



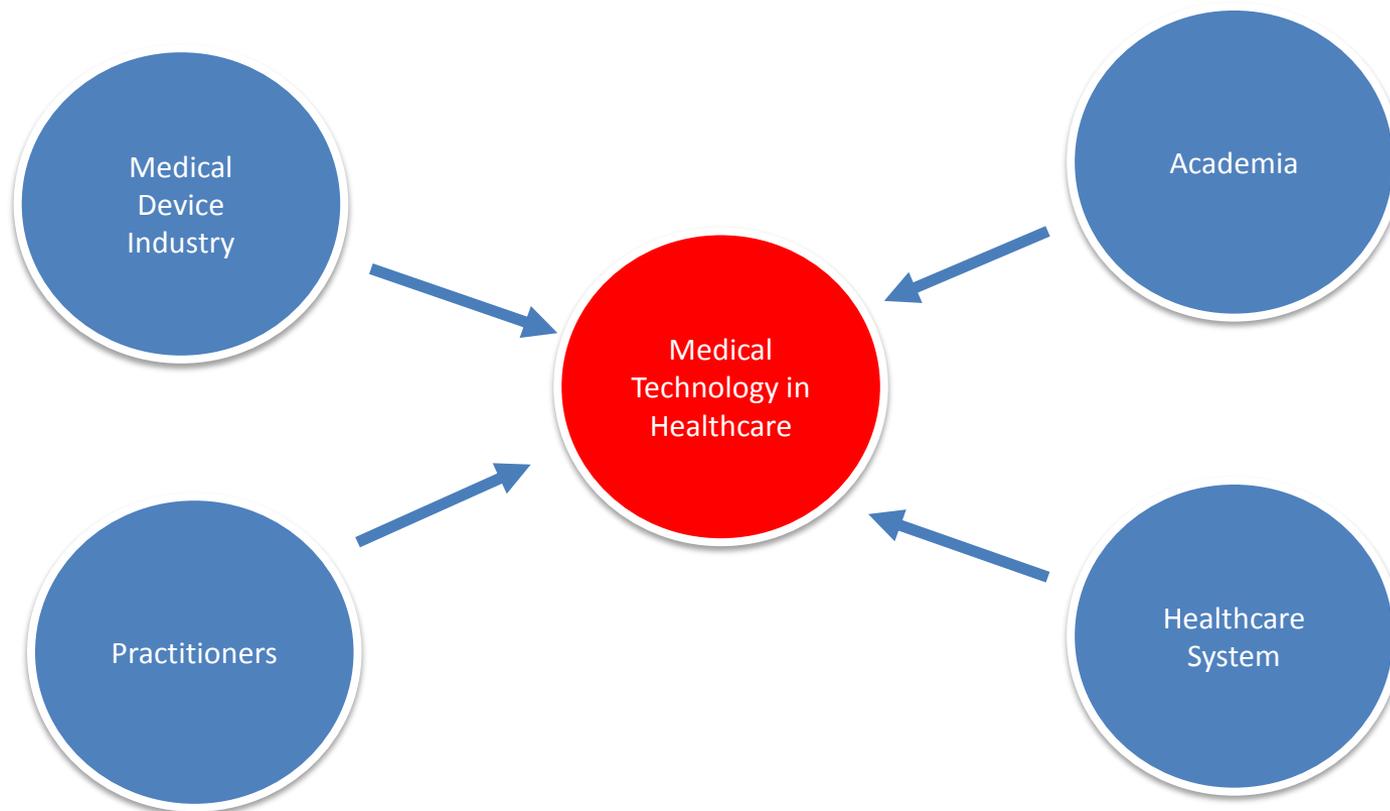
Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



Industry Academia Collaborations

Barry McMahon Tallaght Hospital
and Trinity College Dublin

Medical Technology in Healthcare – The Ecosystem



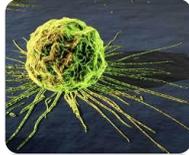
Getting Good Science to Patients

The Focus In Medical Research

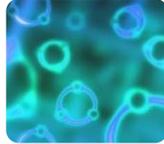
Heart Disease



Cancer



Immunology



Neurosciences



Molecular Medicine



Genomics

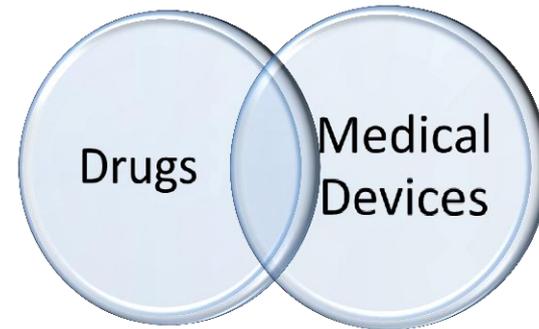


Bench



Understanding
Functional
Aspects to
Disease

Bedside



Medical
Technology

Precision Medicine at the Point of Care

Objective

*Engaging Clinicians & Other Healthcare Professionals in
Technology Innovation at the Bedside*

