National Hiatal Surgical Registry

3rd Annual Report 2024

NATIONAL HIATAL SURGICAL REGISTRY

Benchmarking Surgical Outcomes for UK Hiatal Surgery

Message from the NHSR Chair and Society Presidents:

We delightfully present the third Annual Report of the National Hiatal Surgery Registry (NHSR). NHSR is the first surgical registry in the UK for benign hiatal surgical disease, with outcomes decided by the experience of end-users, and our patients.

Since its inauguration at the Annual AUGIS Conference in Belfast 2021, NHSR has been engaged widely by the UK hiatal surgeons in England, Wales, Scotland and Northern Ireland. Other Upper GI specialities (bariatrics and cancer resection) have benefited from detailed analysis of the quality and effectiveness of these procedures for some time by using Registry data input.

We do not currently know how effective outcomes from hiatal surgery in the UK are nationally.

On behalf of AUGIS and the entire NHSR Committee, we would like to thank all our peer Upper Gastrointestinal Surgeons for taking the time to input their valuable data into this long overdue Registry.

We aim to publish NHSR reports annually. We also aim to present this report annually at the AUGIS National Conference. The reports will be based on the outcomes of Trusts and Private Healthcare Organisations rather than individual surgeons.

We look forward to your ongoing contribution to this novel project and a more considerable success in the years to come.

Best Wishes

Sayan Bhattacharya

Mr Sayan Bhattacharya
NHSR Committee Chair

Prof Viswanath YKS
President BBUGSS

Mr Iain Cameron
President AUGIS

Prof Vis Viswanath
President BBUGSS

Prof Tan Arulampalam
President ALSGBI

Mr Christian Macutkiewicz
President ASGBI

Mr Mark Cheetham
National Clinical Lead
General Surgery at GIRFT

Contents:

Overview and Executive Summary

The purpose of the National Hiatal Surgical Registry (NHSR) aims to provide foregut surgeons with an effective tool to reflect on their practice in treating hiatal surgical disease and, at a national level, benchmark outcomes for hiatal surgical procedures across the UK.

The NHSR database will allow surgeons to voluntarily enter meaningful and valuable information about the hiatal surgery they perform to audit their outcomes, reference themselves against peer outcomes and assist with an appraisal.

The Registry is free to use for all GMC registered surgeons concerning hiatal surgery conducted in the UK within the NHS and Independent Healthcare Sector that are members of AUGIS/BBUGSS/ALSGBI/ASGBI/RCS Ed/Eng.

Hiatal surgery encompasses surgical procedures for treating benign upper gastrointestinal conditions related to the hiatus of the diaphragm. These pathological conditions include gastro-oesophageal reflux disease, symptomatic hiatus hernias, hybrid reflux/hiatus hernia disease and Achalasia. The surgical procedures described under hiatal surgery include- Primary Anti-Reflux Surgery (both Fundoplication and Magnetic Sphincter Augmentation LINX™), Primary Hiatus Hernia Repair, Hybrid Anti-Reflux /Hiatus Hernia Surgery and Cardiomyotomy. Also included is Revisional surgery of these procedure types.

The Registry does not at present include endoluminal procedures.

NHSR uses a classification system of hiatal disease defined by the British Benign Upper GI Surgical Society Home | British Benign Upper Gastro Intestinal Society (bbugss.com) for Registry reporting.

The Registry records patient selection, pre-operative investigations, intra-operative techniques, volumes of practice and most importantly, Quality of Life (QoL) outcomes before and after procedures.

The Registry uses Patient Reported Outcome Measures (PROMs) to record the profile of pre and post-procedure QoL scores and reflect procedure effectiveness.

The Registry will automatically contact patients that have been entered (with their consent-see GDPR policy Downloads – National Hiatal Surgery Registry (nhsr.org)) concerning their symptoms using the QoL evaluation relevant for their condition at -6 months /-1 year /-2 years /-3 years/-4 years /-5 years after their surgery. The data will automatically be entered into users' accounts.

For Primary Anti-Reflux procedures and Hybrid Anti-Reflux/Hiatus Hernia procedures, the Registry will use GORD-QoL (Downloads – National Hiatal Surgery Registry (nhsr.org)) scores and the need for continued anti-acid medication use as outcome measures.

Eckhardt scores (Downloads – National Hiatal Surgery Registry (nhsr.org)) are used for Cardiomyotomy surgery.

For Hiatus Hernia Repair, a pre-operative and post-operative Hiatus Hernia-QoL score will be used (Downloads – National Hiatal Surgery Registry (nhsr.org)).

Surgeons can download a personal report populated by information they have entered and data the NHSR follow-up system has provided for their appraisal.

A national annual report will also be delivered each year at the AUGIS Annual Scientific Meeting and will be made publicly available.

This report will not be at the Surgeon level but at the Unit level. Volumes of activity, complication rates, and follow-up QoL outcomes will be reported.

Individual surgeon users will only be able to see their outcomes, and these will be statistically referenced against the average of other surgeons anonymised outcomes for the same conditions.

As an NHSR user, you cannot see other surgeons' outcomes.

The information collected about surgeons and patients is €confidential and will never be shared with any other organisation without your/their permission (see GDPR policy).

The Registry will not monitor/report/act on any individual or Unit data outcomes; individual outcomes are for confidential interpretation and reflection, and Unit outcomes can be seen publicly.

The Registry is governed by the AUGIS Executive/BBUGSS Council and a surgeons committee (NHSR Committee).

NHSR is operated on behalf of AUGIS by an IT Healthcare Company bound by GDPR confidentiality law. NHSR is the Information Commissioner Office (ICO), Care Quality Commission (CQC), and NHS Digital, registered and regulated, and is data safety compliant.

Outcome data will be published annually. The Registry is not recognised as a research tool and cannot be used as a research tool itself, but data downloaded by surgeons can be used with required consents outside the Registry.

The Registry aims to more specifically classify hiatal surgery to report a more meaningful comparison of outcomes.

NHSR Patient Status Definition

Active Patients- A patient entered into the NHSR, but not all data fields for that patient completed. These patients are thus not included in statistical analysis and not yet eligible for Patient Report Outcome Measures (PROMs).

Complete Patients- Patients have all data fields completed and thus are eligible for progression into PROMs and their data is included in statistical analysis.

PROMs Patients- Patients who have completed their data entry and are passing through their post-operative period of PROMs follow-up for 5 years and are included for statistical analysis.

Executive Summary

Currently from the centres that have engaged, the NHSR reports excellent improvement in patient-reported QoL outcomes for all aspects of benign hiatal surgery validating the quality of this surgery.

The grouped UK outcomes show statistically significant improvements in QoL score from pre-procedure baseline, to post procedure measurements in all subsets of Hiatal Surgery for primary procedures. These improvements seem to be maintained post-operatively. As the Registry matures it will be apparent if this trend continues.

Individually, all centres submitting data show statistically significant improvement with patient reported improvement of QoL scores in all areas of hiatal surgery, there are no outliers in practice.

Data volume has significantly increased since the last NHSR Report *and is set to make a benchmark over time building a picture of Hiatal Surgery outcomes in the UK*

Patient characteristics in relation to anti-reflux surgery and hiatus hernia repair appear different, supporting the decision to classify them separately and report them as different categories of surgery.

Although this registry reports quality, as it remains voluntary it can only validate the quality of those centres entering data and thus does not provide a complete picture of the entire national hiatal surgery practice.

Currently, no other national database provides quality of life outcome data for hiatal surgery and thus NHSR continues to complement the National Consultant Information Programme (NCIP) data (NCIP-FAQ-leaflet-Feb-2021.pdf) which provides more comprehensive volume and safety data.

1. Introduction to National Hiatal Surgery Registry (NHSR)

Hiatal surgery encompasses surgical procedures for treating benign upper gastrointestinal conditions related to the hiatus of the diaphragm. These pathological

conditions include Gastro-Oesophageal Reflux Disease, symptomatic Hiatus Hernias and Achalasia. The surgical procedures described under hiatal surgery include- Anti-Reflux Surgery (both Fundoplication and Magnetic Sphincter Augmentation LINX™), Hybrid Anti-Reflux/Hiatus Hernia Surgery, Primary Hiatus Hernia Repair and Cardiomyotomy; the Registry does not at present include endoluminal procedures.

The current focus in surgery is to ensure standards of safety and quality. Outcomes for the vast majority of hiatal surgery outside the context of emergency intervention (acute hiatus hernia volvulus) are primarily based on long term Quality of Life Improvement (QoLs), of which we have little or no data on a national level. Multiple publications from different centres on long-term outcomes after anti-reflux surgery show us what good outcomes look like in high-volume units with interest in the condition. What is unknown is whether or not all UK providers of hiatal surgery have similar outcomes and patients are receiving equity of care. Experience from other disciplines in Upper GI Surgery suggest the link between outcome quality and volume, it is a reasonable assumption that hiatal surgery is similar.

Hospital Episode Statistics (HES) data can provide a broad measurement of hiatal surgery's safety and quality by providing information on the volume of activity, conversion rates, length of stay and readmission rates. These are essentially short-term outcome performance indicators, but do not provide important information about the longer-term QoL outcome benefits for patients having hiatal procedures. HES has no ability to record this data both now or in the near future.

Currently, hiatal operations are classified by coders using Office of Population Censuses and Surveys (OPCS4) codes to report specific operation types. These codes do not accurately allow classification of the symptoms that are being treated or the operation being performed

anti-reflux surgery carries code G243/G249

hiatus hernia carries code G233

The codes are often bundled together when the primary intent of the surgery is variable, and thus interpretation of outcomes based on these codes is confused. This Registry will use a classification system for defining which type of hiatal pathology is being treated and the specific procedure being provided rather than using the broad OPCS4 codes used by HES. NHSR moves away from the ambiguous system currently used.

Definitions for procedures can be found on the NHSR website or when entering data into the live database and are also detailed below in this report.

The level of detail recorded by the Registry pre-operatively and intra-operatively is currently far beyond what can be obtained and reported from HES. The NHSR committee has selected the information it believes is of most value for surgeons to audit, compare, and help future practice. The most important function of this Registry is to provide an automated system to collect and report Patient Reported Outcome Measures (PROMs). The Registry is designed to allow patient data entry for both the NHS and Independent Healthcare Sector. Users will be able to download a report

about their practice from the Registry dashboard and also be able to download a Surgeons Report benchmarking them against the average outcomes and performance of their peers nationwide. Users can select multiple centres they deliver care from. If Users move hospital, their personal outcomes will follow them, but historical activity will stay within the centre where they performed the surgery.

The process of PROMs follow-up will be automated and conducted by the NHSR administration team, and the data reported back will automatically appear in Users procedure dashboard when received back from patients. NHSR will inform Users if their patient is not responding to follow-up information requests.

The National Hiatal Surgical Registry (NHSR) aims to provide surgeons with an effective tool to be reflective in their surgical practice in treating hiatal disease and benchmark outcomes for hiatal surgical procedures across the UK.

The Registry is free for all GMC registered surgeons with respect to hiatal surgery conducted within the UK for NHS and Independent Sector Practice. That are members of BBUGSS/AUGIS or ALSGBI.

The Registry will record details about patient selection, pre-operative investigations, intra-operative techniques, volumes of practice and, most importantly, outcomes. The Registry has patient reporting outcome measures (PROMs) integral within it. The Registry will automatically contact patients (with their consent-see GDPR policy) about their symptoms at 6 months, 1 year, 2 years, 3 years, 4 years and 5 years after their surgery. For anti-reflux procedures Registry, they will use pre-operative and post-operative GORD-QoL (see downloads page-Downloads – National Hiatal Surgery Registry (nhsr.org)) scores and need for continued anti-acid medication use as outcome measures. For cardiomyotomy surgery, comparison of pre-operative and post-operative Eckhardt scores (see downloads page- Downloads – National Hiatal Surgery Registry (nhsr.org)) are used, and for hiatus hernia repair pre-operative and post-operative Hiatus Hernia-QoL score (see downloads page- Downloads – National Hiatal Surgery Registry (nhsr.org)).

Surgeons will be able to download a personal report based on the information they have entered for the purpose of their appraisal. A National Annual Report will also be delivered yearly at the AUGIS Annual Scientific Meeting. This report will not be at the surgeon level, but at the unit level. Volumes of activity, complication rates, and follow up outcomes will be reported.

Individual surgeon users will only be able to see their individual outcomes, which will be statistically referenced against the average of other surgeons anonymised outcomes for the same conditions. As an NHSR User you will not be able to see other surgeon's outcomes.

The information collected about both surgeons and patients is entirely confidential and will never be shared with any other organisation (see GDPR policy) without Users/their permission. The Registry is governed by AUGIS/BBUGSS and a committee of surgeons and run and maintained by an IT healthcare company bound by GDPR confidentiality law.

2. NHSR Committee:

The NHSR committee members are formally nominated and voted to post by the British Benign Upper Gastrointestinal Surgical Society (BBUGSS) council. The NHSR

Committee is overseen by Association of Upper Gastrointestinal Surgeons (AUGIS) Executive Team.
The NHSR constitutes a 6-member Committee, which is as follows:

A. **Chairperson**
   Current Post Holder: Mr. Sayan Bhattacharya, Consultant Surgeon Manchester
B. **Clinical Risk Management Lead**
   Current Post Holder: Vacant
C. **Data Protection Lead**
   Current Post Holder: Prof. YKS Viswanath, Consultant Surgeon South Tees
D. **Content Lead**
   Current Post Holder: Vacant
E. **Data Analysis Lead**
   Current Post Holder: Vacant
F. **Procedure Classification Lead**
   Current Post Holder: Mr. Guy Finch, Consultant Surgeon Northampton

The structure and function of the committee are as follows:
This consists of 6 voting members, including a chairperson (who carries a casting vote). The quorum comprises at least 3 voting members, including the chairperson (or deputy) and two other NHSR Committee members.
All NHSR committee members including the chair, are selected by application, addressed to the president of BBUGSS and voted in by a transparent process with a 3-year tenancy.

The NHSR Committee is responsible for:

a. Advising on the NHSR dataset, regarding its scope, structure, functionality, compatibility and confidentiality issues.
b. Liaising with the Database provider and other stakeholders.
c. Managing finance agreements and external sponsorship (if necessary) to run the database.
d. Generating and editing annual database reports. Such a report will be initially presented to AUGIS and BBUGSS councils before general release.
e. Address any governance or duty of candour issues that may arise from the NHSR database in conjunction with the Database Provider.
f. All disclosure of outcomes from the NHSR database to external organisations or public members will be through the NHSR Chair/AUGIS Executive Team and Database Provider.

NHSR Committee members are unable to access any individual NHSR User's data.

3. Procedure Definitions/Classifications

The published literature describes and classifies hiatal surgery in considerable variation. For the NHSR to be consistent with what is reported by the Registry, Users are asked to follow a classification system described by the British Benign Upper GI

Surgical Society Home | British Benign Upper Gastro Intestinal Society (bbugss.com) when entering data.

The Registry's classification system is detailed below.

Primary Anti-Reflux Surgery (Fundoplication)

Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™)

Hybrid Anti-Reflux/Hiatus Hernia Repair

Primary Hiatus Hernia Repair

Primary Cardiomyotomy

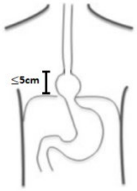
Revisional Anti-Reflux Surgery

Revisional Hiatus Hernia Repair

Revisional Cardiomyotomy

Primary Anti-Reflux Surgery (Fundoplication)

Definition: Elective, lifestyle, anti-reflux surgery with or without a synchronous hiatus hernia repair (type I/type II/type III hiatus hernia <1/3 of the stomach in the chest or ≤ 5 cm migration of GOJ from hiatus) that are associated with small and medium size hiatal defects.



