EndoRotor ablation of Barrett's esophagus: Safety and Feasibility study

Published: 22-12-2016
Last updated: 14-04-2024

The aim of this study is to assess for the first time in humans, the safety and feasibility of the EndoRotor® for the ablation of Barrett*s esophagus.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Malignant and unspecified neoplasms gastrointestinal NEC
Study type	Interventional

Summary

ID

NL-OMON42962

Source
ToetsingOnline

Brief title
EndoRotor ablation of Barrett's esophagus: Safety and Feasibility study

Condition

- Malignant and unspecified neoplasms gastrointestinal NEC

Synonym
Dysplasia in Barrett's esophagus, precancerous esophageal mucosa

Research involving
Human

Sponsors and support

Primary sponsor: Erasmus MC, Universitair Medisch Centrum Rotterdam
Source(s) of monetary or material Support: Ministerie van OC&W,Interscope, Inc,Interscope;Inc

Intervention

Keyword: Barrett, Dysplasia, EndoRotor ablation

Outcome measures

Primary outcome

1. To evaluate the safety of EndoRotor® ablation with regard to bleeding, perforation, and post-resection stenosis.

2. To evaluate the feasibility of EndoRotor® for the ablation of Barrett*s mucosa: The percentage of endoscopically visible surface regression of Barrett*s epithelium after 3 months post EndoRotor® treatment.

Secondary outcome

1. To evaluate patient discomfort (recorded using the Numeric Rating Scale * grade 1-10), dysphagia-score (recorded using the Ogilvie score), and a variety of other symptoms (recorded using a 7 point Likert scale in a short 30 *day diary post procedure).

2. To assess the total time to resect tissue.

3. To evaluate the ease of performing the EndoRotor® procedure.

Study description

Background summary

Barrett*s metaplasia is a change in the esophageal lining from a squamous to intestinal type mucosa that increases the risk of the development of esophageal adenocarcinoma (EAC). Esophageal adenocarcinoma evolves through a multi-step process, including low-grade dysplasia, high-grade dysplasia and then early stage esophageal adenocarcinoma. Both stages of dysplasia in Barrett*s esophagus are currently accepted conditions for pre-emptive treatment by endoscopic means. Additionally, guidelines advocate ablating residual Barrett*s metaplasia after complete endoscopic mucosal resection (EMR) of mucosal EAC,

due to the risk of metachronous lesions. The endoscopic removal of Barrett*s metaplasia without dysplasia is however still debated.

Several techniques have been described for the endoscopic ablation of Barrett*s metaplasia, which include radiofrequency ablation (RFA), argon plasma coagulation (APC), photodynamic therapy (PDT), cryotherapy, EMR and surgical removal of the esophagus. The most commonly used limited-morbidity techniques are RFA and EMR. RFA involves ablating the abnormal lining using radiofrequency energy and allowing the area to heal. Although it is relatively fast and easy to perform, it is expensive (over $2,000 per procedure), it does not harvest tissue for pathological evaluation, and adverse events such as stricture (5%) and bleeding (1%) can occur. A majority of patients will experience chest pain after the procedure which usually lasts a few days, and in 1-2% of patients the pain is more severe and longer lasting. EMR is a technique that allows the endoscopist to resect the lesion away from the remainder of the esophagus. EMR by Cap-technique is a endoscopic technique where a lesion is first lifted by a submucosal fluid injection after which the lesion is sucked into the cap and then grasped and ligated by a snare using electrocautery. EMR by multiband mucosectomy (MBM) uses modified variceal band ligators with a band-and-cut technique. Although EMR produces samples that can be histologically interpreted, a stepwise radical endoscopic resection (SRER) of the Barrett*s mucosa is associated with a high stenosis rate of 48%.

The EndoRotor® is an automated mechanical endoscopic mucosal resection system for use in the gastrointestinal tract for benign neoplastic or pre-malignant tissue removal. The EndoRotor® suctions up the tissue and cuts it, automatically sending the tissue to a collection trap for histological evaluation. As the system automatically suctions and cuts about 1000 times a minute, it allows for the rapid and targeted removal of mucosa. The expected advantages of the EndoRotor® for the ablation of Barrett*s mucosa are 1) it allows for histological evaluation of the tissue, 2) there is no heat or cautery artifact in the samples that are collected, 3) it potentially has a lower stricture risk than SRER due to the absence of electrical ligation involvement in the procedure, 4) it is 8 to 10 times cheaper than RFA and 5) it is potentially faster than RFA or EMR.