Interdisciplinary Engagement at Early Stage



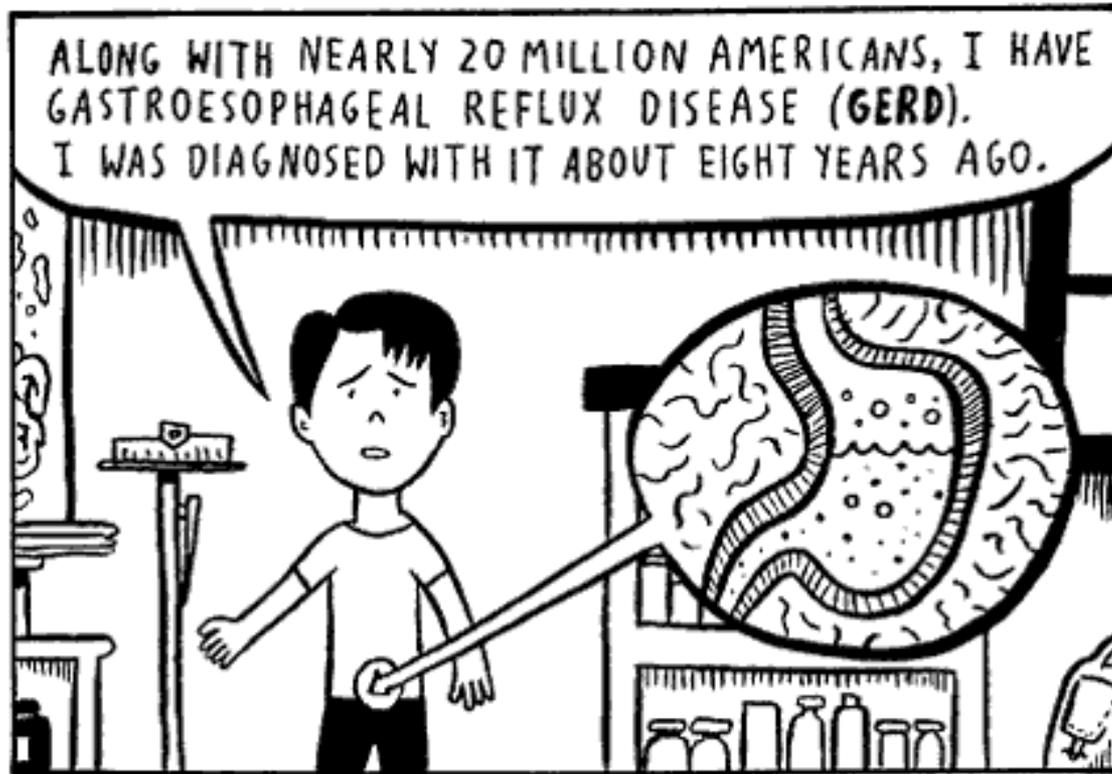
Scientist/Engineer

Lost in Translation



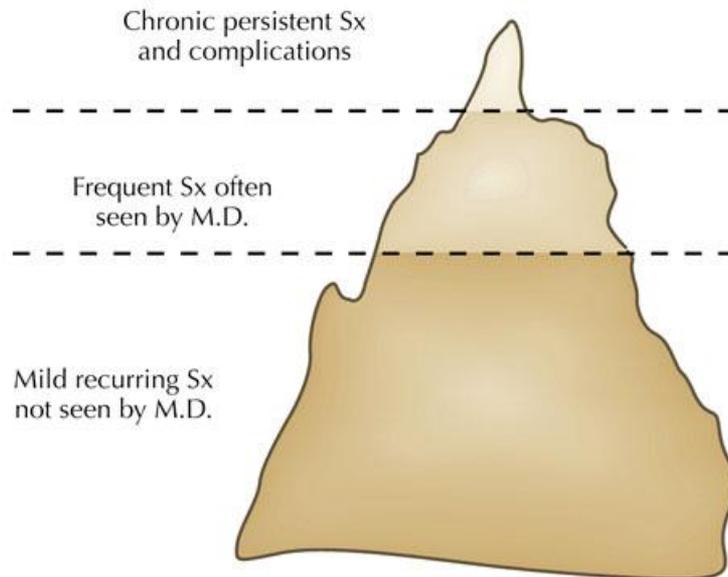
Busy doctor

Prevalence



Prevalence

ICEBERG View



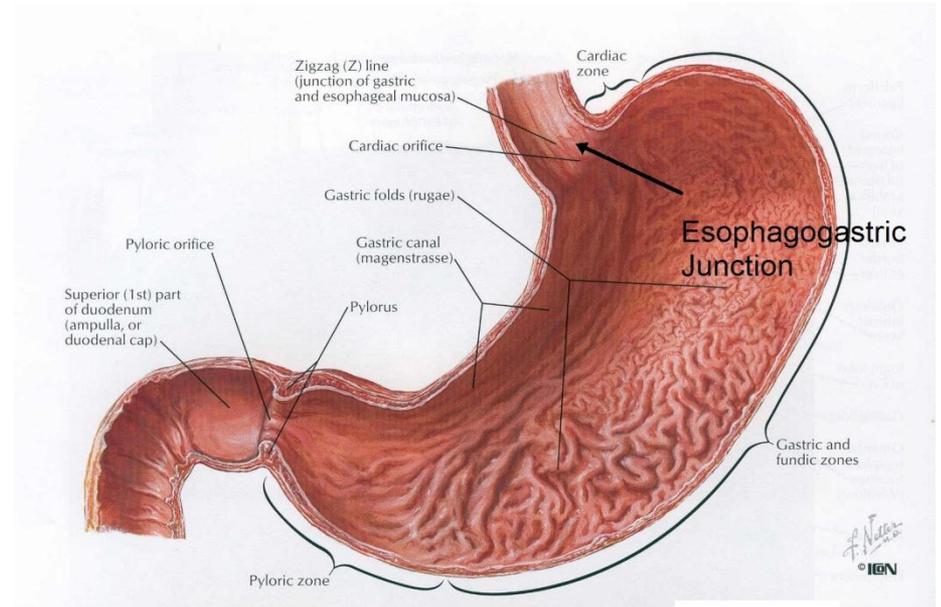
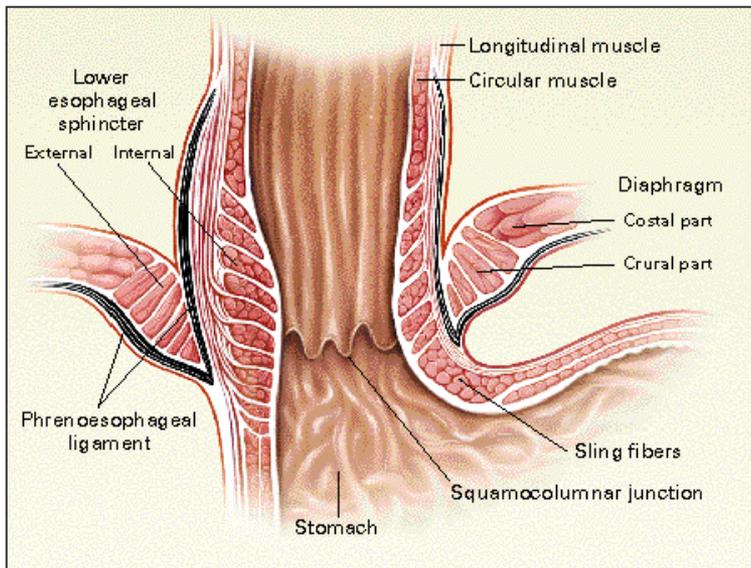
25% in Western Populations

7% Daily Severe Events

Studies show patients with Reflux Disease Lower Quality of Life than those with Chronic Heart Disease

\$9 Billion per annum to control disease in U.S.

The Oesophago-gastric Junction



Treatments Pharmacological

Proton Pump Inhibitor



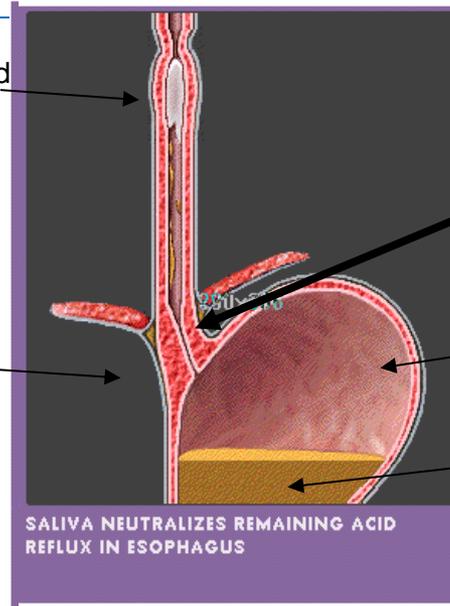
Insufficient Acid Clearance

Abnormal Inter-Abdominal Pressure

Dysfunction of The LES

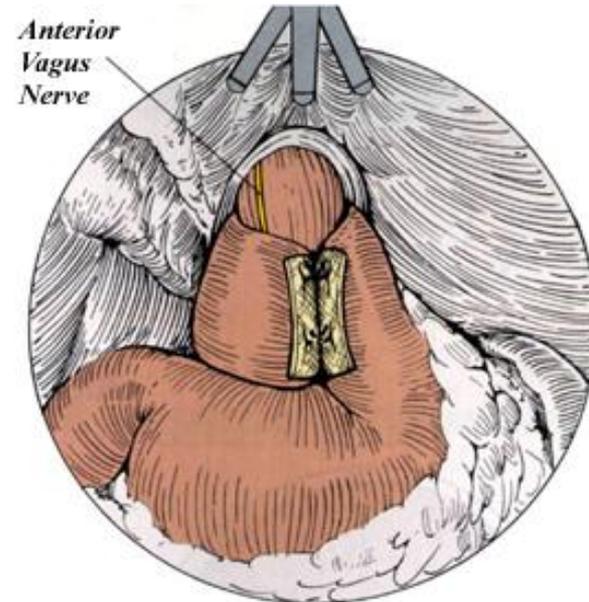
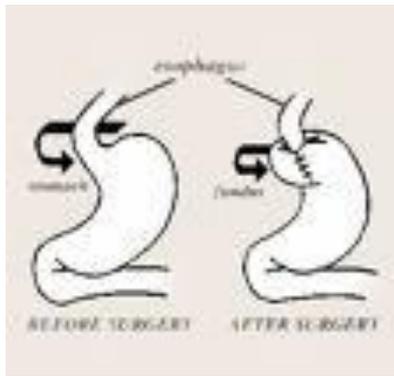
Over production of Acid