Primary indications for surgery:

Patients in whom the primary symptom is volume reflux/regurgitation.

A confirmed diagnosis of acid reflux and adequate symptom control with medical therapy but do not wish to continue with long-term therapy.

Patient with breakthrough symptoms despite maximum medical therapy.

A confirmed diagnosis of acid reflux and symptoms that respond to medical therapy but who are intolerant of medication side effects.

Atypical symptoms such as aspiration, cough or hoarse voice and confirmed evidence of GORD *(these patients as a group have less successful outcomes than patients with typical symptoms)*.

Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX)

Definition: Non-anatomical altering**,** life style anti-reflux surgery with or without synchronous hiatus hernia repair with the use of prosthetic implant.

Primary Hiatus Hernia Repair Surgery

Definition: Elective/Urgent/Emergency surgery to correct a primary symptom * +/- associated secondary symptoms ** of a large hiatus hernia (>1/3 of stomach in the chest or GOJ >5 cm from hiatus, includes intra-thoracic stomach). These hernias are para-oesophageal and classified as type III and type IV (very rare type II). They are associated with medium and large hiatal defects. This classification of surgery does not include type I and II smaller hiatus hernias repaired as part of an anti-reflux procedure or large hiatus hernias repaired for a primary indication of reflux.

*** Primary Symptom**
Episode of emergency volvulus/post-prandial chest pain/shortness of breath/nausea and weight loss/dysphagia and weight loss /iron deficiency anaemia (other causes excluded)/major respiratory aspiration event.

**** Secondary Symptom**
Reflux/dyspepsia/post-prandial chest pain/shortness of breath/nausea/dysphagia/weight loss/iron deficiency anaemia (other causes excluded)/minor aspiration respiratory events.

Classification

Type III (Large)

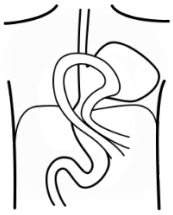
Type III (Large)

Displacement of GOJ >5cm above diaphragmatic hiatus or >1/3 of stomach volume within chest on CT/contrast study.

Type III Intra-Thoracic Stomach

Type III Intra-Thoracic Stomach

Pylorus at, or above level of diaphragmatic hiatus, or if within the abdomen < 5cm distance from diaphragmatic hiatus.



Type IV

Type IV

Another organ above the level of the diaphragmatic hiatus, small/large bowel, pancreas, spleen (not inclusive of omentum).

Type II (Large)

Type II (Large)

>1/3 of stomach volume above level of the hiatus with the GOJ remaining at or below level of diaphragmatic hiatus (RARE).

Hybrid Anti-Reflux/Hiatus Hernia Surgery

Definition: Elective, life style primary intention anti-reflux surgery* +/- associated secondary symptoms ** in the presence of a synchronous large hiatus hernia (>1/3 of stomach in chest or GOJ >5 cm from hiatus, includes intra-thoracic stomach). These hernias are associated with medium and large hiatal defects. This classification of anti-reflux surgery is separate to primary anti-reflux procedures in the presence of smaller type I, II and III hiatus hernias, and does not fall into the same classification as primary hiatus hernia surgery.

*** Primary Symptom**
Reflux

Patients in whom the primary symptom is volume reflux/regurgitation.

A confirmed diagnosis of acid reflux and adequate symptom control with medical therapy but do not wish to continue with long term therapy.

Patient with breakthrough symptoms despite maximum medical therapy.

A confirmed diagnosis of acid reflux and symptoms that respond to medical therapy but who are intolerant of medication side effects.

Atypical symptoms such as aspiration, cough or hoarse voice and confirmed evidence of GORD *(these patients as a group have less successful outcomes than patients with typical symptoms)*.

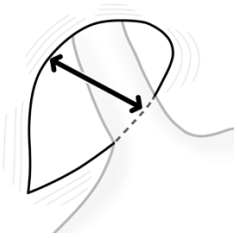
**** Secondary Symptom**
Post-prandial chest pain/shortness of breath/Nausea/Dysphagia/ weight loss/Iron deficiency anaemia.

Primary Cardiomyotomy Surgery

Elective surgery to correct symptoms of a diagnosis of Achalasia which may or may not have previously been treated with Botox or pneumatic dilation.

Hiatal Defects

Classification System
The defect is measured intra-operatively at the widest transverse point of the hiatus after oesophageal mobilisation.



Hiatal Defect Measurement

Hiatal Defect Measurements

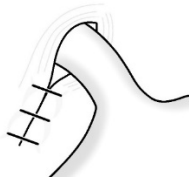
Type A (Small Hiatal Defect) < 3 cm

Type B (Medium Hiatal Defect) 3 - 6 cm

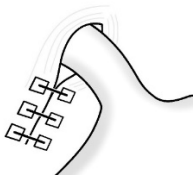
Type C (Large Hiatal Defect) > 6 – 9 cm

Type D (Giant Hiatal Defect) > 9 cm

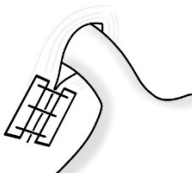
Hiatal Defect Repair Classification



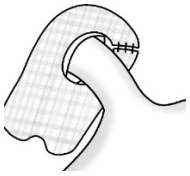
Primary Suture Repair



Pledget Mesh Repair



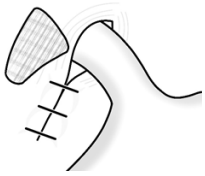
Strip Mesh Repair



On-Lay Mesh Repair

Posterior Bridge Mesh Repair

Anterior Bridge Mesh Repair



Diaphragm Relaxation Mesh

Fundoplication Types

Partial Anterior Fundoplication (Including 90˚/120˚/180˚)

Partial Posterior Fundoplication (Including 180˚/270˚)

360 Degree Fundoplication

Revisional Anti-Reflux Surgery (BBUGSS Classification)

Definition: Elective revisional surgery to correct symptoms after previous fundoplication or LINX procedures (excludes acute complications of primary procedure).

Classification of previous Anti-Reflux surgery failure requiring revisional surgery

Type I: In-situ fundoplication disruption.

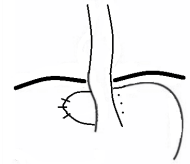
Type II: In-situ fundoplication slip.

Type III: Trans-hiatal fundoplication migration.

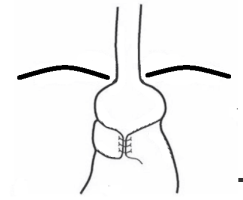
Type IV: Mixed fundoplication disruption and trans-hiatal fundoplication migration.

Type V: Trans-hiatal fundoplication slip.

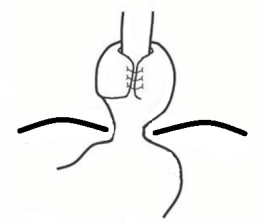
Type VI: LINX failure (migration/erosion/persistent dysphagia/poor symptom control).



Type I In-Situ Fundoplication Disruption

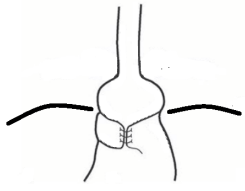


Type II In-Situ Fundoplication Slip

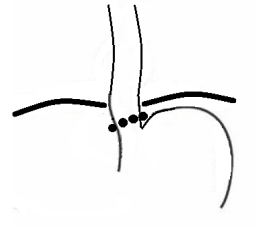


Type III Trans-Hiatal Fundoplication Herniation

Type IV Mixed Fundoplication Disruption and Trans-Hiatal Wrap Herniation



Type V Fundoplication Slip Herniation



Type VI LINX Failure

Indications for surgery

Troublesome persistent dysphagia following previous anti-reflux/LINX surgery (resistant to non-surgical therapy).

Patients in whom the primary symptom is volume reflux/regurgitation despite previous anti-reflux/LINX surgery.

A confirmed diagnosis of recurrent acid reflux after previous anti-reflux/LINX surgery and adequate symptom control with medical therapy but do not wish to continue with long term therapy.

Patient with breakthrough symptoms despite maximum medical therapy for recurrent reflux after previous anti-reflux/LINX surgery.

A confirmed diagnosis of acid reflux in patients following previous anti-reflux surgery/LINX and symptoms that respond to medical therapy but who are intolerant of medication side effects.

Atypical symptoms such as aspiration, cough or hoarse voice and confirmed evidence of GORD in patients treated previously with anti-reflux/LINX surgery *(these patients as a group have less successful outcomes than patients with typical symptoms)*.

LINX explant for erosion/migration.

LINX explant for psychological reasons.

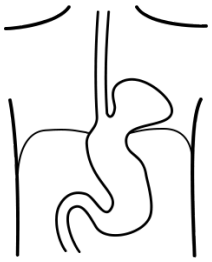
Revisional Hiatus Hernia Surgery

Definition: Elective/Urgent/Emergency *revisional surgery* to correct a recurrent primary symptom * +/- associated secondary symptoms ** with evidence of a recurrent hiatus hernia (>1/3 of stomach in chest or GOJ >5 cm from hiatus), excludes acute complications of primary procedure.

*** Primary Symptom**
Episode of emergency volvulus/post-prandial chest pain/shortness of breath/nausea and weight loss/dysphagia and weight loss /iron deficiency anaemia (other causes excluded)/major respiratory aspiration event.

**** Secondary Symptom**
Reflux/dyspepsia/post-prandial chest pain/shortness of breath/nausea/dysphagia/weight loss/iron deficiency anaemia (other causes excluded)/minor aspiration respiratory events.

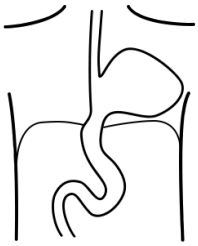
Classification of Recurrence



Type III (Large)

Recurrent Type III (Large)

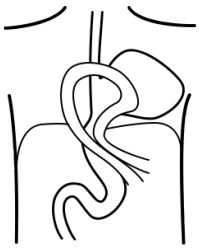
Displacement of GOJ >5cm above diaphragmatic hiatus or >1/3 of stomach volume within chest on CT/contrast study.



Type III Intra-Thoracic Stomach

Recurrent Type III Intra-Thoracic Stomach

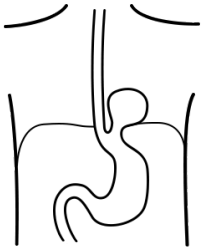
Pylorus at, or above level of diaphragmatic hiatus, or if within the abdomen < 5cm distance from diaphragmatic hiatus.



Type IV

Recurrent Type IV

Another organ above the level of the diaphragmatic hiatus, small/large bowel, pancreas, spleen (not inclusive of omentum).



Type II (Large)

Recurrent Type II (Large)

>1/3 of stomach volume above level of the hiatus with the GOJ remaining at or below level of diaphragmatic hiatus (RARE).

Revisional Cardiomyotomy Surgery

Elective revisional surgery to correct symptoms of a diagnosis of recurrent Achalasia after previous treatment- includes previous cardiomyotomy surgery or POEM, *not Botox and pneumatic dilatation (*excludes acute complications of the primary procedure).

4. Outcome Measures Recorded for NHSR

The Registry will record User entered details about patient selection, pre-operative investigations, intra-operative techniques, volumes of practice.

This includes:

Age (at time of surgery)	DeMeester Score
BMI	Radiological Investigation
ASA	Procedure type
Care Type NHS/Private	Method Open/Lap/Robotic/Converted
Centre of Practice	Day Case/ Inpatient
Symptom Presentation	Hiatal Defect Size
Pre-Procedure QoL Score	Fundoplication type/LINX Size
Use of Anti Acid Medication	Gastroplasty Required
Oesophagitis/Barretts Present	Morbidity
pH/Manometry	Mortality
Length of Stay	90-day Readmission

The Registry has patient reporting outcome measures (PROMs) integral within it. The Registry will automatically contact patients (with their consent-see GDPR policy) with regard to their symptoms at 6 months, 1 year, 2 years, 3 years, 4 years and 5 years after their surgery.

For Anti-Reflux and Hybrid Anti-Reflux/Hiatus Hernia Surgery procedures the Registry will use GORD-QoL scores (see downloads page-Downloads – National Hiatal Surgery Registry (nhsr.org) and need for continued anti-acid medication use as outcome measures.

For Cardiomyotomy Surgery, comparison of pre-operative and post-operative Eckhardt scores (see downloads page Downloads – National Hiatal Surgery Registry (nhsr.org)) are used.

For Hiatus Hernia Repair pre-operative and post-operative Hiatus Hernia-QoL score (see downloads page Downloads – National Hiatal Surgery Registry (nhsr.org)).

5. Data Collection, Storage, and Security and Confidentiality

Data Governance is an important part of this national level project. It is vitally important that data is safe and compliant with all data protection laws and governing bodies. The

data safety of patients and NHSR Users is critical and deliberately kept to a minimum but still allow functionality for its purpose.

No User (including Committee Member) can access another User's data, all activity and access events within the databased is logged and audited.

The Registry's service is under the control of the AUGIS Executive Council/BBUGSS and governed by the NHSR Committee. The NHSR and its webpages are operated on behalf of AUGIS/BBUGSS by Riviera Surgery LLP, a IT Healthcare Company registered in England and Wales. Riviera Surgery LLP registered office is: Westbury Hill, Bristol, Avon, BS9 3QA. The company registration number is OC429838. Riviera Surgery LLP is a registered Data Controller with the Information Commissioner's Office (ICO) under registration number ZA645133. This means that Riviera Surgery LLP is responsible for, and control the processing of any potentially identifiable information we collect about patients and users.

Any data loss/hack/corrupted/unauthorised access is reportable to ICO/CQC for which the NHSR management company is responsible.