The EndoRotor® has been used to resect esophageal mucosa in a live porcine model as part of a Good Lab Practices (GLP) study at CBSET, Lexington, Massachusetts, USA, as well as for a preliminary research project in Germany at the Mariensee Animal Facility using live pigs, where the technical properties and therapeutic potential were evaluated. In September 2015, the EndoRotor® device acquired the CE-mark for gastroenterological mucosal resections in humans.

Study objective

The aim of this study is to assess for the first time in humans, the safety and

feasibility of the EndoRotor® for the ablation of Barrett*s esophagus.

Study design

This is a longitudinal prospective study in 30 patients to evaluate safety and feasibility of the EndoRotor® for the endoscopic ablation of Barrett*s mucosa. For this safety and feasibility trial a minimum 50% of the esophageal circumference will be resected per procedure. The 4 participating centers are expected to enroll a mean number of 3-8 patients during a period of 6 months and the outcomes will be scored 3 months after the procedure.

Study Visits and Procedure:

Device training:
Prior to execution of the protocol, all investigators shall have become proficient in the use of the EndoRotor® device, by training in live porcine models and/or having performed 2-3 ablation procedures in patients with Barrett*s esophagus.

Pre-EndoRotor® assessment:
Endoscopic assessment including biopsies with low- or high-grade dysplasia should have been done no longer than 6 months prior to the ablation procedure. Complete endoscopic mucosal resection of a lesion should be done no shorter than 6 weeks prior to the ablation procedure, allowing for enough time to heal the mucosa. The treating physician will assess if the patient fulfills the inclusion and exclusion criteria, and shall inform the patient about the study. Only after providing informed consent, the patient will participate in the study.

EndoRotor® ablation procedure:
All procedures will be performed using high resolution endoscopes with a 3.2mm size working channel and the through-the-scope EndoRotor® Mucosal Resection System. The EndoRotor® system will be prepared by attaching the EndoRotor® catheter, foot pedal and the calibrated suction to the Control Unit, ensuring there is a filter in the collection unit (specimen trap), and then priming the catheter with 0.9% normal saline. The full set of instructions for the EndoRotor® system can be found in the attached Instructions For Use (IFU) document. The procedures will be performed under sedation. The choice of sedation (conscious sedation or general anesthesia) will be left to the discretion of the endoscopist.

The esophagus is first evaluated using white light high-resolution endoscopy (WLE) and narrow band imaging (NBI). The extent of the Barrett*s segment is documented according to the Prague C&M classification and by taking still images with WLE and NBI at 1cm intervals. In the absence of visible lesions, the patient is eligible for ablation using the EndoRotor® device.

For this safety and feasibility trial at least 50% of the esophageal circumference will be resected in one procedure. Prior to ablation, submucosal injection with diluted adrenalin can be performed as to minimize intra-procedural bleeding. The EndoRotor® catheter will be inserted through the working channel of the endoscope until it is in proper cutting position with the cutting surface oriented towards the mucosal lesion and the catheter no more than 3cm out of the scope. The physician will turn the motor on by depressing the blue pedal and engage cutting by holding the orange pedal for as long as he/she wishes to cut tissue. Cutting should be performed while moving the EndoRotor® catheter over the mucosal area until only submucosa is seen. It is important to take care to not keep the suction activated when there is no intention to cut mucosa and when stopped for more than 1 second while apposed to tissue to not risk creating a perforation. Cutting should be done starting at the GE-junction and then moving proximally.

After at least 50% of the esophageal circumference has been ablated by the EndoRotor® system and incidental bleeding has been managed, as is standard of care, still images with WLE and NBI will be taken at 1cm intervals. This will provide baseline images to compare with after 3 months follow-up. All relevant data will be recorded on predefined case record forms during and after the procedure.

Histopathology examination:
Resected tissue collected in the Specimen Trap will be placed in 10% Formalin and sent to the pathologist for routine histological evaluation by experienced GI pathologists.

