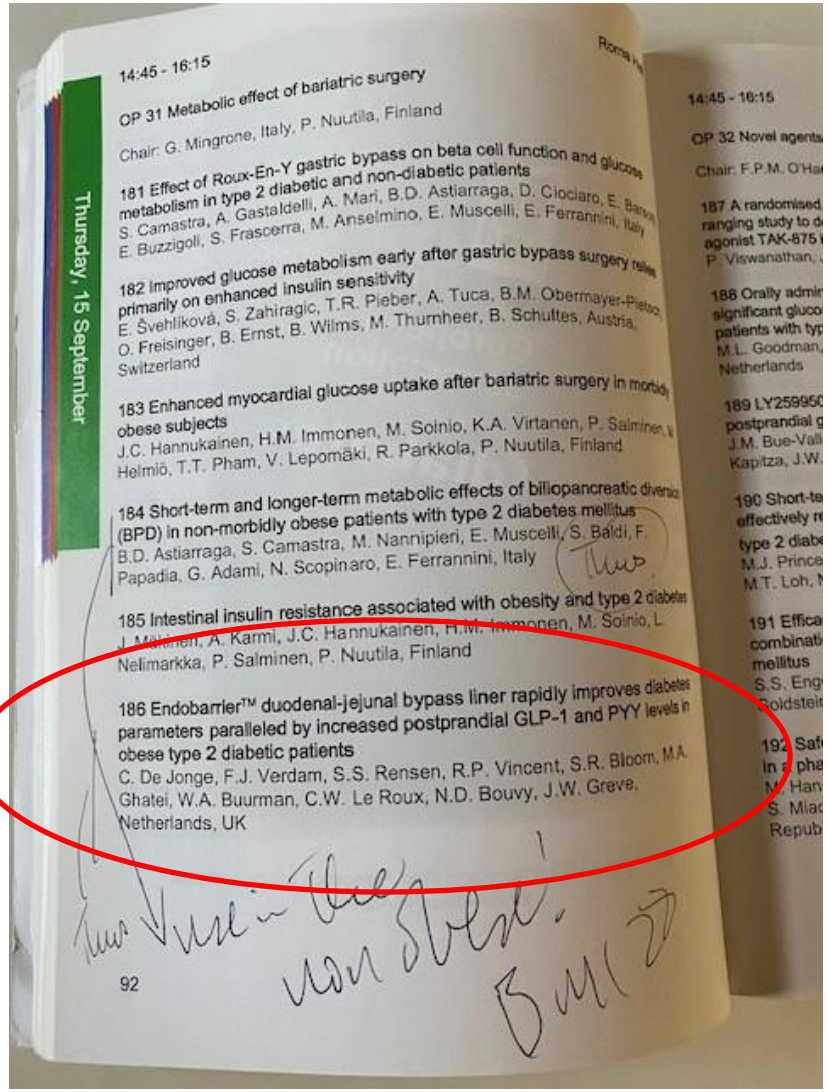
EASD Lisbon 2011



EndobarrierTM duodenal-jejunal bypass liner rapidly improves diabetes parameters paralleled by increased postprandial GLP-1 and PYY levels in obese type 2 diabetic patients

Session: OP 31 Metabolic effect of bariatric surgery

Lisbon 2011 Roma Hall 15. September 2011 16:00 - 16:15 440 views

Charlotte de Jonge

EndobarrierTM duodenal-jejunal bypass liner rapidly

Charlotte de Jonge

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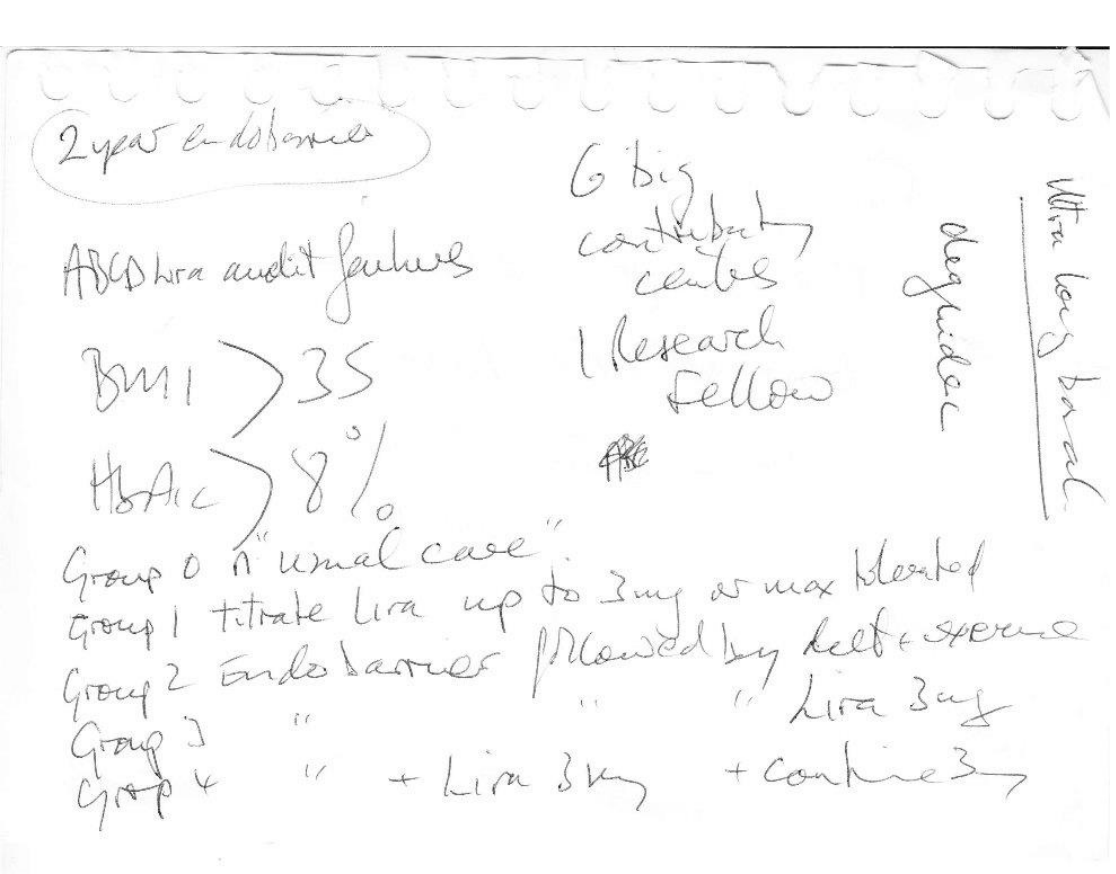
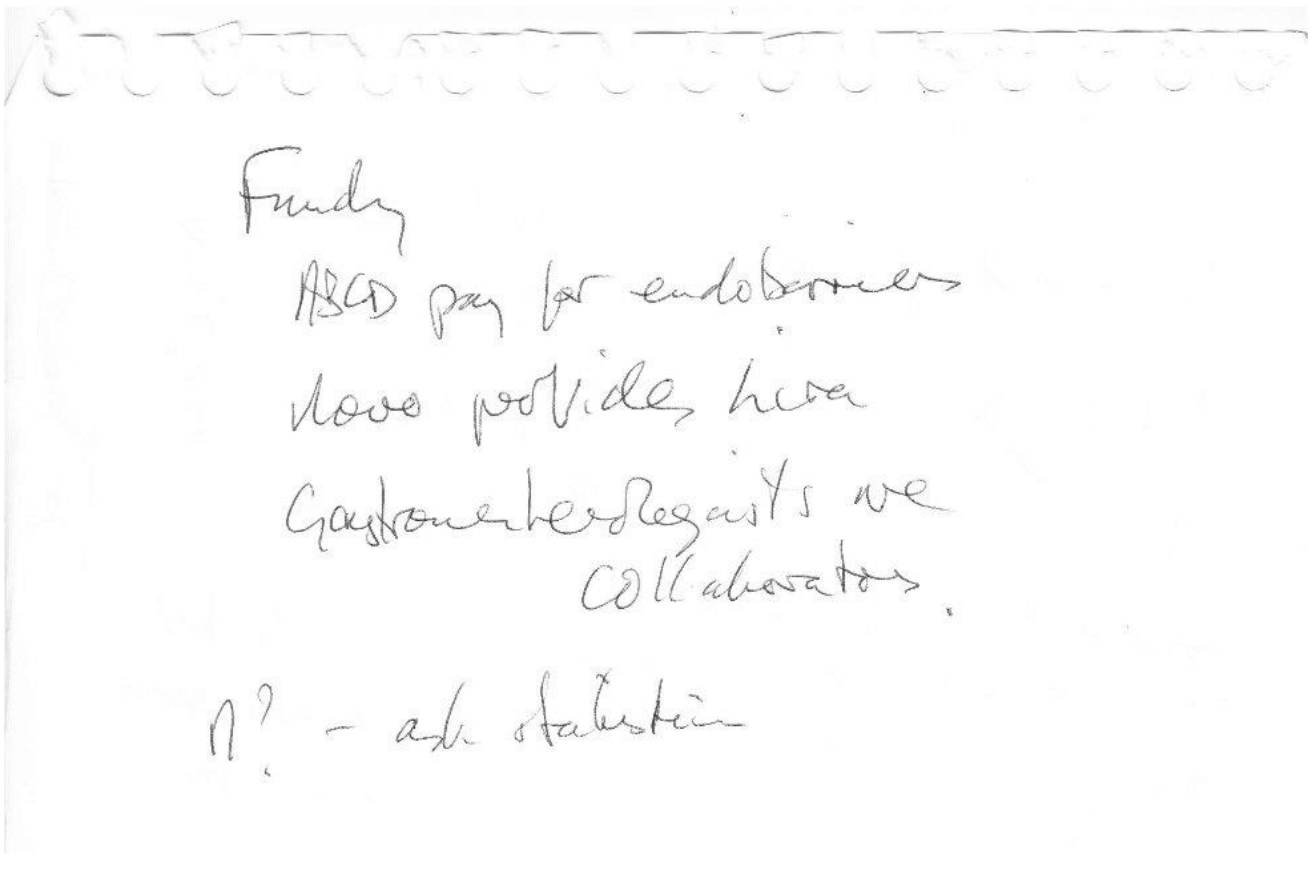
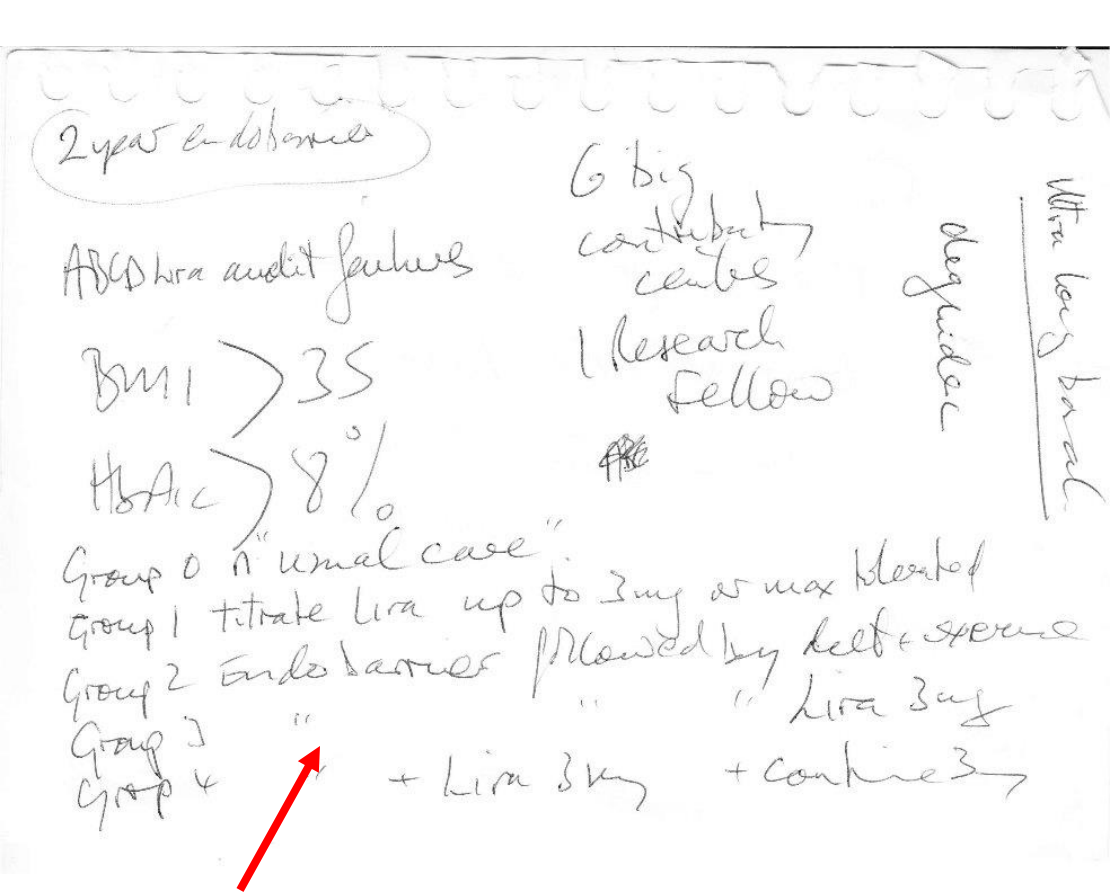
Sharing

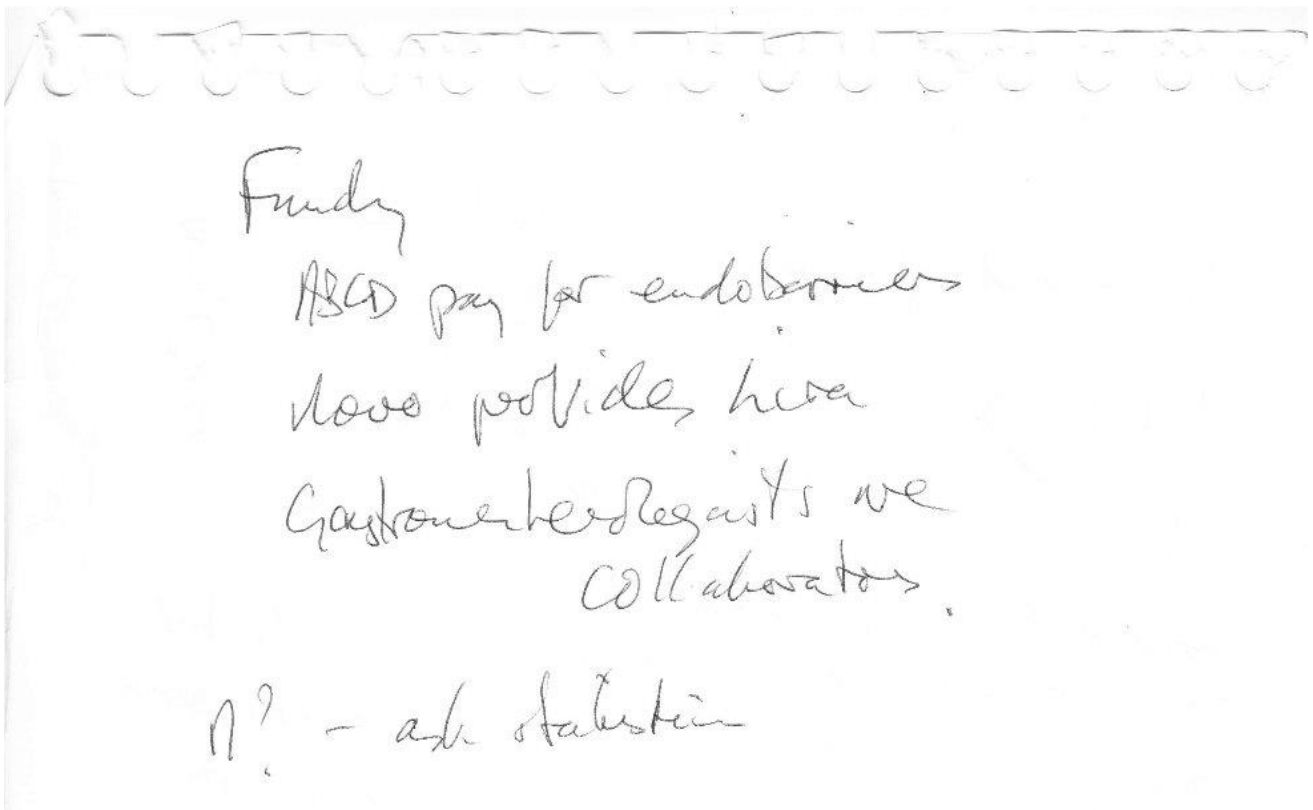
Notes made by me during the EASD presentation by Charlotte de Jonge