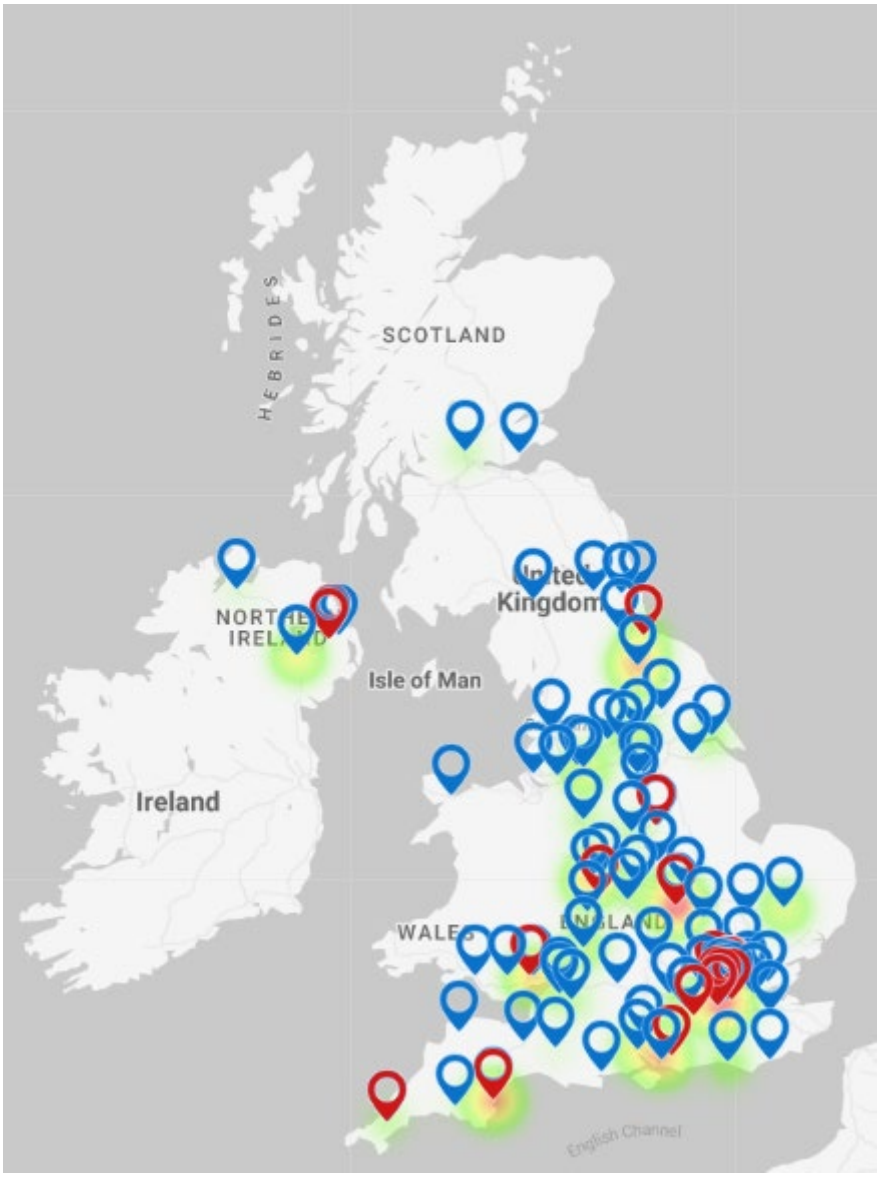
Details of Riviera Surgery LLP notification to the regulator for data protection, may be found in the ICO's Public Register of Data Controllers at www.ico.org.uk. Riviera Surgery LLP is registered and data safety regulated by Care Quality Commission (CQC), (CQC CRT-9418357166), Riviera Surgery LLP is registered with NHS Digital and compliant with Data Security and Protection (NHS Digital- C9G2R).

Data entered into the NHSR is identified legally as a limited healthcare record, users of the NHSR are required to comply with the Terms and Conditions Policy Terms & Conditions – National Hiatal Surgery Registry (nhsr.org).

The data entered is completely confidential at the individual surgeon level, and no other person/organisation has access now or in the future to the data you enter without user permission unless required to by law. Outcome data will be available in the public domain at the Hospital Trust/Private Healthcare Organisation level.

6. Current Engagement with NHSR

At the time of this report there are currently 156 Consultant users from 70 registered centres in both NHS and Independent Healthcare Sector, with currently 985 patients registered either in the Active or Complete phase



NHS Trusts and Private Healthcare Organisation's Registered with NHSR

NHS Centres of Practice Registered with NHSR

Private Centres of Practice Registered with NHSR

All NHS/Private Healthcare Organisations Currently Registered with NHSR- (centres that have entered at least one patient are in bold)

Trust/Organisation Name	Consultants		Patients		
	Total	Active	Active	Complete	Total
All Trusts/Organisations	**146**	**47**	**199**	**723**	**922**
Aneurin Bevan University Health Board	4	3	14	51	65
Aspen Healthcare	4	0	0	0	0
BMI Healthcare	14	2	2	16	18
Barking, Havering and Redbridge University Hospitals NHS Trust	2	0	0	0	0
Bedfordshire Hospitals NHS Foundation Trust	2	0	0	0	0
Belfast Health and Social Care Trust	1	0	0	0	0
Betsi Cadwaladr University Health Board	2	0	0	0	0
Burcot Hall Bromsgrove	1	0	0	0	0
Calderdale and Huddersfield NHS Foundation Trust	1	0	0	0	0
Cambridge University Hospitals NHS Foundation Trust	2	0	0	0	0
Chelsea and Westminster Hospital NHS Foundation Trust	1	0	0	0	0
Chesterfield Royal Hospital NHS Foundation Trust	3	0	0	0	0
Circle Healthcare Group	2	2	2	1	3
County Durham and Darlington NHS Foundation Trust	1	0	0	0	0
Croydon Health Services NHS Trust	2	2	9	50	59
Cwm Taf Morgannwg University Health Board	1	0	0	0	0
Dartford and Gravesham NHS Trust	1	0	0	0	0
ERROR_COP100 [get_var title 890 OBJECT]	1	0	0	0	0
ERROR_COP100 [get_var title 891 OBJECT]	1	0	0	0	0
East Sussex Healthcare NHS Trust	1	0	0	0	0
Epsom and St. Helier University Hospitals NHS Trust	2	2	14	37	51
Fife NHS	1	0	0	0	0
Forth Valley NHS	3	1	3	5	8
Frimley Health NHS Foundation Trust	4	2	4	16	20
Gateshead Health NHS Foundation Trust	1	0	0	0	0
Gloucestershire Hospitals NHS Foundation Trust	4	1	5	18	23
Great Western Hospitals NHS Foundation Trust	1	0	0	0	0
Guy's and St. Thomas' NHS Foundation Trust	2	0	0	0	0
Hampshire Hospitals NHS Foundation Trust	2	0	0	0	0
Hull University Teaching Hospitals NHS Trust	1	1	1	9	10
Imperial College Healthcare NHS Trust	1	1	3	2	5
Kettering General Hospital NHS Foundation Trust	1	0	0	0	0
King's College Hospital NHS Foundation Trust	1	0	0	0	0
Kingsbridge Private Hospital Belfast	3	0	0	0	0
Lancashire Teaching Hospitals NHS Foundation Trust	3	0	0	0	0
Leeds Teaching Hospitals NHS Trust	4	2	1	9	10
Lewisham and Greenwich NHS Trust	2	0	0	0	0
Liverpool University Hospitals NHS Foundation Trust	1	0	0	0	0
London Bridge Hospital	2	0	0	0	0
Maidstone and Tunbridge Wells NHS Trust	1	0	0	0	0
Manchester University NHS Foundation Trust	3	1	3	34	37
Mid Yorkshire Hospitals NHS Trust	2	1	0	10	10
Mid and South Essex NHS Foundation Trust	1	0	0	0	0
New Victoria Hospital	2	0	0	0	0
North Bristol NHS Trust	1	0	0	0	0
North Cumbria Integrated University Hospitals NHS Trust	1	0	0	0	0
Northamptonshire Healthcare NHS Foundation Trust	3	3	10	88	98
Northern Care Alliance NHS Group	1	0	0	0	0

Northern Devon Healthcare NHS Trust	1	0	0	0	0
Northern Lincolnshire and Goole NHS Foundation Trust	1	0	0	0	0
Northumbria Healthcare NHS Foundation Trust	1	0	0	0	0
Nottingham University Hospitals NHS Trust	2	0	0	0	0
Nuffield Health	15	2	8	16	24
Oxford University Hospitals NHS Foundation Trust	3	0	0	0	0
Portsmouth Hospitals NHS Trust	5	2	30	31	61
Ramsay Health Care UK	11	2	0	6	6
Royal Berkshire NHS Foundation Trust	1	0	0	0	0
Royal Cornwall Hospitals NHS Trust	3	2	3	5	8
Royal United Hospitals Bath NHS Foundation Trust	1	1	2	6	8
Sandwell and West Birmingham Hospitals NHS Trust	2	2	1	8	9
Sheffield Teaching Hospitals NHS Foundation Trust	1	1	1	0	1
South Eastern Health and Social Care Trust	2	0	0	0	0
South Tees Hospitals NHS Foundation Trust	1	1	13	47	60
South Tyneside and Sunderland NHS Foundation Trust	1	0	0	0	0
South Warwickshire NHS Foundation Trust	2	0	0	0	0
Southern Health and Social Care Trust	1	1	2	41	43
Spire Healthcare Group	19	2	3	0	3
St. George's University Hospitals NHS Foundation Trust	2	1	1	4	5
St. Josephs Hospital, Newport	1	1	2	12	14
Swansea Bay University Health Board	1	0	0	0	0
Taunton and Somerset NHS Foundation Trust	1	0	0	0	0
The Dudley Group NHS Foundation Trust	2	2	23	47	70
The Hillingdon Hospitals NHS Foundation Trust	1	0	0	0	0
The Princess Alexandra Hospital NHS Trust	1	0	0	0	0
The Rotherham NHS Foundation Trust	1	0	0	0	0
Torbay and South Devon NHS Foundation Trust	6	6	21	62	83
Ulster Independent Clinic	3	0	0	0	0
University Hospital Dorset NHS Foundation Trust	1	0	0	0	0
University Hospital Southampton NHS Foundation Trust	4	2	1	40	41
University Hospital of Derby and Burton NHS Foundation Trust	2	1	1	0	1
University Hospitals Bristol and Weston NHS Foundation Trust	1	0	0	0	0
University Hospitals Coventry and Warwickshire NHS Trust	4	1	5	11	16
University Hospitals Plymouth NHS Trust	1	0	0	0	0
University Hospitals Sussex NHS Foundation Trust	2	1	0	9	9
University Hospitals of Leicester NHS Trust	1	0	0	0	0
University Hospitals of North Midlands NHS Trust	2	1	1	0	1
Warrington and Halton Hospitals NHS Foundation Trust	2	0	0	0	0
West Hertfordshire Hospitals NHS Trust	2	0	0	0	0
West Suffolk NHS Foundation Trust	2	2	7	31	38
Western Health and Social Care Trust	1	1	2	1	3
Worcestershire Acute Hospitals NHS Trust	1	0	0	0	0
Yeovil District Hospital NHS Foundation Trust	1	1	1	0	1
York Teaching Hospital NHS Foundation Trust	6	0	0	0	0

7. Outcome Reporting

NHSR Statistical Analysis Methodology

NHSR uses Standard Error (SE) to compare statistical significance between PROMs outcomes within the subsets of procedures.
+/-2 SEs are taken as significant with 95% confidence.

Worked Example of a Significance Test
NHSR uses t-test statistical analysis test using the mean of a sample of data, $\bar{x}$, to determine whether the population mean, μ, is zero. This tests the null hypothesis H0: $\mu = 0$ with the alternative hypothesis HA: $\mu \neq 0$. NHSR uses a t-test when the standard deviation is estimated from the sample data, and this is particularly important when the sample size is small ($n < 30$).
There are a number of steps in the calculation of the t-test to compare scores. This is illustrated with a worked example for testing a change at 1-year post-surgery compared to pre-surgery for Primary Anti-Reflux (Fundoplication patients).

The data includes all primary anti-reflux fundoplication patients with scores at pre-surgery and 1-year post-surgery timepoints. These are shown in Table 1 below.

Note: While results are presented to 1 decimal place in this example, unrounded values are used throughout the calculations.

i	**Patient ID**	**QoL pre-surgery**	**QoL 1 year post-surgery**
1	Patient 87	20	2
2	Patient 91	30	2
3	Patient 76	34	2
4	Patient 158	15	7
5	Patient 181	29	1
6	Patient 185	27	9
….	….	….	….
48	Patient 455	35	0
49	Patient 514	36	4

Table. 1

1. Calculate the change in score for each patient
For each patient, *i*, calculate the change in quality of life score: Table 2

$change = xi = year\ 1\ scorei - presurgery\ scorei$

i	**Patient ID**	**QoL pre-surgery**	**QoL 1 year post-surgery**	**Change (xi)**

1	Patient 87	20	2	-18
2	Patient 91	30	2	-28
3	Patient 76	34	2	-32
4	Patient 158	15	7	-8
5	Patient 181	29	1	-28
6	Patient 185	27	9	-18
….	….	….	….	….
48	Patient 455	35	0	-35
49	Patient 514	36	4	-32

Table 2.

3. Calculate the mean change
Calculate the sample mean, $\bar{x}$.

$$\text{mean(change)} = \bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

$$\text{mean(change)} = \bar{x} = \frac{(-18 + -28 + -32 + -8 + -28 + -18 + \cdots + -35 + -32)}{49}$$

$$= -22.16327$$

4. Calculate the standard deviation of the change
Calculate the sample standard deviation, *s.d.*

$$\text{s.d.(change)} = \sqrt{\frac{\sum_{i}^{n} (x_i - \bar{x})^2}{n - 1}}$$

$$\text{s.d.(change)} = \sqrt{\frac{(-18--22.2)^2+(-28--22.2)^2+(-32--22.2)^2 + \cdots +(-35--22.2)^2 + (-32- -22.2)^2}{49 - 1}}$$

$$\text{s.d.(change)} = \sqrt{\frac{4.22+(-5.8)^2+(-9.8)^2 + 14.22+(-5.8)^2+ \cdots +(-12.8)^2 + (-9.8)^2}{48}}$$

$$= \sqrt{\frac{(17.3 + 34.1 + 96.8 + 200.6 + 34.1 + \cdots + 164.8 + 96.8)}{48}}$$

$$= 10.14755$$

5. Calculate the 95% confidence interval for the mean change
The 95% confidence interval is calculated using the mean and standard deviation from the previous two steps and the critical value of the t-distribution.

The critical value for the t-distribution depends on the sample size, *n*. Critical values for a number of sample sizes, *n*, are given Table 3 below.

n	***df = (n-1)***	***t(critical)***
2	1	12.706205

3	2	4.302653
4	3	3.182446
5	4	2.776445
10	9	2.262157
15	14	2.144787
20	19	2.093024
30	29	2.045230
49	48	2.010635

Table 3

The 95% confidence interval is given by:

$$95\%\ CI = \bar{x} \pm t(critical) \times \frac{s.d.}{\sqrt{n}}$$

$$= -22.2 \pm 2.01 \times \frac{10.1}{\sqrt{49}}$$

$$= (-25.1, -19.2)$$

6. Interpretation

The outcome is a 95% confidence interval for the population mean. The confidence interval is the interval we are confident that the true mean lies and is the basis for testing the hypothesis that the mean is zero.

If the 95% confidence interval is wholly below zero (i.e., the value of zero does not fall within the confidence interval) we can be confident that the change in quality of life is different from zero. This suggests that the null hypothesis is false, and the result is said to be statistically significantly different from zero.

If the 95% confidence interval includes the value of zero then there is either no change in the quality of life, or there isn't sufficient data to detect a difference.

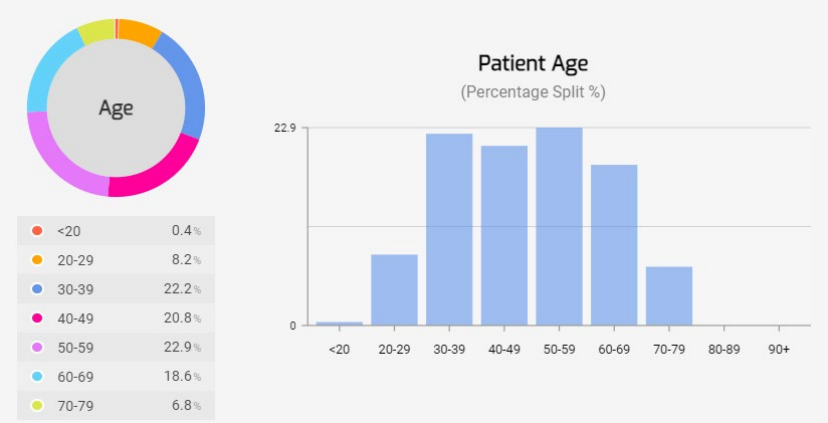
The above is applied other subsets of the data, for example, for comparing the change in quality of life score pre and 2-year post surgery or for individual procedures.