Delayed Gastric Emptying



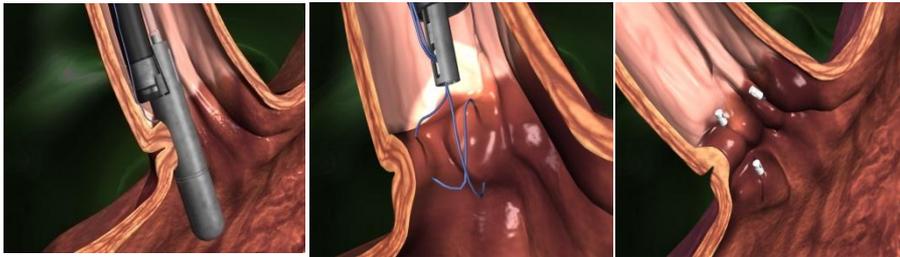
Treatments Surgical

Laparoscopic Nissen Fundoplication

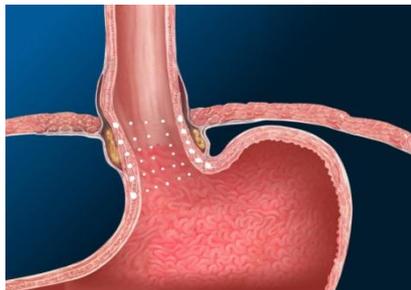


Treatments Endoscopic Therapy

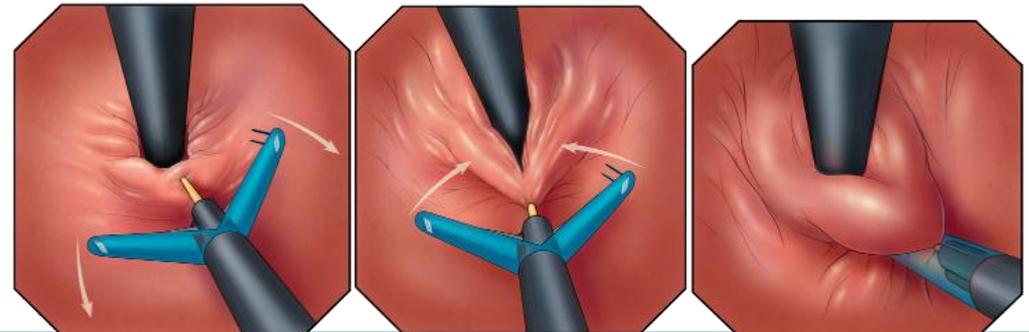
Endoscopic Suturing



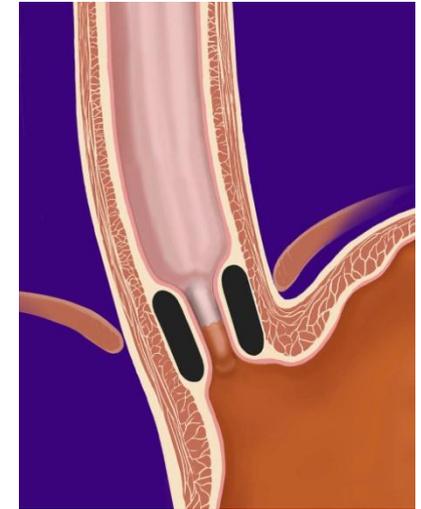
RF Delivery



Clip Insertion



Insertion of Prosthesis



Suturing the Oesophagogastric Junction Endoscopically



Endocinch 1 Year follow Up

OESOPHAGEAL DISEASE

Endocinch therapy for gastro-oesophageal reflux disease: a one year prospective follow up

Z Mahmood, B P McMahon, Q Arfin, P J Byrne, J V Reynolds, E M Murphy, D G Weir

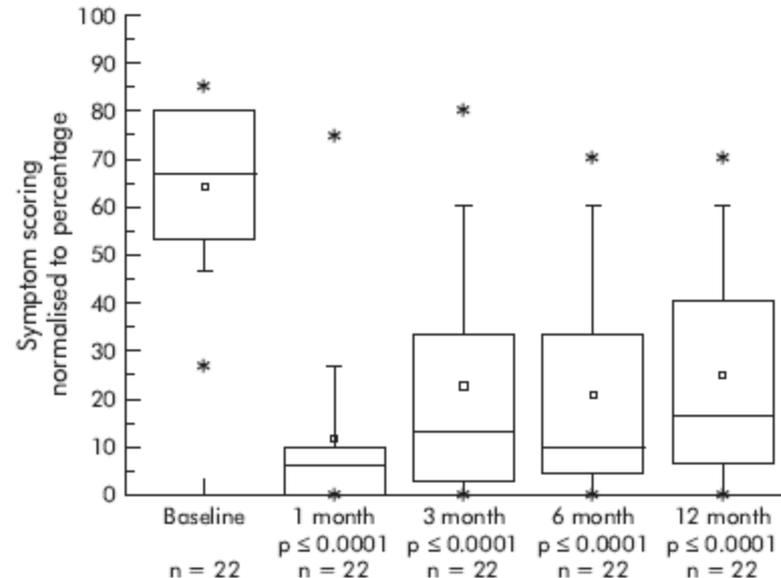
Gut 2003;52:34-39

Background: Gastro-oesophageal reflux disease (GORD) is, in the main, treated with either proton pump inhibitor (PPI) drugs or a Nissen fundoplication operation. Recently, BARD developed Endocinch, a device used to place sutures just below the oesophagogastric junction (OGJ) to treat GORD.

Aim: To evaluate the long term benefit of the Endocinch technique post procedure.

Patients: Twenty six patients with symptoms of GORD were performed. Four patients were lost to follow up.

Methods: Twenty two patients completed their one year follow up.



GUIDELINES CLINICAL PRACTICE

Asbjørn Mohr Drewes, Professor, MD, PhD, DMSc, Series Editor

Do we really understand the role of the oesophago-gastric junction in disease?