Notes made by me during the EASD presentation by Charlotte de Jonge

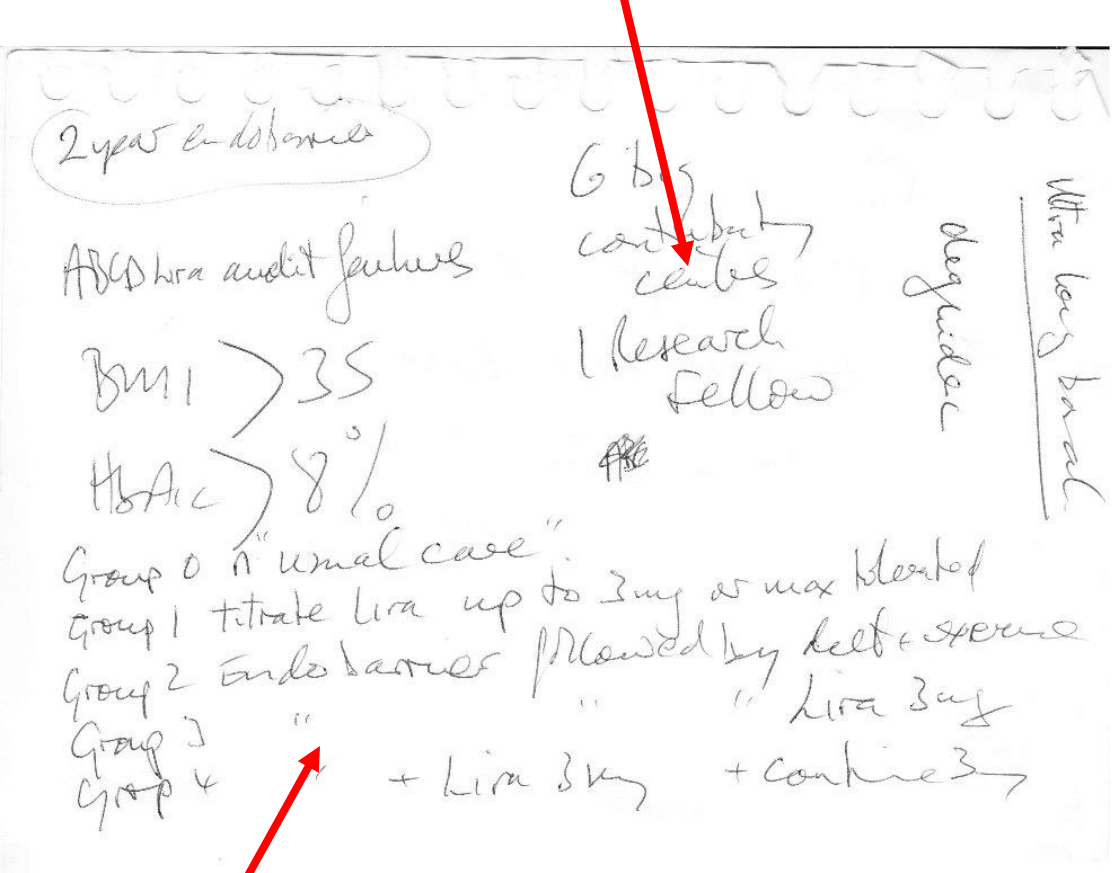


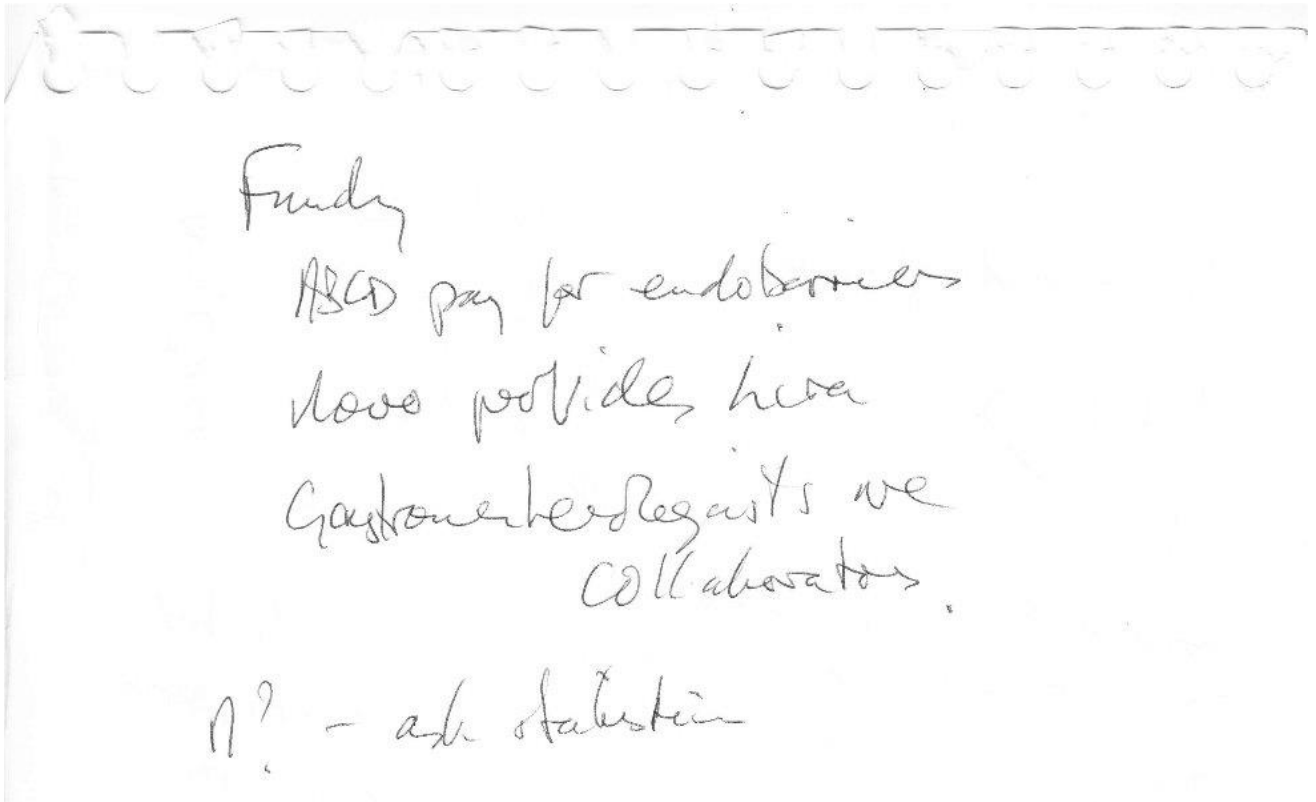


Became the REVISE-Diabesity study

Birmingham (me),
Kings (Stephanie Amiel),
Guys and St Thomas's (Barbara McGowan),
Glasgow (Russell Drummond)

he EASD presentation by de Jonge





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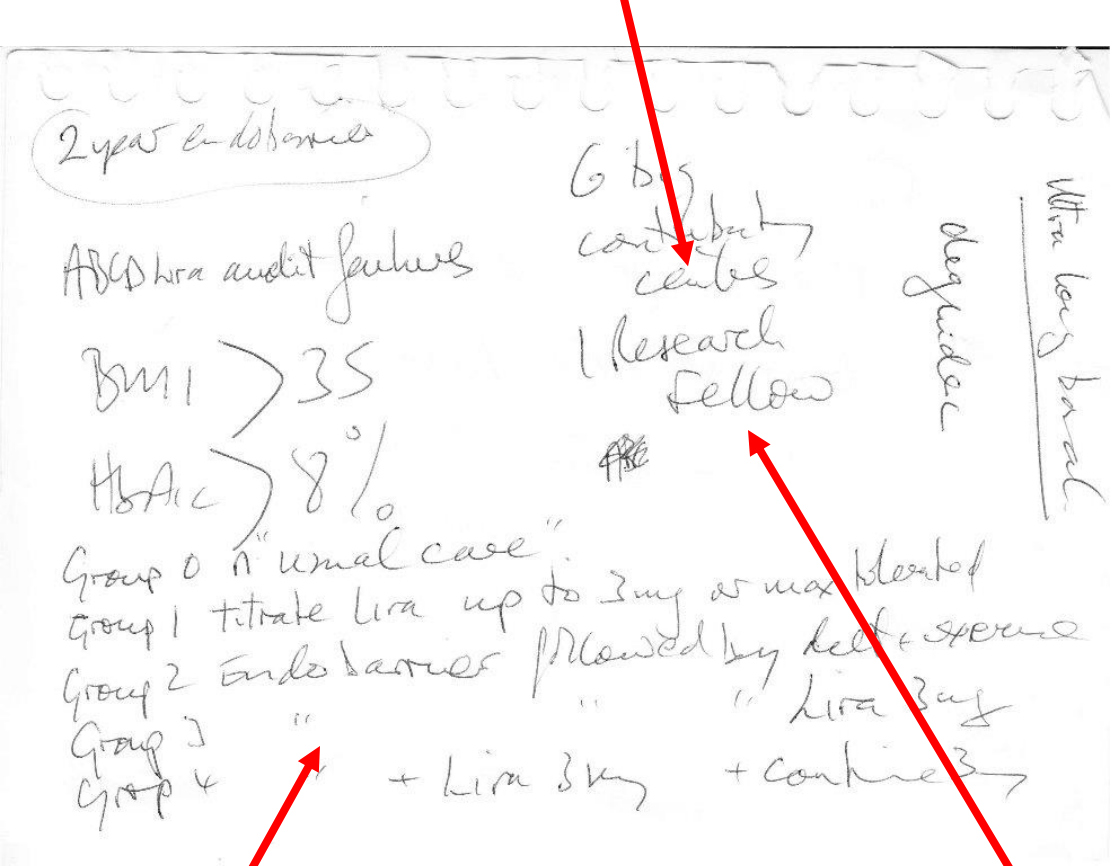

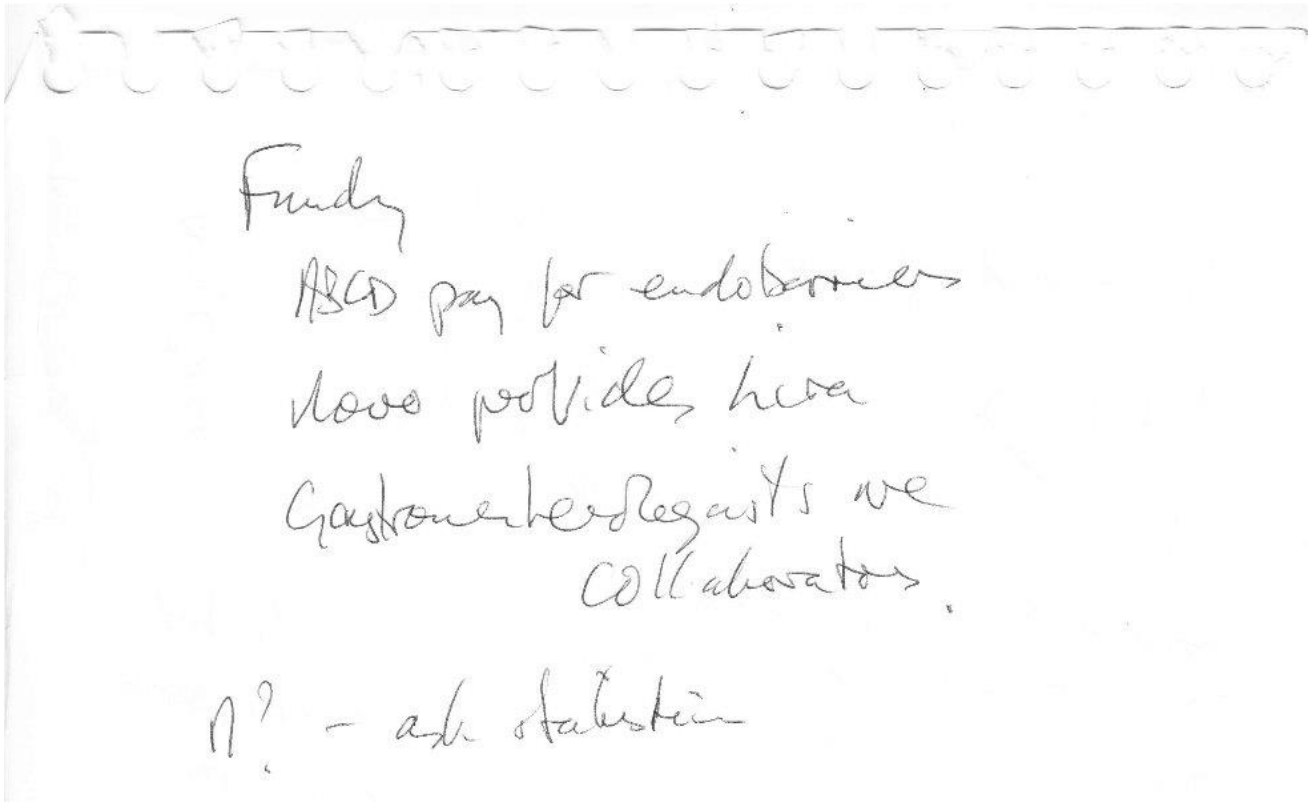

Became the REVISE-Diabesity study

Piya Sen Gupta

he EASD presentation by de Jonge

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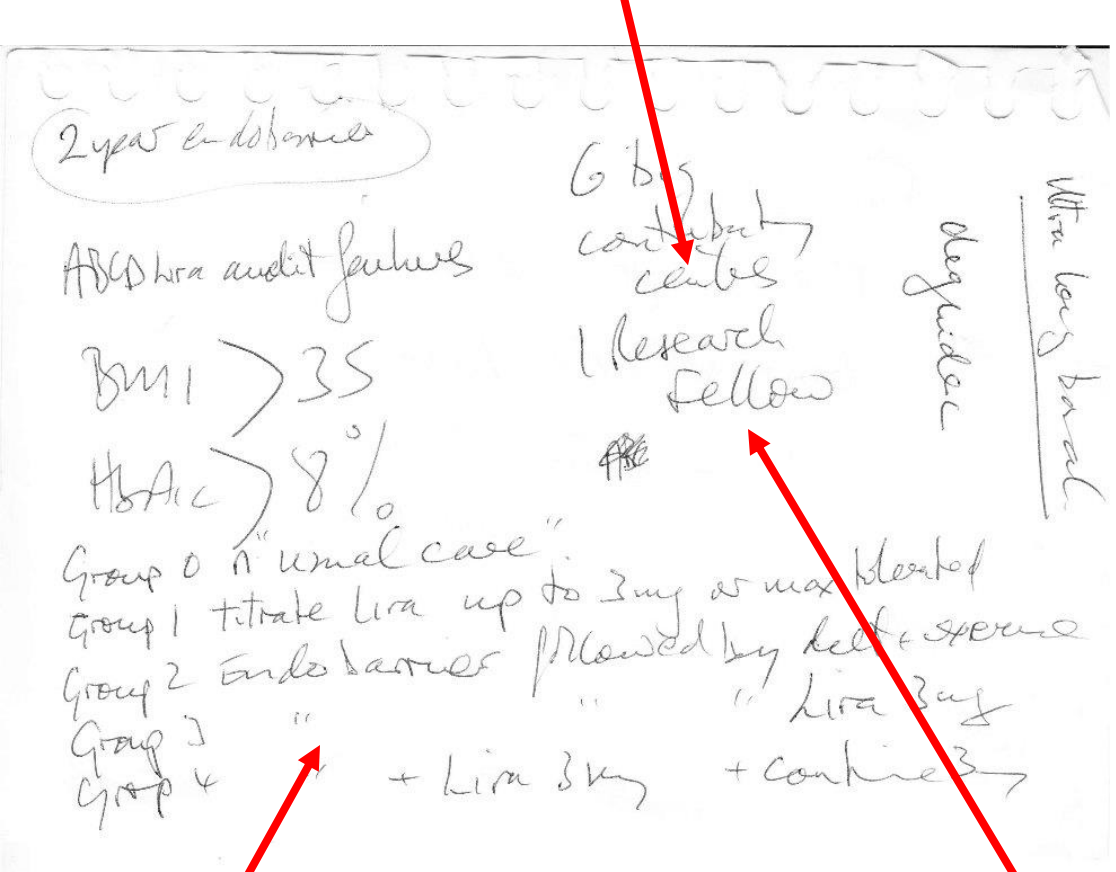

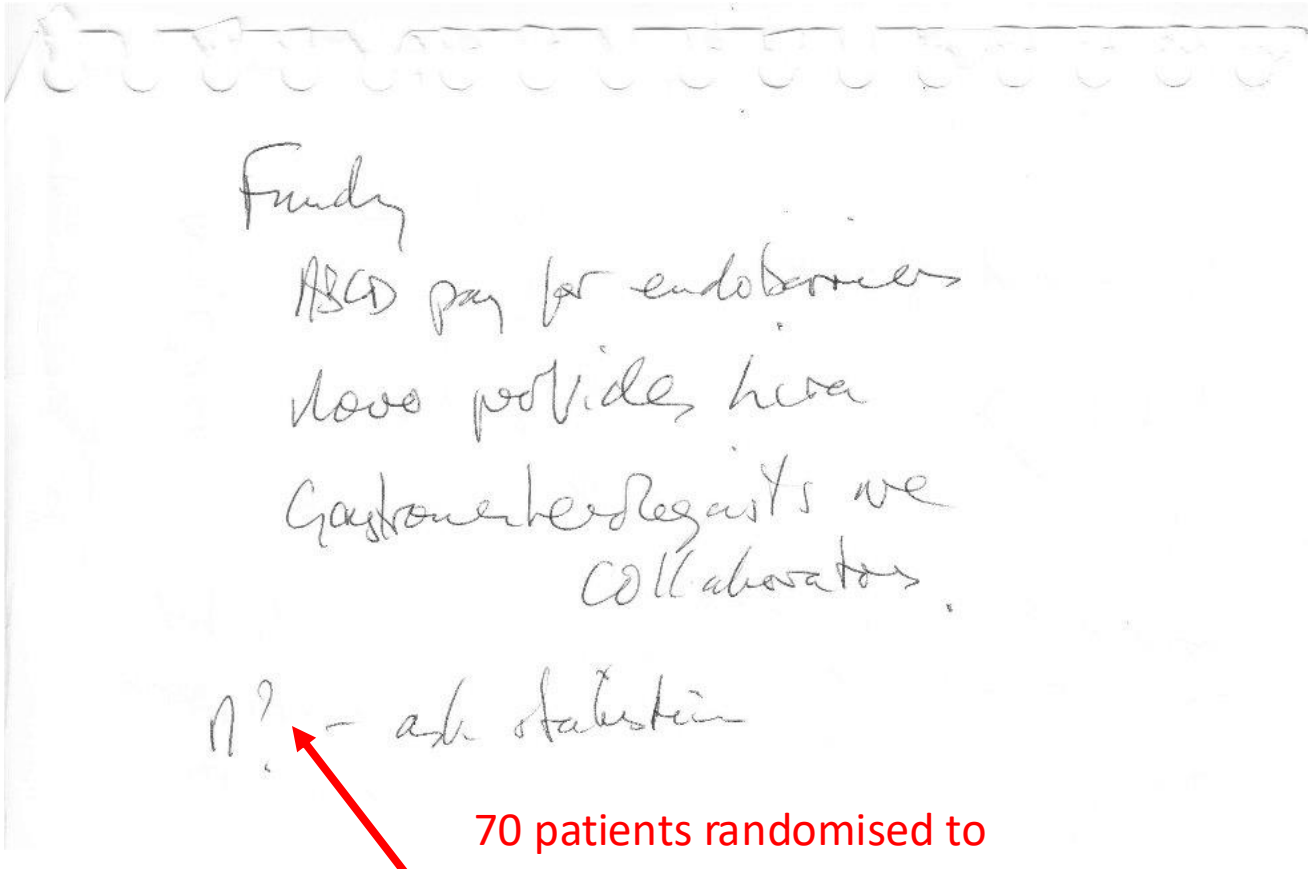

Became the REVISE-Diabesity study

Piya Sen Gupta

70 patients randomised to
EndoBarrier plus continue liraglutide
EndoBarrier plus stop liraglutide
Higher dose liraglutide (1.8mg)