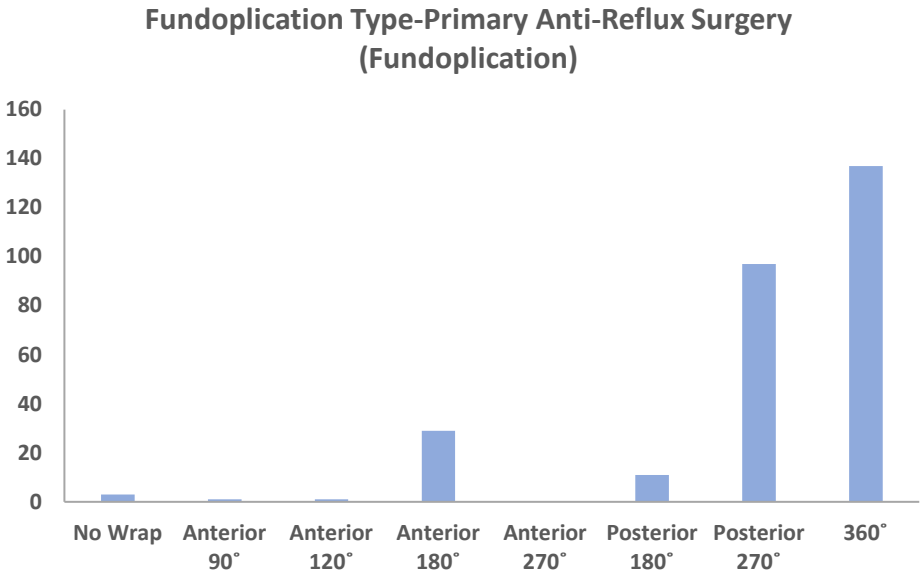
8 Hiatal Surgery Outcomes

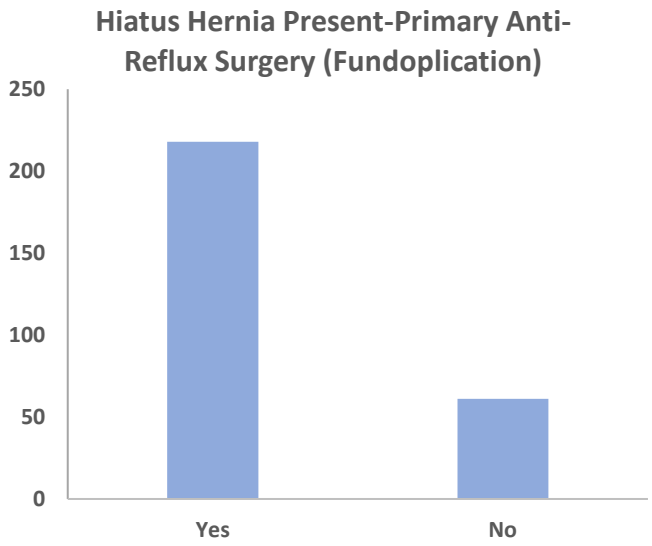
Primary Anti-Reflux Surgery (Fundoplication)- All Trusts/Organisations

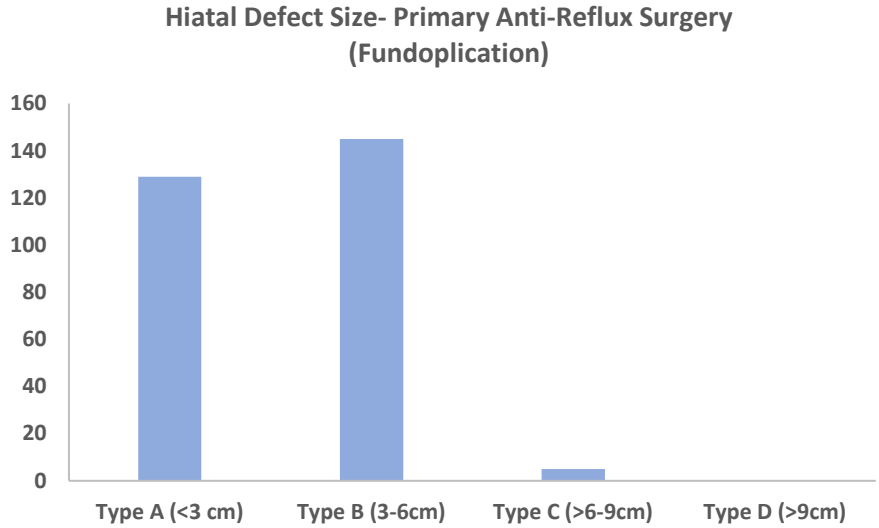
379 registered patients, 100 active, 279 complete, from 30 NHS Trusts/Independent HealthCare Organisations

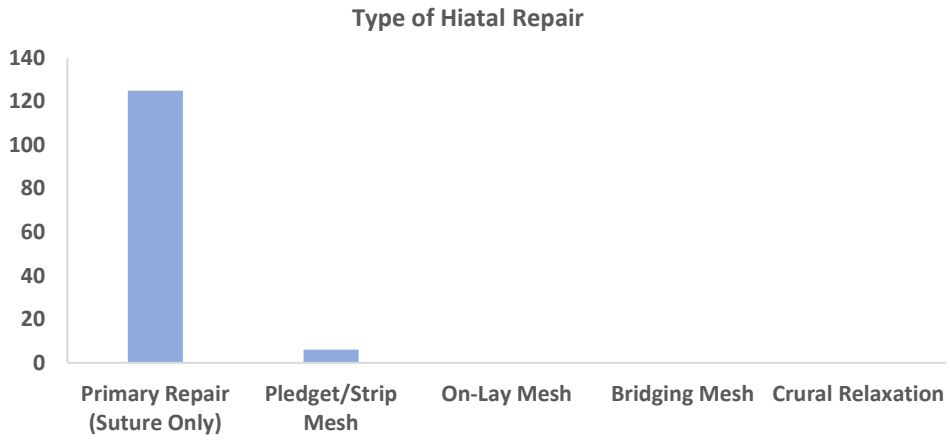
*To appear in statistical analysis the patient must have a complete status






Hiatus Hernia Present-Primary Anti-Reflux Surgery (Fundoplication)
250
200
150
100
50
0
Yes
No


Hiatal Defect Size- Primary Anti-Reflux Surgery (Fundoplication)
160
140
120
100
80
60
40
20
0
Type A (<3 cm)
Type B (3-6cm)
Type C (>6-9cm)
Type D (>9cm)

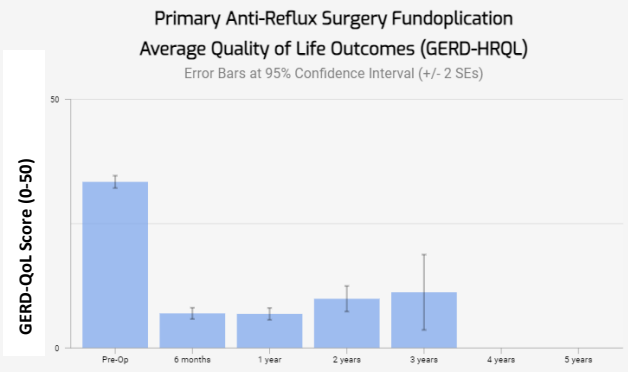

Type of Hiatal Repair
140
120
100
80
60
40
20
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Bridging Mesh
Crural Relaxation

Primary Anti-Reflux Surgery (Fundoplication)						
Total	**279**					
Sex						
Male/Female/Other	**131**	**148**	-			
Age						
Median	**49**					
Range	**17-79**					
Episodes						
Day Case	**89 (32%)**					
Inpatient	**190 (68%)**					
Time on Waiting List (Days)						
Median	**183.5**					
Range	**2-1630**					
Method						
Open	-					
Laparoscopic	**262 (95%)**					
Robotic	**15 (5%)**					
Converted	**1**					
Hiatus Hernia Present	Yes	No				
	218 (78%)	**61 (22%)**				
Hiatal Defect	Type A (<3 cm)	Type B (3-6cm)	Type C (>6-9cm)	Type D (>9cm)		
	129	**145**	**5**	-		
Hiatal Repair	Primary Suture	Pledget/Strip Mesh	On-Lay Mesh	Bridging Mesh	Crural Relaxation	
	269	**10**	-	-	-	
Fundoplication Type	Anterior Partial 90˚	Anterior Partial 120˚	Anterior Partial 180˚	Posterior Partial 180˚	Posterior Partial 270˚	360˚ Complete
	1	**1**	**29**	**11**	**97**	**137**
Gastroplasty	Yes	No				
	1	**278**				
Length of Stay (Days)						
Median	**1**					
Range	**0-80**					
Complications						
Morbidity (Overall)	**11 (3.9%)**					
Return to Theatre	**3**					
Readmission (90 Days)	**24 (8.6%)**					
Mortality	**0**					
QoL Outcomes						
	N	Mean ($\bar{x}$)	Range	SD	SE	95% CI
Pre-Procedure QoL	**279**	**30.7**	**5-50**	**9.4**	**0.56**	**29.6-31.8**
6 Month QoL	**158**	**6.4**	**1-42**	**6.29**	**0.50**	**5.4-7.4**
1 Year QoL	**115**	**6.3**	**1-27**	**5.84**	**0.54**	**5.2-7.4**
2 Year QoL	**47**	**9.1**	**1-30**	**7.99**	**1.17**	**6.8-11.4**
3 Year QoL	**3**	**10.3**	**4-16**	**6.03**	**3.48**	**3.3-17.3**
4 Year QoL	-	-	-	-	-	-
5 Year QoL	-	-	-	-	-	-

Combined UK GERD-QoL Score PROMs- Primary Anti-Reflux Surgery (Fundoplication) All NHS Trusts & Independent HealthCare Organisations

Quality of Life

QoL Average Scores	PROMs	Mean
Pre-Op:	279	30.7
6 months:	158	6.4
1 year:	115	6.3
2 years:	47	9.1
3 years:	3	10.3
4 years:	–	–
5 years:	–	–
Improvement:		66.4%
PROM Ratio:		100.0%



Individual UK GERD-QoL Score PROMs- Primary Anti-Reflux Surgery (Fundoplication) All NHS Trusts & Independent HealthCare Organisations who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Ave.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	279	12 4.30%	-	30.7	6.1	80.1%	6.0	80.5%	7.4	75.9%	10.3	66.4%	–	–	–	–
Aneurin Bevan University Health Board [4]	11	-	-	31.3	10.2	67.4%	2.7	91.4%	9.5	69.6%	–	–	–	–	–	–
BMI Healthcare [14]	13	-	-	29.5	9.6	67.5%	4.6	84.4%	8.8	70.2%	16.0	45.8%	–	–	–	–
Croydon Health Services NHS Trust [2]	28	2 7.14%	-	24.9	9.1	63.5%	9.6	61.4%	9.1	63.5%	–	–	–	–	–	–
Epsom and St. Helier University Hospitals NHS Trust [2]	3	-	-	33.7	35.3	-4.7%	–	–	–	–	–	–	–	–	–	–
Forth Valley NHS [3]	3	-	-	34.7	–	–	–	–	–	–	–	–	–	–	–	–
Frimley Health NHS Foundation Trust [4]	6	-	-	24.3	6.2	74.5%	2.3	90.5%	9.0	63.0%	–	–	–	–	–	–
Gloucestershire Hospitals NHS Foundation Trust [4]	7	-	-	28.6	1.6	94.4%	4.7	83.6%	7.5	73.8%	–	–	–	–	–	–
Hull University Teaching Hospitals NHS Trust [1]	2	-	-	37.5	2.0	94.7%	3.0	92.0%	–	–	–	–	–	–	–	–
Imperial College Healthcare NHS Trust [1]	2	-	-	31.5	0.5	98.4%	–	–	–	–	–	–	–	–	–	–
Leeds Teaching Hospitals NHS Trust [4]	3	1 33.33%	-	32.0	9.3	70.9%	5.0	84.4%	5.0	84.4%	–	–	–	–	–	–
Manchester University NHS Foundation Trust [3]	19	-	-	45.9	8.2	82.1%	6.7	85.4%	11.8	74.3%	–	–	–	–	–	–
Mid Yorkshire Hospitals NHS Trust [2]	4	1 25.00%	-	20.0	5.5	72.5%	–	–	–	–	–	–	–	–	–	–
Northamptonshire Healthcare NHS Foundation Trust [3]	35	2 5.71%	-	34.3	4.9	85.7%	8.6	74.9%	7.3	78.7%	4.0	88.3%	–	–	–	–
Nuffield Health [15]	9	1 11.11%	-	29.3	3.7	87.4%	4.9	83.3%	10.3	64.8%	–	–	–	–	–	–
Portsmouth Hospitals NHS Trust [5]	3	-	-	25.0	9.0	64.0%	–	–	1.0	96.0%	–	–	–	–	–	–
Ramsay Health Care UK [11]	4	1 25.00%	-	39.3	4.0	89.8%	2.0	94.9%	–	–	–	–	–	–	–	–
Royal Cornwall Hospitals NHS Trust [3]	1	-	-	11.0	5.0	54.5%	–	–	–	–	–	–	–	–	–	–
Royal United Hospitals Bath NHS Foundation Trust [1]	4	-	-	25.8	1.0	96.1%	3.3	87.2%	13.0	49.6%	–	–	–	–	–	–
Sandwell and West Birmingham Hospitals NHS Trust [2]	6	-	-	19.7	2.0	89.8%	4.0	79.7%	5.8	70.6%	11.0	44.2%	–	–	–	–
South Tees Hospitals NHS Foundation Trust [1]	13	-	-	32.0	3.5	89.1%	3.4	89.4%	0.5	98.4%	–	–	–	–	–	–
Southern Health and Social Care Trust [1]	6	-	-	37.2	10.2	72.6%	9.0	75.8%	1.0	97.3%	–	–	–	–	–	–
St. George's University Hospitals NHS Foundation Trust [2]	3	-	-	25.0	7.3	70.8%	10.0	60.0%	–	–	–	–	–	–	–	–
St. Josephs Hospital, Newport [1]	9	-	-	31.9	3.9	87.8%	2.4	92.5%	–	–	–	–	–	–	–	–
The Dudley Group NHS Foundation Trust [2]	33	3 9.09%	-	29.1	3.3	88.7%	5.7	80.4%	4.6	84.2%	–	–	–	–	–	–
Torbay and South Devon NHS Foundation Trust [6]	16	1 6.25%	-	31.1	6.1	80.4%	3.4	89.1%	1.3	95.8%	–	–	–	–	–	–
University Hospital Southampton NHS Foundation Trust [4]	12	-	-	30.3	3.3	89.1%	5.0	83.5%	5.0	83.5%	–	–	–	–	–	–
University Hospitals Coventry and Warwickshire NHS Trust [4]	5	-	-	25.0	10.6	57.6%	11.2	55.2%	17.3	30.8%	–	–	–	–	–	–
University Hospitals Sussex NHS Foundation Trust [2]	2	-	-	43.5	2.0	95.4%	3.0	93.1%	–	–	–	–	–	–	–	–
West Suffolk NHS Foundation Trust [2]	16	-	-	25.8	3.4	86.8%	4.6	82.2%	4.7	81.8%	–	–	–	–	–	–
Western Health and Social Care Trust [1]	1	-	-	29.0	6.0	79.3%	7.0	75.9%	–	–	–	–	–	–	–	–