Barry P McMahon, Blair A Jobe, John E Pandolfino, Hans Gregersen

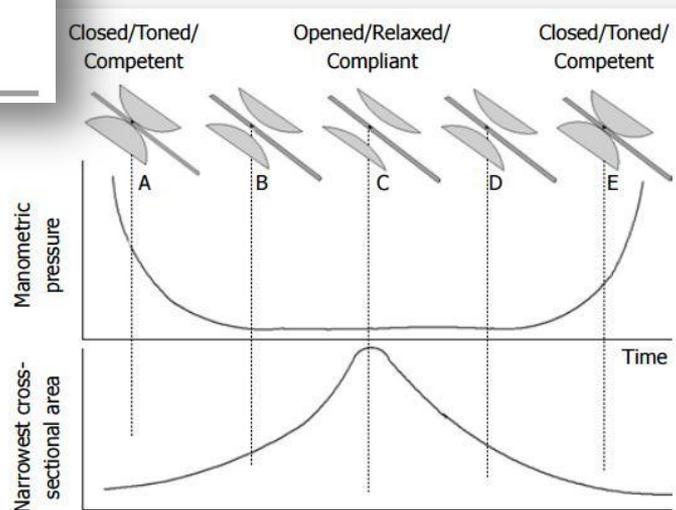
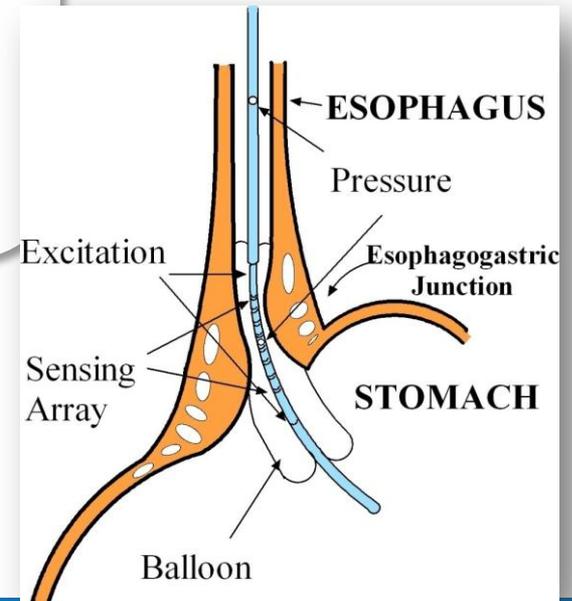
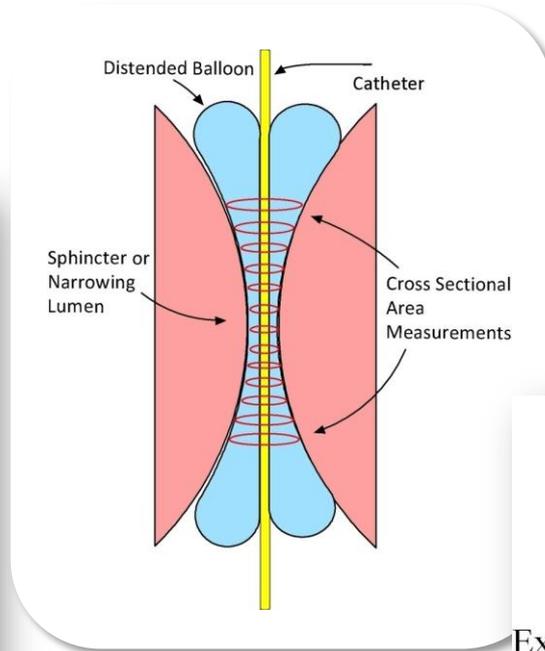
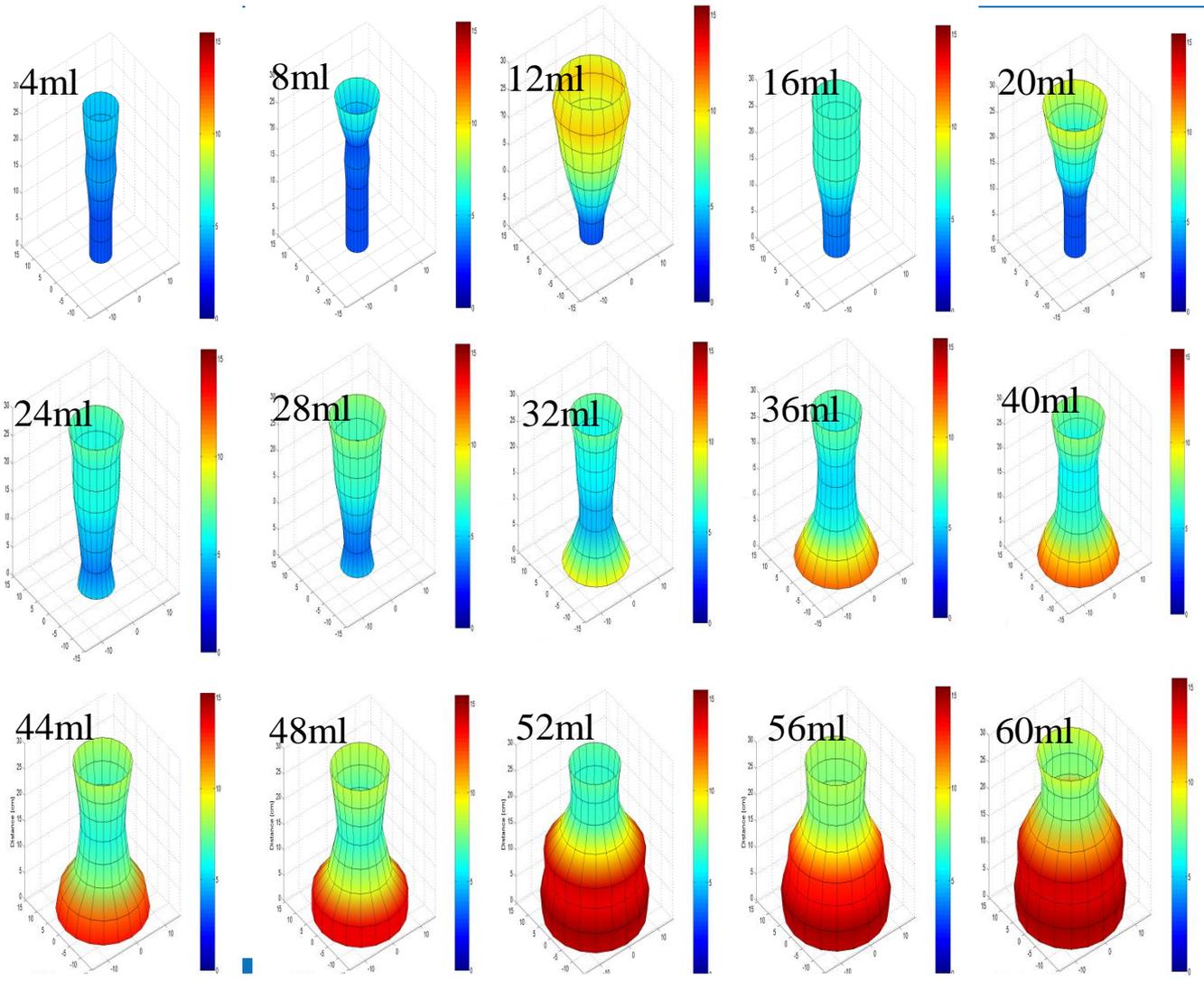


Figure 5 Diagram showing the difference between manometry and cross-sectional area (CSA) for measuring luminal changes in the oesophago-gastric junction during opening and closing. At point A where the junction is closed, there is a high pressure and a low CSA representing the toned sphincteric region. As the sphincter relaxes, very quickly the manometry catheter is no longer squeezed, and at point B the pressure is zero or very low. However, this opening is detected by an increase in CSA at B. At C the sphincter is fully relaxed; but, there is still no useful information from manometry despite the CSA increasing even further. The pressure does not start to rise again until the sphincter is fully closed and toned at E.