he EASD presentation by de Jonge

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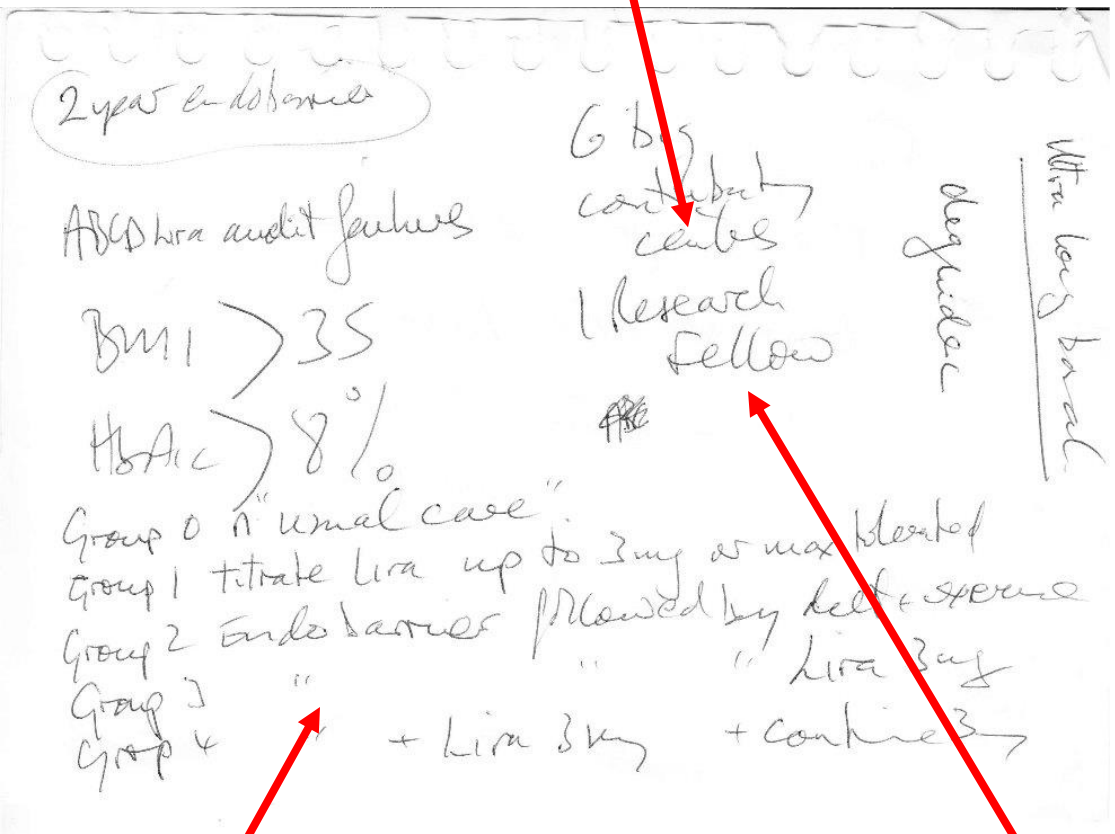
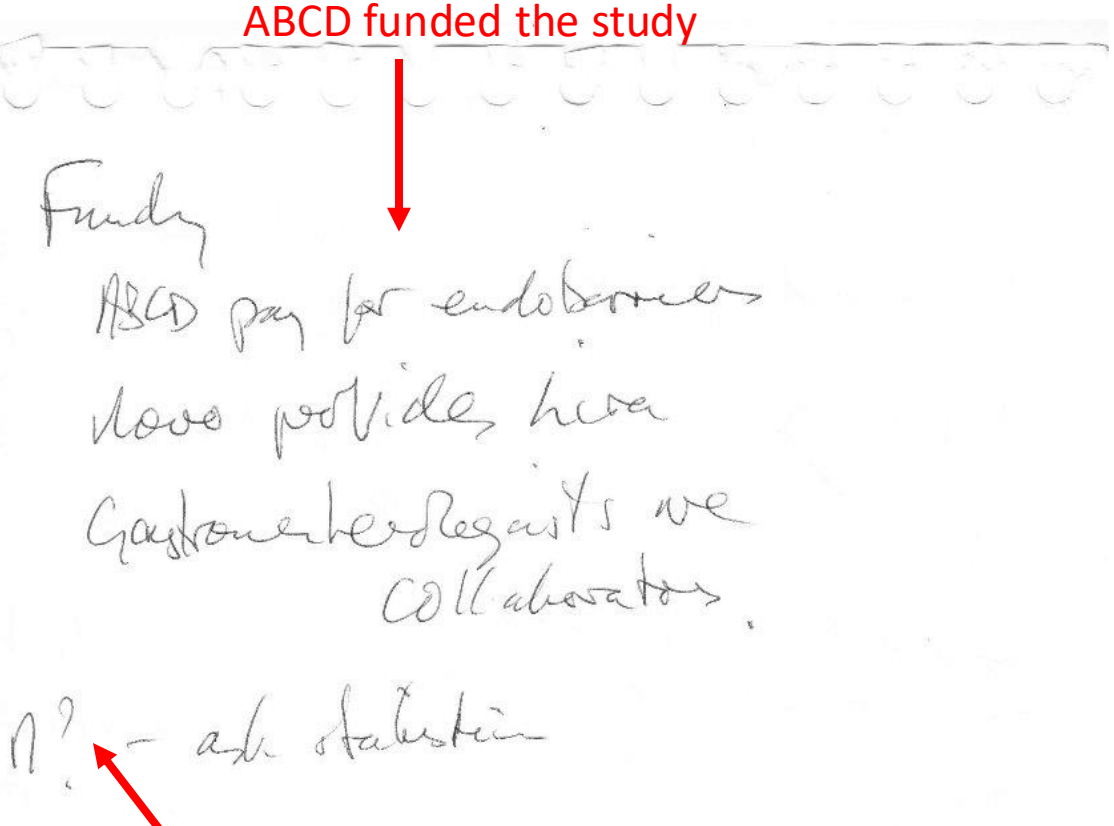


Became the REVISE-Diabesity study

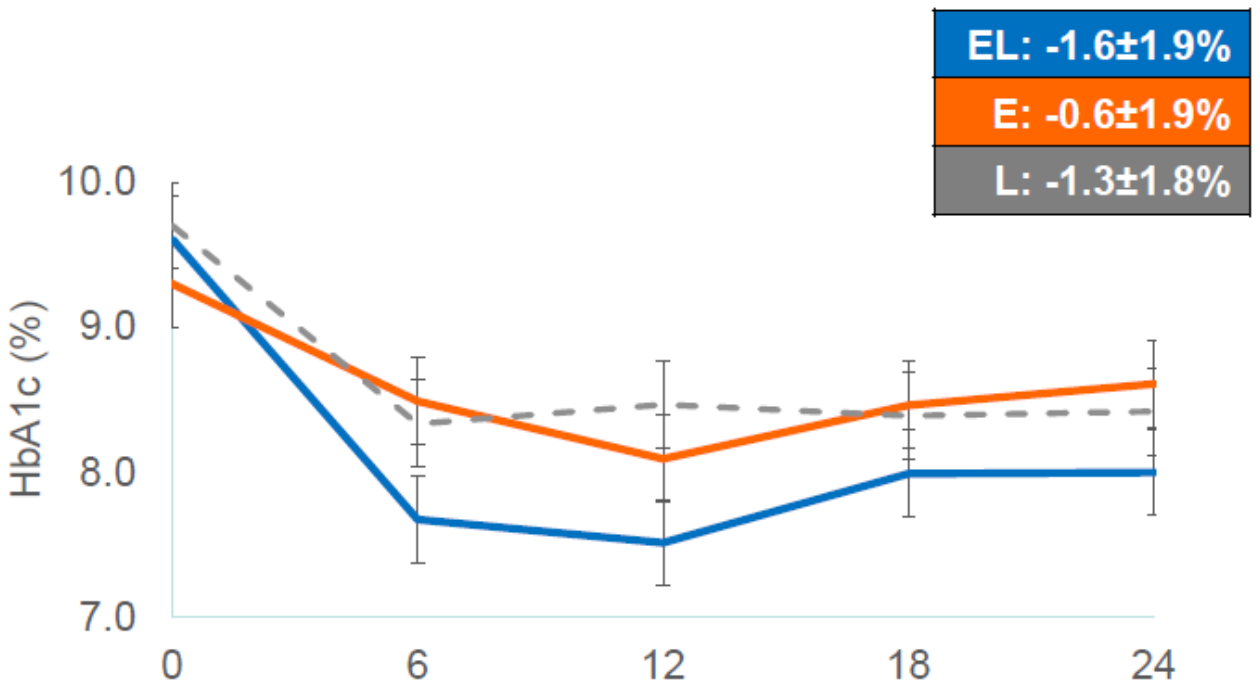
Piya Sen Gupta

ABCD funded the study



70 patients randomised to
EndoBarrier plus continue liraglutide
EndoBarrier plus stop liraglutide
Higher dose liraglutide (1.8mg)

REVISE-Diabesity Results



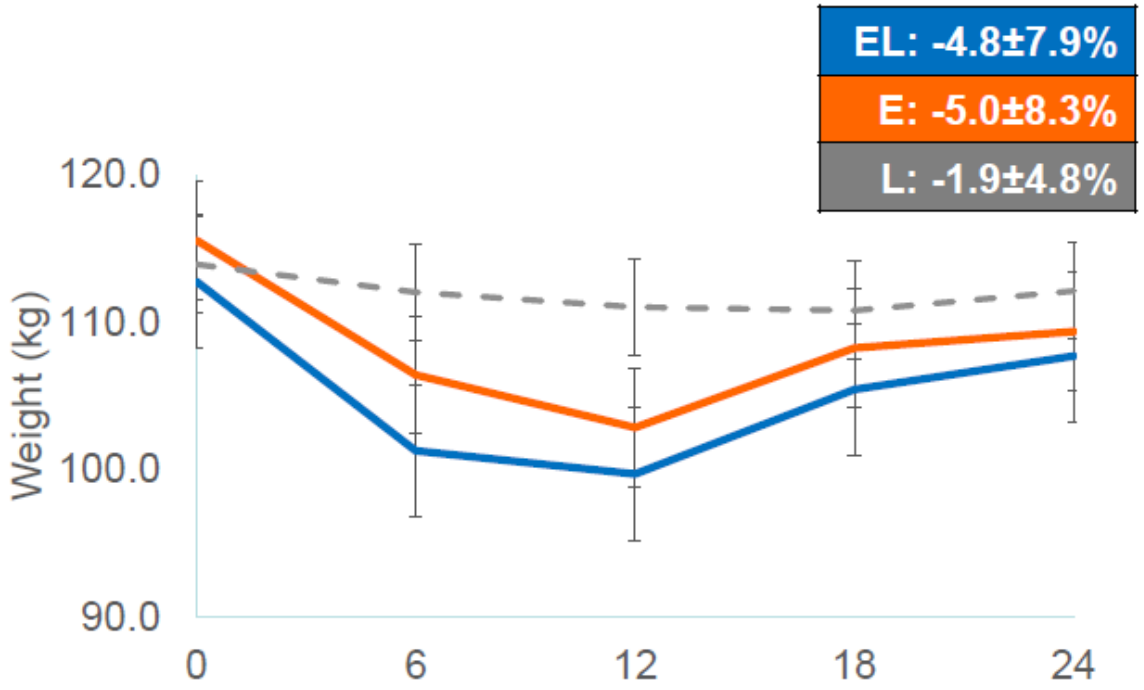
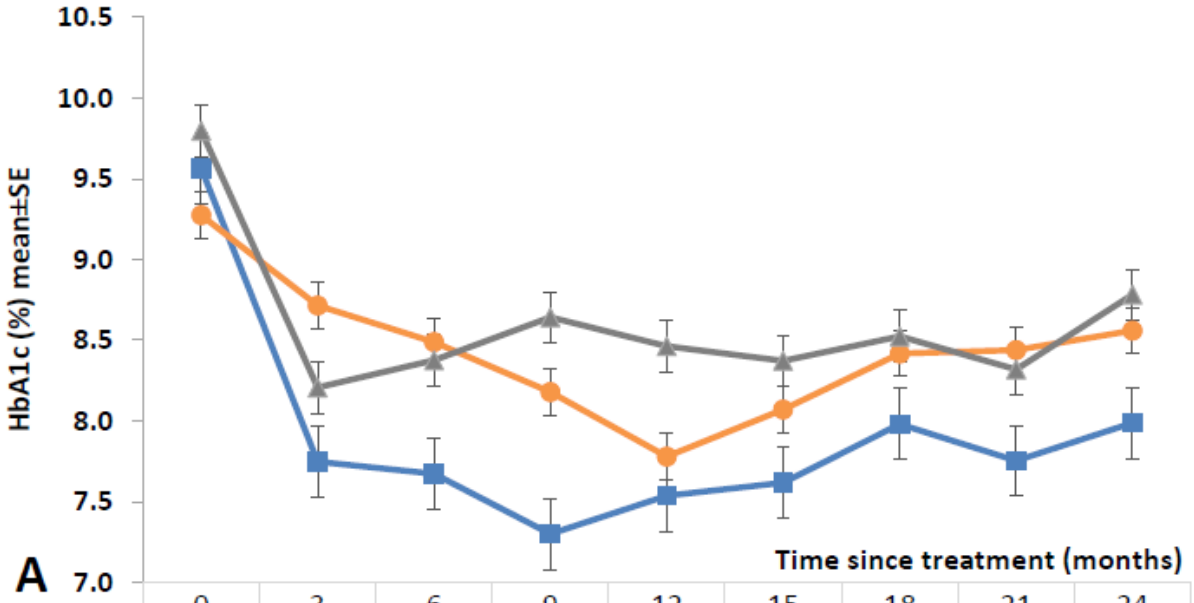


Fig. 3. Impact of treatment on A. HbA1c (%) and B. weight (kg) over time (months).

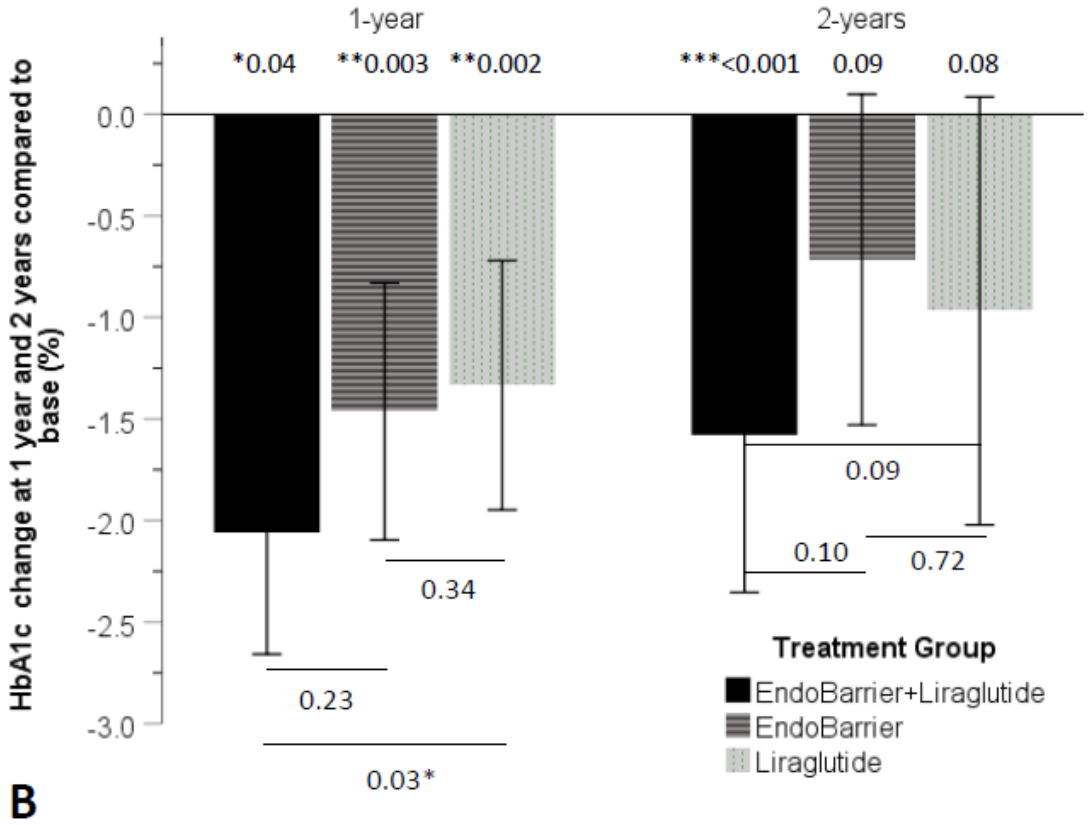
Presented at WCIT2D, New York, USA, 8 Apr 2019

Association of British Clinical Diabetologists

Fig. 3.3. Impact of treatment on **A-B** HbA1c (%) and on **C-D** body weight (kg) over time. Error bars indicate standard error.



	0	3	6	9	12	15	18	21	24
E+L	9.6	7.7	7.7	7.3	7.5	7.6	8.0	7.8	8.0
E	9.3	8.7	8.5	8.2	7.8	8.1	8.4	8.4	8.6
L	9.8	8.2	8.4	8.6	8.5	8.4	8.5	8.3	8.8



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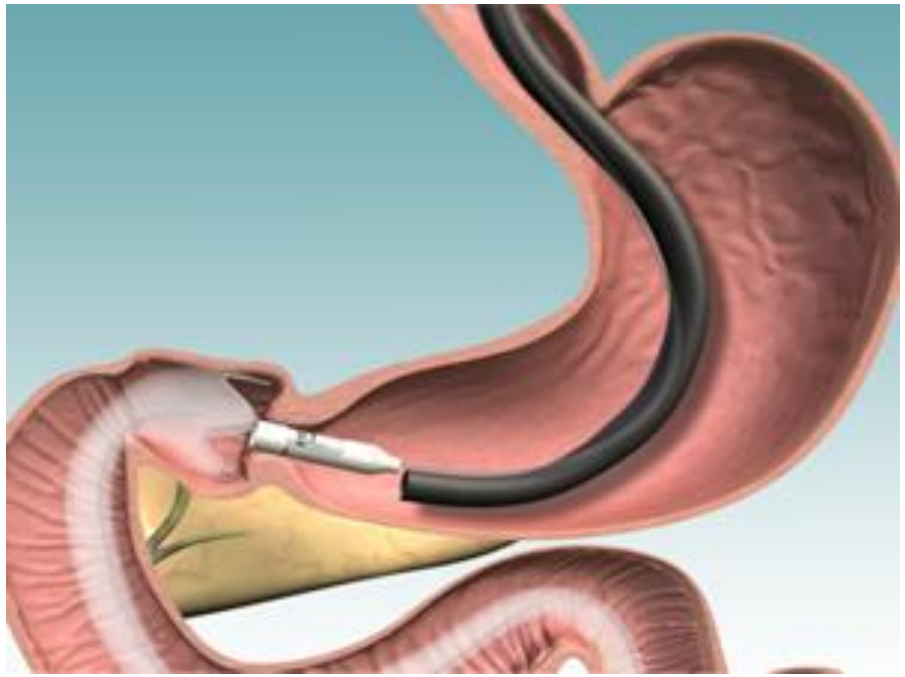
DJBL – Implantable Duodenal-Jejunal Bypass Liner
The Worldwide Experience



Dr Bob Ryder

ABCD Midlands Regional Meeting 2025

1, October 2025

Sandwell and West Birmingham Hospitals NHS
NHS Trust

Association of British Clinical Diabetologists

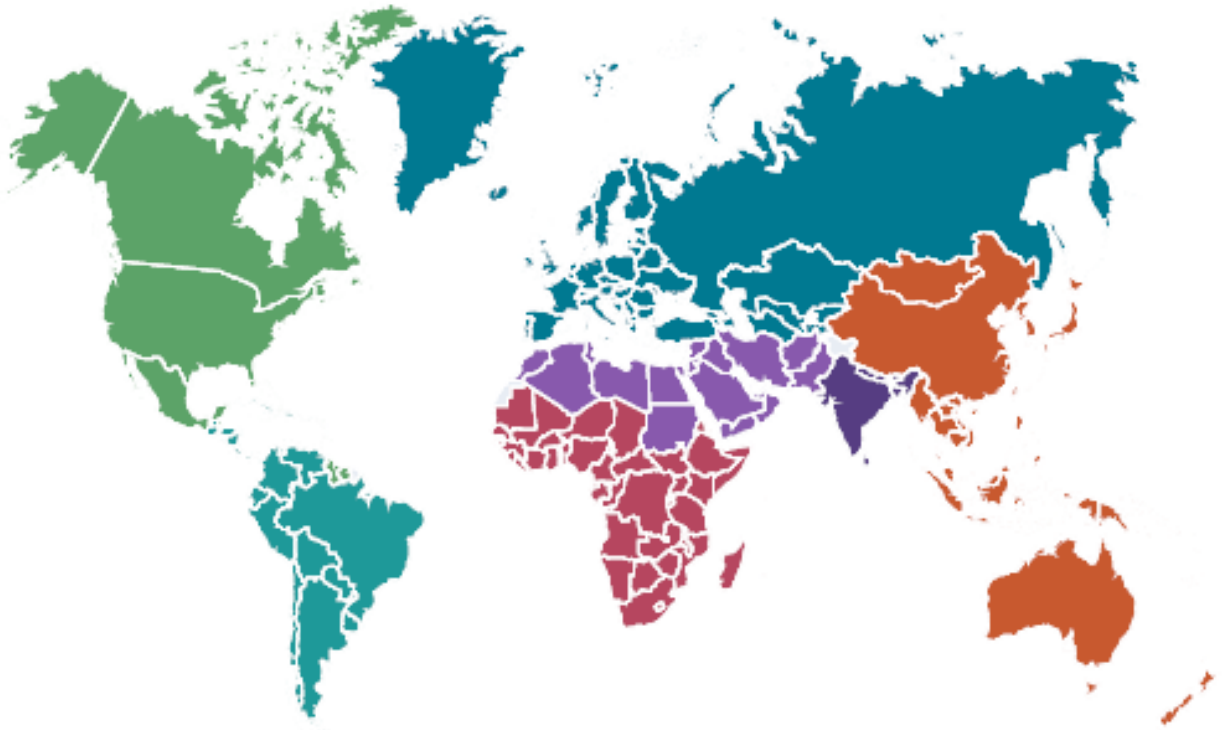
Disclosures

- Dr Bob Ryder has received speaker fees, and/or consultancy fees and/or educational sponsorships from Abbott, Astra Zeneca, Besins, BioQuest, Morphic Medical and Novo Nordisk

There is a worldwide pandemic of diabetes and obesity

Summary

Map 1 Number of people with diabetes worldwide and per IDF Region, in 2024–2050 (20–79 years)



World

2050	852.5 Million	45% increase
2024	588.7 Million	

Africa (AFR)

2050	59.5 Million	142% increase
2024	24.6 Million	

Europe (EUR)

2050	72.4 Million	10% increase
2024	65.6 Million	

Middle-East and North Africa (MENA)

2050	162.6 Million	92% increase
2024	84.7 Million	

North America and Caribbean (NAC)

2050	68.1 Million	21% increase
2024	56.2 Million	

South and Central America (SACA)

2050	51.5 Million	45% increase
2024	35.4 Million	

South-East Asia (SEA)

2050	184.5 Million	73% increase
2024	106.9 Million	

Western Pacific (WP)

2050	253.8 Million	18% increase
2024	215.4 Million	

https://diabetesatlas.org/resources/idf-diabetes-atlas-2025/

RESET® DJBL – Implantable Duodenal-Jejunal Bypass Liner

Patients reported on in the data presented here received the DJBL device branded as EndoBarrier®. To reflect the rebranding of the company to **Morphic Medical®** and the rebranding of the device to **RESET®**, this presentation will use the new brand name throughout.

