Barrett’s oesophagus: ablative therapy for the treatment of Barrett’s oesophagus

Clinical review methods

1) Inclusion/Exclusion criteria

**Inclusion criteria**

- **Population**: Adults (age 18 and older) with a diagnosis of Barrett’s oesophagus with high-grade dysplasia or with intramucosal cancer (including T1a).
- **Intervention**: endoscopic resection and ablative therapies [argon plasma coagulation (APC), photodynamic therapy (PDT), laser ablation, multipolar electrocoagulation (MPEC), radiofrequency ablation (RFA)]
- **Comparators**: oesophageal surgery or surveillance with proton-pump inhibitors
- **Study Design**: RCTs, observational studies and caser series.

**Exclusion criteria**

- **Population**: 
  a) Children (younger than 18),
  b) Adults with a diagnosis of Barrett’s oesophagus with no dysplasia or with low-grade dysplasia.
  c) Adults with other gastrointestinal conditions, including gastro-oesophageal reflux disease.
  d) Studies with a heterogeneous population with less than 50% being HGD and/or intramucosal cancer (including T1a).
- **Intervention**: 
  a) Diagnosis and assessment of Barrett’s oesophagus.
  b) Other forms of management for Barrett’s oesophagus, including oesophageal surgery, unless they are being used as comparators for the ablative therapies.
c) Diagnosis and treatment of gastro-oesophageal reflux disease.
d) Treatment of dyspepsia.

- **Comparators:** Comparators other than oesophageal surgery or surveillance.
- **Study Design:** Individual case reports

2) Evidence review results

1.1 **Systematic reviews**
- initial 238 hits including duplicates
- 42 selected based on title and abstract for background reading and reference checking

1.2 **Evidence map**
- initial 988 hits including duplicates
- 197 selected based on title and abstract
- also daisy chained from the included and excluded reviews so 24 studies added
- 221 ordered full text

**Additional EMR and early cancer terms added for a new search**
- initial 900 hits including duplicates
- 757 excluded based on title and abstract
- 143 ordered for full text.
- Additional reference – article in press sent by the GDG

**Overall papers ordered:** 364
**Articles excluded on full text:** 284
**Included articles:** 81
Evidence found:

- Number of RCTs included: 2
  - Overholt, 2005;2007 – PDT+ omeprazole versus omeprazole
  - Shaheen, 2009 – RFA versus Sham procedure
- Number of two arm observational studies included: 7
  - Das, 2008 – Endotherapies versus surgery
  - Greenstein, 2008 – Endotherapies versus no therapy
  - Pacifico, 2003 – ER+PDT versus surgery
  - Prasad, 2007 – PDT versus surgery
  - Prasad, 2009 – Endotherapies versus surgery
  - Reed, 2005 – ER+PDT versus surgery and observation
  - Schembre, 2008 - Endotherapies versus surgery
- Number of case series/ single arm registry data included: 72
Included studies


Barr H, Shepherd NA, Dix A et al. (1996) Eradication of high-grade dysplasia in columnar-lined (Barrett's) oesophagus by photodynamic therapy with endogenously generated protoporphyrin IX. Lancet 348: 584-5.


Other References


Excluded Studies

Photodynamic therapy is a cost-effective treatment option for patients with high-grade dysplasia in Barrett's esophagus. AHRQ Research Activities [298], 4. 2005. EXC - commentary on Vij 2004 (health economic study).


Ackroyd, R., Brown, N. J., Davis, M. F., Stephenson, T. J., Stoddard, C. J., and Reed, M. W. Aminolevulinic acid-induced photodynamic therapy: safe and effective ablation of dysplasia in


Allgood, P. C. and Bachmann, M. Medical or surgical treatment for chronic gastro-oesophageal reflux: a systematic review of published evidence of effectiveness. European Journal of Surgery 166(9), 713-721. 2000. EXC - review of interventions (medical, fundoplication) for GORD. One study with BO patients, but not ablation therapy.


