

A career in research?

Steve Halligan
Professor of Radiology
UCL





*Royal College of Radiologists
Röntgen Professor Lecture 2001*

Radiological Research: Cooking the books or a recipe for success?

**Dr Steve Halligan
Consultant Radiologist,
Intestinal Imaging Centre
St. Marks Hospital, UK**



EXAMINATION REQUESTED

Defaecating proctogram

PATIENT TRANSPORT

WALKING

CHAIR

BED

MOBILE/THEATRE

AMBULANCE

DOCTOR'S SIGNATURE



DATE

17/4/02

BLEEP NO.

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IS EXAMINATION PART OF A RESEARCH PROJECT?

YES

NO

LMP DATE OR

IGNORE LMP (SIGNATURE)

RELEVANT CLINICAL INFORMATION

Organ were defaecating

I have the best job in the world

why?

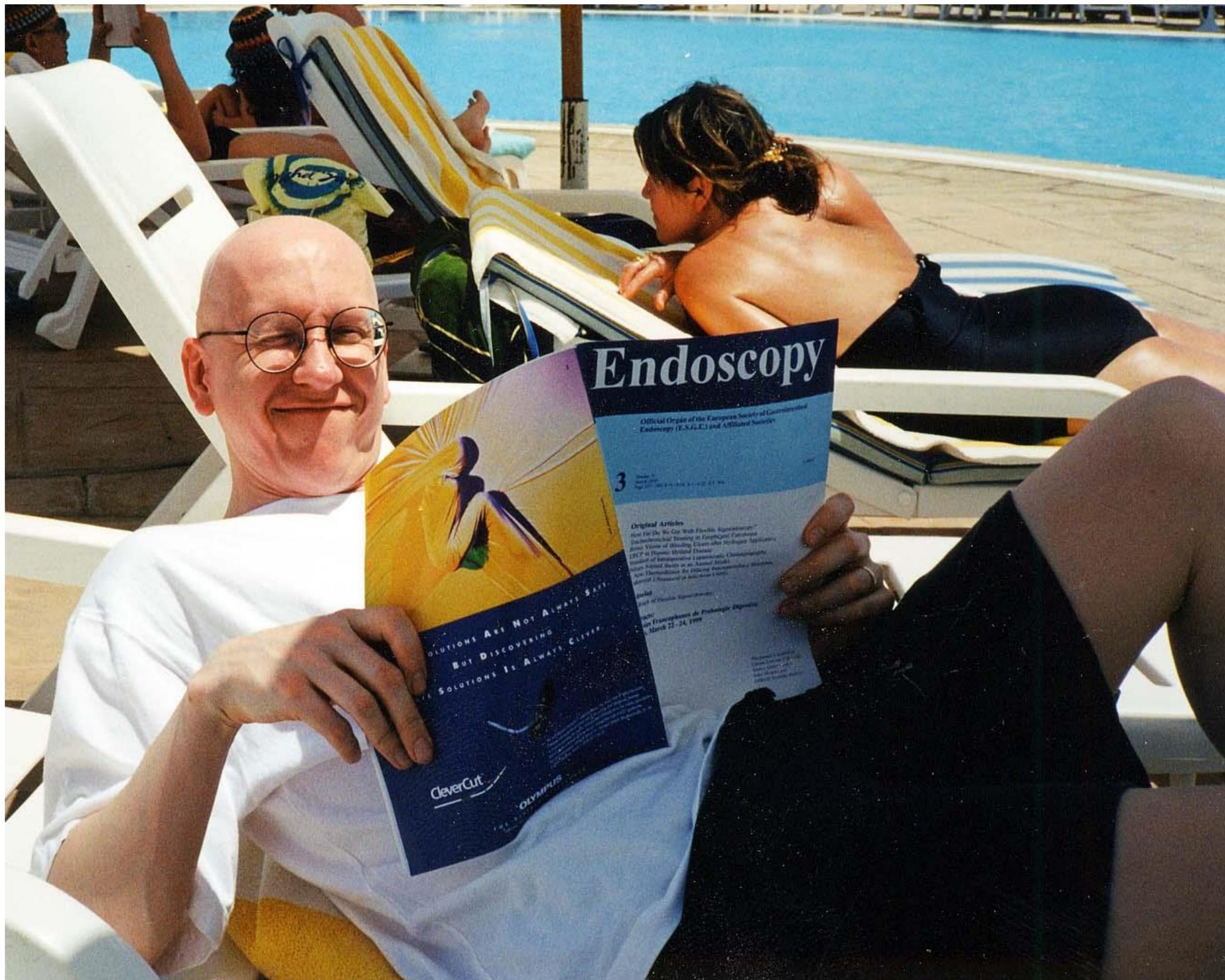
Pros

1. 50% of my time is *not* spent doing GP US
2. Huge personal autonomy
3. Intellectually stimulating
4. Key opinion leader
5. Personally satisfying on multiple levels
6. Well paid!

Cons

1. Busy, busy, busy!
2. Not a 9 to 5 job (*because it's such good fun*)
3. Hair loss

1. Why bother to do research
2. What personal attributes do you need, how to go about it etc.



Travel (avoids clinical work)



Fame



Fortune



People are nice to you



Gravy trains

COLONY

F 3000

COLONY





To avoid boredom & routine



Personal satisfaction



Medical & political influence

Computed tomographic colonography versus barium enema for diagnosis of colorectal cancer or large polyps in symptomatic patients (SIGGAR): a multicentre randomised trial

Steve Halligan, Kate Wooldrage, Edward Dadswell, Ines Kralj-Hans, Christian von Wagner, Rob Edwards, Guiqing Yao, Clive Kay, David Burling, Omar Faiz, Julian Teare, Richard J Lilford, Dion Morton, Jane Wardle, Wendy Atkin, for the SIGGAR investigators*

Summary

Background Barium enema (BE) is widely available for diagnosis of colorectal cancer despite concerns about its accuracy and acceptability. Computed tomographic colonography (CTC) might be a more sensitive and acceptable alternative. We aimed to compare CTC and BE for diagnosis of colorectal cancer or large polyps in symptomatic patients in clinical practice.