Sandwell and West Birmingham Hospitals NHS NHS Trust

Association of British Clinical Diabetologists

RESET® – Implantable Duodenal-Jejunal Bypass Liner

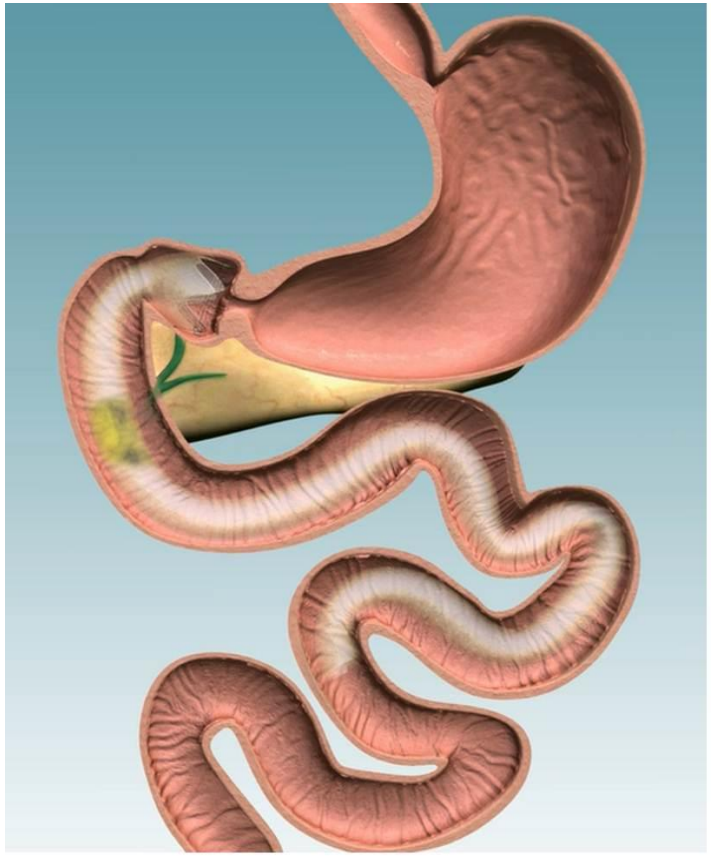
- 60 cm impermeable sleeve
- Minimally invasive

RESET® – Implantable Duodenal-Jejunal Bypass Liner

Fluoropolymer wall

Nitinol Anchor

- 60 cm impermeable sleeve
- Minimally invasive



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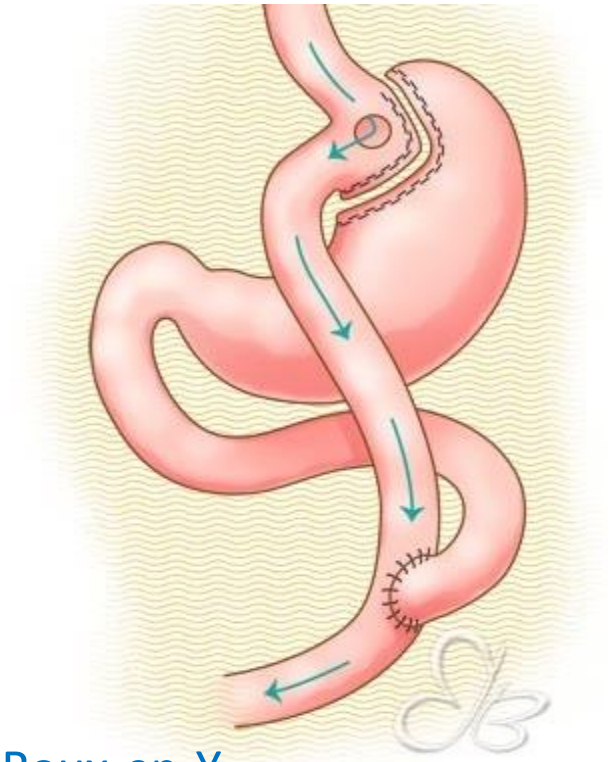
RESET® – Implantable Duodenal-Jejunal Bypass Liner

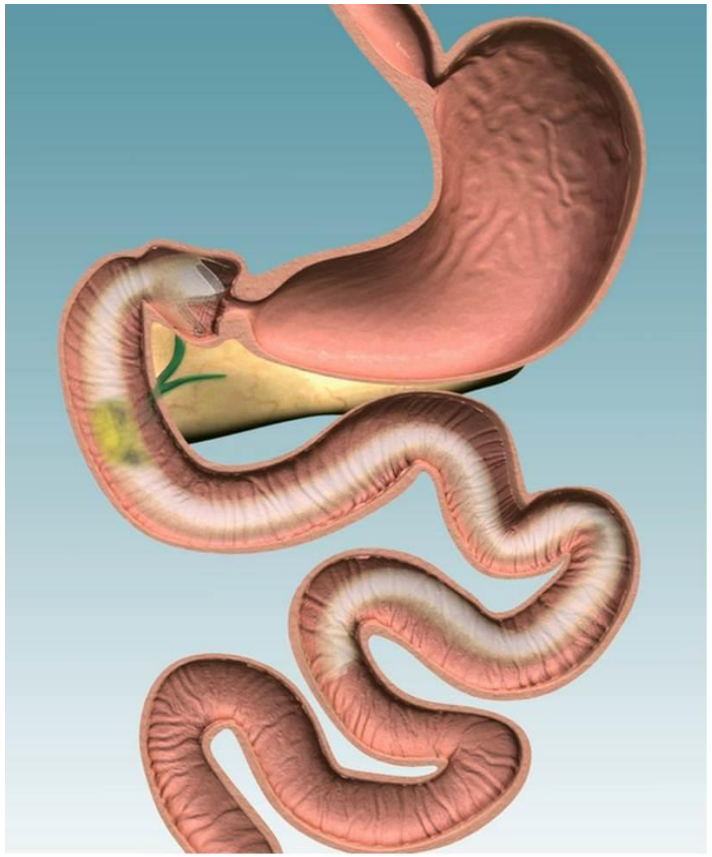


Roux-en-Y gastric bypass surgery

Fluoropolymer wall

Nitinol Anchor

- 60 cm impermeable sleeve
- Minimally invasive



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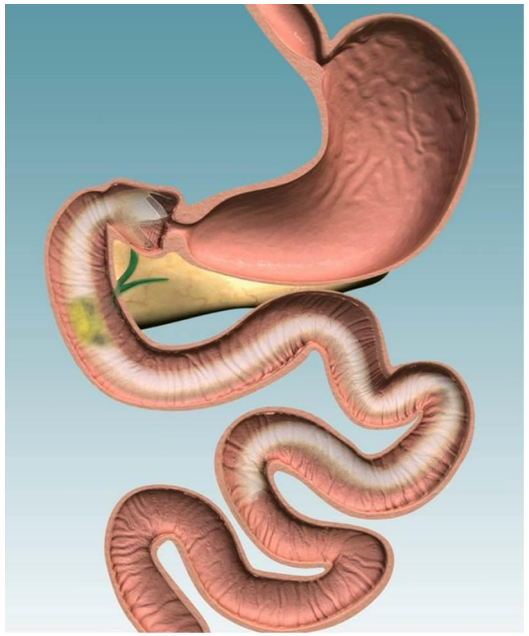
First NHS RESET® Service for Refractory Diabesity

- We implanted RESET® into 62 patients with sub optimally controlled diabesity
- Of these 43/62 (69%) attended for review 3 years after RESET® removal



43 NHS patients attended follow up 3 years after RESET® removal – baseline characteristics

Parameter	N=43
Age (years)	51.6±7.6
Sex (% male)	55.8
Ethnicity (% Europid)	55.8
→ BMI (kg/m^2)	41.7±7.3
→ HbA1c (mmol/mol) (%)	76.3±19.2 9.1±1.8
→ *Diabetes duration (years)	14.6 (8 -21)
→ Taking insulin (%)	62.8

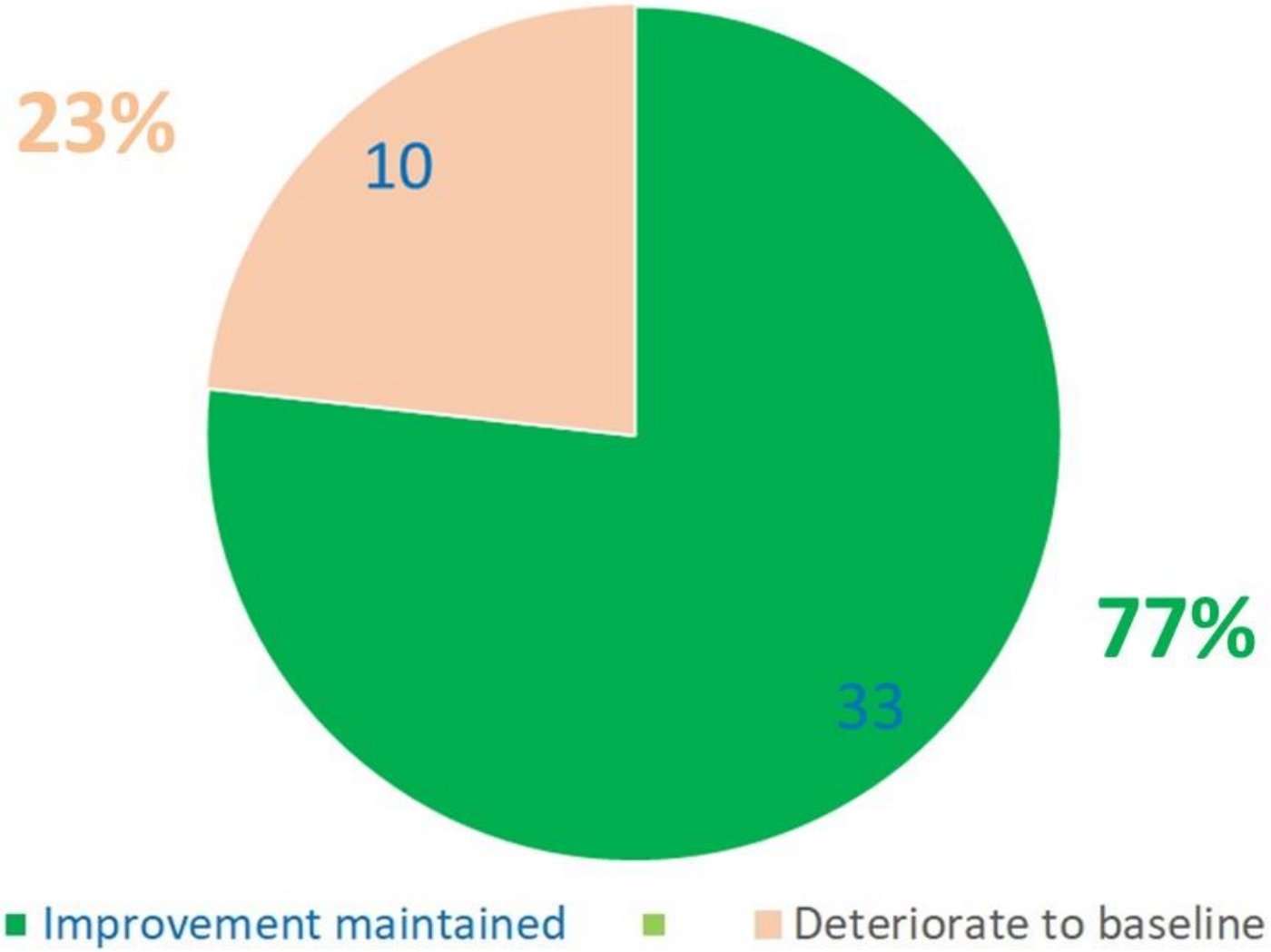
median(interquartile range)

Outcomes at explant of RESET®, n=43

Parameter	Baseline	EB Explant	Difference	P-value
Weight (kg)	123.3±30.0	105.9±30.8	-17.4±9.1	<0.001
BMI (kg/m^2)	41.7±7.3	35.6±7.7	-6.2±3.5	<0.001
HbA1c (%)	9.1±1.8	7.2±1.0	-1.9±1.8	<0.001
HbA1c (mmol/mol)	76.3±19.2	55.7±11.1	-20.6±19.6	<0.001
Systolic blood pressure (mmHg)	138.7±14.4	125.4±14.7	-13.3±16.2	<0.001
Cholesterol (mmol/L)	4.6±1.0	3.7±0.7	0.8±0.8	<0.001
ALT (U/l)	30.8±17.2	19.3±11.2	-11.5±18.3	<0.001
Insulin daily dose* (n=30)	114(54-180)	20(0-65)	-94	<0.001

* Median(IQR). 10 of the 27 (37%) people with diabetes discontinued insulin

33/43 (77%) maintained most of the improvement
10/43 (23%) reverted to baseline **three years post explant**



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Where EVERYONE Matters

Fig 1a:

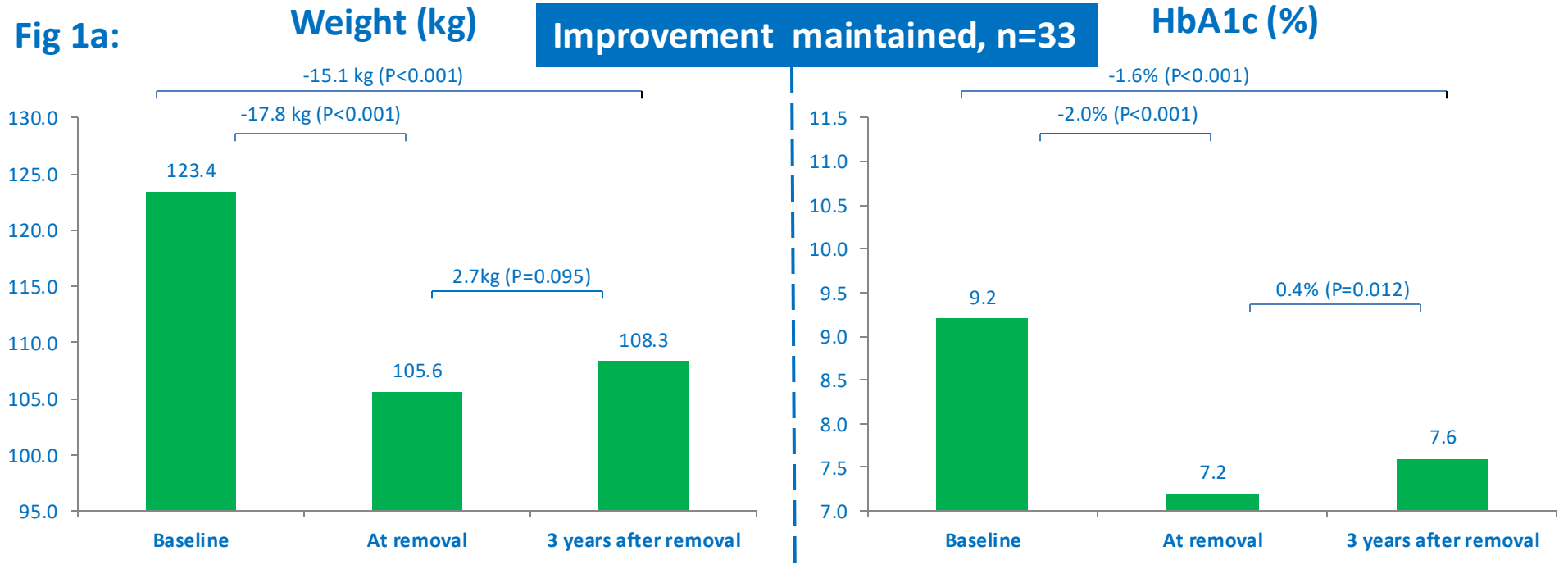

Weight (kg)
Improvement maintained, n=33
HbA1c (%)
-15.1 kg (P<0.001)
-17.8 kg (P<0.001)
2.7kg (P=0.095)
123.4
105.6
108.3
130.0
125.0
120.0
115.0
110.0
105.0
100.0
95.0
Baseline
At removal
3 years after removal
-1.6% (P<0.001)
-2.0% (P<0.001)
0.4% (P=0.012)
9.2
7.2
7.6
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
Baseline
At removal
3 years after removal

Fig 1b:

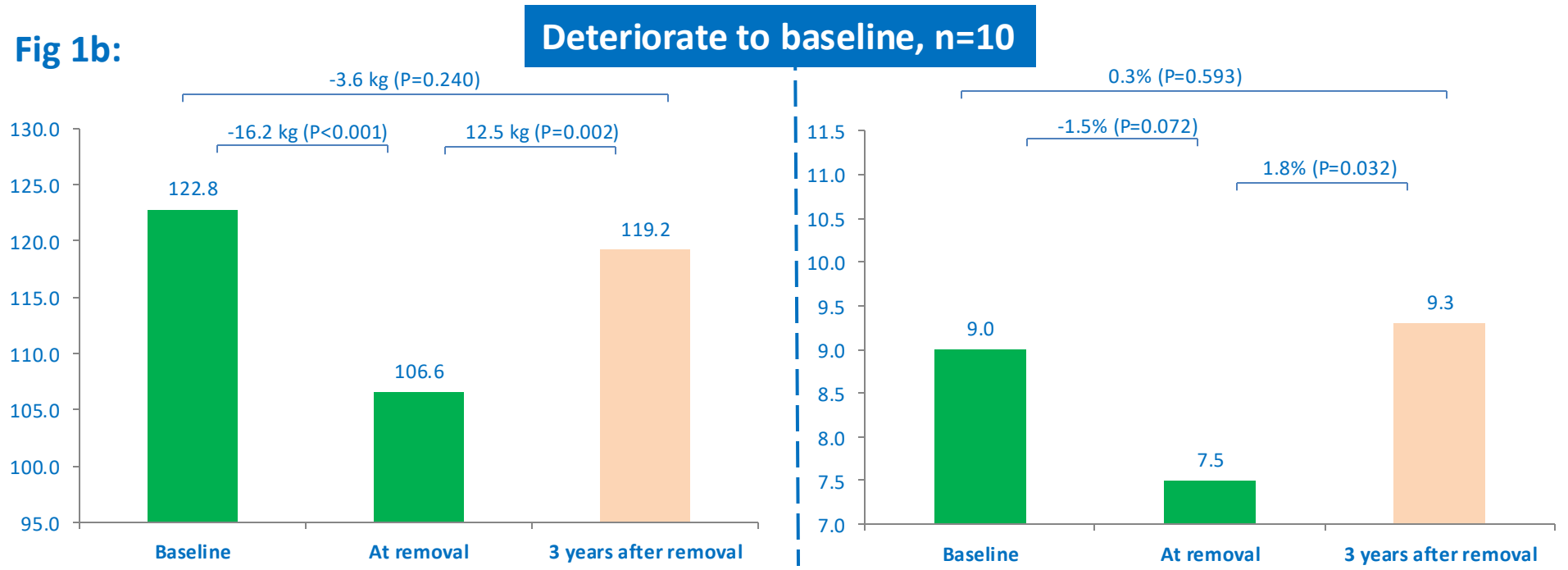
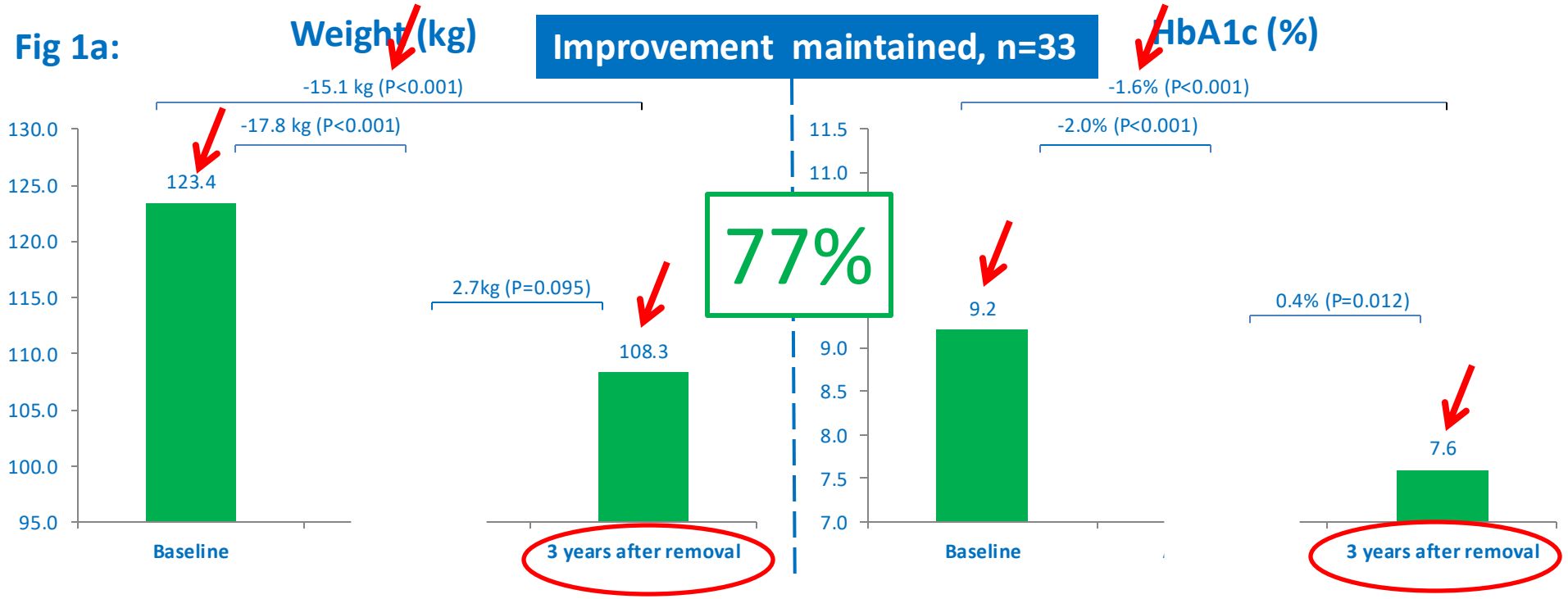

Deteriorate to baseline, n=10
-3.6 kg (P=0.240)
-16.2 kg (P<0.001)
12.5 kg (P=0.002)
122.8
106.6
119.2
130.0
125.0
120.0
115.0
110.0
105.0
100.0
95.0
Baseline
At removal
3 years after removal
0.3% (P=0.593)
-1.5% (P=0.072)
1.8% (P=0.032)
9.0
7.5
9.3
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
Baseline
At removal
3 years after removal

Fig 1a:


Weight (kg)
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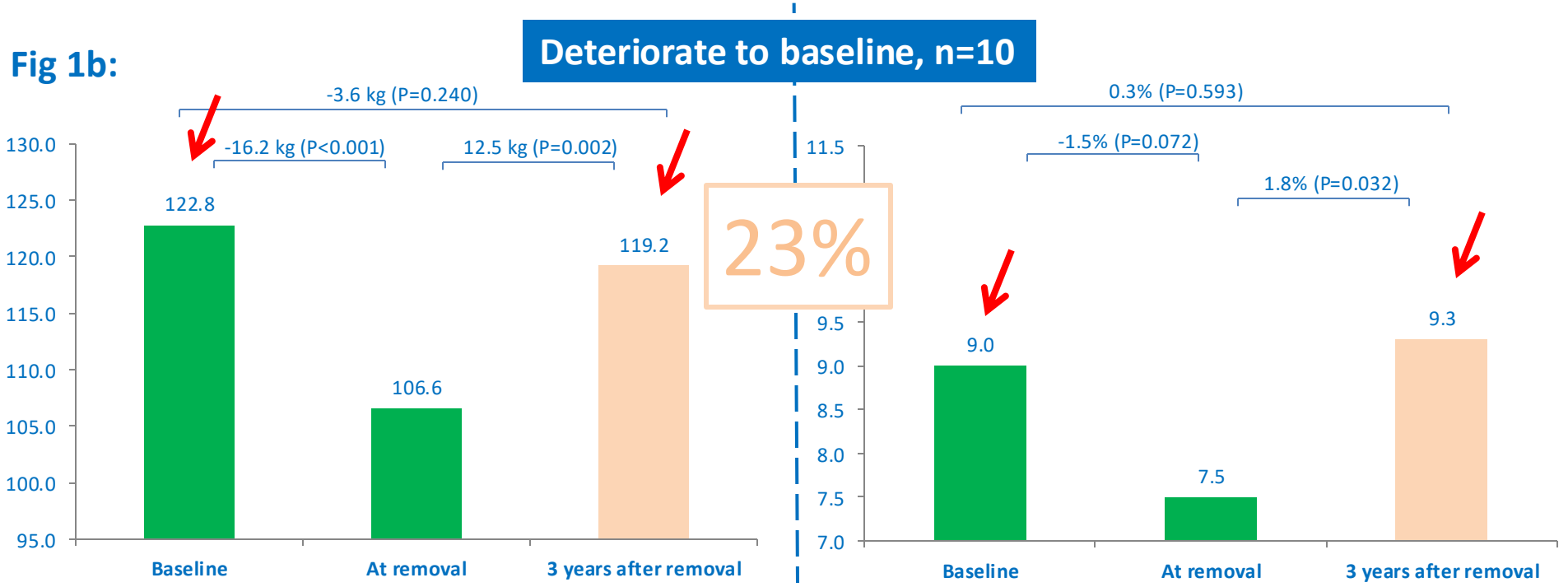
HbA1c (%)
-15.1 kg (P<0.001)
-17.8 kg (P<0.001)
123.4
130.0
125.0
120.0
115.0
110.0
105.0
100.0
95.0
Baseline
2.7kg (P=0.095)
108.3
3 years after removal
77%
-1.6% (P<0.001)
-2.0% (P<0.001)
11.5
11.0
9.2
9.0
8.5
8.0
7.5
7.0
Baseline
0.4% (P=0.012)
7.6
3 years after removal

Fig 1b: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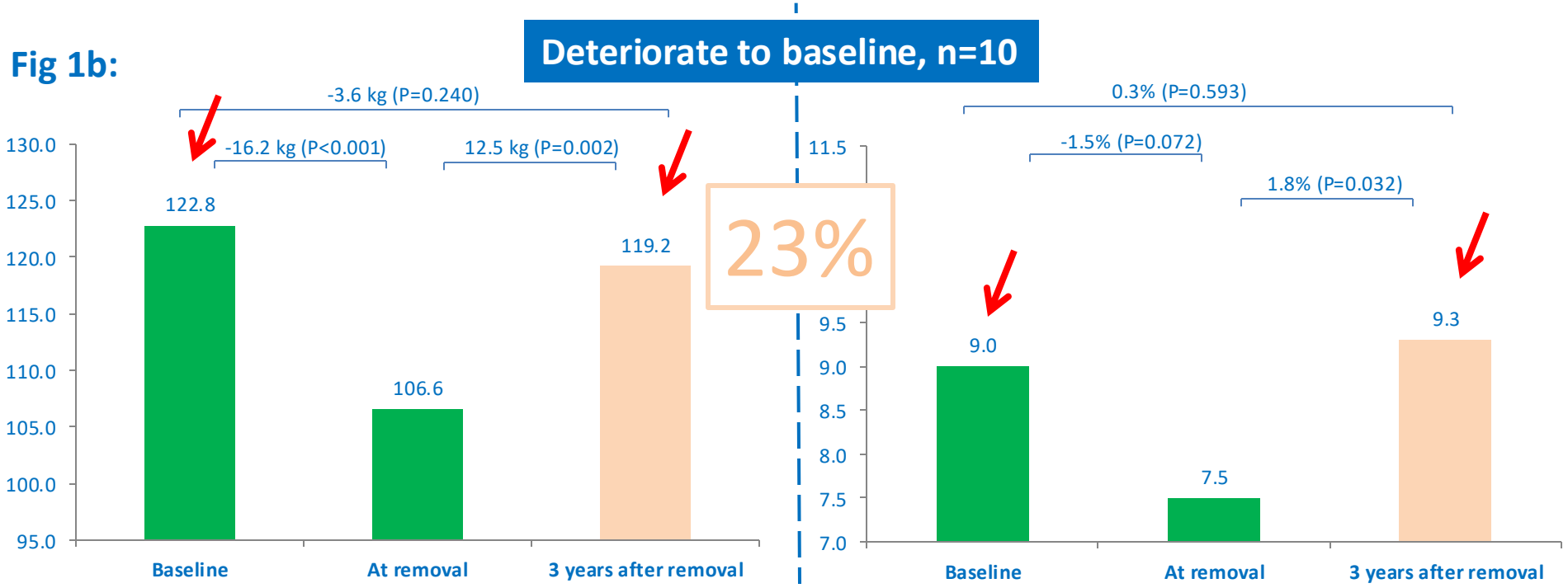
125.0
120.0
115.0
110.0
105.0
100.0
95.0
122.8
106.6
119.2
Baseline
At removal
3 years after removal
23%
0.3% (P=0.593)
-1.5% (P=0.072)
1.8% (P=0.032)
11.5
9.5
9.0
8.5
8.0
7.5
7.0
9.0
7.5
9.3
Baseline
At removal
3 years after removal

Those who deteriorated to baseline reported to us many problems in their lives and 9/10 (90%) had

depression and/or bereavement and/or major health problems/disability.

Fig 1b:



62 NHS service patients – impact of RESET®

Early removal

- 10/62 (16%) patients
- 4 x gastrointestinal haemorrhage
- 2 x liver abscess
- 1 x other abscess
- 3 x gastrointestinal symptoms
- all made a full recovery and most derived considerable benefit despite the early removal
- In some patients these problems were related to non compliance with advice given

62 NHS service patients – impact of RESET®
Early removal

- 10/62 (16%) patients
- 4 x gastrointestinal haemorrhage
- 2 x liver abscess
- 1 x other abscess
- 3 x gastrointestinal symptoms
- all made a full recovery and most derived considerable benefit despite the early removal
- In some patients these problems were related to non compliance with advice given – could have been averted by compliance*

*Ryder REJ et al. *Br J Diabetes* 2019;**19**:110-117

62 NHS service patients – impact of RESET®
Examples of avoidable early removal

- One GI bleed could have been averted: the patient reverted to normal food during 2nd week after insertion instead of recommended pureed food
- A second GI bleed could have been averted: the patient stopped taking recommended proton pump inhibitor after 10 weeks
  - Nevertheless, he lost 9.6 kg, HbA1c fell from 12.1% to 6.5% and his insulin requirement fell from 140 to 30 units daily
- Early removal at 10 months could have been averted in a patient swallowed a piece of steak without sufficient chewing
  - She lost 23.6 kg during 10 months with EndoBarrier
- Diagnosis of liver abscess not recognised in ITU being treated as pneumonia (the liver abscess complication was not known at that time).
  - He lost 18.4 kg during 7 months before Endobarrier removal

Before

- Pre-RESET®
- HbA1c = 70 mmol/mol (8.6%)
- Wt = 82.9 kg

- BMI = 33.6 kg/m^2
- **ALT = 86 U/L (Fatty liver)**
- **Obese BMI**

Sandwell and West Birmingham Hospitals NHS
NHS Trust
Where EVERYONE Matters

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Parameter	Baseline	EB Explant	Difference	P-value
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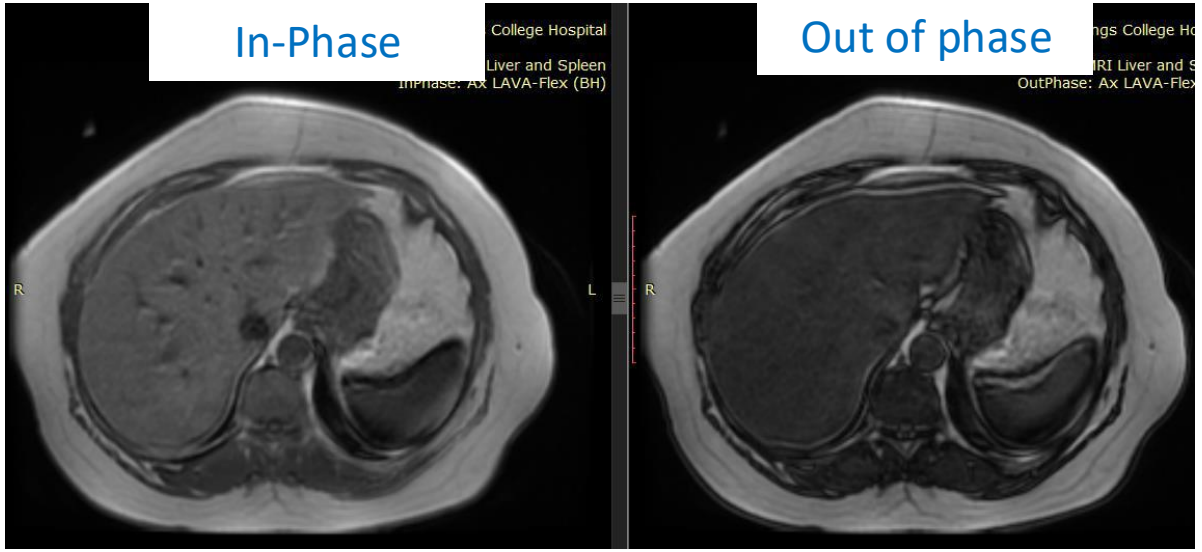
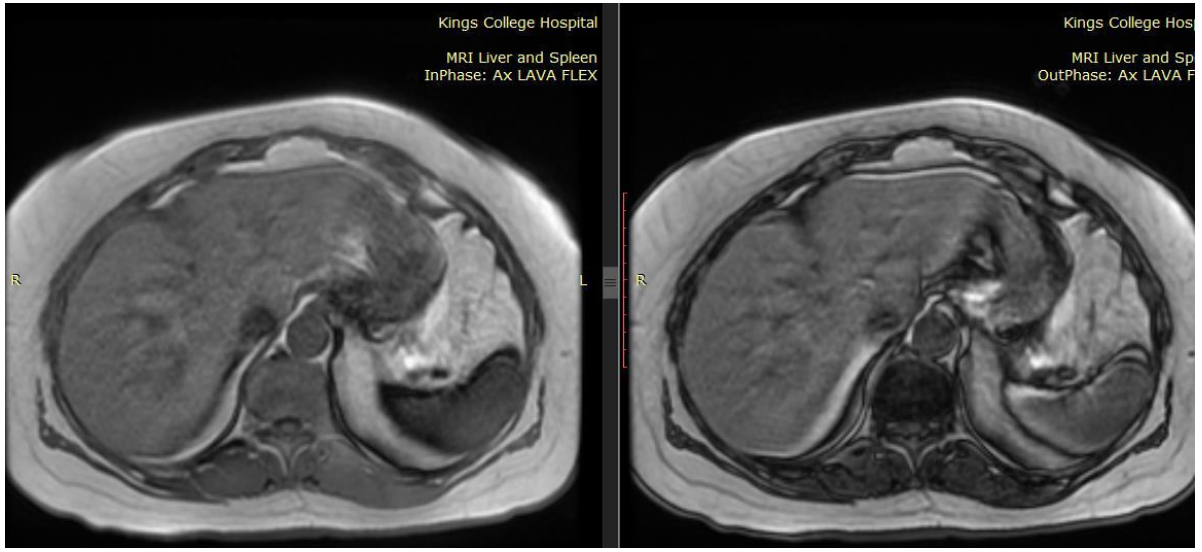
Insulin daily dose* (n=30)	114(54-180)	20(0-65)	-94	<0.001