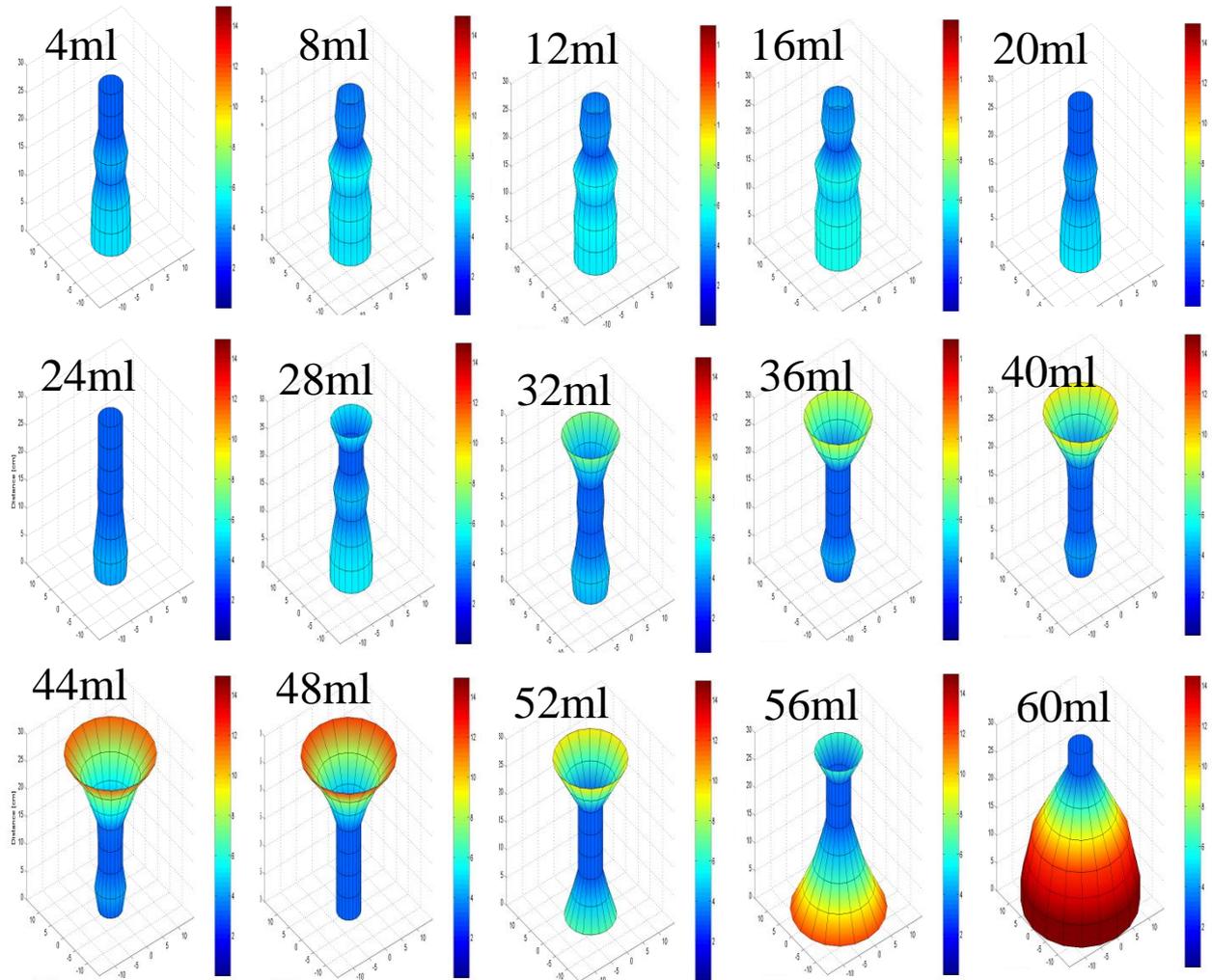
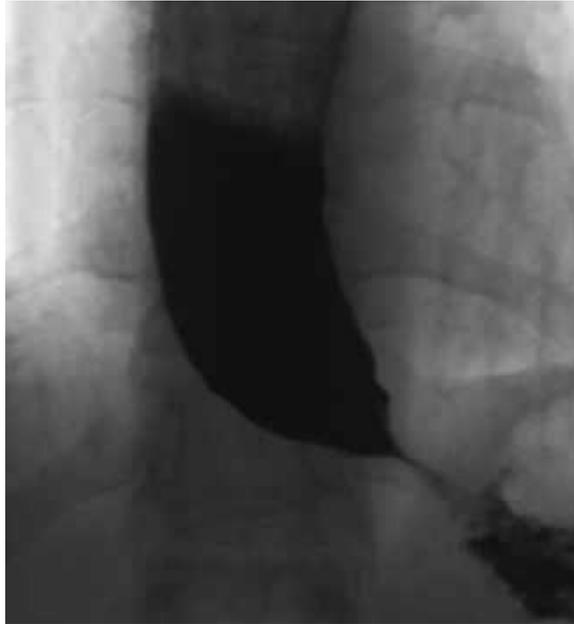
2003-2005 Work in Denmark



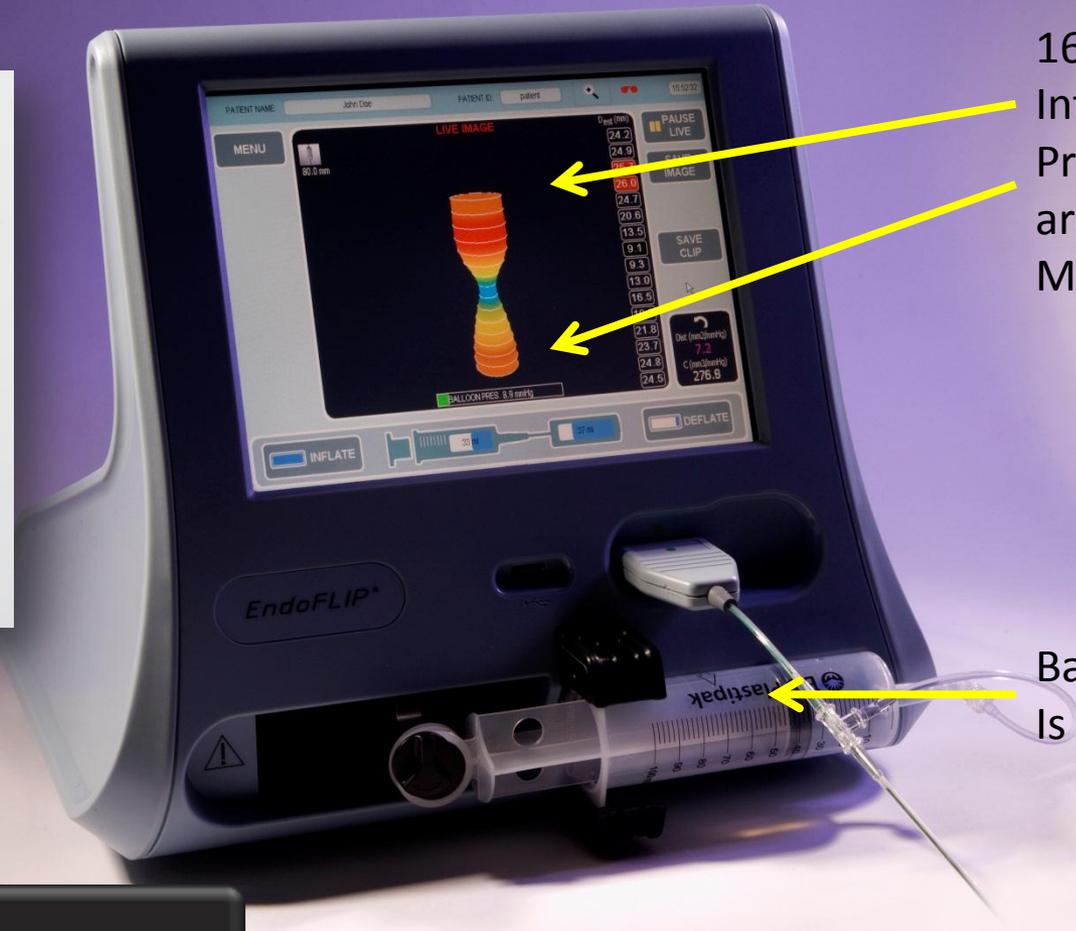
Geometric Reconstruction



Patient with Achalasia (Denmark)