Calzavara, F., Tomio, L., and Norberto, L. Photodynamic therapy in the treatment of malignant tumours of the upper aerodigestive tract. Lasers in Medical Science 4, 279-284. 1989. EXC - study was on malignant cancer of the upper aerodigestive system. Tumor was not staged.


DeVault, K. R. and Wolfsen, H. C. Esophageal dysmotility in Barrett's esophagus with high grade dysplasia is worsened by photodynamic therapy. Am.J Gastroenterol 97[9], S24. 2002. EXC - Study was on oesophageal motility in BO.


MEDLINE. EXC - not HGD (based on abstract).


MEDLINE. EXC - Population of 31 but only 5 with HGD and analysis done for 3 of them

MEDLINE. EXC - not HGD.


MEDLINE. EXC - not HGD (based on abstract).


MEDLINE. EXC - Survey on patients experience
Hernandez, J. C., Reicher, S., Chung, D., Pham, B. V., Tsai, F., Disibio, G., French, S., and Eysselein, V. E. Pilot series of radiofrequency ablation of Barrett's esophagus with or without neoplasia. 20080729. Endoscopy 40[5], 388-392. 2008. MEDLINE
MEDLINE. EXC - Case series of 10 with 7 non-dysplastic, 2 LGD and only 1 HGD

MEDLINE. EXC - Study of biomarkers accumulation post PDT

MEDLINE. EXC - Study of biomarkers accumulation post PDT


MEDLINE. EXC - Study of different antigens - biomarkers

MEDLINE. EXC - not relevant population (based on abstract).


suppression. Gastrointestinal Endoscopy 49[5], 547-553. 1999. MEDLINE.
EXC - not HGD.


MEDLINE. EXC - not HGD (based on abstract).


Maish, M. S. and DeMeester, S. R. Endoscopic mucosal resection as a staging technique to determine the depth of invasion of esophageal adenocarcinoma. [Review] [16 refs]. 20050204. Annals of Thoracic Surgery 78[5], 1777-1782. 2004. MEDLINE. EXC - Using EMR to correctly stage patients before they go for surgery


MEDLINE. EXC - submucosal invasion.


20011219. Hepato-Gastroenterology 48[40], 1015-1017. 2001. MEDLINE. EXC - Mixed population with 12 out of 15 with squamous cell carcinoma in Japan


MEDLINE. EXC - not effectiveness of ablative therapy.


MEDLINE. EXC - Population of 15, but only 2 HGD (1 LGD and 11 non-dysplastic BO)


MEDLINE. EXC - oesophagectomy, not endoscopic therapy.


MEDLINE. EXC - not HGD (based on abstract).


MEDLINE. EXC - Updated by Overholt 1999


MEDLINE. EXC - Updated by Overholt 1999


MEDLINE. EXC - Updated by Overholt 1999


Shimizu, Y., Kato, M., Yamamoto, J., Nakagawa, S., Komatsu, Y., Tsukagoshi, H., Fujita, M., Hosokawa, M., and Asaka, M. Endoscopic clip application for closure of esophageal perforations caused by EMR. Gastrointestinal Endoscopy 60[4], 636-639. 2004. EXC - not able to determine if relevant population (only 3 had adenocarcinoma, other 181 had squamous cell carcinoma). Also focus on repair of perforation, not effectiveness of EMR.


Upton, M. P., Nishioka, N. S., Ransil, B. J., Rosenberg, S. J., Puricelli, W. P., Zwas, F. R., and Shields, H. M. Multilayered epithelium may be found in patients with Barrett's epithelium and dysplasia or adenocarcinoma. 20070130. Digestive Diseases & Sciences 51[10], 1783-1790. 2006. MEDLINE MEDLINE. EXC - looking at whether MLE is a prognostic factor for BO


patients with high grade dysplasia with the rest with low grade dysplasia or indeterminate dysplasia