* Median(IQR). 10 of the 27 (37%) people with diabetes discontinued insulin

REVISE- Diabesity:
Liver fat pre- and post-MR images

Association of British Clinical Diabetologists

	In-Phase	Out of phase
Baseline		
4-months post-RESET®		

Data presented at DDW 2016, San Diego USA, May 2016

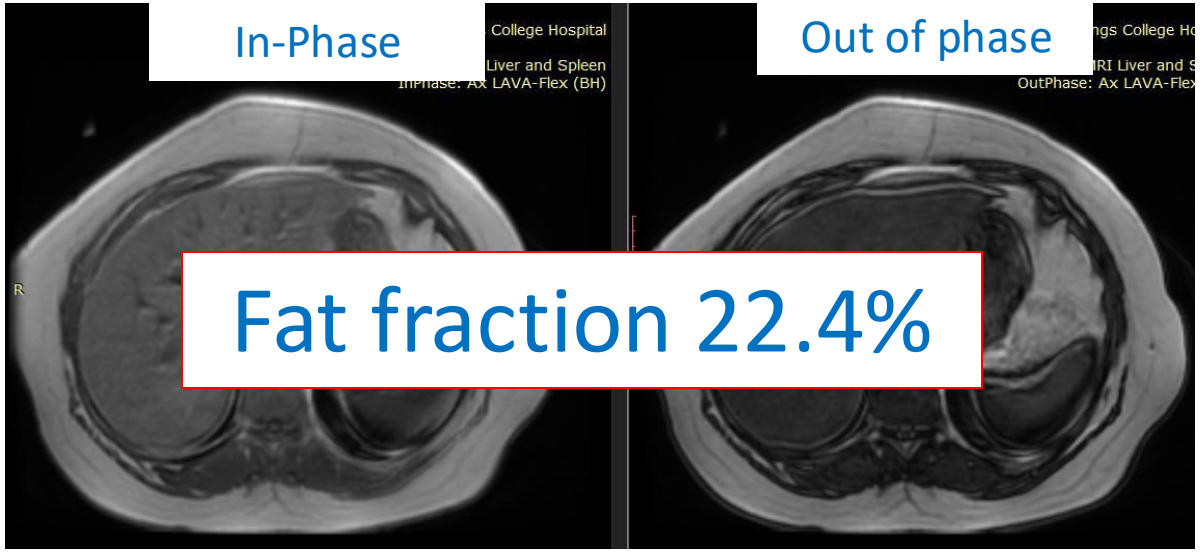
Sandwell and West Birmingham Hospitals NHS Trust

Where EVERYONE Matters

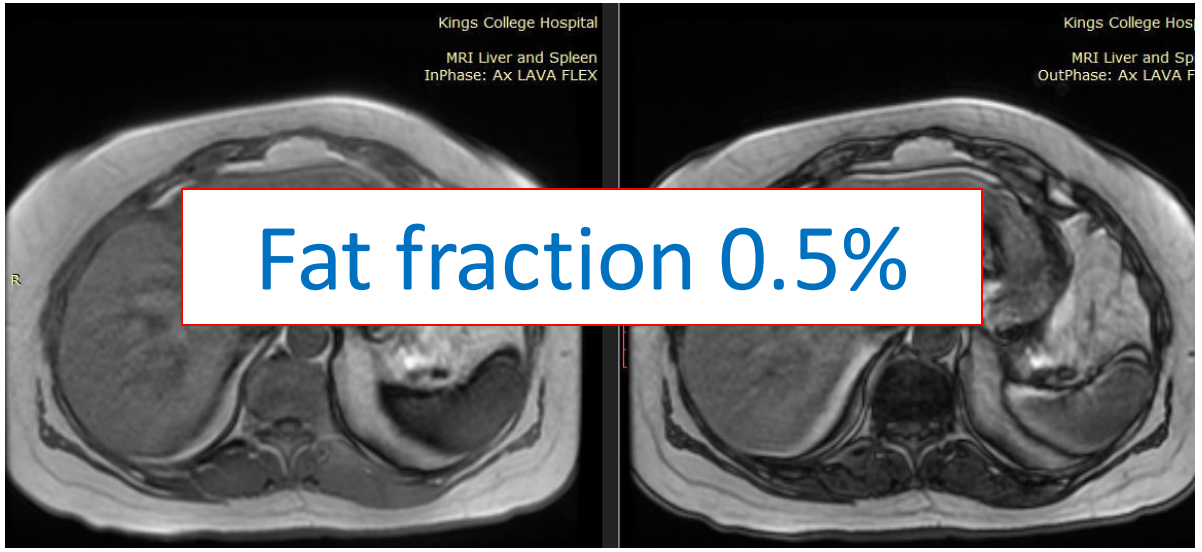
REVISE- Diabesity:
Liver fat pre- and post-MR images

Association of British Clinical Diabetologists

Baseline



4-months post-RESET®



Data presented at DDW 2016, San Diego USA, May 2016

Sandwell and West Birmingham Hospitals NHS Trust

Where EVERYONE Matters

MRI analysis: mean fat fraction (n8) (Impact of four months RESET® treatment)

Association of British Clinical Diabetologists

- Hepatic fat: 14.9 ± 9.4% to 2.9 ± 4.5%, p=0.003
- Pancreatic fat: 6.9 ± 8.5% to 1.3 ± 8.9%, p=0.02

- Reduction in hepatic fat leads to improvement in hepatic insulin sensitivity
- Reduction in pancreatic fat is associated with improved insulin secretion

Data presented at DDW 2016, San Diego USA, May 2016

Sandwell and West Birmingham Hospitals NHS Trust

Where EVERYONE Matters

Before

- Pre-RESET®
- HbA1c = 70 mmol/mol (8.6%)
- Wt = 82.9 kg

- BMI = 33.6 kg/m^2
- **ALT = 86 U/L (Fatty liver)**
- **Obese BMI**

Sandwell and West Birmingham Hospitals NHS
NHS Trust
Where EVERYONE Matters

Before

- Pre-RESET®
- HbA1c = 70 mmol/mol (8.6%)
- Wt = 82.9 kg

- BMI = 33.6 kg/m^2
- **ALT = 86 U/L (Fatty liver)**
- **Obese BMI**

12 months

- 12 months RESET®
- HbA1c = 51 mmol/mol (6.8%)
- Wt = 62.2 kg
  - **=Wt loss 20.7 kg (45.6 lbs)**
- BMI = 24.8 kg/m^2
- **ALT = 18 U/L (normal)**
- **Normal BMI**

Sandwell and West Birmingham Hospitals NHS
NHS Trust
Where EVERYONE Matters

Before

- Pre-RESET®
- HbA1c = 70 mmol/mol (8.6%)
- Wt = 82.9 kg

- BMI = 33.6 kg/m^2
- **ALT = 86 U/L (Fatty liver)**
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- Wt = 62.2 kg
  - **=Wt loss 20.7 kg (45.6 lbs)**
- BMI = 24.8 kg/m^2
- **ALT = 18 U/L (normal)**
- **Normal BMI**

4 years

- 4 years after RESET®
- HbA1c = 43 mmol/mol (6.5%)
- Wt = 55.8 kg

- BMI = 22 kg/m^2
- **ALT = 10 U/L**
- **Improvement sustained**

Sandwell and West Birmingham Hospitals NHS
NHS Trust

Where EVERYONE Matters

- HbA1c 128 mmol/mol (13.9%)
- Weight = 102 kg

- BMI = 39.3 kg/m^2 **(Obese BMI)**
- **Insulin 260 units**

Outcomes at explant of RESET®, n=43

Parameter	Baseline	EB Explant	Difference	P-value
Weight (kg)	123.3±30.0	105.9±30.8	-17.4±9.1	<0.001
BMI (kg/m^2)	41.7±7.3	35.6±7.7	-6.2±3.5	<0.001
HbA1c (%)	9.1±1.8	7.2±1.0	-1.9±1.8	<0.001
HbA1c (mmol/mol)	76.3±19.2	55.7±11.1	-20.6±19.6	<0.001
Systolic blood pressure (mmHg)	138.7±14.4	125.4±14.7	-13.3±16.2	<0.001
Cholesterol (mmol/L)	4.6±1.0	3.7±0.7	0.8±0.8	<0.001
ALT (U/l)	30.8±17.2	19.3±11.2	-11.5±18.3	<0.001
Insulin daily dose* (n=30)	114(54-180)	20(0-65)	-94	<0.001

* Median(IQR). 10 of the 27 (37%) people with diabetes discontinued insulin

- HbA1c 128 mmol/mol (13.9%)
- Weight = 102 kg

- BMI = 39.3 kg/m^2 **(Obese BMI)**
- **Insulin 260 units**

Before

NHS service patient

12 months After

- HbA1c 128 mmol/mol (13.9%)
- Weight = 102 kg

- BMI = 39.3 kg/m^2 **(Obese BMI)**
- **Insulin 260 units**

- HbA1c 49 mmol/mol (6.6%)
- Weight 64.2 kg
  =Weight loss 37.8 kg (83.3 lbs)
- BMI 24.46 kg/m^2 **(Normal BMI)**
- **Insulin no longer required**

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NHS Trust

Where EVERYONE Matters

To maintain 260 units of insulin/day she required to use 316 insulin pens per year = $+++

- 1,095 blood glucose tests/year ($+++)
- 1,460 pen needles/year ($+++)
- 1,095 lancing devices/year ($+++)
- 3 sharps bins for sharps disposal/year ($+++)

- HbA1c 128 mmol/mol (13.9%)
- Weight = 102 kg
- BMI = 39.3 kg/m^2 **(Obese BMI)**
- **Insulin 260 units**

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- Weight 64.2 kg

  =Weight loss 37.8 kg (83.3 lbs)
- BMI 24.46 kg/m^2 **(Normal BMI)**
- **Insulin no longer required**

- HbA1c 59 mmol/mol (7.5%)
- Weight 67.6 kg
- BMI 25.7 kg/m^2
- **Remains off Insulin:**
- **474 insulin pens avoided since RESET® removed**

- HbA1c 128 mmol/mol (13.9%)
- Weight = 102 kg
- BMI = 39.3 kg/m^2 **(Obese BMI)**
- **Insulin 260 units**

- HbA1c 49 mmol/mol (6.6%)
- Weight 64.2 kg
  =Weight loss 37.8 kg (83.3lbs)
- BMI 24.46 kg/m^2 **(Normal BMI)**
- **Insulin no longer required**

At 4 years after RESET® she continued to remain off insulin – i.e. 948 insulin pens saved!

- **474 insulin pens avoided since Endobarrier removed**

Summary and Conclusion

- Our data demonstrate RESET® as highly effective in patients with refractory diabesity, with maintenance of significant improvement three years after RESET® removal in 77%
- Patients reported considerable improvements in wellbeing, energy, fitness, exercise ability; 10/27 (37%) insulin-treated patients discontinued insulin
- Of the 10 patients (23%) whose weight and glycaemic control deteriorated to baseline after removal of RESET®, 9/10 had depression and/or bereavement and/or major health problems/disability
- There were high patient satisfaction levels and an acceptable safety profile
- These data are supportive of risk:benefit being strongly towards benefit and they support the continuance of RESET® as an important treatment option for refractory diabesity
- As endoscopy units are ubiquitous, our service could be readily disseminated.

Before

- Pre-RESET®
- HbA1c = 61 mmol/mol (7.7%)
- Wt = 86.6 kg
- BMI = 35.1 kg/m^2
- **Insulin 120 units daily**
- **Obstructive sleep apnoea requiring CPAP**

12 months

- 12 months RESET®
- HbA1c = 43 mmol/mol (6.1%)
- Wt = 65.6 kg
  - **Wt loss 21.0 kg (46.3 lbs)**
- BMI = 26.2 kg/m^2
- **Insulin 12 units daily**
- **CPAP no longer required**

Sandwell and West Birmingham Hospitals NHS
NHS Trust

Where EVERYONE Matters

Before

- Pre-RESET®
- HbA1c = 61 mmol/mol (7.7%)
- Wt = 86.6 kg

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  - **Wt loss 21.0 kg (46.3 lbs)**
- BMI = 26.2 kg/m^2
- **Insulin 12 units daily**
- **CPAP no longer required**

36 months

- 24 months after RESET®
- HbA1c = 53 mmol/mol (7.0%)
- Wt = 70.4 kg

- BMI = 28.9 kg/m^2
- **Insulin 16 units daily**
- **Remains off CPAP**

Sandwell and West Birmingham Hospitals NHS Trust

Where EVERYONE Matters

RESET® in Obstructive Sleep Apnoea

NICE

- Mild OSA : AHI<15 events/hr
- Moderate OSA : AHI 15-29 events/hr
- Severe OSA : AHI ≥30 events/hr

RESET® in Obstructive Sleep Apnoea

NICE

- Mild OSA : AHI<15 events/hr
- Moderate OSA : AHI 15-29 events/hr
- Severe OSA : AHI ≥30 events/hr

RESET® in Obstructive Sleep Apnoea

Celebrating 80 years of Passion. Inspiration. Courage. For Life.

American Diabetes Association. 80TH SCIENTIFIC SESSIONS

CHICAGO, IL • JUNE 12 - 16, 2020

Control/Tracking Number: 2020-A-3387-Diabetes
Activity: Abstract
Current Date/Time: 1/13/2020 6:11:10 AM

Endobarrier(EB) In Diabetes/Prediabetes With Obstructive Sleep Apnoea(OSA) Study- The Final Results

Author Block: MAHENDER YADAGIRI, FIONA Y. KINNEY, NATALIE ASHMAN, JESSICA ADAMS, MELANIE C. WYRES, EMMA S. SHARRATT, CHERYL GREENWOOD, MICHAEL H. LANG, JOHN BLEASDALE, EDWARD FOGDEN, MARK ANDERSON, CHRISTOPHER WALTON, MICHAEL A. GREENSTONE, ROBERT E. RYDER, *Birmingham, United Kingdom, Hull, United Kingdom*

Abstract:

Background/Aim: EB, a 60cm endoscopically implanted proximal intestinal liner is implanted for up to one year and then removed. We aimed to assess the extent to which patients with type2 diabetes or pre-diabetes, obesity (BMI 30-45kg/m^2) and moderate OSA requiring continuous positive airway pressure ventilation (CPAP) are able to discontinue CPAP following EB-related weight loss.

Method: We assessed Apnoea Hypopnoea Index (AHI), weight and HbA1c before and during EB treatment and following its removal in the 12 patients with moderate OSA requiring continuous positive airway pressure ventilation (CPAP) {75% female, 8/12 (66%) type 2 diabetes, 4/12 (34%) prediabetes, mean ± SD age 52.6±9.7 years, BMI 37.4±3.5 kg/m^2, median duration of OSA while on CPAP 9.0(7.0-15.0) months}.

Results: During the period of EB implantation, mean ± SD HbA1c fell by 1.26±0.7% from 7.9 ± 1.6 to 6.6 ± 0.9% (p=0.023), weight by 10.5±4.0 kg from 103.8± 14.1 to 93.3±13.7 kg (p<0.001) and AHI by 9.1±5.0 events/hour from 18.9±3.8 to 9.7±3.0 events/hour(p<0.001). Prior to EB, all patients had AHI in the National Institute for Health and Care Excellence (NICE) moderate OSA range (15-29.9 events/hour). During EB treatment the AHI of all 12 patients fell below 15 such that they no longer required CPAP according to NICE criteria. After EB removal, 10/12 (83%) patients attended follow up and at 12 months after removal, AHI remained below 15 in 5/10 (50%) patients but in the other 5 the AHI rose above 15 such that restarting CPAP was recommended. Two of these 5 patients, inspired by the desire to avoid CPAP, lost the regained weight and their AHI dropped below 15 again. Thus, 7/10 (70%) of patients were able to remain off CPAP 12 or more months after EB removal.

Conclusion: These results demonstrate major benefit of EB in moderate OSA, allowing patients to discontinue CPAP with maintenance of improvement at follow up in 70% and confirm previously demonstrated metabolic improvements in diabesity.

Sandwell and West Birmingham Hospitals NHS NHS Trust

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RESET® in Obstructive Sleep Apnoea

Print this Page for Your Records

After one year of RESET® treatment 12/12 (100%) patients with moderate sleep apnoea were able to discontinue CPAP

Cont

Fr ive Sleep Apnoea(OSA) Study- The Final Results

Aut ATALIE ASHMAN, JESSICA ADAMS, MELANIE C. WYRES, EMMA S. SHARRATT, CHERYL GREENWOOD, DEN, MARK ANDERSON, CHRISTOPHER WALTON, MICHAEL A. GREENSTONE, ROBERT E. RYDER, *Birmingham, United Kingdom, Hull, United Kingdom*

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Sandwell and West Birmingham Hospitals NHS Trust
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RESET® in Obstructive Sleep Apnoea

Received: 2 May 2024 | Accepted: 26 June 2024
DOI: 10.1111/cob.12694

Clinical OBESITY WILEY

ORIGINAL RESEARCH

Endoscopic duodenal-jejunal bypass liner treatment of moderate obstructive sleep apnoea—A pilot study

Mahender Yadagiri[1] | Fiona Y. Kinney[2] | Natalie Ashman[3] | John P. Bleasdale[4] | Edward N. Fogden[5] | Mark R. Anderson[5] | Christopher Walton[6] | Michael A. Greenstone[7] | Robert E. J. Ryder[1]

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[2]Research and Development, Sandwell & West Birmingham NHS Trust, Birmingham, UK
[3]Respiratory Physiology, Sandwell & West Birmingham NHS Trust, City Hospital, Birmingham, UK
[4]Anaesthetics Department, Sandwell & West Birmingham NHS Trust, City Hospital, Birmingham, UK
[5]Gastroenterology Department, Sandwell & West Birmingham NHS Trust, City Hospital, Birmingham, UK
[6]Diabetes Department, Hull Royal Infirmary, Hull, UK
[7]Respiratory Department, Castle Hill Hospital, Cottingham, UK

Correspondence
Mahender Yadagiri and Robert E. J. Ryder, Diabetes Department, Sandwell & West Birmingham NHS Trust, City Hospital, Dudley Road, Birmingham B18 7QH, UK.
Email: myadagiri@nhs.net and bob.ryder@nhs.net

Funding information
Association of British Clinical Diabetologists

Summary

We aimed to assess the extent to which people with type 2 diabetes or pre-diabetes, obesity (BMI 30–45 kg/m^2) and moderate obstructive sleep apnoea (OSA) requiring continuous positive airway pressure ventilation (CPAP) were able to discontinue CPAP following EndoBarrier-related weight loss. We assessed sleep and metabolic parameters before, during and after EndoBarrier in 12 participants with moderate OSA requiring CPAP (75% female, 8/12 [66%] type 2 diabetes, 4/12 [34%] prediabetes, mean ± SD age 52.6 ± 9.7 years, BMI 37.4 ± 3.5 kg/m^2, median duration of OSA while on CPAP 9.0 [7.0–15.0] months). With EndoBarrier in-situ, mean ± SD Apnoea Hypopnoea Index (AHI) fell by 9.1 ± 5.0 events/h from 18.9 ± 3.8 to 9.7 ± 3.0 events/h ($p < .001$) with an associated reduction in symptoms of daytime sleepiness (mean Epworth Sleepiness Score) such that all the 12 participants no longer required CPAP according to National Institute for Health and Care Excellence criteria. After EndoBarrier removal, 10/12 (83%) patients attended follow-up and at

Yadagiri, M et al. *Clinical Obesity*. 2024;14:e12694
https://doi.org/10.1111/cob.12694

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NHS Trust
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Before

- HbA1c = 69 mmol/mol (8.5 %)
- Wt = 92.4 kg
- BMI = 36 kg/m^2
- **Insulin 147 units daily**
- **Creatinine 153 umol/L**
- **eGFR 30 mL/min/1.73m^2**

12 months

- HbA1c = 50 mmol/mol (6.7 %)
- Wt = 73 kg
  - **weight loss 19.4 kg (42.8 lbs)**
- BMI = 27.1 kg/m^2
- **Insulin no longer required**
- **Creatinine 106 umol/L**
- **eGFR 46 mL/min/1.73m^2**

Sandwell and West Birmingham Hospitals NHS
NHS Trust
Where EVERYONE Matters

Before

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- BMI = 27.1 kg/m^2
- **Insulin no longer required**
- **Creatinine 106 umol/L**
- **eGFR 46 mL/min/1.73m^2**

24 months

- HbA1c = 55 mmol/mol (6.7 %)
- Wt = 74.6 kg

- BMI = 27.7 kg/m^2
- **Remains off insulin**
- **Creatinine 116 umol/L**
- **eGFR 41 mL/min/1.73m^2**

Sandwell and West Birmingham Hospitals NHS
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Current Research in
Diabetes & Obesity Journal
ISSN: 2476-1435

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Research Article
Volume 15 Issue 1 - July 2021
DOI: 10.19080/CRDOJ.2021.15.555902

Curr Res Diabetes Obes J

Improvement in Renal Function in Participants in the First UK National Health Service (NHS) EndoBarrier Service for Uncontrolled Diabesity

Robert EJ Ryder[1], Piya Sen Gupta[1,2], Mahi Yadagiri[1], Susan P Irwin[1], Wyn Burbridge[1], Tahira Bashir[1], Rachael A Allden[1], Melanie Wyres[1], Melissa Cull[1], John P Bleasdale[1], Edward N Fogden[1], Mark R Anderson[1] and Paul Cockwell[3]

[1]*Sandwell & West Birmingham NHS Trust, City Hospital, Birmingham, England*

[2]*Guy's and St Thomas' Hospitals, London, England*

[3]*Queen Elizabeth Hospital, Birmingham, England*

Submission: July 16, 2021; **Published:** July 30, 2021

***Corresponding author:** Bob Ryder, Sandwell & West Birmingham NHS Trust, City Hospital, Dudley Road Birmingham B18 7QH, UK

Abstract

Aims: EndoBarrier, a 60cm proximal intestinal liner, endoscopically implanted for up to one-year, reduces weight and HbA1c. As the risk of progressive chronic kidney disease (CKD) is increased by high BMI, we assessed the impact of EndoBarrier on renal function.