Methods This pragmatic multicentre randomised trial recruited patients with symptoms suggestive of colorectal cancer from 21 UK hospitals. Eligible patients were aged 55 years or older and regarded by their referring clinician as suitable for radiological investigation of the colon. Patients were randomly assigned (2:1) to BE or CTC by computer-generated random numbers, in blocks of six, stratified by trial centre and sex. We analysed the primary outcome—diagnosis of colorectal cancer or large (≥ 10 mm) polyps—by intention to treat. The trial is an International Standard Randomised Controlled Trial, number 95152621.

Findings 3838 patients were randomly assigned to receive either BE (n=2553) or CTC (n=1285). 34 patients withdrew consent, leaving for analysis 2527 assigned to BE and 1277 assigned to CTC. The detection rate of colorectal cancer or large polyps was significantly higher in patients assigned to CTC than in those assigned to BE (93 [7.3%] of 1277 vs 141 [5.6%] of 2527, relative risk 1.31, 95% CI 1.01–1.68; $p=0.0390$). CTC missed three of 45 colorectal cancers and BE missed 12 of 85. The rate of additional colonic investigation was higher after CTC than after BE (283 [23.5%] of 1206 CTC patients had additional investigation vs 422 [18.3%] of 2300 BE patients; $p=0.0003$), due mainly to a higher polyp detection rate. Serious adverse events were rare.

Interpretation CTC is a more sensitive test than BE. Our results suggest that CTC should be the preferred radiological test for patients with symptoms suggestive of colorectal cancer.

Funding NIHR Health Technology Assessment Programme, NIHR Biomedical Research Centres funding scheme, Cancer Research UK, EPSRC Multidisciplinary Assessment of Technology Centre for Healthcare, and NIHR Collaborations for Leadership in Applied Health Research and Care.