174 trusts found for **Primary Anti-Reflux Surgery (Fundoplication)** sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Primary Anti-Reflux Surgery (Fundoplication)

Patient Reported Outcome Measures (PROMs) NHS Trusts- (Trust vs Peer Trusts)

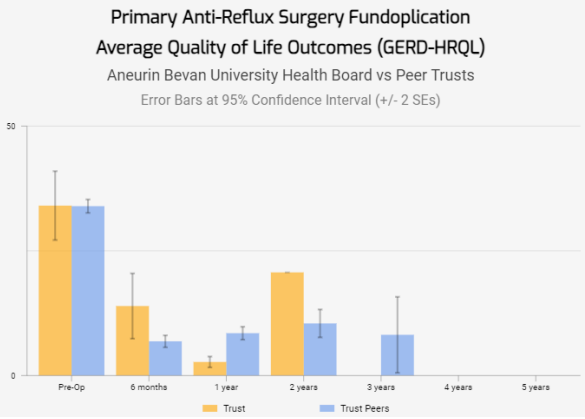
Included- NHSR registered NHS Trusts who have entered at least 1 patient into any NHSR reporting category

Excluded- NHSR registered NHS Trusts that have not entered any patients into any category

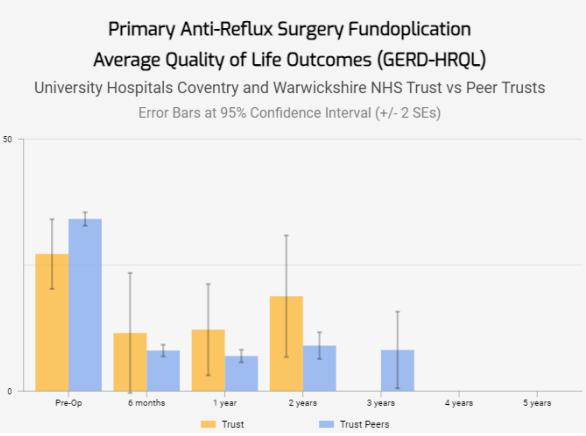
*To appear in statistical analysis the patient must have a complete status or in PROM status

*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

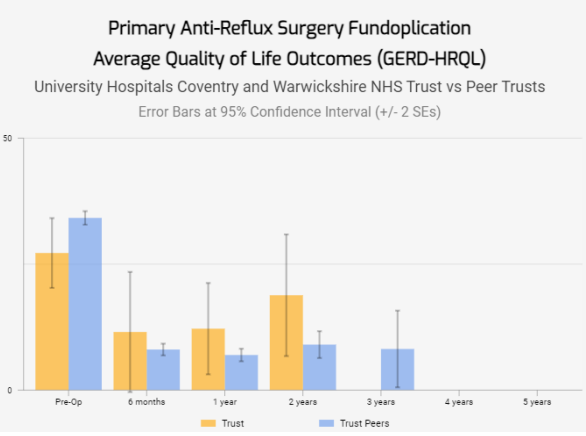
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	11 / 233	31.3	31.2	0.3% ↑
6 months:	5 / 130	12.8	6.3	103.2% ↑
1 year:	2 / 98	2.5	7.8	-67.9% ↓
2 years:	1 / 40	19.0	9.6	97.9% ↑
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		39.3%	76.0%	-48.3% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



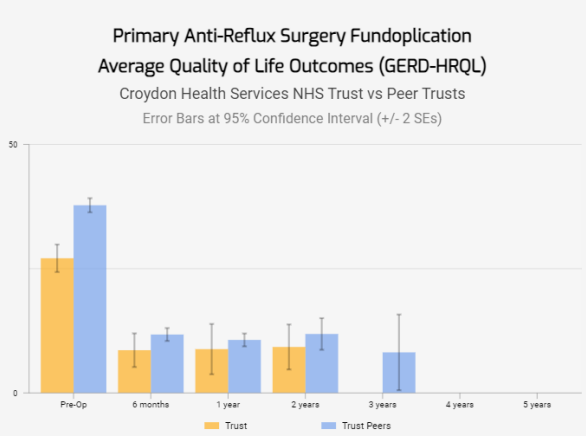
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	5 / 239	25.0	31.4	-20.4% ↓
6 months:	5 / 130	10.6	7.4	43.2% ↑
1 year:	5 / 95	11.2	6.4	75.0% ↑
2 years:	4 / 37	17.3	8.3	108.4% ↑
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		30.8%	76.1%	-59.5% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



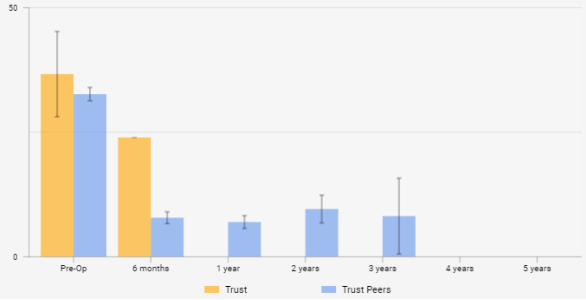
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	5 / 239	25.0	31.4	-20.4% ↓
6 months:	5 / 130	10.6	7.4	43.2% ↑
1 year:	5 / 95	11.2	6.4	75.0% ↑
2 years:	4 / 37	17.3	8.3	108.4% ↑
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		30.8%	76.1%	-59.5% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



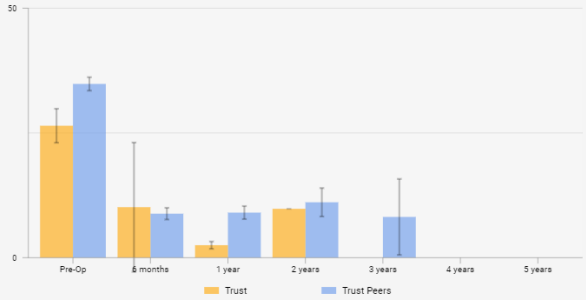
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	28 / 216	24.9	34.7	-28.2% ↓
6 months:	18 / 117	7.9	10.8	-26.9% ↓
1 year:	11 / 89	8.1	9.8	-17.3% ↓
2 years:	6 / 35	8.5	10.9	-22.0% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		65.9%	78.4%	-15.9% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



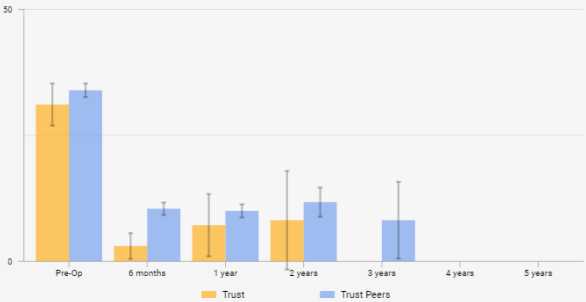
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 241	33.7	30.0	12.3% ↑
6 months:	1 / 134	22.0	7.2	205.6% ↑
1 year:	– / 100	–	6.4	-100% ↓
2 years:	– / 41	–	8.8	-100% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		34.7%	75.0%	-53.7% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



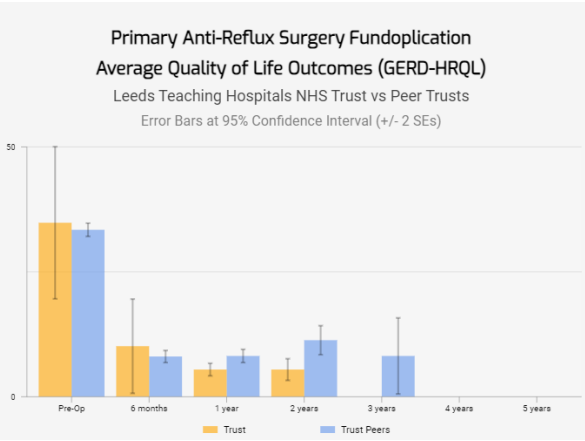
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	6 / 238	24.3	32.0	-24.1% ↓
6 months:	4 / 131	9.3	8.1	14.8% ↑
1 year:	3 / 97	2.3	8.3	-72.3% ↓
2 years:	1 / 40	9.0	10.2	-11.8% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		63.0%	76.6%	-17.8% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



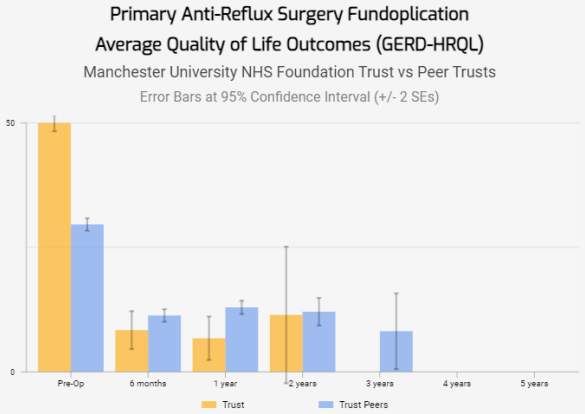
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	7 / 237	28.6	31.2	-8.3% ↓
6 months:	4 / 131	2.8	9.6	-70.8% ↓
1 year:	5 / 95	6.6	9.2	-28.3% ↓
2 years:	2 / 39	7.5	10.8	-30.6% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		73.8%	76.0%	-2.9% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



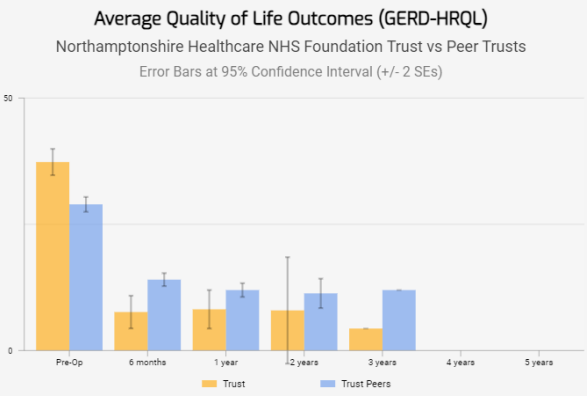
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 241	32.0	30.7	4.2% ↑
6 months:	3 / 132	9.3	7.4	25.7% ↑
1 year:	3 / 97	5.0	7.5	-33.3% ↓
2 years:	2 / 39	5.0	10.4	-51.9% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		84.4%	75.6%	11.6% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



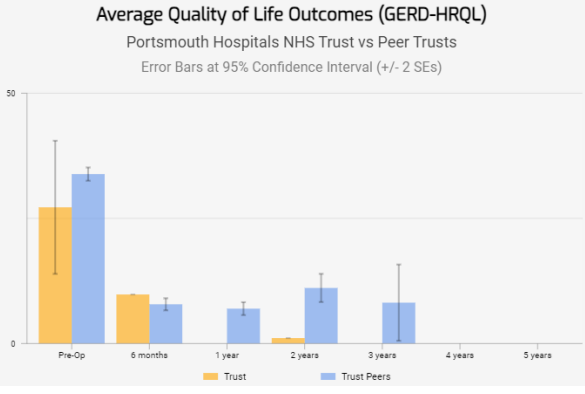
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	19 / 225	45.9	27.2	68.8% ↑
6 months:	15 / 120	7.7	10.4	-26.0% ↓
1 year:	10 / 90	6.2	11.9	-47.9% ↓
2 years:	4 / 37	10.5	11.1	-5.4% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		77.1%	72.4%	6.5% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



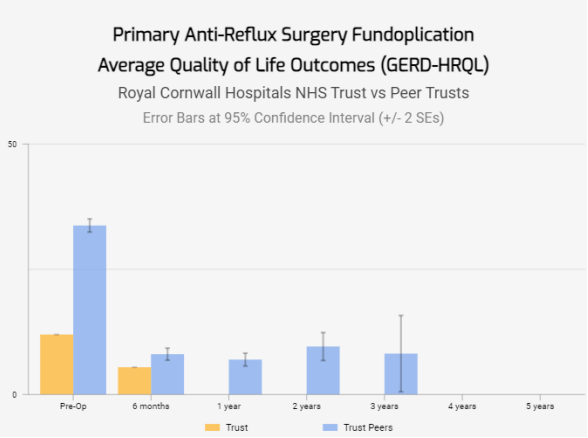
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	35 / 209	34.3	26.6	28.9% ↑
6 months:	21 / 114	7.0	12.9	-45.7% ↓
1 year:	13 / 87	7.5	11.0	-31.8% ↓
2 years:	3 / 38	7.3	10.4	-29.8% ↓
3 years:	1 / 1	4.0	11.0	-63.6% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		88.3%	58.6%	50.7% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



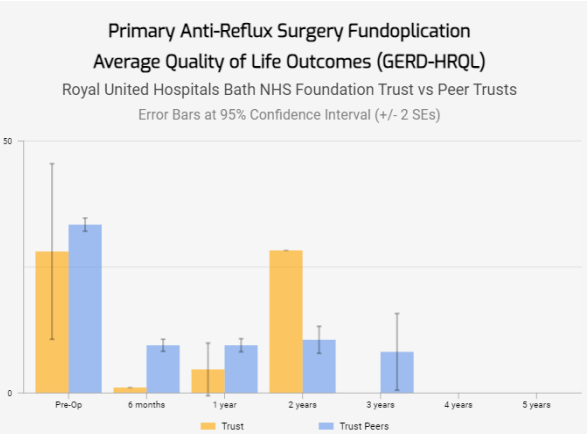
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 241	25.0	31.1	-19.6% ↓
6 months:	1 / 134	9.0	7.2	25.0% ↑
1 year:	– / 100	–	6.4	-100% ↓
2 years:	1 / 40	1.0	10.2	-90.2% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		96.0%	75.9%	26.5% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 243	11.0	31.0	-64.5% ↓
6 months:	1 / 134	5.0	7.4	-32.4% ↓
1 year:	– / 100	–	6.4	-100% ↓
2 years:	– / 41	–	8.8	-100% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		54.5%	75.8%	-28.1% ↓
PROM Ratio:		100.0%	100.0%	0.0% -

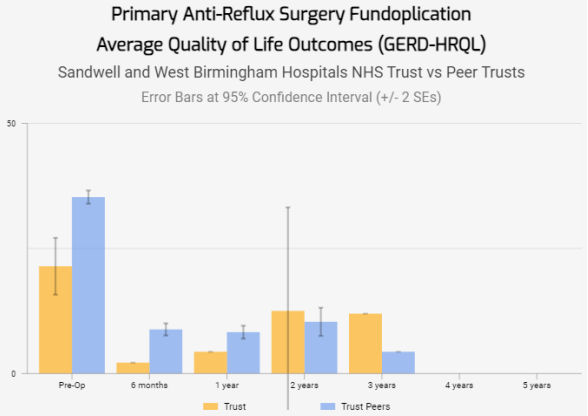


QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	4 / 240	25.8	30.7	-16.0% ↓
6 months:	2 / 133	1.0	8.7	-88.5% ↓
1 year:	3 / 97	4.3	8.7	-50.6% ↓
2 years:	1 / 40	26.0	9.7	168.0% ↑
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		-0.8%	75.6%	-101.1% ↓
PROM Ratio:		100.0%	100.0%	0.0% -