Methods: Between October 2014 and November 2017 we implanted EndoBarriers in 62 patients with sub-optimally controlled diabesity in

Current Research in
Diabetes & Obesity Journal
ISSN: 2476-1435

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key to the Researchers

Research Article
Volume 15 Issue 1 - July 2021
DOI: 10.19080/CRDOJ.2021.15.555902

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Improvement in Renal Fun
Participants in the First
Service (NHS)

Robert El R
A Ali
win[1], Wyn Burbridge[1], Tahira Bashir[1], Rachael
ie[1], Edward N Fogden[1], Mark R Anderson[1] and Paul

Birmingham, England
gland
gham, England

2021; **Published:** July 30, 2021

ponding author: Bob Ryder, Sandwell & West Birmingham NHS Trust, City Hospital, Dudley Road Birmingham B18 7QH, UK

As well as previously documented improvements in weight, HbA1c, BP, ALT and cholesterol, RESET® was associated with improvements in renal function.

Abstract

Aims: EndoBarrier, a 60cm proximal intestinal liner, endoscopically implanted for up to one-year, reduces weight and HbA1c. As the risk of progressive chronic kidney disease (CKD) is increased by high BMI, we assessed the impact of EndoBarrier on renal function.

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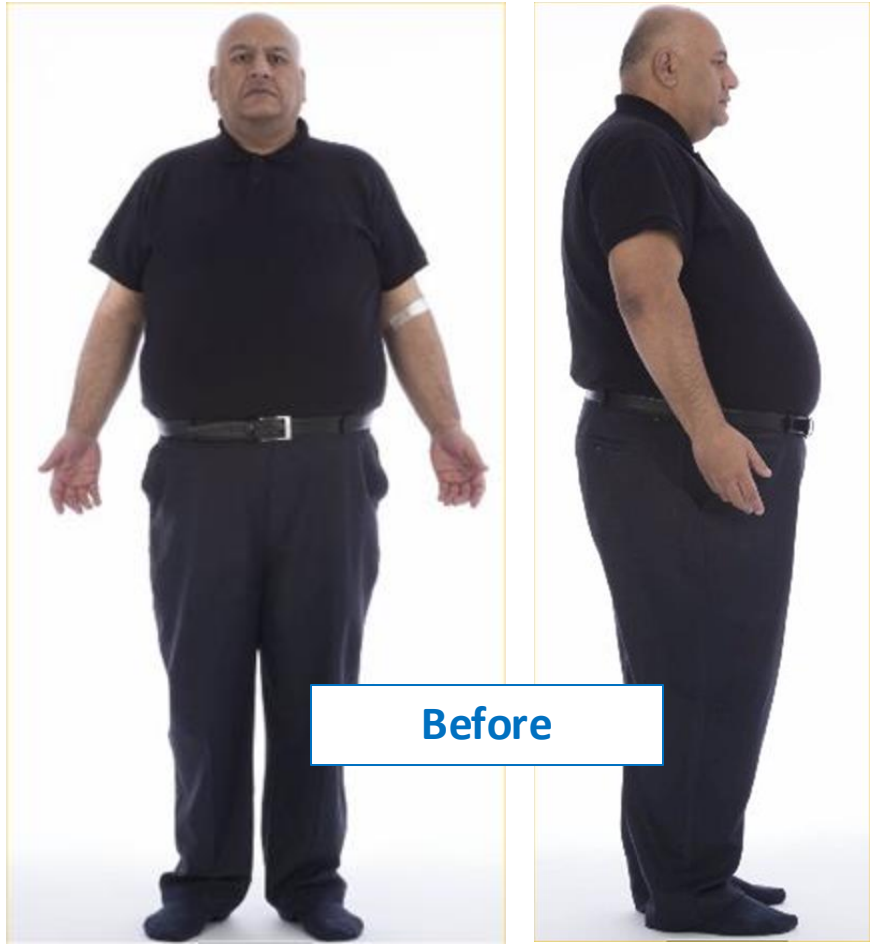

- HbA1c 109 mmol/mol (12.1%)
- Weight 136.9 kg

- BMI 44.7 kg/m^2

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- Weight 136.9 kg

- BMI 44.7 kg/m^2

WHO Definition of Diabetes Mellitus

‘Diabetes mellitus is a state of **chronic hyperglycaemia** which may result from many environmental and genetic factors, often acting jointly’

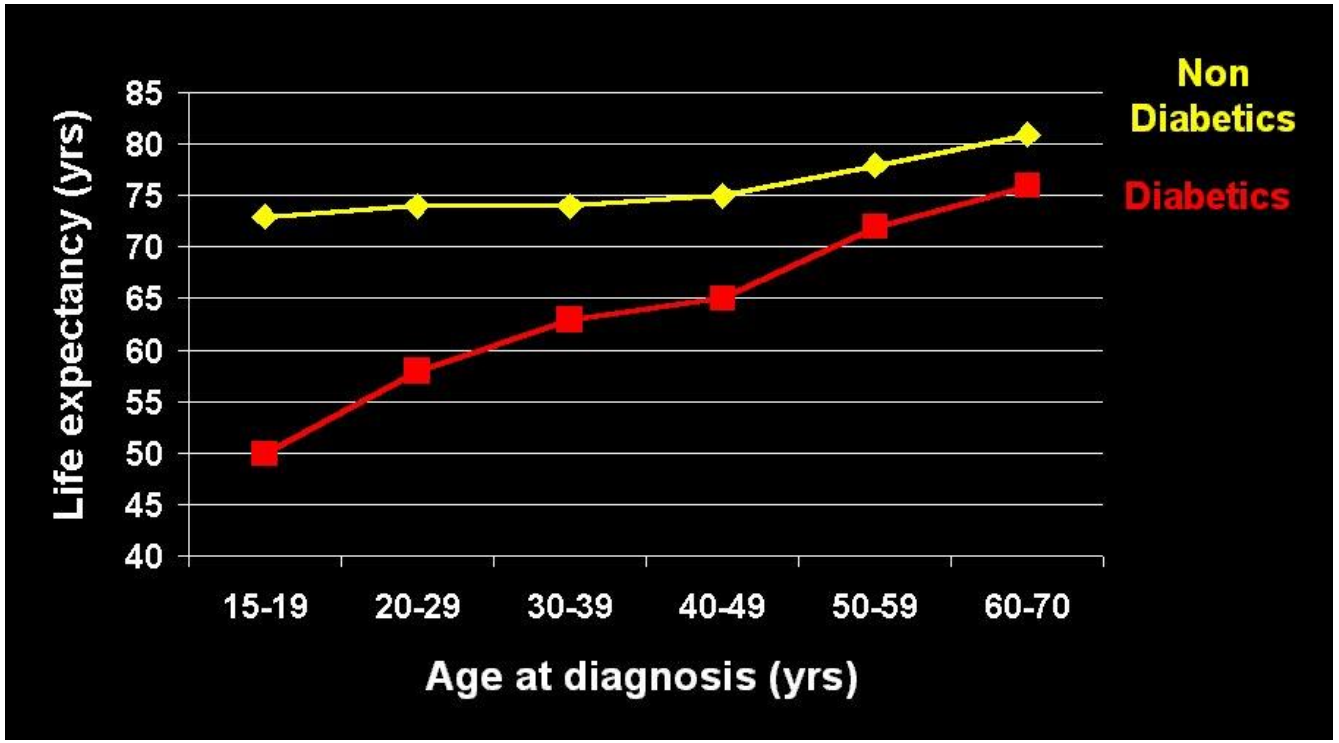
WHO Expert Committee on Diabetes Mellitus 1980

Re-definition of diabetes

‘Diabetes is a state of **premature cardiovascular death** which is associated with **chronic hyperglycaemia** and may also be associated with **blindness** and **renal failure**’

Miles Fisher, British Diabetes Association , Dublin, 1996

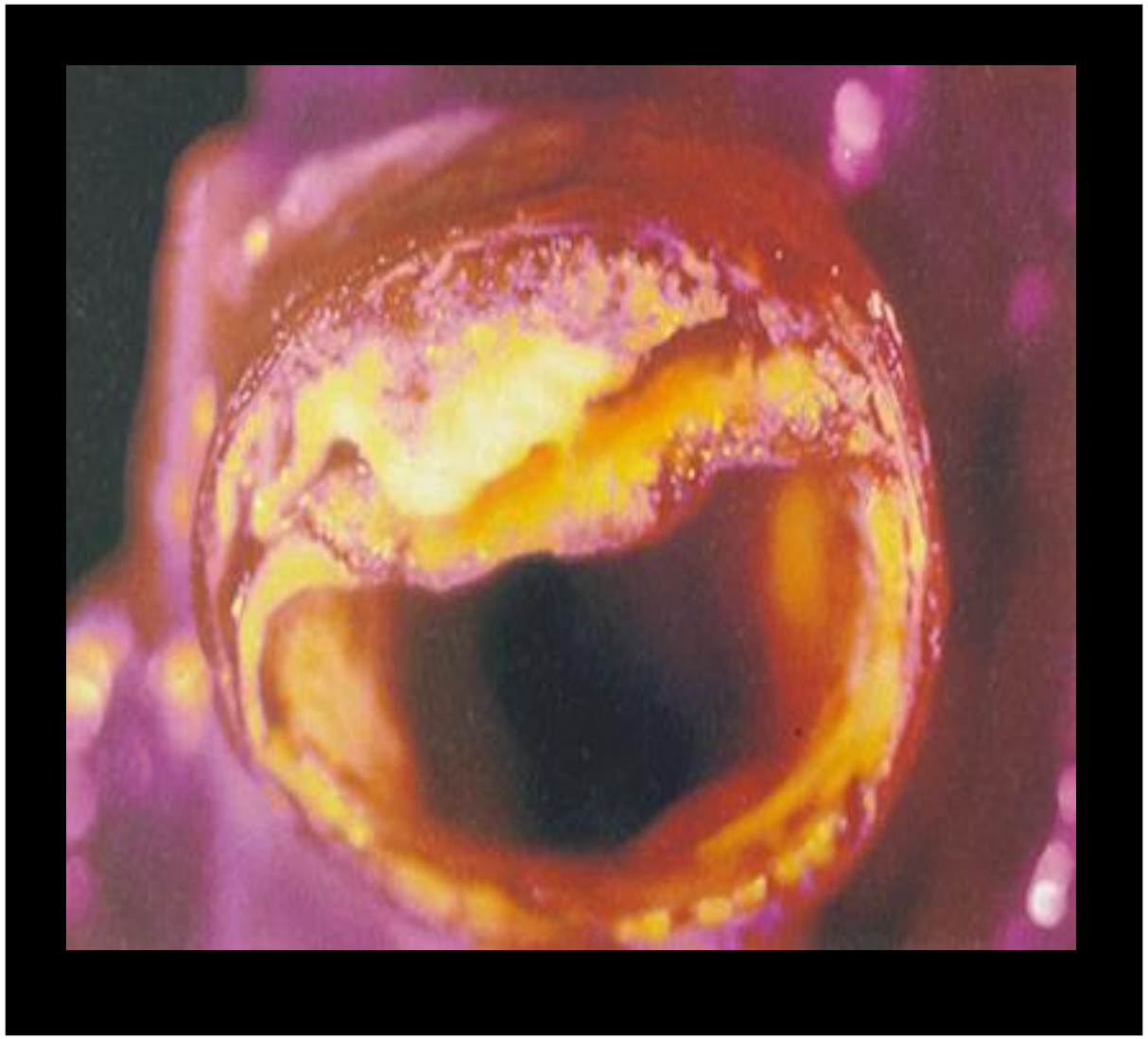
Life Expectancy and Diabetes



'Adults with diabetes have an annual mortality of about 5.4%, double the rate for non-diabetic adults. Life expectancy is decreased by 5–10 years.'

Goodkin G. Journal of Occupational Medicine 1975;17(11): 716–721.
Donnelly R, et al. British Medical Journal 2000; 320: 1062–1066.

Diabetes and Macrovascular Disease



Outcomes at explant of RESET®, n=43

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Weight (kg)	123.3±30.0	105.9±30.8	-17.4±9.1	<0.001
BMI (kg/m^2)	41.7±7.3	35.6±7.7	-6.2±3.5	<0.001
HbA1c (%)	9.1±1.8	7.2±1.0	-1.9±1.8	<0.001
HbA1c (mmol/mol)	76.3±19.2	55.7±11.1	-20.6±19.6	<0.001
Systolic blood pressure (mmHg)	138.7±14.4	125.4±14.7	-13.3±16.2	<0.001
Cholesterol (mmol/L)	4.6±1.0	3.7±0.7	0.8±0.8	<0.001
ALT (U/l)	30.8±17.2	19.3±11.2	-11.5±18.3	<0.001
Insulin daily dose* (n=30)	114(54-180)	20(0-65)	-94	<0.001

* Median(IQR). 10 of the 27 (37%) people with diabetes discontinued insulin

Impact of big weight loss in diabesity

- Decreased liver fat
- Decreased pancreatic fat

Lim EL, et al Diabetologia 2011; 54: 2506-2514
REVISE-Diabesity study data presented at DDW 2016, San Diego USA, May 2016

Impact of big weight loss in diabesity

- Decreased liver fat
- Decreased pancreatic fat
- ?Decreased fat in the arteries of the heart
- ?Decreased fat in the arteries to the brain

Lim EL, et al Diabetologia 2011; 54: 2506-2514
REVISE-Diabesity study data presented at DDW 2016, San Diego USA, May 2016
Ryder REJ – general musings about life, the universe, and everything, October 2025

The United Kingdom's first NHS Endobarrier service for advanced diabesity: 1-year outcomes for all 62 treated patients

RESET®

ROBERT EJ RYDER, SUSAN P IRWIN, WYN BURBRIDGE, HARDEEP GANDHI, TAHIRA BASHIR, RACHAEL A ALLDEN, MORDEL WILSON, MELANIE WYRES, MELISSA CULL, MAHI YADAGIRI, JOHN P BLEASDALE, EDWARD N FOGDEN, MARK R ANDERSON, PIYA SEN GUPTA

Abstract

Aims: **EndoBarrier is a 60 cm proximal intestinal liner, endoscopically implanted for up to 1 year, designed to mimic the bypass aspect of Roux-en-Y gastric bypass surgery. We aimed to assess its safety and efficacy in patients with advanced diabesity.**

Methods: **Since October 2014 we have implanted 62 EndoBarriers in our NHS service. By November 2018 all were explanted. Outcomes were monitored in a registry.**

Results: **In 61 of the 62 patients (98.4%) (age 51.4±7.2 years, 54.1% male, 57.4% Europid, diabetes duration 12.0 (8.0–19.5) years, 57.4% insulin-treated, BMI 41.9±7.4 kg/m^2) with implant and explant data, mean±SD HbA$_{1c}$ fell by 23.7±21.4 mmol/mol from 80.2±22.5 to 56.5±11.5 mmol/mol ($p<0.001$), weight fell by 15.9±8.5 kg from 122.6±27.9 to 106.7±28.9 kg ($p<0.001$), systolic blood pressure from 138.5±15.0 to 125.8±14.6 mmHg ($p<0.001$), cholesterol from 4.7±1.4 to 3.9±0.9 mmol/L ($p<0.001$) and device removal and most derived benefit despite early removal.**

Conclusion: **EndoBarrier was highly effective in this setting in patients with advanced diabetes and obesity. Given the high cardiovascular and microvascular risk of these patients, benefits might outweigh risks. As an endoscopic procedure it is relatively simple and non-invasive. Early removal rates require monitoring and there needs to be increased focus on preventing complications but, on balance, EndoBarrier deserves further investigation as a potential treatment for wider use.**

Br J Diabetes 2019;**19**:110-117

Key words: EndoBarrier, duodenal–jejunal bypass liner, DJBL, obesity, type 2 diabetes, diabesity, bariatric surgery

Introduction

Background and rationale

RESET®

ORIGINAL RESEARCH

Table 4 EndoBarrier impact on 10-year CV risk as assessed by the UKPDS risk engine

	Before EndoBarrier	At EndoBarrier removal	p-value	Absolute risk reduction	Cases saved (out of 100)	Numbers needed to treat
CHD	15.8±11.8	9.0±6.0	<0.001	-6.8±7.6	6.8	14.7
Fatal CHD	11.4±10.1	5.6±4.7	<0.001	-5.7±6.7	5.7	17.5
Stoke	5.90±4.71	4.84±3.70	<0.001	-1.06±1.50	1.06	94.3
Fatal stroke	0.94±0.89	0.61±0.52	<0.001	-0.33±0.54	0.33	303.0

Interpretation:
According to UKPDS risk engine about **8 patients out of 100** will not have a coronary heart disease or stroke event over the next 10 years because of EndoBarrier treatment about **6 lives will be saved**