Computed tomographic colonography versus colonoscopy for investigation of patients with symptoms suggestive of colorectal cancer (SIGGAR): a multicentre randomised trial

Wendy Atkin, Edward Dadswell, Kate Wooldrage, Ines Kralj-Hans, Christian von Wagner, Rob Edwards, Guiqing Yao, Clive Kay, David Burling, Omar Faiz, Julian Teare, Richard J Lilford, Dion Morton, Jane Wardle, Steve Halligan, for the SIGGAR investigators*

Summary

Background Colonoscopy is the gold-standard test for investigation of symptoms suggestive of colorectal cancer;

computed tomographic colonography (CTC) is an alternative, less invasive test. However, additional investigation after CTC is needed to confirm suspected colonic lesions, and this is an important factor in establishing the feasibility of CTC as an alternative to colonoscopy. We aimed to compare rates of additional colonic investigation after CTC or colonoscopy for detection of colorectal cancer or large (≥ 10 mm) polyps in symptomatic patients in clinical practice.

Methods This pragmatic multicentre randomised trial recruited patients with symptoms suggestive of colorectal cancer from 21 UK hospitals. Eligible patients were aged 55 years or older and regarded by their referring clinician as suitable for colonoscopy. Patients were randomly assigned (2:1) to colonoscopy or CTC by computer-generated random numbers, in blocks of six, stratified by trial centre and sex. We analysed the primary outcome—the rate of additional colonic investigation—by intention to treat. The trial is an International Standard Randomised Controlled Trial, number 95152621.

Findings 1610 patients were randomly assigned to receive either colonoscopy (n=1072) or CTC (n=538). 30 patients withdrew consent, leaving for analysis 1047 assigned to colonoscopy and 533 assigned to CTC. 160 (30.0%) patients in the CTC group had additional colonic investigation compared with 86 (8.2%) in the colonoscopy group (relative risk 3.65, 95% CI 2.87–4.65; $p<0.0001$). Almost half the referrals after CTC were for small (<10 mm) polyps or clinical uncertainty, with low predictive value for large polyps or cancer. Detection rates of colorectal cancer or large polyps in the trial cohort were 11% for both procedures. CTC missed 1 of 29 colorectal cancers and colonoscopy missed none (of 55). Serious adverse events were rare.

Interpretation Guidelines are needed to reduce the referral rate after CTC. For most patients, however, CTC provides a similarly sensitive, less invasive alternative to colonoscopy.

Funding NIHR Health Technology Assessment Programme, NIHR Biomedical Research Centres funding scheme, Cancer Research UK, EPSRC Multidisciplinary Assessment of Technology Centre for Healthcare, and NIHR Collaborations for Leadership in Applied Health Research and Care.

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See Comment page 1161

See Articles page 1194

*The SIGGAR investigators are listed at the end of the paper

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Effect of MRI on clinical outcome of recurrent fistula-in-ano