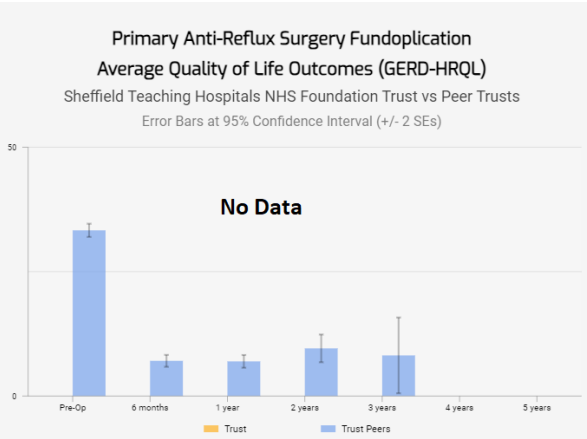


Quality of Life

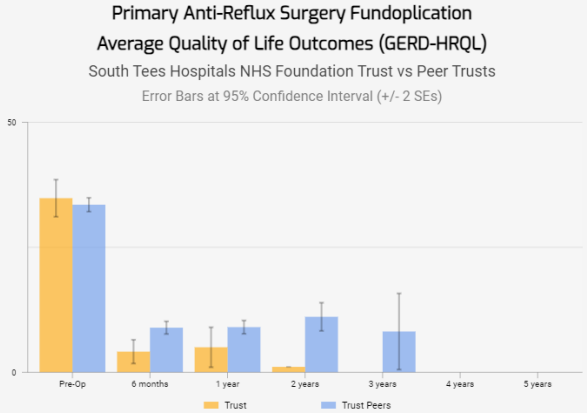
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	6 / 238	19.7	32.4	-39.2% ↓
6 months:	1 / 134	2.0	8.1	-75.3% ↓
1 year:	1 / 99	4.0	7.6	-47.4% ↓
2 years:	2 / 39	11.5	9.5	21.1% ↑
3 years:	1 / 1	11.0	4.0	175.0% ↑
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		44.2%	87.7%	-49.6% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



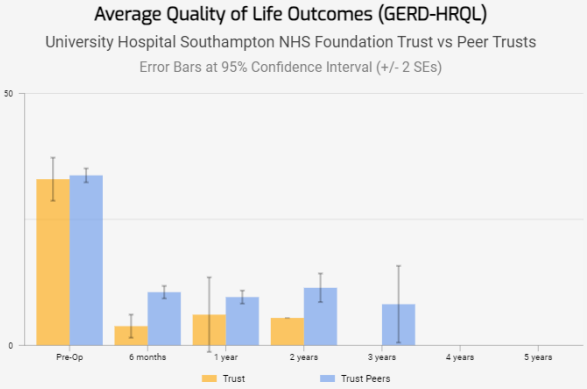
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	– / 244	–	30.6	-100 % ↓
6 months:	– / 135	–	6.5	-100 % ↓
1 year:	– / 100	–	6.4	-100 % ↓
2 years:	– / 41	–	8.8	-100 % ↓
3 years:	– / 2	–	7.5	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		–	75.5 %	-100 % ↓
PROM Ratio:		–	100.0 %	-100 % ↓



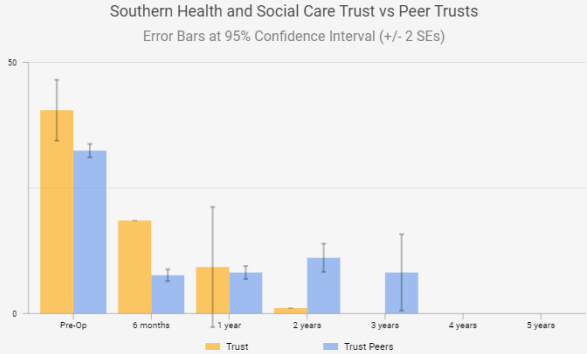
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	13 / 231	32.0	30.8	3.9 % ↑
6 months:	9 / 126	3.8	8.2	-53.7 % ↓
1 year:	5 / 95	4.6	8.3	-44.6 % ↓
2 years:	1 / 40	1.0	10.2	-90.2 % ↓
3 years:	– / 2	–	7.5	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		96.9 %	75.6 %	28.2 % ↑
PROM Ratio:		100.0 %	100.0 %	0.0 % -



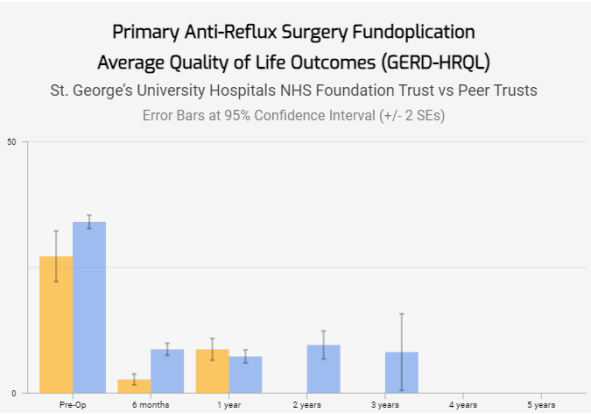
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	12 / 232	30.3	31.0	-2.3 % ↓
6 months:	6 / 129	3.5	9.7	-63.9 % ↓
1 year:	5 / 95	5.6	8.8	-36.4 % ↓
2 years:	1 / 40	5.0	10.5	-52.4 % ↓
3 years:	– / 2	–	7.5	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		83.5 %	75.8 %	10.2 % ↑
PROM Ratio:		100.0 %	100.0 %	0.0 % -



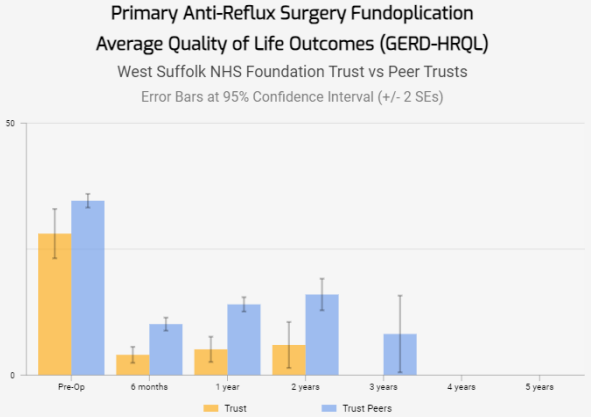
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	6 / 238	37.2	29.8	24.8 % ↑
6 months:	1 / 134	17.0	7.0	142.9 % ↑
1 year:	2 / 98	8.5	7.5	13.3 % ↑
2 years:	1 / 40	1.0	10.2	-90.2 % ↓
3 years:	– / 2	–	7.5	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		97.3 %	74.8 %	30.1 % ↑
PROM Ratio:		100.0 %	100.0 %	0.0 % -



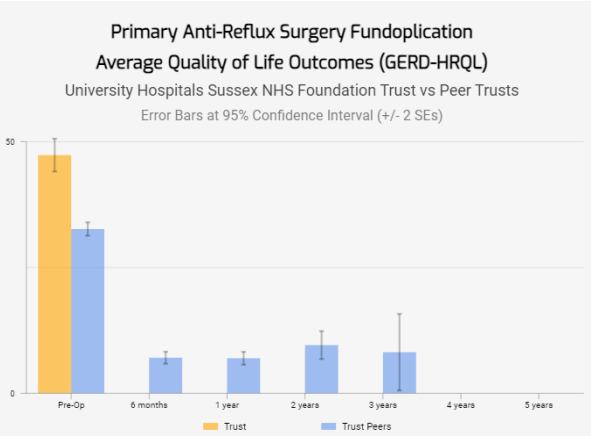
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 241	25.0	31.3	-20.1% ↓
6 months:	2 / 133	2.5	8.0	-68.8% ↓
1 year:	2 / 98	8.0	6.7	19.4% ↑
2 years:	– / 41	–	8.8	-100% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		68.0%	76.0%	-10.5% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



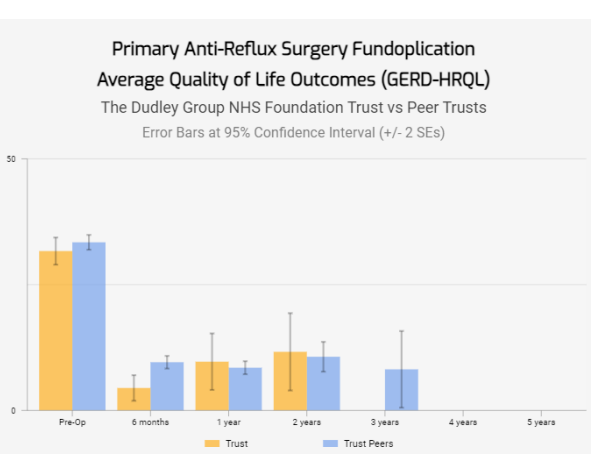
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	16 / 228	25.8	31.8	-18.9% ↓
6 months:	12 / 123	3.7	9.3	-60.2% ↓
1 year:	14 / 86	4.7	12.9	-63.6% ↓
2 years:	6 / 35	5.5	14.7	-62.6% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		78.7%	76.4%	3.0% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



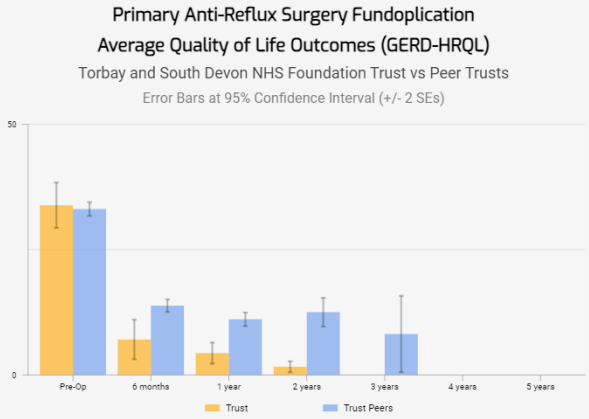
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 242	43.5	30.0	45.0% ↑
6 months:	– / 135	–	6.5	-100% ↓
1 year:	– / 100	–	6.4	-100% ↓
2 years:	– / 41	–	8.8	-100% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	75.0%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	33 / 211	29.1	30.7	-5.2% ↓
6 months:	8 / 127	4.1	8.8	-53.4% ↓
1 year:	8 / 92	8.9	7.8	14.1% ↑
2 years:	3 / 38	10.7	9.8	9.2% ↑
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		63.2%	75.6%	-16.4% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



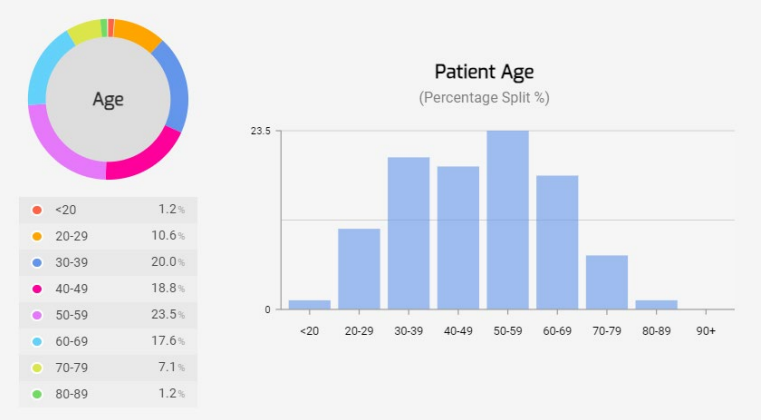
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	16 / 228	31.1	30.4	2.3% ↑
6 months:	11 / 124	6.5	12.7	-48.8% ↓
1 year:	6 / 94	4.0	10.2	-60.8% ↓
2 years:	2 / 39	1.5	11.5	-87.0% ↓
3 years:	– / 2	–	7.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		95.2%	75.3%	26.4% ↑
PROM Ratio:		100.0%	100.0%	0.0% -

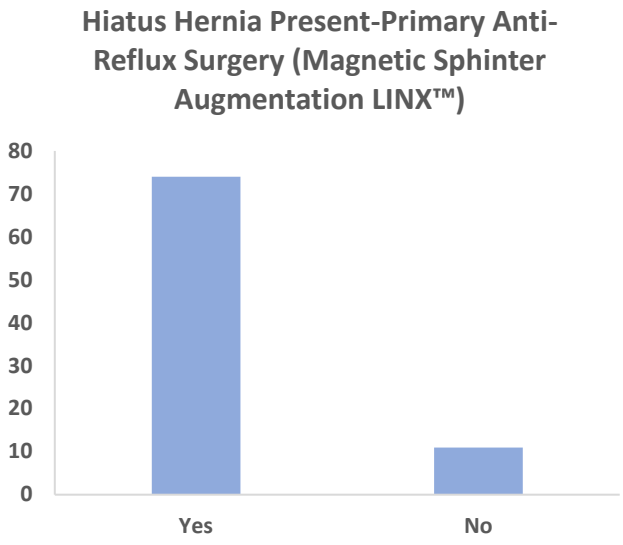


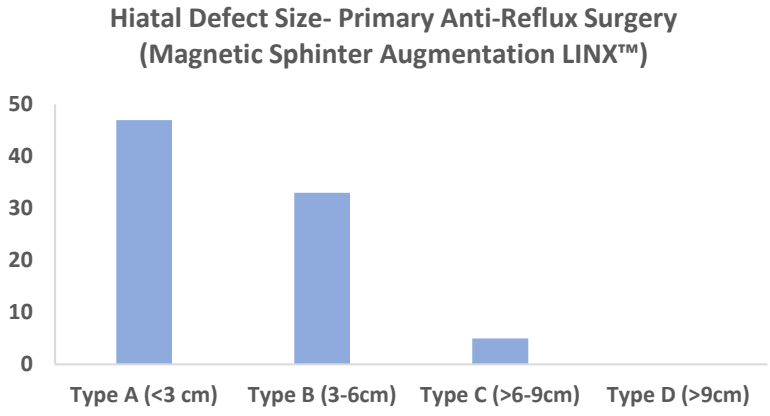
Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™)- All Trusts/Organisations

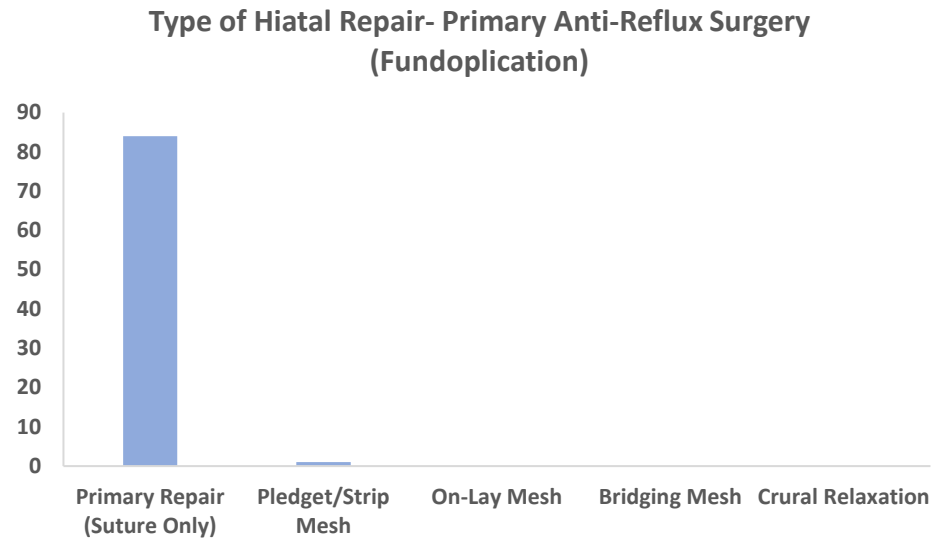
133 registered patients, 48 active, 85 complete, from 8 NHS Trusts/Independent HealthCare Organisations

