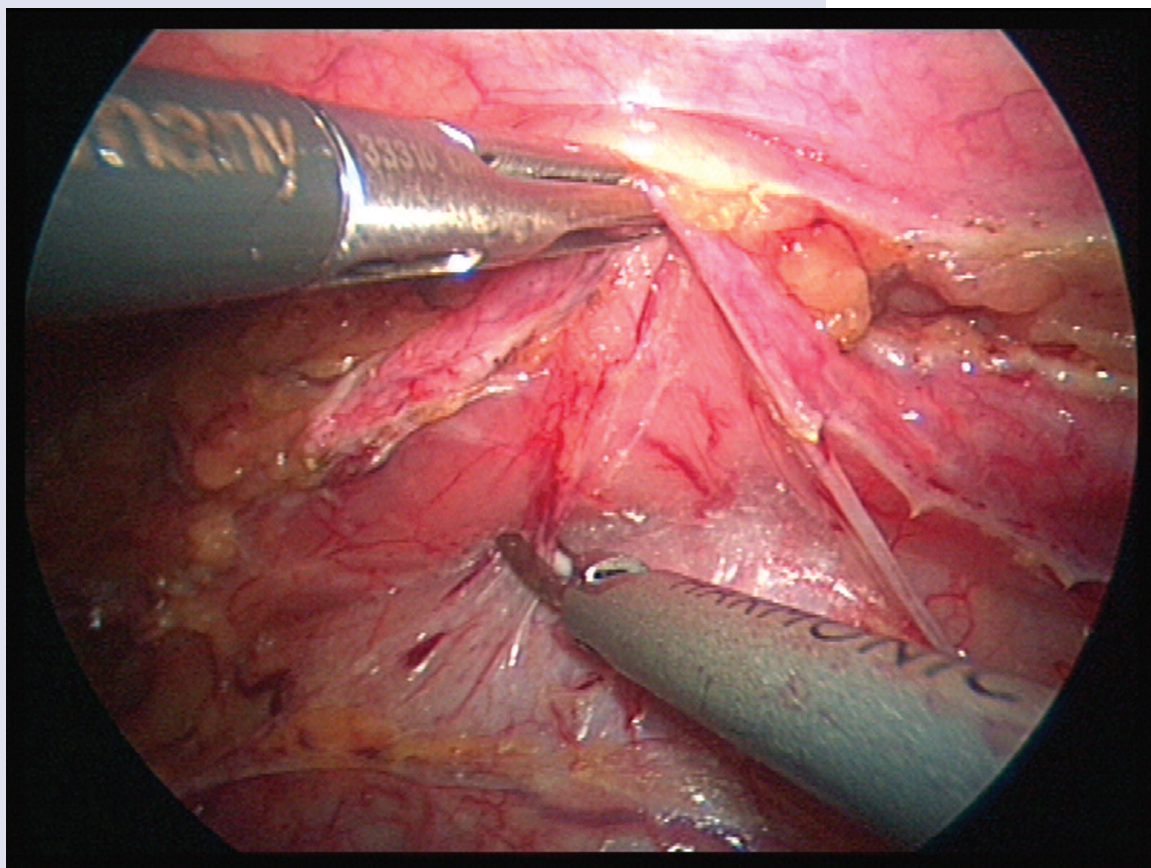


A Consensus View and Recommendations on the Development and Practice of Minimally Invasive Oesophagectomy

The Association of Upper Gastrointestinal Surgeons (AUGIS) and The Association of Laparoscopic Surgeons of Great Britain & Ireland (ALS)

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AUGIS
ASSOCIATION OF
UPPER GASTROINTESTINAL SURGEONS
OF GREAT BRITAIN AND IRELAND

Introduction

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Open oesophagectomy remains the primary treatment for patients with non-metastatic cancer of the oesophagus or gastro-oesophageal junction who are deemed fit enough for surgery. In the UK this is usually preceded by neoadjuvant chemotherapy and constitutes a significant physical insult for the patient who may take 6-12 months to fully recover. Consequently, surgeons around the World have been trying to develop less traumatic techniques for oesophagectomy by using “minimally invasive” or “minimal access” techniques.