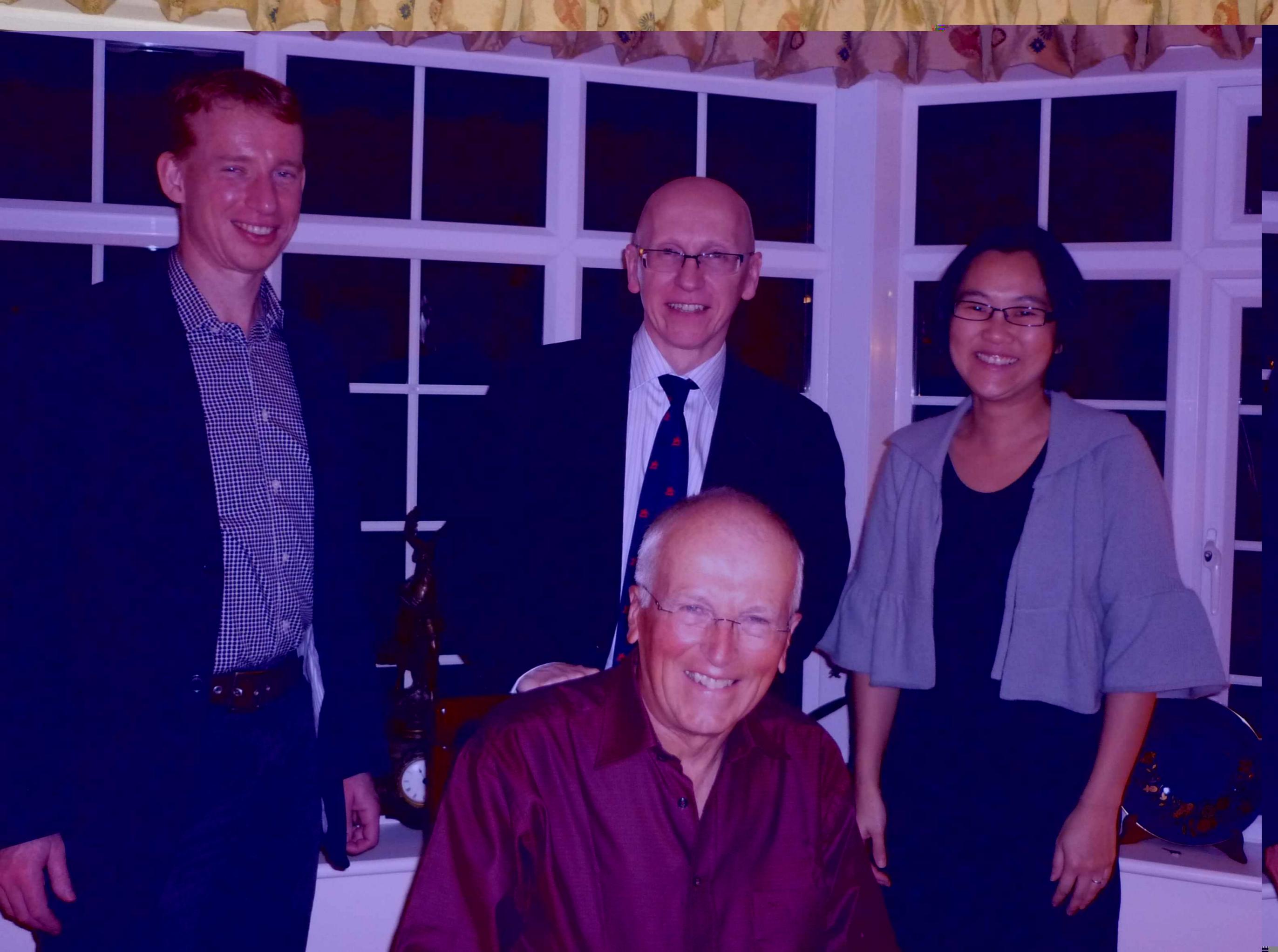
Gordon Buchanan, Steve Halligan, Andrew Williams, C Richard G Cohen, Danilo Tarroni, Robin K S Phillips, Clive I Bartram

Recurrent fistula-in-ano is usually due to sepsis missed at surgery, which can be identified by MRI. We aimed to establish the therapeutic effect of MRI in patients with fistula-in-ano. We did MRI in 71 patients with recurrent fistula, with further surgery done at the discretion of the surgeon. Surgery and MRI agreed in 40 patients, five (13%) of whom had further recurrence, compared with 16 (52%) of 31 in whom surgery and MRI disagreed ($p=0.0005$). Further recurrence in all 16 was at the site predicted by MRI. For surgeons who always acted on MRI, further recurrences arose in four of 25 (16%) operations versus eight of 14 (57%) operations for those who ignored imaging ($p=0.008$). Surgery guided by MRI reduces further recurrence of fistula-in-ano by 75% and should be done in all patients with recurrent fistula.

Lancet 2002; 360: 1661–62

helps to guide surgery,⁴ but assessment of outcome after imaging has been restricted to simple fistulas, for which MRI is unlikely to assist.⁵ Instead, MRI ought to be most beneficial in patients with recurrent disease because occult sepsis is most likely to arise in this type of disease. We aimed to ascertain the therapeutic effect of MRI in patients with recurrent fistula and to establish any effect on outcome.