t Up



Bag volume is controlled



The System ospon Ltd, Galway, Ireland

Measurement Intra-O

Surg Endosc (2011) 25:3109
DOI 10.1007/s00464-011-1611-7

VIDEO

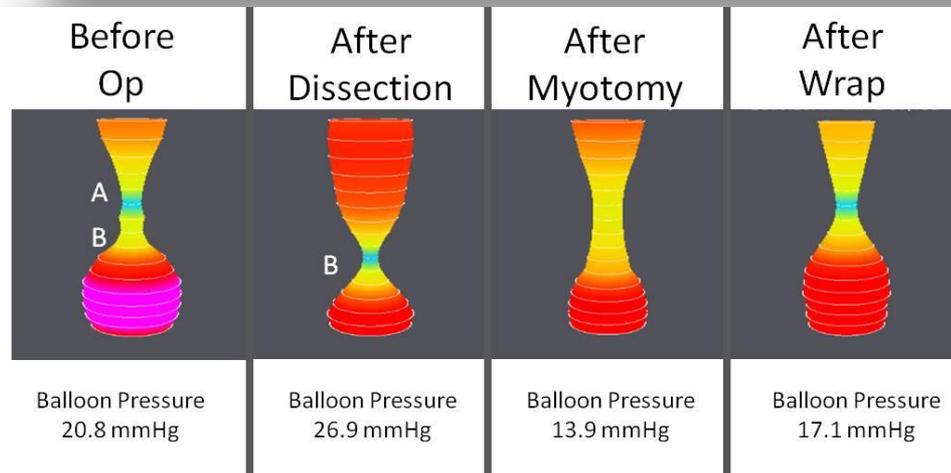


Improving functional esophageal surgery with a “smart” bougie: endoflip

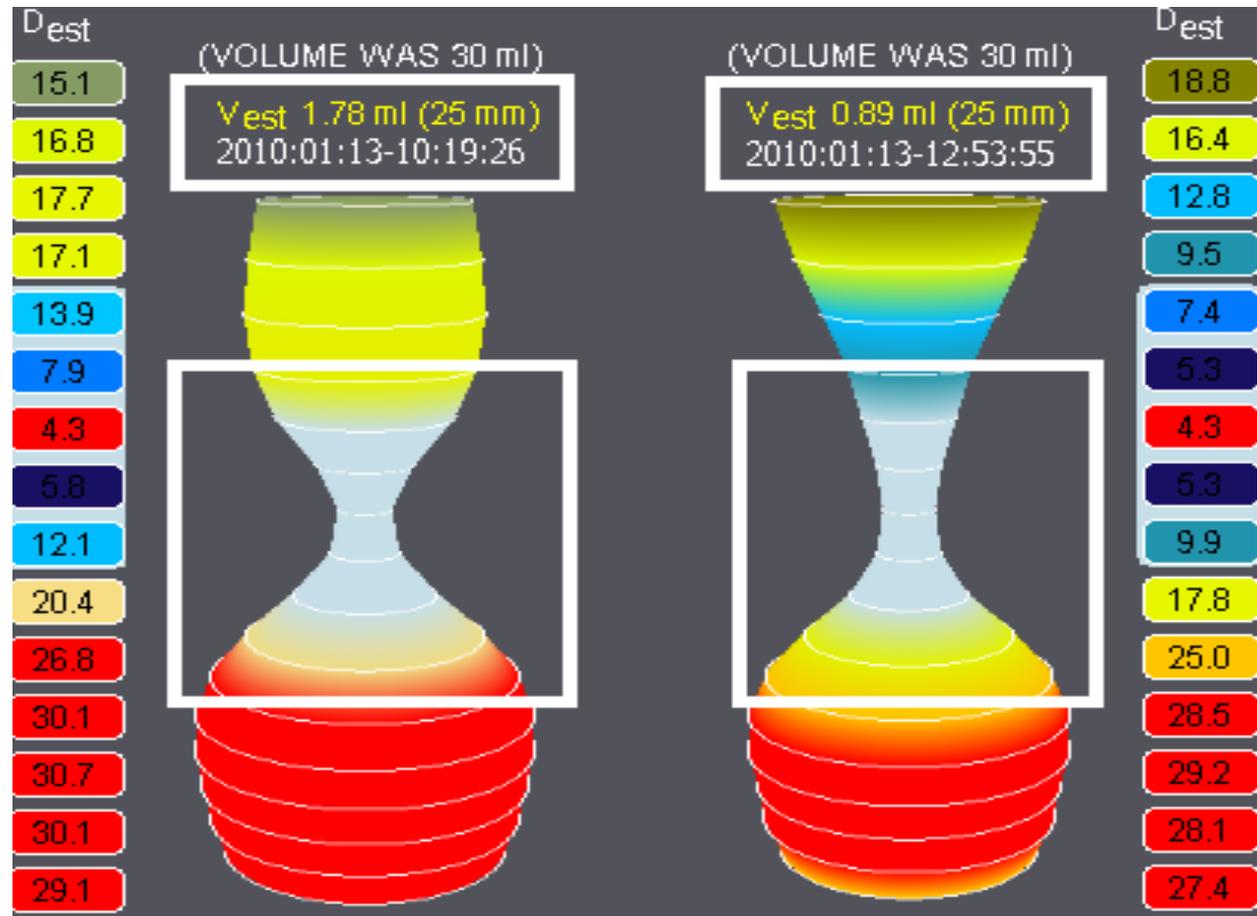
Silvana Perretta · Bernard Dallemagne ·
Barry McMahon · Jacopo D’Agostino ·
Jacques Marescaux

Smart bougie for calibration

An emerging physiology tool, the functional lumen imaging probe (Endoflip, Crospon Ltd.), combines measurements of esophagogastric junction (EGJ) resistance to distention and provides a geometrical reconstruction of the EGJ [84]. The Endoflip could be used to dynamically assess the configuration and quality of the fundoplication with respect to the EGJ, acting as a “smart bougie” evaluating laxity, orientation, and position of a properly constructed floppy Nissen fundoplication (Fig. 4).