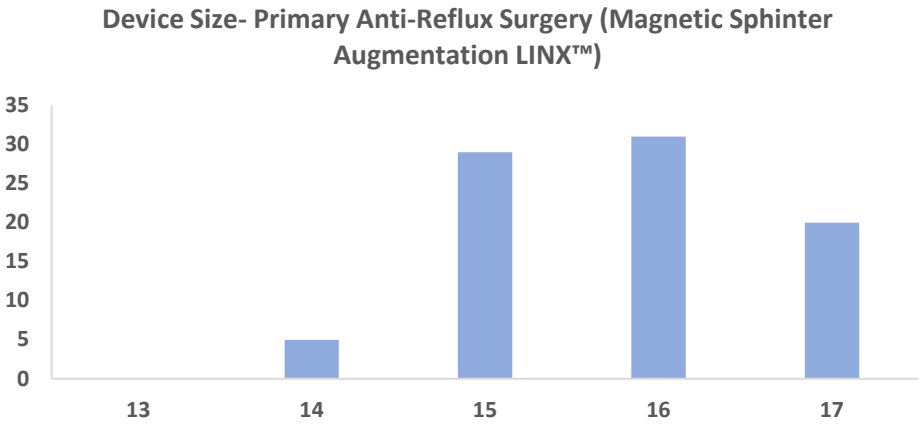
*To appear in statistical analysis the patient must have a complete status








Type of Hiatal Repair- Primary Anti-Reflux Surgery (Fundoplication)
90
80
70
60
50
40
30
20
10
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Bridging Mesh
Crural Relaxation

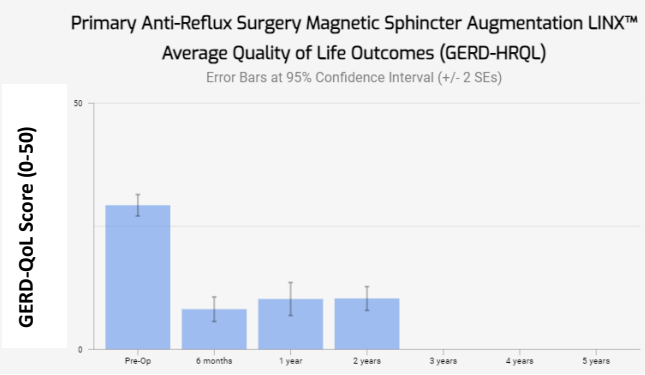

Device Size- Primary Anti-Reflux Surgery (Magnetic Sphinter Augmentation LINX™)
35
30
25
20
15
10
5
0
13
14
15
16
17

Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™)						
Total	**85**					
Sex						
Male/Female/Other	**37**	**48**	**-**			
Age						
Median	**49**					
Range	**19-81**					
Episodes						
Day Case	**65 (76.5%)**					
Inpatient	**20 (23.5%)**					
Time on Waiting List						
Median (Days)	**158**					
Range (Days)	**6-680**					
Method						
Open	**-**					
Laparoscopic	**65 (76.5%)**					
Robotic	**20 (23.5%)**					
Converted	**-**					
Hiatus Hernia Present	Yes		No			
	74 (87%)		**11 (13%)**			
Hiatal Defect	Type A (<3 cm)	Type B(3-6cm)	Type C (>6-9cm)	Type D (>9cm)		
	47	**33**	**5**	**-**		
Hiatal Repair	Primary Suture	Pledget/Strip Mesh	On-Lay Mesh	Bridging Mesh	Crural Relaxation	
	84	**1**	**-**	**-**	**-**	
LINX™ Size	13	14	15	16	17	
	-	**5**	**29**	**31**	**20**	
Gastroplasty	Yes		No			
	-		**-**			
Length of Stay						
Median (Days)	**0**					
Range (Days)	**0-4**					
Complications						
Morbidity	**1 (1.2%)**					
Return to Theatre	**-**					
Readmission (90 days)	**9 (10.6%)**					
Mortality	**-**					
QoL Outcomes						
	N	Mean ($\bar{x}$)	Range	SD	SE	95% CI
Pre-Procedure QoL	**85**	**26.9**	**4-50**	**9.57**	**1.04**	**24.8-29.0**
6 Month QoL	**40**	**7.5**	**1-50**	**7.2**	**1.14**	**5.2-9.8**
1 Year QoL	**26**	**9.4**	**1-50**	**7.74**	**1.52**	**6.4-12.4**
2 Year QoL	**8**	**9.5**	**1-50**	**6.75**	**2.39**	**4.7-14.3**
3 Year QoL	-	-	-	-	-	-
4 Year QoL	-	-	-	-	-	-
5 Year QoL	-	-	-	-	-	-

Combined UK GERD-QoL Score PROMs- Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™) All NHS Trusts & Independent HealthCare Organisations

Quality of Life

QoL Average Scores	PROMs	Mean
Pre-Op:	85	26.9
6 months:	40	7.5
1 year:	26	9.4
2 years:	8	9.5
3 years:	–	–
4 years:	–	–
5 years:	–	–
Improvement:		64.7 %
PROM Ratio:		100.0 %



Individual UK GERD-QoL Score PROMs- Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™) All NHS Trusts & Independent HealthCare Organisations who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Ave.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	85	2 2.35%	-	26.9	4.6	82.9%	5.1	81.0%	5.3	80.3%	–	–	–	–	–	–
Aneurin Bevan University Health Board [4]	21	-	-	24.0	6.9	71.3%	5.3	77.9%	–	–	–	–	–	–	–	–
Croydon Health Services NHS Trust [2]	2	-	-	17.0	4.5	73.5%	–	–	–	–	–	–	–	–	–	–
Epsom and St. Helier University Hospitals NHS Trust [2]	23	2 8.70%	-	29.4	2.9	90.1%	3.3	88.8%	0.6	98.0%	–	–	–	–	–	–
Nuffield Health [15]	2	-	-	31.5	9.0	71.4%	3.0	90.5%	–	–	–	–	–	–	–	–
Portsmouth Hospitals NHS Trust [5]	19	-	-	21.6	–	–	3.0	86.1%	–	–	–	–	–	–	–	–
St. George's University Hospitals NHS Foundation Trust [2]	1	-	-	4.0	2.0	50.0%	2.0	50.0%	–	–	–	–	–	–	–	–
Torbay and South Devon NHS Foundation Trust [6]	9	-	-	34.9	13.8	60.5%	14.0	59.9%	11.3	67.6%	–	–	–	–	–	–
University Hospital Southampton NHS Foundation Trust [4]	8	-	-	34.8	3.8	89.1%	4.0	88.5%	–	–	–	–	–	–	–	–

174 trusts found for Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™) sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Primary Anti-Reflux Surgery (Magnetic Sphincter Augmentation LINX™) Patient Reported Outcome Measures (PROMs) NHS Trusts- (Individual Trust vs Peer Trusts)

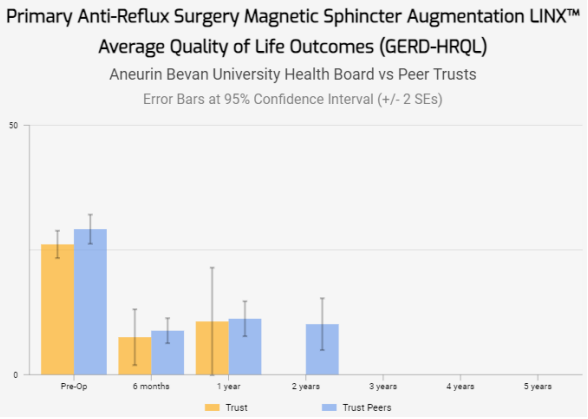
Included- all Trusts who have entered at least 1 patient into any NHSR reporting category

Excluded- Trusts that have not entered any patients into any category

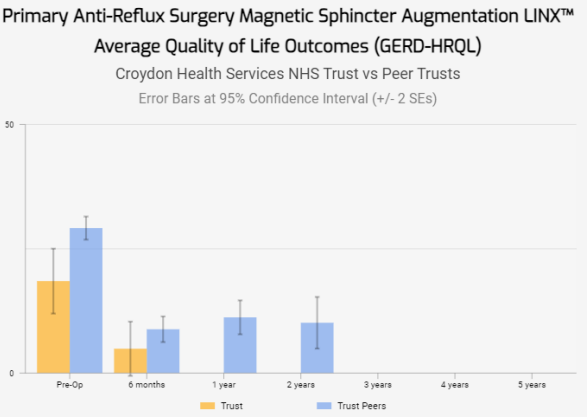
*To appear in statistical analysis the patient must have a complete status or in PROM status

*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

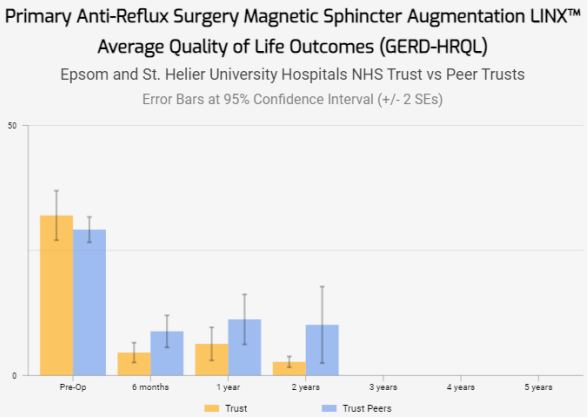
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	21 / 62	24.0	26.8	-10.4% ↓
6 months:	13 / 26	6.9	8.1	-14.8% ↓
1 year:	5 / 20	9.8	10.3	-4.9% ↓
2 years:	– / 8	–	9.3	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		59.2%	65.3%	-9.3% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



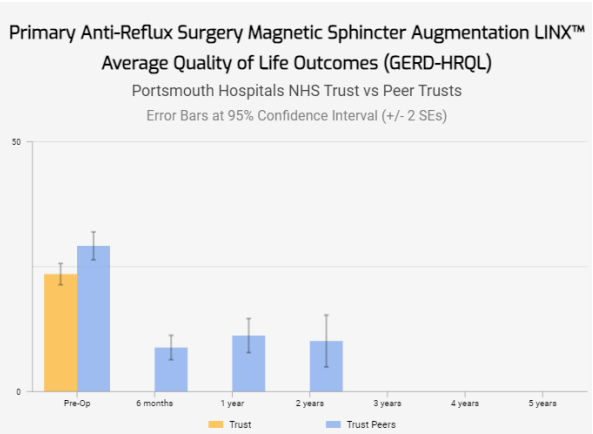
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 81	17.0	26.8	-36.6% ↓
6 months:	2 / 37	4.5	8.1	-44.4% ↓
1 year:	– / 25	–	10.3	-100% ↓
2 years:	– / 8	–	9.3	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		73.5%	65.3%	12.6% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



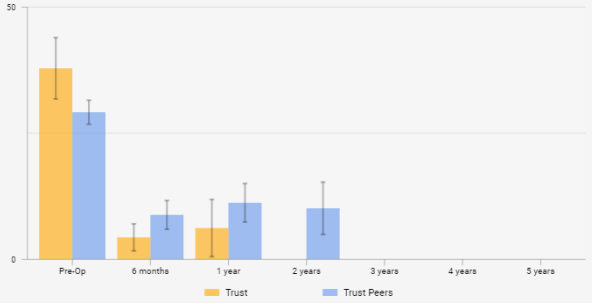
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	23 / 60	29.4	26.8	9.7% ↑
6 months:	10 / 29	4.2	8.1	-48.1% ↓
1 year:	9 / 16	5.8	10.3	-43.7% ↓
2 years:	2 / 6	2.5	9.3	-73.1% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		91.5%	65.3%	40.1% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



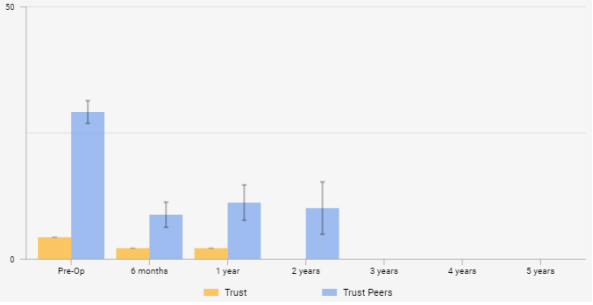
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	19 / 64	21.6	26.8	-19.4% ↓
6 months:	– / 39	–	8.1	-100% ↓
1 year:	– / 25	–	10.3	-100% ↓
2 years:	– / 8	–	9.3	-100% ↓
3 years:	– / –	–	–	–
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		0.0%	65.3%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



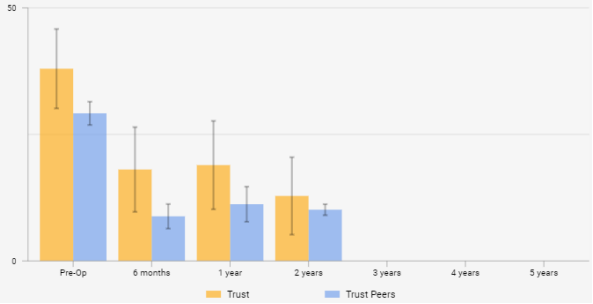
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	8 / 75	34.8	26.8	29.9% ↑
6 months:	6 / 33	4.0	8.1	-50.6% ↓
1 year:	3 / 22	5.7	10.3	-44.7% ↓
2 years:	– / 8	–	9.3	-100% ↓
3 years:	– / –	–	–	–
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		83.6%	65.3%	28.0% ↑
PROM Ratio:		100.0%	100.0%	0.0%



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 82	4.0	26.8	-85.1% ↓
6 months:	1 / 38	2.0	8.1	-75.3% ↓
1 year:	1 / 24	2.0	10.3	-80.6% ↓
2 years:	– / 8	–	9.3	-100% ↓
3 years:	– / –	–	–	–
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		50.0%	65.3%	-23.4% ↓
PROM Ratio:		100.0%	100.0%	0.0%



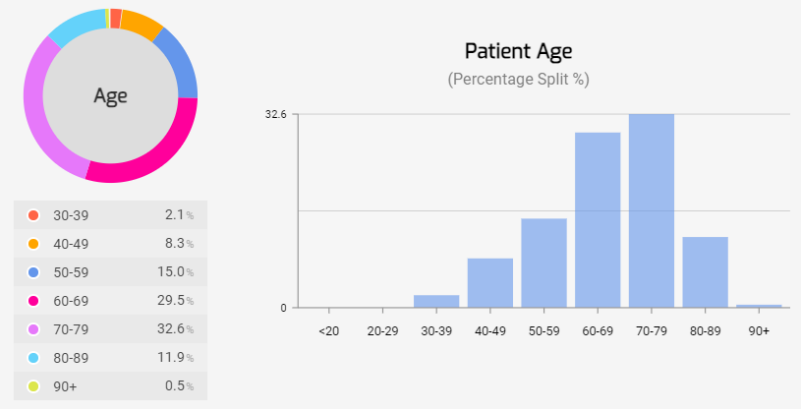
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	9 / 74	34.9	26.8	30.2% ↑
6 months:	7 / 32	16.6	8.1	104.9% ↑
1 year:	7 / 18	17.4	10.3	68.9% ↑
2 years:	6 / 2	11.8	9.3	26.9% ↑
3 years:	– / –	–	–	–
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		66.2%	65.3%	1.4% ↑
PROM Ratio:		100.0%	100.0%	0.0%