After we obtained ethics approval, consecutive patients with recurrent fistula who gave informed consent were recruited. We assessed patients before EUA with a 1.0-T static magnet. We obtained axial and coronal short tau inversion recovery sequences aligned to the anal canal: repetition time/echo time 1500/15; field of view 375 mm; 256×256 matrix; 4 mm thick; 1 mm gap. We noted the course of the primary track and any associated extensions on a fistula classification sheet, which we sealed in an envelope





University College London Hospitals NHS
NHS Foundation Trust

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Contribution to World-Class Research Award

This certificate is awarded to
Professor Steve Halligan and the Centre of Medical Imaging
as winner of the Contribution to World-Class Research Award

Paul
Chairman 27th February 2024

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Safety Kindness Teamwork Improving

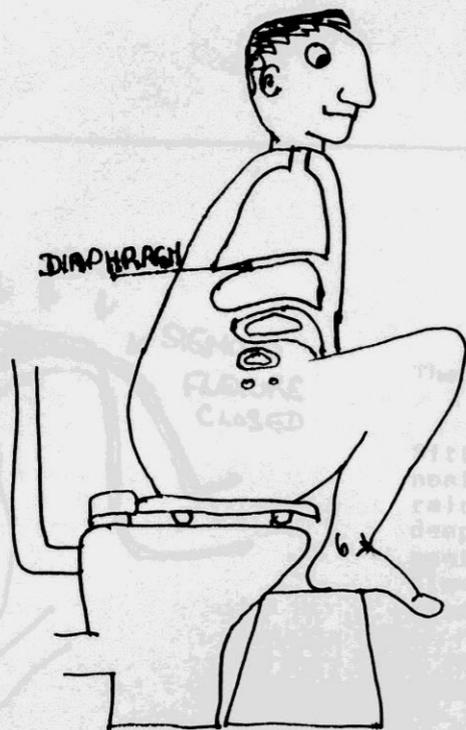


FIG 5

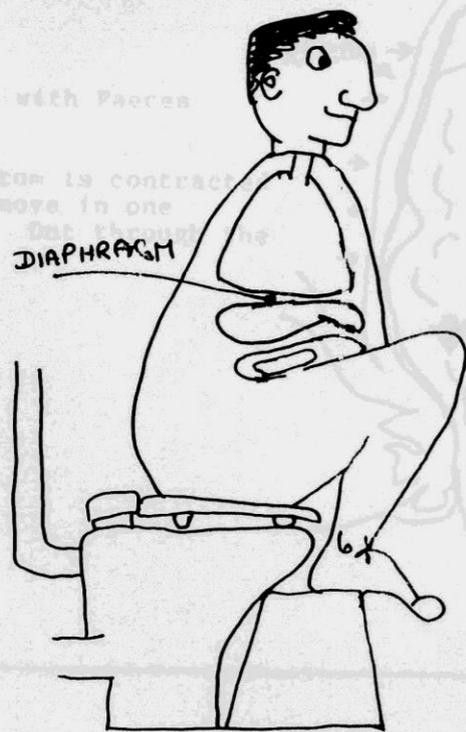
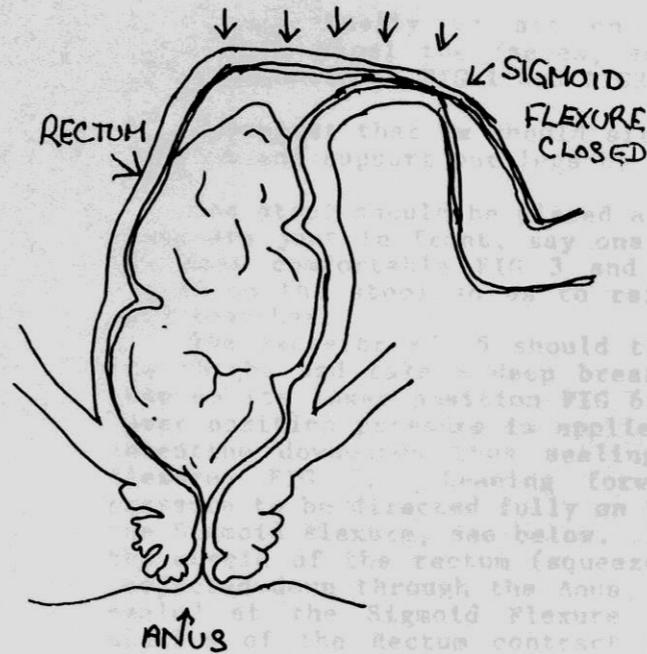


FIG 6

FIG 7



The Rectum with Faeces

As the Rectum is contracted the Faeces move in one direction. Out through the Anus.