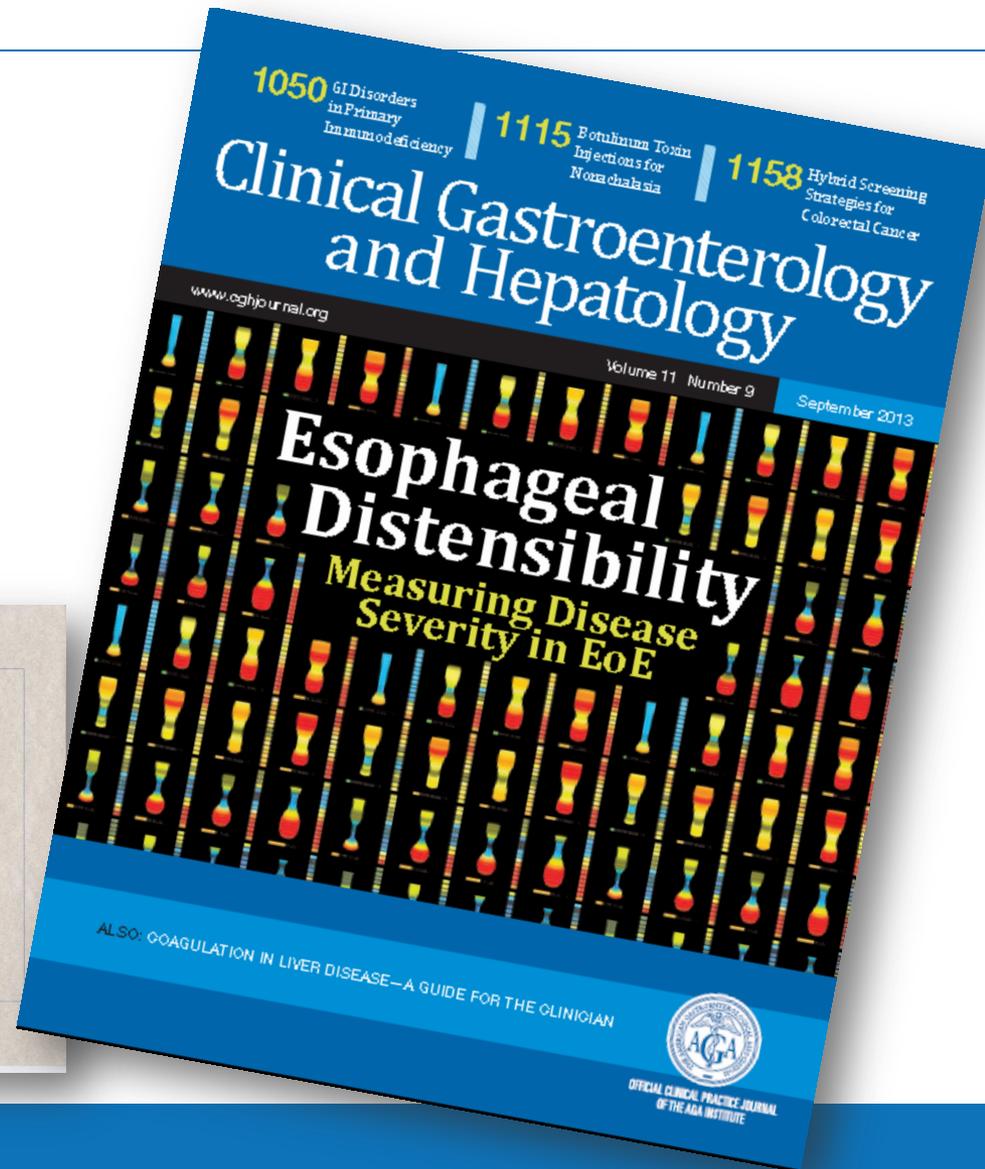
Pre & Post Lap Nissen



Successful Technology



Irish Medical
Devices Association



Research to Innovation

Normal Route



My Route



Innovation at the Hospital

European Institute of Innovation & Technology
HEALTH SUMMER SCHOOL
Presented by
**Tallaght Hospital,
The Innovation Academy,
School of Medicine TCD,
& Trinitas Ventures**

 European Institute of Innovation & Technology
 The EIT is a body of the European Union

**LIVE INNOVATION WORKSHOP
NOVEL CINCHING DEVICE FOR THE
ENDOSCOPIC TREATMENT FOR OBESITY**

1. Introduction and Welcome CEO/DECO (5mins)
2. Collaborative Innovation at the Frontline of Medicine - Dr. Barry McMahon (15 mins)
3. The Clinical Problem - Prof. Deirdre McNamara (15 Mins)
4. Applying a New Technology - Working Towards a Practical Solution - Dr. Jim Coleman (15 mins)
Break (15 mins)
5. LIVE TESTING OF PROTOTYPE (30-40 mins)
6. Q&A Session

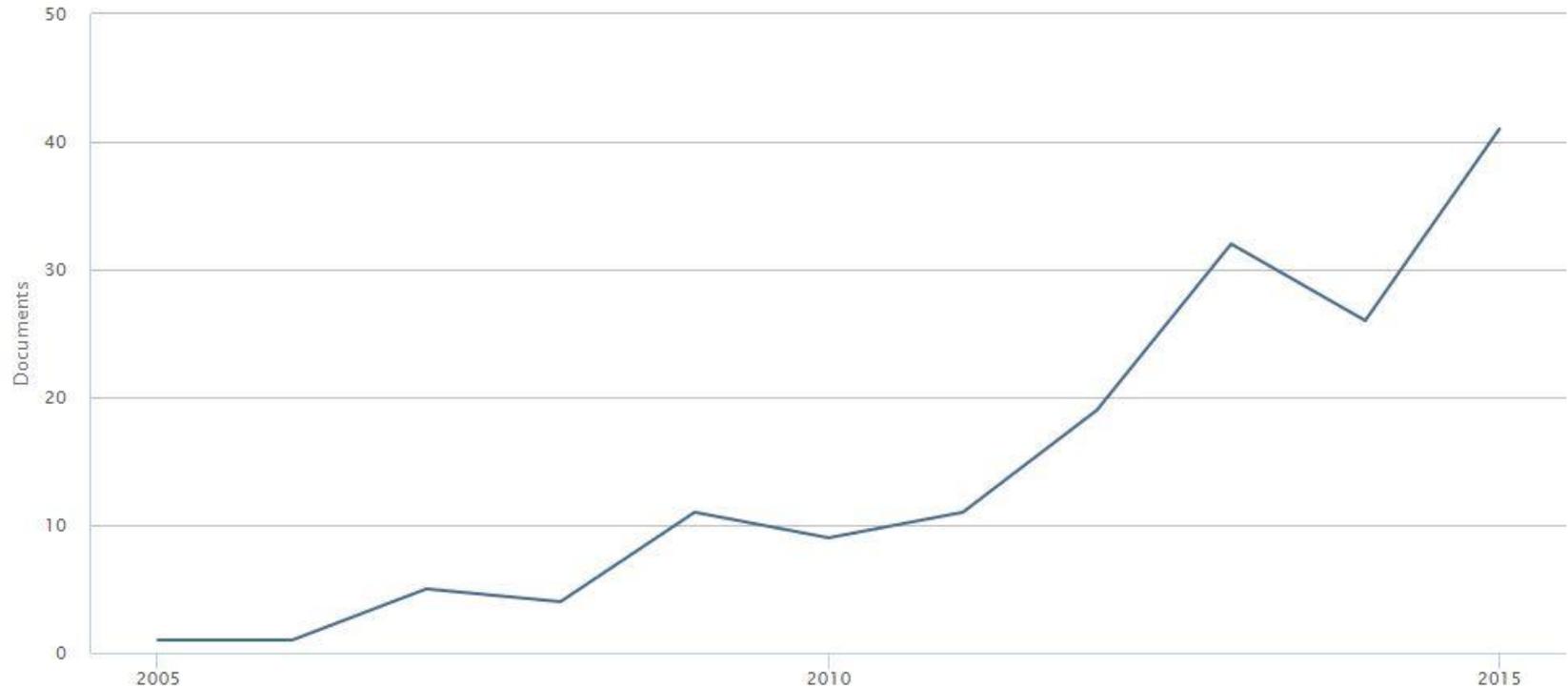
Wednesday 8th July 2pm to 4pm

Venue: Trinity Lecture Theatre, Trinity Centre for Health Sciences, Tallaght Hospital