As with other areas of gastrointestinal surgery, by using a minimally invasive or minimally access approach there is the potential to reduce postoperative pain and wound related complications and hasten the patients return to normal activities. However, it must be recognised that the published evidence to support this is weak, the technical details of minimally invasive surgery are still evolving and its role in the management of oesophageal cancer is uncertain. The National Institute for Health and Clinical Excellence (NICE) has published an overview of thoracoscopically assisted oesophagectomy as part of its interventional procedures programme (NICE 2006), describing the technique as remaining under investigation. A recent systematic literature review concludes that this form of surgery is feasible but identifies a lack of quality data and thus continued uncertainty over whether there is evidence that MIO has benefits over open surgery (Gemmill & McCulloch 2007).

In view of this uncertainty, The Association of Upper Gastrointestinal Surgeons of Great Britain & Ireland (AUGIS) and The Association of Laparoscopic Surgeons (ALS) determined that there was a need for professional guidance on the development and introduction of minimally invasive oesophagectomy in the UK. A meeting of members from both Societies was organised by The Pelican Cancer Foundation and held at The Ark in Basingstoke, UK on the 14th March 2008. Participants represented the full range of opinion from sceptic to enthusiast. Approximately half of those who attended were already performing some form of minimally invasive oesophagectomy. This consensus document is an account of the groups' discussion and provides views and recommendations on the current role of this technique, definitions of the different approaches that can be used and offers suggestions as to how they might be introduced into clinical practice without putting patients at risk. It is not an evidence based document in the usual sense but rather a series of informed opinions drawing upon the collective experience of those present at the meeting.

The place of minimally invasive surgery in the contemporary management of oesophageal cancer: definitions and philosophy.

There is currently no recognised definition of a minimally invasive oesophagectomy (MIO) and many different operations are grouped together under this one heading. We propose a classification in which the acronym MIO is only used for operations involving thoracoscopic mobilisation of the oesophagus and laparoscopic mobilisation of the stomach. Procedures using minimally invasive techniques for only the abdominal or chest phase but not both should be termed “laparoscopically” or “thoracoscopically assisted oesophagectomy (LAO and TAO). In addition, qualifiers would be used to describe how the gastric conduit was fashioned (intra-corporeal or extracorporeal), how the specimen was removed (via neck, chest or abdomen), and what type of anastomosis was done (mechanical, semi-mechanical or sutured). If adopted, this system would greatly assist communication and audit of results. For the remainder of this document, the term “Minimally invasive oesophagectomy techniques” or “MIOT” will be used to encompass the range of procedures described below.

We therefore propose that the following descriptions be used:

- MIO with cervical anastomosis
- MIO with intra-thoracic anastomosis
- LAO with standard thoracotomy and intra-thoracic anastomosis
- LAO with mini-thoracotomy and intra-thoracic anastomosis
- LAO with thoracotomy and cervical anastomosis
- TAO with laparotomy and cervical anastomosis

The consensus group agreed the following statements:

1. Minimally invasive surgery is a technique for resecting the oesophagus and not a new treatment per se. Even if it is shown to be beneficial for some patients it will join open resection in the surgeons' armamentarium and not replace it in the foreseeable future.
2. Patients being considered for any minimally invasive approach to oesophagectomy should to be deemed fit enough for open surgery as well.
3. There is some evidence that MIOT reduce the peri-operative insult to the patient resulting in less pain, less wound related complications and faster return to normal activities. There is currently no good evidence that MIOT reduce hospital stay, overall complication rates or peri-operative mortality. Some complications may in fact be more frequent after MIOT.
4. All surgeons performing MIOT should monitor their outcomes prospectively and submit data to the national audit on every patient. This was strongly supported by all members of the consensus group.
5. Surgeons undertaking MIOT should be fully trained in laparoscopic surgery at the hiatus, confident in intra-corporeal suturing and competent with stapling in the context of minimal access surgery.
6. The oesophageal MIOT "learning curve" is long and thought to be between twenty and fifty operations but will vary from surgeon to surgeon.
7. MIOT should only be undertaken in recognised cancer centres by surgical teams confident in the performance of the open equivalent of the proposed minimal access approach.
8. As with all surgery, protection of the patient from avoidable harm is of the utmost importance.
9. When these are available, surgeons should enter their patients into high quality randomised controlled trials of MIO vs. open oesophagectomy.