FIG 8

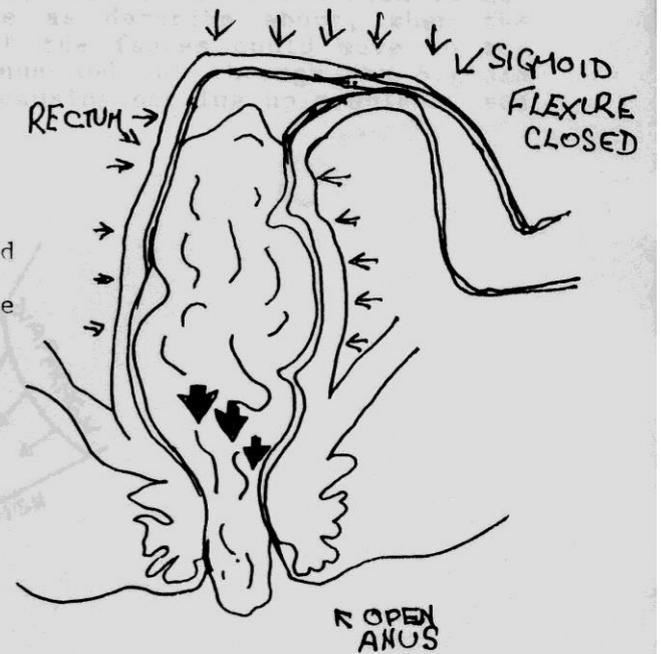


FIG 7

The Rectum with Faeces

Sitting in an upright position with knees raised and together, deep breath leaning gently forwards the Sigmoid Flexure is closed.

OK, I'm convinced!
What do I need & how
do I go about it?



“Potential researchers must be taught by example because the necessary skills cannot be learnt overnight or from a ‘how-to-do-it’ lecture. Rather, the key is the identification and fostering of an effective mentor”

“If a potentially outstanding trainee cannot find an effective & experienced researcher to guide them, perhaps collaborating with a Consultant little more experienced than themselves, then their project is doomed, irrespective of its merits. I have seen more radiological research fail because of this than for any other reason”

A guide to radiological research

Board of the Faculty of Clinical Radiology 1997

- Radiological research during structured training
- Doing an MD
- External funding for your research
- Obtaining industrial support for your research
- Fund-raising
- Writing a grant application
- Obtaining ethical committee approval
- Project planning
- Statistics
- Presenting your research at meetings
- Preparing your research for publication

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Research 'Recipe Book'

From August 2012, radiology trainees will be required to undertake a research activity as part of their training. Research is recognised to be an important component of the curriculum. The College has produced a 'Research Recipe Book', designed to be of assistance to trainees undertaking their research projects. This resource will help guide a trainee through a research project from its inception to its conclusion. The individual guides provide useful information with references to further details where required. Trainees are not expected to undertake a whole project from start to finish but to participate in an existing project or to develop a hypothetical project. The aim of this practical piece of work is to aid a deep understanding of a particular aspect of research methodology.

- [Performing a Literature Search](#) (written by Dr Elspeth Whitby)
- [Developing a Research Question](#) (written by Dr Adam Waldman)
- [Writing a Research Protocol](#) (written by Professor Stuart Taylor)
- [Submitting an Ethics Application](#) (written by Professor David Lomas)
- [Analysing a Data Set](#) (written by Dr Declan O'Regan)
- [Undertaking a Meta-Analysis](#) (written by Dr Julie Cox)

With thanks to the Academic Committee of the RCR for the production of these guides.

- The art & some practical aspects of abstract writing
 - *Redman HC. Radiology 1986;158:270-71*
- An authors guide to the guidelines for authors
 - *Whalen E. AJR 1989;152:195-98*
- Manuscript preparation: Advice to first-time authors
 - *Berk RN. AJR 1992;158:203-8*
- Techniques for ensuring that your next paper is quite unsuitable for publication
 - *Home PD. JRCPLon 1988;22:48-50*

Bridging the gap between basic & higher surgical training: the research option.