Medication and discharge regime
All patients will be on a maintenance dose of a proton pump inhibitor (by preference Esomeprazole) at a dosage of 40mg twice a day during the whole treatment period until follow-up. Additionally, during the first 14 days post procedure, Sucralfate suspension 4 times daily (after each meal and prior to bedtime) and Ranitidine 300mg at bedtime will be prescribed, as is routinely done after all ablative procedures. In case of pain, patients may take paracetamol 1000mg maximum 4 times daily.
In the first 24 hours post ablation, patients will be restricted to drinking clear liquids only. After 24 hours, they will be allowed a normal diet.
Patients will be asked to complete a short 30 - day diary in which symptoms such as dysphasia, discomfort and pain will be recorded. If after 3 days the patient is free of complaints, they can stop completing the questionnaire.

Follow-up
At 12 weeks follow-up, the first post treatment endoscopy will be performed. Still images with WLE and NBI will be taken at 1cm intervals to assess the percentage of endoscopically visible surface regression of the resected Barrett*s area. During the 12 weeks follow-up, all unscheduled visits, unscheduled endoscopies and complications will be recorded. After the first

post treatment endoscopy, further treatment and follow-up will be performed according to the standard guidelines.

An independent safety committee will evaluate all treated cases after the first 5 procedures, and will again review after 10 and 20 cases.

Intervention

EndoRotor ablation to eradicate Barrett's mucosa

Study burden and risks

The burden of participation is low since patients with Barrett*s esophagus with high-grade dysplasia, low-grade dysplasia or residual Barrett*s after complete endoscopic resection of esophageal adenocarcinoma by EMR will already be undergoing upper endoscopy with endoscopic ablation in routine clinical practice. There is a small but increased risk of complications as a result of endoscopic resection with the EndoRotor® (bleeding, perforation, pain and post-procedural stenosis), but these complications can usually be managed by endoscopic means. These complications are however also seen with the current standard of care (radiofrequency ablation and EMR).
From the patient*s point-of-view, participation in the study will require their consent and a post-procedural assessment on pain and discomfort, by filling out a 30-day diary. The initial endoscopic procedure for treatment and the 3-month follow-up endoscopy are part of routine practice. There is no financial burden or incentive for patients to participate in this study.

Contacts

Public
Erasmus MC, Universitair Medisch Centrum Rotterdam

's Gravendijkwal 230
Rotterdam 3015 CE
NL
Scientific
Erasmus MC, Universitair Medisch Centrum Rotterdam

's Gravendijkwal 230
Rotterdam 3015 CE
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

1. Written informed consent.
2. Age equal to or above 18 years (adult).
3. Minimum (residual) Barrett*s length of 2 cm and a maximum length of 5 cm (C0-5M2-5 according to the Prague classification)
4. Scheduled Barrett*s ablation for:
a. Histologically proven intestinal metaplasia with either high- or low-grade dysplasia in the absence of any visible lesion,
b. Residual Barrett*s mucosa after complete endoscopic resection (for visible lesions containing HGD or EAC.) (EMR <50% of the circumference)
5. Favorable anatomy (e.g. straight esophagus, no previous anti-reflux procedure) that allows performing endoscopic treatment with the EndoRotor®.

Exclusion criteria

1. Inability to give informed consent.
2. Age less than 18 years of age.
3. Presence of a visible lesion suspicious of early esophageal cancer or has a high chance of harboring cancer, or biopsy proven cancer.
4. In case of previous EMR: EMR specimen showing deep submucosal invasion (> 500µm), poorly to undifferentiated cancer (G3 or G4), lymphovascular invasion, or positive vertical margins.
5. In case of previous EMR: > 50% circumference.
6. Any prior endoscopic ablation treatment or dilation for esophageal stenosis.
7. Significant esophageal stenosis, preventing the passage of the therapeutic endoscope.
8. Evidence of portal hypertension, esophageal varices, etc.
9. An interval < 6 weeks between EMR and EndoRotor treatment.
10. An interval of > 6 months after the last high resolution endoscopy with biopsies

containing low or high grade dysplasia.
11. Unable to undergo endoscopic procedure using sedation analgesics.
12. Anti-coagulant therapy (apart from monotherapy aspirin) that cannot be discontinued prior to the procedure, OR uncorrectable hemostatic disorders.

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	27-01-2017
Enrollment:	30
Type:	Actual

Medical products/devices used

Generic name:	EndoRotor
Registration:	Yes - CE intended use

Ethics review

Approved WMO

Date:	22-12-2016
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL59336.078.16