Ryder, REJ et al, Br J Diabetes 2019;19:110-117

RESET®

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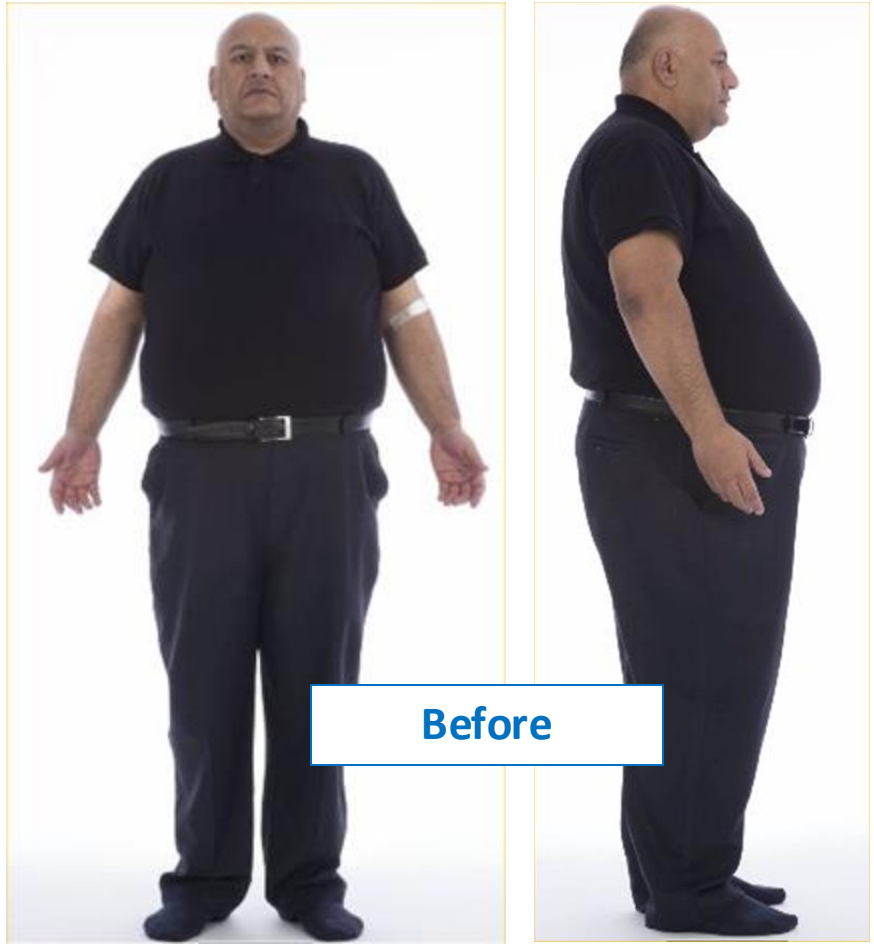
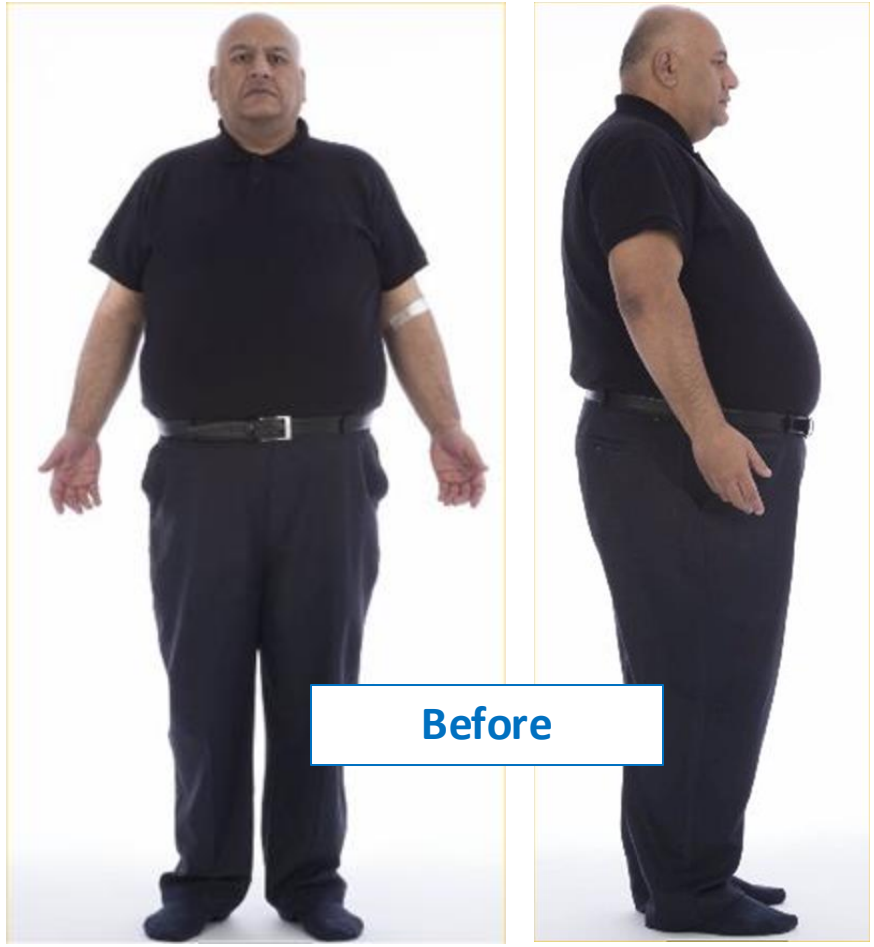
Sandwell and West Birmingham Hospitals NHS
NHS Trust
Where EVERYONE Matters



- HbA1c 109 mmol/mol (12.1%)
- Weight 136.9 kg

- BMI 44.7 kg/m^2



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- BMI 44.7 kg/m^2

- HbA1c 58 mmol/mol (7.5%)
- Weight 115.0 kg

  =Weight loss 21.9 kg (48.3 lbs)
- BMI 37.6 kg/m^2

Sandwell and West Birmingham Hospitals NHS
NHS Trust

Where EVERYONE Matters

“You can get another person in there”

BBC news item 11 May 2016: https://youtu.be/xRcnMBOdb58

Search YouTube with terms “ABCD” and “Endobarrier”

Before

Cardiovascular disaster waiting to happen

- HbA1c 109 mmol/mol (12.1%)
- Weight 136.9 kg

- BMI 44.7 kg/m^2

Sandwell and West Birmingham Hospitals NHS
NHS Trust

Where EVERYONE Matters

Before

Cardiovascular disaster waiting to happen

- HbA1c 109 mmol/mol (12.1%)
- Weight 136.9 kg
- BMI 44.7 kg/m^2

12 months After

?CV disaster averted

- HbA1c 58 mmol/mol (7.5%)
- Weight 115.0 kg

  =Weight loss 21.9 kg (48.3 lbs)
- BMI 37.6 kg/m^2

Sandwell and West Birmingham Hospitals NHS
NHS Trust

Where EVERYONE Matters

EndoBarrier / RESET® worldwide registry

- Over 3000 EndoBarriers implanted worldwide in recent years
- In view of uncertainty about risks versus benefits of EndoBarrier, during 2017, an independent, secure, online registry was established under the auspices of the Association of British Clinical Diabetologists (ABCD), for the collection of EndoBarrier safety and efficacy data from patients worldwide
- As of March 2023, data had been submitted on 1022 patients from 34 centres in 10 countries: Australia, Austria, Brazil, Czech Republic, England, Germany, Israel, Netherlands, Scotland and Slovenia
- This registry is currently being updated to reflect the device name change to RESET® and the Company name change to Morphic Medical

Association of British Clinical Diabetologists

Endoscopic Duodenal-Jejunal Bypass Liner Treatment for Type 2 Diabetes and Obesity: Glycemic and Cardiovascular Disease Risk Factor Improvements in 1,022 Patients Treated Worldwide

Diabetes Care 2023;46:e89–e91 | https://doi.org/10.2337/dc22-1952

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There is a worldwide pandemic of type 2 diabetes (T2D) and obesity (1). In clinical practice, many patients with obesity have poor glycemic management despite diet and lifestyle advice and maximal medications (2–4). In this situation, Roux-en-Y gastric bypass is highly effective, and increased use of bariatric surgery has been recommended (2). Nevertheless, it is an invasive and irreversible surgical procedure. EndoBarrier (GI Dynamics, Boston, MA), also known as duodenal-jejunal bypass liner, is a 60-cm impermeable fluoropolymer sleeve that is implanted endoscopically into the upper part of the small intestine (2–4), left in place for up to 1 year, and then removed endoscopically. The duodenal-jejunal bypass liner was developed to mimic the proposed small-bowel mechanisms of Roux-en-Y gastric bypass (2–4) while being less invasive. In Europe in 2017, approval for use (certificate of Conformité Européenne, or CE mark) of EndoBarrier was not renewed for reasons that are not entirely clear (3,4). As over 3,000 patients have been treated with EndoBarrier worldwide, during 2017, an independent, secure, online registry was established by the Association of British Clinical Diabetologists (ABCD) for the collection of safety and efficacy data of EndoBarrier-treated patients worldwide.

By October 2022, data had been entered on 1,022 EndoBarrier-treated patients (mean ± SD age 51.3 ± 11.4 years, 52.5% male, 84.9% with diabetes, mean ± SD BMI 41.1 ± 8.7 kg/m^2) from 34 centers in 10 countries. For those with both baseline and time-of-removal data, EndoBarrier treatment was associated with considerable reduction in weight, HbA_{1c}, systolic

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[4]Epworth Centre for Bariatric Surgery, Richmond, Australia

Association of British Clinical Diabetologists

- Outcomes on these 1022 patients from the registry were published in Diabetes Care, April 2023

Ryder, REJ et al. *Diabetes Care* 2023;**46**:e89–e91

Summary : 1022 RESET® treated patients

- Mean weight loss during the period of RESET® implantation was 13.3 kg with associated improvements in glycaemic control, blood pressure and cholesterol
- The higher the baseline HbA1c the greater the fall in HbA1c with a mean fall of 3.2% (34.9 mmol/mol) with those with a baseline HbA1c ≥ 10% (86 mmol/mol).
- The rate of serious adverse events was 4.2% with the majority of these (2.3%) being gastrointestinal bleeds
- The rate of early removal for hepatic abscess (1.1%) was noticeably less than that the 3.5% rate found in the US pivotal trial
- All patients with a serious adverse event made a full recovery and most experienced considerable benefit from the treatment despite the adverse event.

Ryder, REJ et al. *Diabetes Care* 2023;**46**:e89–e91

Association of British Clinical Diabetologists

IMPROVING SAFETY VS EFFICACY OF DUODENAL JEJUNAL BYPASS LINER TREATMENT FOR TYPE 2 DIABETES AND OBESITY

R.E.J. RYDER on behalf of:

R.E.J. Ryder[1], R. Drummond[2], B. McGowan[3], S Amiel[4], R. Lopez-Gonzalez[5], J. Pujol[5], H. Frydenberg[6], J. Stein[7], T. Battelino[8], S. Fishman[9], C. de Jonge[10], J. Greve[11], R. Cohen[10], P. M. Yadagiri[1], Sen Gupta[11,1]

EASD 2025,Vienna

15–19 September 2025

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Association of British Clinical Diabetologists

EndoBarrier Worldwide Registry

- Many of the of the serious adverse events associated with EndoBarrier occur during the last three months of treatment
- Reducing the period of implantation to 9-months may reduce the complication rate
- We aimed to assess safety and efficacy for 9-months vs 12-months implantation using data in the registry

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EndoBarrier Worldwide Registry

- As of June 2025, data had been entered on 1298 EndoBarrier treated patients*
- Of whom 258 had both 9- and 12-month data entered**

*From 37 centres in 12 countries

**From 19 centres in 9 countries: Australia, Brazil, Germany, Israel, Netherlands, Scotland, Slovenia, Spain and England)

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Baseline demographics of the 258 patients

Parameter	n=258
Age (years)	49.5±13.3
Sex (% male)	46.5
Ethnicity (% white)	83
BMI (kg/m^2)	39.6±6.9

Impact of EndoBarrier on weight and HbA1c
Little difference 9-months vs 12-months

Parameter	n	Baseline	9-months	12-months	Difference 9-months vs baseline	Difference 12-months vs baseline	P-value baseline vs 9-months	P-value baseline vs 12-months	P-value difference 9- vs 12-months
Weight (kg)	228	113.8±22.5	101.6±22.0	100.7±23.0	-12.2±8.1	-13.1±8.6	<0.001	<0.001	0.005
All HbA1c (%)	197	8.8±2.0	7.3±1.4	7.3±1.3	-1.5±1.7	-1.5±1.7	<0.001	<0.001	0.571

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HbA1c ≥ 7%	170	9.3±1.8	7.5±1.3	7.5±1.2	-1.7±1.7	-1.7±1.8	<0.001	<0.001	0.639
HbA1c ≥ 8%	132	9.8±1.7	7.7±1.4	7.7±1.3	-2.0±1.8	-2.1±1.8	<0.001	<0.001	0.447
HbA1c ≥ 9%	82	10.6±1.7	7.9±1.6	7.8±1.5	-2.6±2.0	-2.8±1.9	<0.001	<0.001	0.203
HbA1c ≥ 10%	48	11.4±1.7	8.4±1.8	8.1±1.5	-3.1±2.3	-3.3±2.0	<0.001	<0.001	0.091
HbA1c ≥ 11%	26	12.4±1.9	8.6±2.0	8.5±1.8	-3.8±2.7	-3.8±2.5	<0.001	<0.001	0.857

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HbA1c ≥						-2.8±1.9	<0.001	<0.001	0.203
HbA1c ≥ 1				8.1±1.5	-3.1±2.3	-3.3±2.0	<0.001	<0.001	0.091
HbA1c ≥ 11	28	12.4±1.9	8.6±2.0	8.5±1.8	-3.8±2.7	-3.8±2.5	<0.001	<0.001	0.857

How many SAEs would be avoided by reducing implant time to 9-months?

Serious Adverse Events

- In the full registry, 60/1298 (4.6%) experienced serious adverse events (SAE)
- All patients with SAE made a full recovery, and most experienced benefits despite the SAE
- 22/60 (36.7%) SAE would have been avoided by removal at 9-months (12 liver abscess, 8 GI bleed, one cholecystitis, one surgical removal required as liner was displaced)
- It was particularly noteworthy that 12/18 (66.6%) liver abscess SAEs would have been avoided by removal at 9-months

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Serious Adverse Events

Serious Adverse Event	All	Before 9-months	After 9-months
Early removal because of GI bleed (removal: by endoscopy = 30/31; by laparoscopy = 1/31)	31	26	5
Liver abscess (early removal = 12/15; found at time of routine explant = 3/15)	15	6	9
Early removal because of pancreatitis or cholecystitis	4	3	1
GI bleed after prolonged implant (1/3 = 18 months; 2/3 = 13 months)	3	0	3
Liver abscess after prolonged implant (1/2 = nearly 2 years; 1/2 = 16 months)	3	0	3
Early removal because of liner obstruction - surgical removal required*	1	1	0
Abdominal abscess due to small perforation of bowel in relation to DJBL	1	1	0
Early removal - gastric perforation – surgical removal as part of successful Roux-en-Y procedure	1	1	0
Surgical removal required as liner was displaced	1	0	1
Total	60	38	22

*Extraction hood came off during removal and EndoBarrier became stuck in the oesophagus requiring removal through a small incision in the side of the neck

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Summary and Conclusion

- The data confirms the effectiveness of EndoBarrier at reducing weight and HbA1c
- The higher the baseline HbA1c the greater the fall with a mean fall of 3.8% or more when baseline HbA1c ≥ 11%.
- Reducing the implantation period from 12-months to 9-months resulted in:
  - Little significant difference in weight loss or in the improvement in HbA1c
  - 36.7% reduction in SAE
  - It was particularly noteworthy that 66.6% liver abscess SAE would have been avoided by removal at 9-months
- These data support a change in the recommended implantation period for EndoBarrier from 12-months to 9-months

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Summary and Conclusion

- The data confirms the effectiveness of EndoBarrier at re… …1c
- The higher the baseline HbA1c the great… …re when baseline HbA1c ≥ 11%.
- Reducing th…
  - …
  - …moval at 9-
- The… …mplantation period for EndoBarrier from…

Since this abstract was submitted, the Duodenal Jejunal Bypass Liner has regained its CE Mark and has been relaunched with the name RESET® and it now has a recommended implantation time of 9 months

Association of British Clinical Diabetologists

Before

- HbA1c 109 mmol/mol (12.1%)
- Weight 136.9 kg
- BMI 43.2 kg/m^2

9 months

- HbA1c 40 mmol/mol (5.8%)
- Weight 113.8 kg (Wt loss 23.1kg)
- BMI 35.9 kg/m^2

12 months

- HbA1c 58 mmol/mol (7.5%)
- Weight 115.0 kg (Wt loss 21.9kg)
- BMI 36.3 kg/m^2

Before

- HbA1c = 70 mmol/mol (8.6%)
- Wt = 82.9 kg
- BMI = 33.6 kg/m^2
- **ALT = 86 U/L (Fatty liver)**
- **Obese BMI**

9 months

- HbA1c = 60 mmol/mol (7.6%)
- Wt = 65.6 kg (**Wt loss 17.3 kg)**
- BMI = 26.6 kg/m^2
- **ALT = 20 U/L (normal)**

12 months

- HbA1c = 51 mmol/mol (6.8%)
- Wt = 62.2 kg (**Wt loss 20.7 kg)**
- BMI = 24.8 kg/m^2
- **ALT = 18 U/L (normal)**
- **Normal BMI**

Before

- HbA1c = 61 mmol/mol (7.7%)
- Wt = 86.6 kg
- BMI = 35.1 kg/m^2
- **Insulin 120 units daily**
- **Obstructive sleep apnoea requiring CPAP**

CPAP – continuous positive airway pressure ventilation

Before

- HbA1c = 61 mmol/mol (7.7%)
- Wt = 86.6 kg
- BMI = 35.1 kg/m^2
- **Insulin 120 units daily**
- **Obstructive sleep apnoea requiring CPAP**

9 months

- HbA1c = 57 mmol/mol (7.4%)
- Wt = 72.5 kg (**Wt loss 14.1 kg**)
- BMI = 29.4 kg/m^2
- **Insulin 45 units daily**
- **CPAP no longer required**

12 months

- HbA1c = 43 mmol/mol (6.1%)
- Wt = 65.6 kg (**Wt loss 21.0 kg**)
- BMI = 26.2 kg/m^2
- **Insulin 12 units daily**
- **CPAP no longer required**

Before

- HbA1c = 69 mmol/mol (8.5 %)
- Wt = 92.4 kg
- BMI = 36 kg/m^2
- **Insulin 147 units daily**
- **Creatinine 153 umol/L**
- **eGFR 30 mL/min/1.73m^2**

9 months

- HbA1c = 51 mmol/mol (6.8 %)
- Wt = 80 kg (**Wt loss 12.4 kg**)
- BMI = 31.2 kg/m^2
- **Insulin 26 units daily**
- **Creatinine 114 umol/L**
- **eGFR 42 mL/min/1.73m^2**

12 months

- HbA1c = 50 mmol/mol (6.7 %)
- Wt = 73 kg (**Wt loss 19.4 kg**)
- BMI = 27.1 kg/m^2
- **Insulin no longer required**
- **Creatinine 106 umol/L**
- **eGFR 46 mL/min/1.73m^2**

Before

- HbA1c 128 mmol/mol (13.9%)
- Weight = 102 kg
- BMI = 39.3 kg/m^2 **(Morbid obese BMI)**
- **Insulin 260 units**

9 months

- HbA1c 45 mmol/mol (6.3%)
- Weight = 76.8 kg **(Wt loss 25.2 kg)**
- BMI = 29.6 kg/m^2
- **Insulin 12 units**

12 months

- HbA1c 49 mmol/mol (6.6%)
- Weight = 64.2 kg **(Wt loss 37.8 kg)**
- BMI = 24.46 kg/m^2 **(Normal BMI)**
- **Insulin no longer required**

Before EndoBarrier

After 6 months

- At 11.2 months, presented with right flank pain radiating to the back and vomiting. USS revealed liver abscess. Required intravenous antibiotics and urgent EndoBarrier removal
- This serious situation would have been avoided by removal at 9-months

Before

- HbA1c = 85 mmol/mol (9.9%)
- Wt =113.0 kg
- BMI = 44.7 kg/m^2

9 months

- HbA1c = 51 mmol/mol (6.8%)
- Wt = 103.6 kg **(Wt loss 9.4 kg)**
- BMI = 40.9 kg/m^2

At explant (11.2 months)

- HbA1c = 51 mmol/mol (6.8%)
- Wt = 99.2 kg **(Wt loss 13.8 kg)**
- BMI = 39.2 kg/m^2