A Bayat. BMJ classified, 2 June 2001

Advantages of setting up your own research project

- ‘exciting to set everything up’
- ‘applying to prestigious organisations’ (MRC, Wellcome)
- ‘demonstrates confidence’
- *i.e. there are no advantages!*

“Doing some research”

David Pencheon. Assistant Director of R & D, NHS Executive

BMJ classified April 1999

- “*Training in research skills is poor* – to be able to develop good research skills without actually being taught seems, for many, to be perfectly reasonable”
- “Do research only if you want to”
- “Reluctant research is *invariably* bad research”
- “Good research is done by people with skills in their head & fire in their belly – you can no more require people to do good research than you can require them to have a hobby”
- **“Publication is success”**

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- [Quantifying public preferences for different bowel preparation options prior to screening CT colonography: a discrete choice experiment.](#)
 1. Ghanouni A, **Halligan S**, Taylor SA, Boone D, Plumb A, Stoffel S, Morris S, Yao GL, Zhu S, Lilford R, Wardle J, von Wagner C.
 BMJ Open. 2014 Apr 3;4(4):e004327. doi: 10.1136/bmjopen-2013-004327.
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- [Towards a framework for analysis of eye-tracking studies in the three dimensional environment: a study of visual search by experienced readers of endoluminal CT colonography.](#)
 2. Helbren E, **Halligan S**, Phillips P, Boone D, Fanshawe TR, Taylor SA, Manning D, Gale A, Altman DG, Mallett S.
 Br J Radiol. 2014 May;87(1037):20130614. doi: 10.1259/bjr.20130614. Epub 2014 Feb 20.
 PMID: 24689842 [PubMed - in process]
[Related citations](#)
- [Implementation of a new CT colonography service: 5 Year experience.](#)
 3. Lung PF, Burling D, Kallarackel L, Muckian J, Ilangovan R, Gupta A, Marshall M, Shorvon P, **Halligan S**, Bhatnagar G, Bassett P, Taylor SA.
 Clin Radiol. 2014 Jun;69(6):597-605. doi: 10.1016/j.crad.2014.01.007. Epub 2014 Feb 28.
 PMID: 24589446 [PubMed - in process]
[Related citations](#)
- [Determinants of suicide and accidental or violent death in the Australian HIV Observational Database.](#)
 4. McManus H, Petoumenos K, Franic T, Kelly MD, Watson J, O'Connor CC, Jeanes M, Hoy J, Cooper DA, Law MG; Australian HIV Observational Database.
 PLoS One. 2014 Feb 19;9(2):e89089. doi: 10.1371/journal.pone.0089089. eCollection 2014.
 PMID: 24586519 [PubMed - in process] **Free PMC Article**
[Related citations](#)
- [Sensitivity and specificity of CT colonography for the detection of colonic neoplasia after positive faecal occult blood testing: systematic review and meta-analysis.](#)
 5. Plumb AA, **Halligan S**, Pendsé DA, Taylor SA, Mallett S.
 Eur Radiol. 2014 Feb 12. [Epub ahead of print]
 PMID: 24519111 [PubMed - as supplied by publisher]
[Related citations](#)
- [Multifunctional imaging signature for V-KI-RAS2 Kirsten rat sarcoma viral oncogene homolog \(KRAS\) mutations in colorectal cancer.](#)
 6. Miles KA, Ganeshan B, Rodriguez-Justo M, Goh VJ, Ziauddin Z, Engledow A, Meagher M, Endozo R, Taylor SA, **Halligan S**, Ell PJ, Groves AM.
 J Nucl Med. 2014 Mar;55(3):386-91. doi: 10.2967/jnumed.113.120485. Epub 2014 Feb 10.
 PMID: 24516257 [PubMed - indexed for MEDLINE]
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- 2013 (29)
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- 2010 (6)

Author Name

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- Taylor, S.A. (87)
- Bartram, C.I. (87)
- Burling, D. (35)
- Goh, V. (27)

Subject Area

- Medicine (247)
- Health Professions (71)
- Computer Science (13)
- Mathematics (8)
- Biochemistry, Genetics and Molecular Biology (4)