Innovation to Research

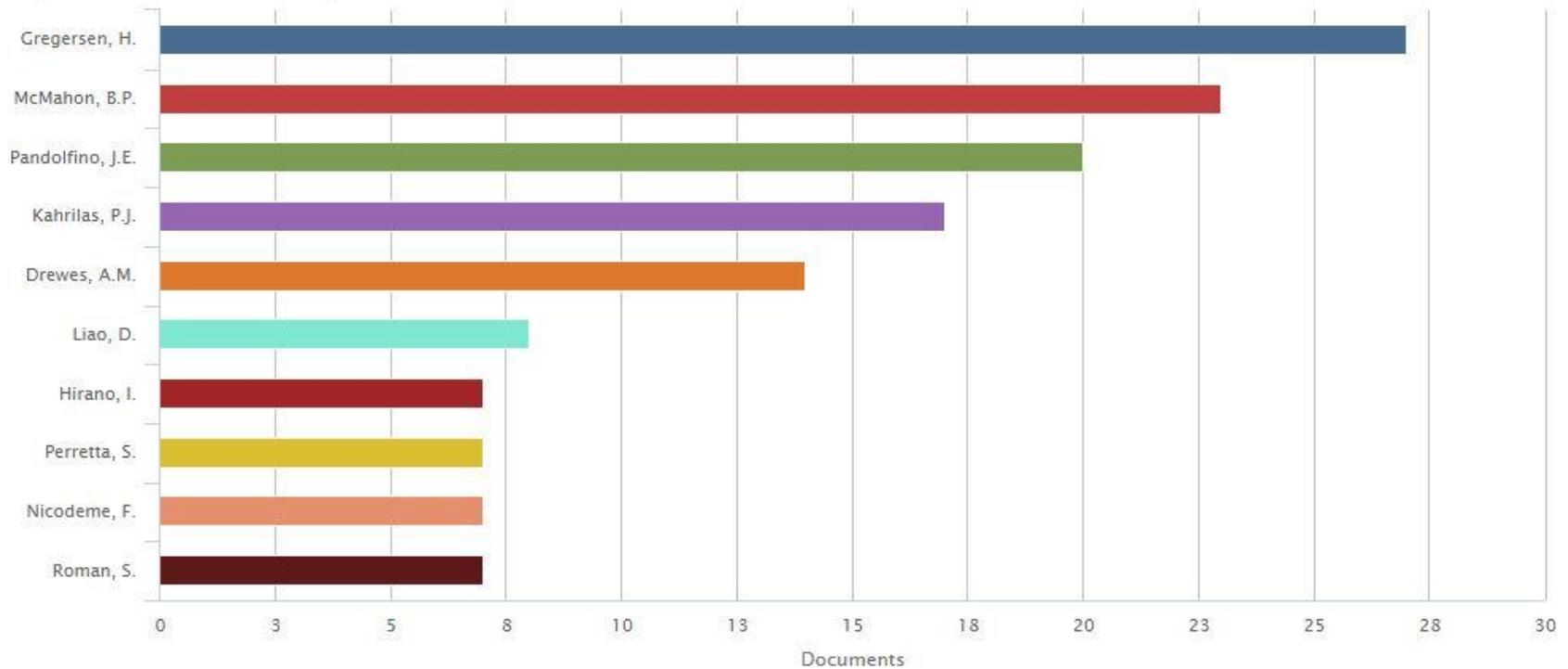
Documents by year



Innovation to Research

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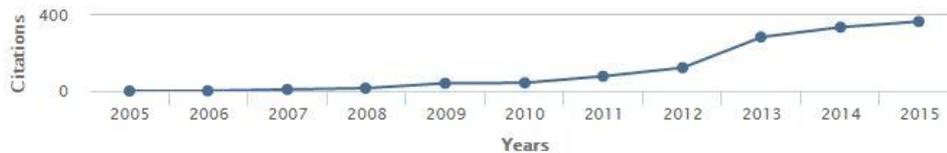


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Citations

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	Total	0	0	1	8	15	41	43	78	123	285	337	367	1298	0	1298
1	Mechanical properties of the esophagus in eosinophilic esoph...								12	17	28	34	14	105		105
2	Efficacy of treatment for patients with achalasia depends on...									3	28	16	18	65		65
3	Esophagogastric junction distensibility assessed with an end...								6	10	15	13	13	57		57
4	The functional lumen imaging probe (FLIP) for evaluation of ...				3	3	7	5	5	5	11	9	5	53		53
5	Opioid-induced bowel dysfunction: Pathophysiology and manage...										19	17	9	45		45
6	An alginate-antacid formulation (Gaviscon Double Action Liqu...									6	14	12	10	42		42
7	Esophageal Distensibility as a Measure of Disease Severity i...										2	23	14	39		39
8	A new technique for evaluating sphincter function in viscera...			1	3	3	5	4	1	4	5	5	7	38		38
9	A double-blind sham-controlled study of the effect of radiof...										1	10	14	34		34
10	Achalasia											9	24	33		33



INNOVATION ACADEMY



STUDY MAKES A SCHOLAR
ACTION MAKES AN ENTREPRENEUR

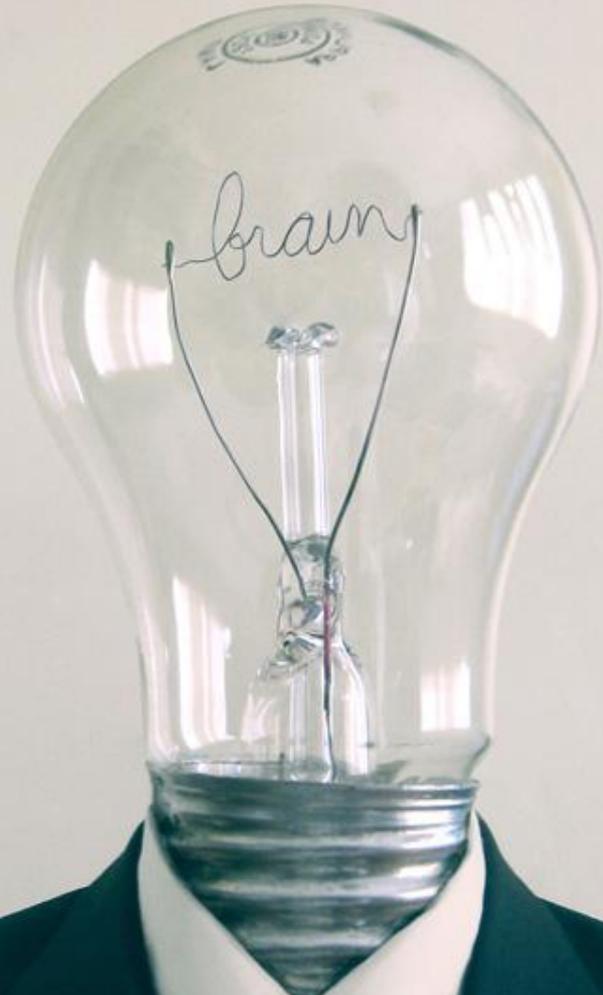
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Post-graduate Certificate in Innovation and Entrepreneurship

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Where ideas take shape



THE INNOVATION ACADEMY

Where ideas take shape



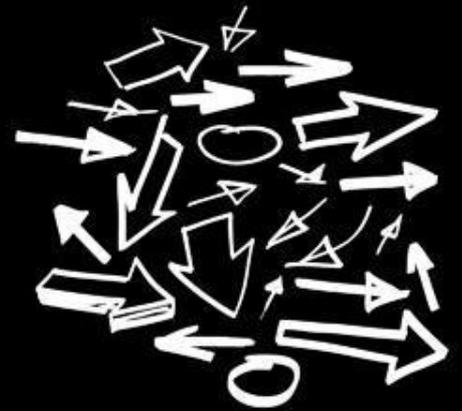
MISSION::

TO DEVELOP A **NEW KIND OF PHD GRADUATE**,
EXPERT IN THEIR DISCIPLINE, WITH A THOROUGH
UNDERSTANDING OF HOW **INNOVATION** CAN
CONVERT **KNOWLEDGE AND IDEAS**
INTO **PRODUCTS, SERVICES AND POLICIES** FOR
ECONOMIC AND SOCIAL AND CULTURAL BENEFIT.

IDENTIFY VALUE

COMMERCIAL // SOCIAL // CULTURAL
ECONOMIC // EDUCATIONAL // SOCIETAL

VALUE UNUSED = WASTE?





INNOVATION IN THE **BROADEST SENSE**

Engineering, Mathematics and Science - Health Sciences - Arts, Humanities and Social Sciences



POSTGRADUATE CERTIFICATE INNOVATION AND ENTREPRENEURSHIP

CORE (PREREQUISITE)

- CREATIVE THINKING AND INNOVATION (10 ECTS)
- OPPORTUNITY GENERATION AND RECOGNITION (5 ECTS)

SPECIALISED (CHOOSE 3 OF 4)

- CREATIVE CAPITAL (5 ECTS)
- PLANNING YOUR NEW VENTURE (5 ECTS)
- PROTECTING OR EXPLOITING YOUR IDEA (5 ECTS)
- LEADERSHIP (5 ECTS)



Innovation Academy Engagement – Since 2012



Some Points in Conclusion

- **If you have an idea- try to do something about it**
- **Don't forget to protect your idea**
- **TR&I are there to help – use them**
- **You need to have a realistic expectation from a potential commercial idea.**
- **There can be many benefits you are not aware of.**
- **Try to create a network of people you know outside your research group**
- **You will be surprised how willing others will be to help.**



Trinity College Dublin

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

Thank You

