysphagia either in the short or long term but has suggested a slight increase in post-operative epigastric bloating<sup>[7,8]</sup>. The consensus of opinion is therefore that the short gastric vessels only need to be divided if it is required to achieve a tension free fundoplication. Leaving the crura untouched and minimal dissection techniques have also been proposed as a means of reducing post-operative dysphagia but these have never been tested in a randomized manner<sup>[9]</sup>. Although the evidence is not strong, most would however advocate hiatal closure if the defect is moderate or large<sup>[10]</sup>. A single randomized study has reported on the use of a 56 French bougie placed in the oesophagus during construction of the fundoplication. This study did report a reduced incidence of dysphagia at a short follow up period, it also reported a small (1.2%) incidence of oesophageal injury secondary to the bougie and on this basis a bougie is not widely used<sup>[11]</sup>.

A number of alternative wraps have been described to try to address the functional problems associated with a full 360-degree Nissen fundoplication. The wrap types can be split into posterior wraps where the stomach is wrapped behind the oesophagus. These include both the Nissen fundoplication and the 270-degree posterior Toupet wrap. Alternatively, anterior wraps where the stomach is passed anterior to the oesophagus such as the 180-200 degree Watson or Dor wraps. Anything less than a 180° wrap has been dismissed as inadequate<sup>[12]</sup>.

Partial wraps were initially reported as advantageous in patients with reduced oesophageal motility and therefore potentially at higher risk of post-operative dysphagia but recent evidence has suggested that this is not necessarily correct<sup>[13,14]</sup>.

The choice of wrap has traditionally been based on anatomic considerations and surgeon preference. The lack of standardization can make comparison of techniques difficult but most surgeons would accept that the following should occur: (1) Crural repair with non-absorbable sutures; (2) Vagal preservation; (3) A mobilization of at least 3cm of intra-abdominal oesophagus; (4) A tension free wrap with or without division of the short gastric vessels; and (5) A 1.5 to 2 cm wrap incorporating the anterior wall of the oesophagus with at least one suture.

## COMPARISON BETWEEN FULL AND PARTIAL WRAPS

There have been a number of randomized controlled trials that have compared the

outcomes of both full and partial posterior<sup>[15,16]</sup> and posterior with anterior fundoplication<sup>[17-19]</sup>. The evidence suggests that there is little difference in post-operative dysphagia when comparing full and partial posterior fundoplication<sup>[20]</sup> and while the evidence from the randomized trials comparing posterior with anterior fundoplication was mixed. A recent meta-analysis has reported that both anterior and posterior fundoplication are equally effective at controlling reflux symptoms the 180° anterior fundoplication is associated with a lower incidence of post-operative dysphagia<sup>[21]</sup>. As a consequence an anterior fundoplication is associated with fewer re-operations (carried out for dysphagia).

In addition to these data, there are technical factors to consider when comparing anterior and posterior fundoplication. There is little doubt that the 180° anterior fundoplication is simpler to perform but the requirement to anchor the fundoplication to the right crus means that re-operation for recurrent symptoms requires more dissection to release the attachments.

The evidence therefore would suggest that the fundoplication associated with the lowest rates of unwanted post-operative symptoms is an anterior 180° fundoplication. This fundoplication will provide an acceptable level of symptom control and patient satisfaction but in the event of the patient requiring further surgery, this type of fundoplication might increase the complexity of that redo surgery. This however, needs to be balanced against the reduce requirement for intervention for post-operative dysphagia.

## CONCLUSION

There is a paucity of long-term follow up data in this field and this has led to practitioners who favour the full posterior fundoplication to question some of the data presented. Ultimately, the decision regarding the type of fundoplication performed will rest with the surgeon and be based on their experience, their preference and the individual patient.

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