Document Type

- Article (195)
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	  View at Publisher		 Article in Press	
<input type="checkbox"/> 2	Evaluation of Crohn's disease activity: Initial validation of a magnetic resonance enterography global score (MEGS) against faecal calprotectin	Makanyanga, J.C., Pendsé, D., Dikaios, N., (...), Halligan, S., Taylor, S.A.	2014 European Radiology	0
	  View at Publisher			
<input type="checkbox"/> 3	Sensitivity and specificity of CT colonography for the detection of colonic neoplasia after positive faecal occult blood testing: Systematic review and meta-analysis	Plumb, A.A., Halligan, S., Pendsé, D.A., Taylor, S.A., Mallett, S.	2014 European Radiology	0
	  View at Publisher			
<input type="checkbox"/> 4	Abdominal computed tomography, colonography and radiation exposure: What the surgeon needs to know	Steward, M.J., Taylor, S.A., Halligan, S.	2014 Colorectal Disease	0
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<input type="checkbox"/> 5	Patients' & healthcare professionals' values regarding true- & false-positive diagnosis when colorectal cancer screening by CT colonography: Discrete choice experiment	Boone, D., Mallett, S., Zhu, S., (...), Lilford, R., Halligan, S.	2013 PLoS ONE	0
	  View at Publisher			
<input type="checkbox"/> 6	Small bowel strictures in Crohn's disease: A quantitative investigation of intestinal motility using MR enterography	Menys, A., Helbren, E., Makanyanga, J., (...), Atkinson, D., Taylor, S.A.	2013 Neurogastroenterology and Motility	0
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Clive I. Bartram, FRCR, FRCP
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Kate Kingston, MRCP

Index terms:
Defecography, 757.1288
Rectum, abnormalities, 757.1288,
757.73, 757.79
Rectum, radiography, 757.1288
Radiology 1999; 211:223-227

Evacuation Proctography: A Prospective Study of Diagnostic and Therapeutic Effects¹

PURPOSE: To determine the diagnostic and therapeutic effects of evacuation proctography.

MATERIALS AND METHODS: Forty-seven referring clinicians completed pre-evacuation proctography questionnaires for 50 patients, detailing diagnoses, confidence in these, intended management, and what they hoped to learn. After evacuation proctography, the radiology report was returned with a second question

CLINICAL RADIOLOGY

A JOURNAL OF THE ROYAL COLLEGE OF RADIOLOGISTS

The Effect of Timing of Intravenous Muscle Relaxant on the Quality of Double-Contrast Barium Enema

E. M. ELSON*†, D. M. CAMPBELL*, S. HALLIGAN*, I. SHAIKH*, S. DAVITT†, C. I. BARTRAM*

*Departments of Radiology, *Northwick Park and St Mark's Hospitals, Harrow, and †Guy's and St. Thomas' NHS Trust, London, U.K.*

Clinical Radiology

Dynamic Cystoproctography and Physiological Testing in Women With Urinary Stress Incontinence and Urogenital Prolapse

S. HALLIGAN, C. SPENCE-JONES[†], M. A. KAMM* and C. I. BARTRAM

*Departments of Radiology and *Physiology, St Mark's Hospital, Northwick Park, Harrow, and [†]Department of Obstetrics and Gynaecology, the Whittington Hospital, London, UK*

The Recipe for Success:

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- Insecurity
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- Focus on what’s truly important; RSNA
 - *A paper is worth a hundred presentations*
- Vicious time-management; clinical work
- Saying ‘no’ must come very easily: you have two jobs.

The authors are to be congratulated on an important paper validating the proctographic diagnosis of anismus. I would recommend early publication, if possible.

The paper sets out to present the results of evacuation proctography in a small group of adults to determine if this study is of relevance to the diagnosis of anismus. Several deficiencies limit the scientific validity of this work and will need to be redressed by the authors.

I strongly recommend this original and practical manuscript for publication in Radiology. # 3

RECOMMENDATION: Rejection

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Conflicts of interest

SH and DB have been remunerated for research and development advice by Medicsight, a software company developing computer-assisted detection for CT colonography. The other authors declare that they have no conflicts of interest.

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