General advice on patient selection for MIO

1. Fitness for MIOT should be based on similar criteria used for the selection of patients for open resection
2. Patient suitability for MIOT should be discussed in the specialist Upper GI multi-disciplinary meeting (MDT)
3. Patients with BMI >30, those with full-thickness tumours where there is a perceived risk of invasion into an adjacent structure, or patients with large lymph node burden on EUS/CT should be avoided until the surgical team feels confident to progress to these more difficult patient groups.
4. Ideal patient characteristics for MIO therefore include:
 - a. Low BMI
 - b. Non-arthritis shoulders and spine
 - c. Small early tumours of the mid and distal third of the oesophagus (avoid proximal third tumours during learning curve to reduce risk of airway injuries)

Introducing MIO into clinical practice

A) Process

1. Surgeons should follow their local trusts' guidelines for introducing a new procedure into their hospital.
2. At least one of the surgeons in the team should attend a formal course on MIO techniques
3. Decisions regarding a surgeon's competency to perform MIO procedures should ultimately lie with the trust medical director who will be advised by the teams' mentor and the clinical director
4. Some centres may begin MIOT after the appointment of a new consultant who has trained in this type of surgery. This will become increasingly common with time as more training occurs. However, MIOT should still be introduced cautiously to allow established staff time to familiarise themselves with the different approach.

B) Team Working & Mentoring

1. Surgeons should operate in pairs during the "learning curve" to provide each other with advice and support.
2. At least one, and preferably two of the surgeons involved should visit a centre performing MIOT to observe in theatre. They should take with them a senior member of their theatre scrub team
3. Surgeons should develop a working relationship with a centre already doing MIOT to allow mentorship and advice. Mentoring is good clinical practice and should occur for as long as is deemed necessary by the mentor. A list of recognised mentors will be available from the AUGIS website.
4. The number of procedures observed and performed during mentoring will vary depending upon the experience of the trainee. However, the consensus group felt that a minimum of five operations should be observed/assisted with and another five done with the mentor assisting. Surgeons should not begin MIOT without a mentor.

C) Technical and Ethical Aspects

1. Surgeons should have an honest and full discussion with their patients to obtain their informed consent for MIOT. This should include information on the pros and cons of this approach, the alternatives (open surgery), the experience of the surgical team, any problems they have encountered (ie audit data) and any mentoring arrangements.
2. The surgeon should be confident that the oncologic standard of the minimal access procedure is equivalent to its open counterpart at that centre. Rates of resection margin positivity and lymph node yields should be detailed for comparison with open surgery.
3. Before embarking upon an MIOT programme surgeons should liaise closely with their theatre managers to ensure that adequate equipment of a high enough quality is available. As with all advanced minimal access surgery inadequate instrumentation and poor image quality may lead to avoidable complications

4. Surgeons who are less familiar with minimally invasive surgery in the chest (ie upper GI surgeons) or the abdomen (ie thoracic surgeons) will need to focus their learning on the area of least familiarity.
5. During the early stages of a teams experience it is recommended that they perform an LAO or TAO rather than a full MIO. This allows a step wise introduction of the various elements of this complex operation and increases safety. Surgical teams should be prepared to adjust their practice accordingly as more published data becomes available on the relative merits of these different approaches.
6. The risk of thermal injury to the airway by diathermy or harmonic scalpel may be higher during thoracoscopy than in open surgery and surgeons should exercise extreme caution when operating close to the trachea and bronchi.
7. In MIOT, current consensus is that the gastric conduit is most safely made outside of the body via a small incision using a linear stapler; this also facilitates specimen removal and, in LAO, formation of the anastomosis.
8. Anastomoses in the neck between the gastric conduit and cervical oesophagus are prone to stricture and surgeons should consider a semi-mechanical anastomosis to reduce stricture rates. In addition, great care should be taken to avoid injury to the recurrent laryngeal nerve.
9. Conversion to open surgery should not be considered a failure and if in doubt Surgeons should revert to this approach.

Gemmill EH, McCulloch P. Systematic review of minimally invasive resection for gastro-oesophageal cancer. Br J Surgery 2007;94:1461-7. www.nice.org.uk IPG189 August 2006

Members of the Consensus Group

This document was produced by Mr Richard H Hardwick, chairman of the audit & clinical services committee, AUGIS with editorial assistance from Professor Derek Alderson (Birmingham) and Professor Mike Griffin (Newcastle). All members of the consensus group contributed to the drafting processes.

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