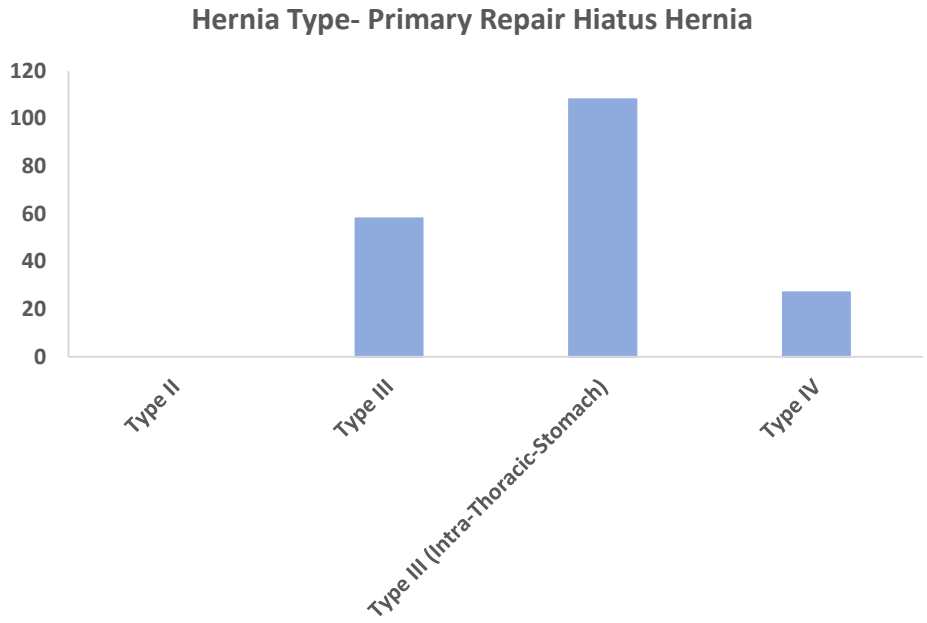


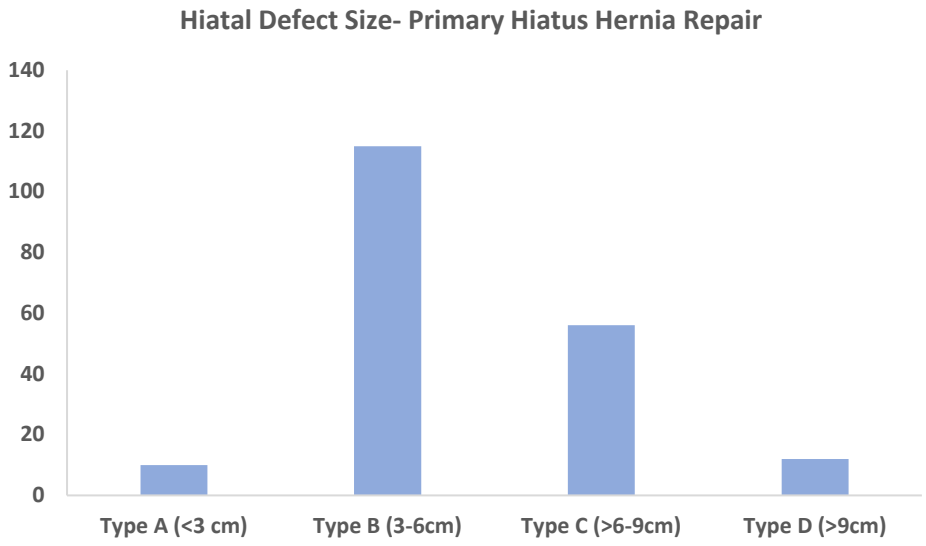
Primary Hiatus Hernia Repair- All Trusts/Organisations

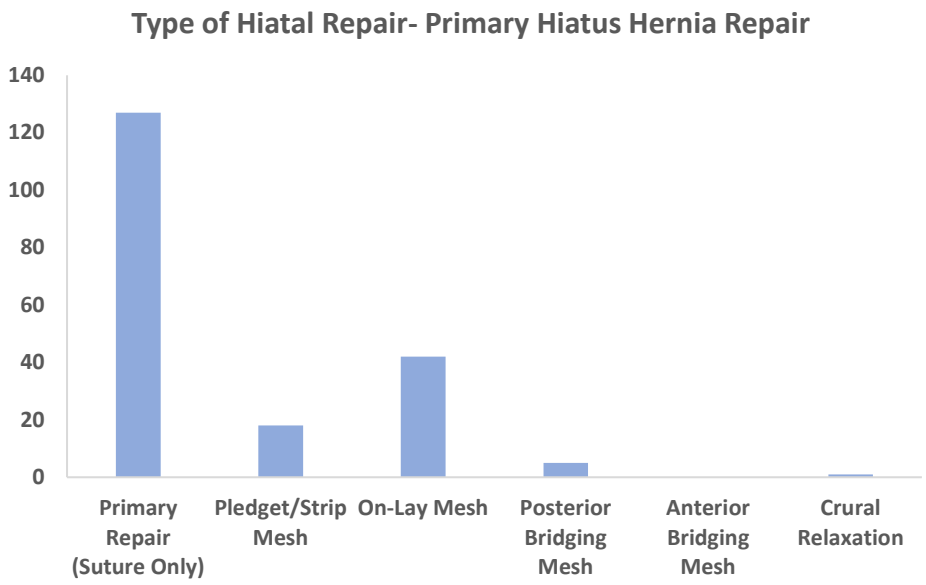
256 registered patients, 63 active, 193 complete, from 26 NHS Trusts/Independent HealthCare Organisations

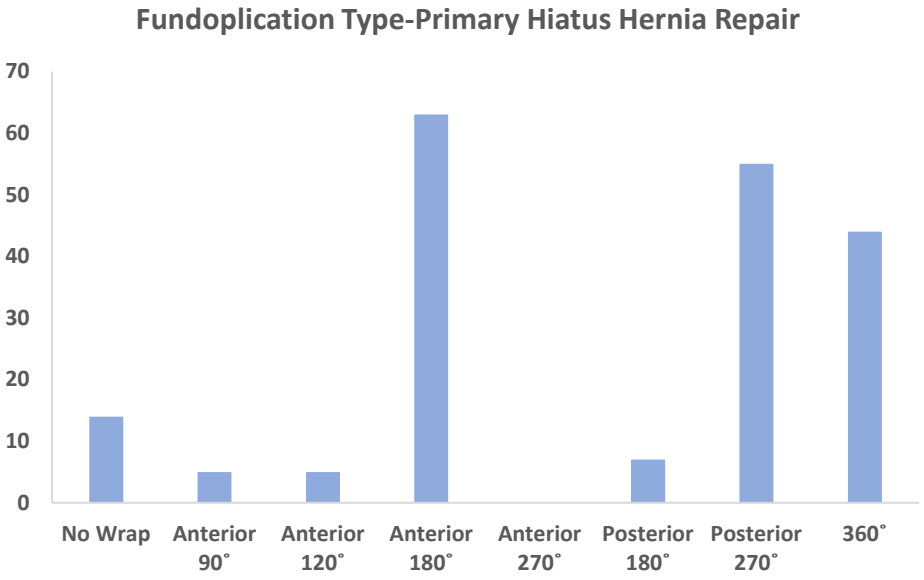
*To appear in statistical analysis the patient must have a complete or in PROM status

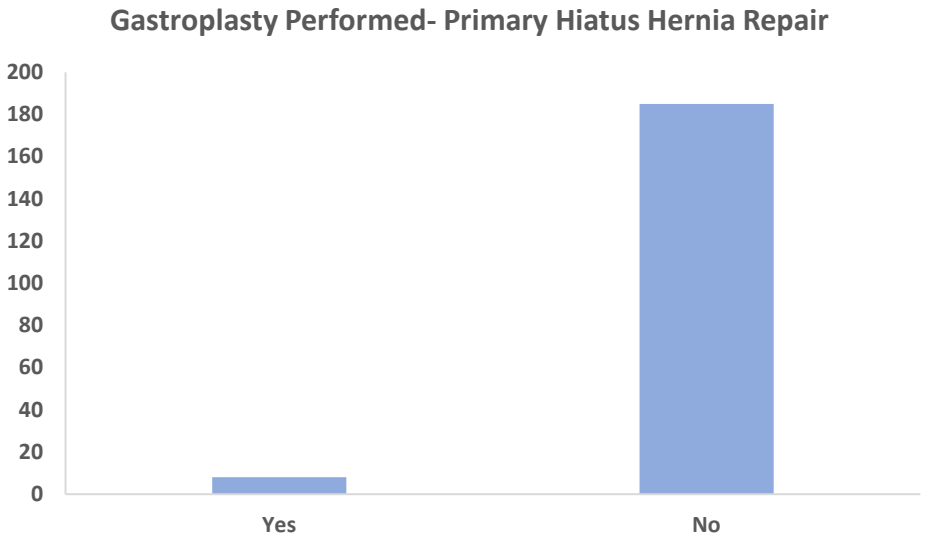





Hiatal Defect Size- Primary Hiatus Hernia Repair
140
120
100
80
60
40
20
0
Type A (<3 cm)
Type B (3-6cm)
Type C (>6-9cm)
Type D (>9cm)


Type of Hiatal Repair- Primary Hiatus Hernia Repair
140
120
100
80
60
40
20
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Posterior Bridging Mesh
Anterior Bridging Mesh
Crural Relaxation


Fundoplication Type-Primary Hiatus Hernia Repair
70
60
50
40
30
20
10
0
No Wrap
Anterior 90˚
Anterior 120˚
Anterior 180˚
Anterior 270˚
Posterior 180˚
Posterior 270˚
360˚


Gastroplasty Performed- Primary Hiatus Hernia Repair
200
180
160
140
120
100
80
60
40
20
0
Yes
No

Primary Hiatus Hernia Repair						
Total	**193**					
Sex						
Male/Female/Other	**55**	**138**	**-**			
Age						
Median	**67**					
Range	**33-92**					
Episodes						
Day Case	**15 (7.8%)**					
Inpatient	**178 (92.2%)**					
Time on Waiting List						
Median (Days)	**106**					
Range (Days)	**1-762**					
Method						
Open	**2 (1%)**					
Laparoscopic	**177 (91.7%)**					
Robotic	**14 (7.3%)**					
Converted	**-**					

Hiatus Hernia Type	Type II	Type III	Type III (Intra-Thoracic-Stomach)	Type IV
	-	**58**	**108**	**27**

Hiatal Defect	Type A (<3 cm)	Type B(3-6cm)	Type C (>6-9cm)	Type D (>9cm)
	10	**115**	**56**	**12**

Hiatal Repair	Primary Suture	Pledget/Strip Mesh	On-Lay Mesh	Bridging Mesh	Crural Relaxation
	127	**18**	**42**	**5**	**1**

Fundoplication Type	None	Anterior Partial 90˚	Anterior Partial 120˚	Anterior Partial 180˚	Posterior Partial 180˚	Posterior Partial 270˚	360˚ Complete
	14	**5**	**5**	**63**	**7**	**55**	**44**

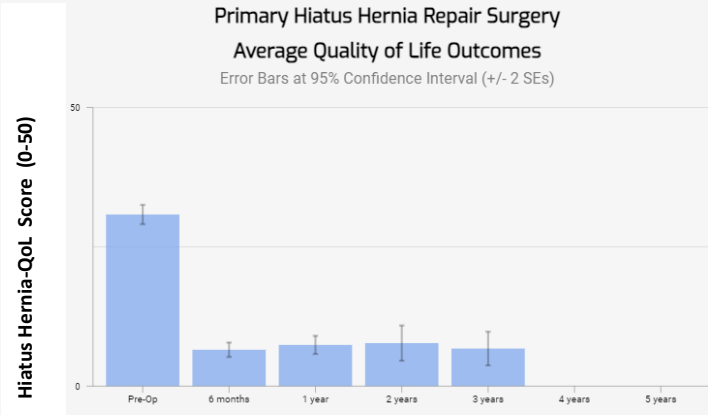
Gastroplasty	Yes	No
	8	**185**

Length of Stay	
Median (Days)	**2**
Range (Days)	**0-22**
Complications	
Morbidity (Overall)	**19 (9.8%)**
Return to Theatre	**3 (1.6%)**
Readmission (90 days)	**20 (10.4%)**
Mortality	**-**
QoL Outcomes	

	N	Mean ($\bar{x}$)	Range	SD	SE	95% CI
Pre-Procedure QoL	**193**	**28.3**	**3-50**	**10.87**	**0.78**	**26.7-29.9**
6 Month	**100**	**6.0**	**1-24**	**5.75**	**0.58**	**4.8-7.2**
1 Year QoL	**66**	**6.8**	**1-41**	**5.78**	**0.71**	**5.4-8.2**
2 Year QoL	**28**	**7.1**	**1-25**	**6.93**	**1.31**	**4.5-9.7**
3 Year QoL	**5**	**6.2**	**3-10**	**3.11**	**1.39**	**3.4-9.0**
4 Year QoL	-	-	-	-	-	-
5 Year QoL	-	-	-	-	-	-

Combined UK Hiatus Hernia-QoL Score PROMs- Primary Hiatus Hernia Repair All NHS Trusts & Independent HealthCare Organisations

QoL Average Scores	PROMs	Mean
Pre-Op:	193	28.3
6 months:	100	6.0
1 year:	66	6.8
2 years:	28	7.1
3 years:	5	6.2
4 years:	–	–
5 years:	–	–
Improvement:		78.1%
PROM Ratio:		80.0%



Individual UK Hiatus Hernia-QoL Score PROMs- Primary Hiatus Hernia Repair All NHS Trusts & Independent HealthCare Organisations who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Ave.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	193	21 10.88%	-	28.3	4.4	84.5%	4.6	83.7%	5.5	80.6%	6.8	76.0%	–	–	–	–
Aneurin Bevan University Health Board [4]	6	-	-	21.5	2.0	90.7%	–	–	–	–	–	–	–	–	–	–
BMI Healthcare [14]	3	-	-	24.0	3.0	87.5%	3.7	84.6%	2.3	90.4%	3.0	87.5%	–	–	–	–
Circle Healthcare Group [2]	1	-	-	32.0	1.0	96.9%	3.0	90.6%	1.0	96.9%	–	–	–	–	–	–
Croydon Health Services NHS Trust [2]	7	1 14.29%	-	26.1	7.9	69.7%	5.7	78.2%	7.3	72.0%	–	–	–	–	–	–
Epsom and St. Helier University Hospitals NHS Trust [2]	7	1 14.29%	-	30.3	4.0	86.8%	2.4	92.1%	2.0	93.4%	–	–	–	–	–	–
Frimley Health NHS Foundation Trust [4]	5	1 20.00%	-	23.0	2.2	90.4%	1.2	94.8%	–	–	–	–	–	–	–	–
Gloucestershire Hospitals NHS Foundation Trust [4]	8	1 12.50%	-	25.9	4.0	84.6%	5.7	78.0%	4.5	82.6%	–	–	–	–	–	–
Hull University Teaching Hospitals NHS Trust [1]	2	-	-	36.0	13.0	63.9%	6.0	83.3%	–	–	–	–	–	–	–	–
Leeds Teaching Hospitals NHS Trust [4]	2	-	-	42.0	3.0	92.9%	2.0	95.2%	5.0	88.1%	10.0	76.2%	–	–	–	–
Manchester University NHS Foundation Trust [3]	6	-	-	44.0	6.7	84.8%	6.3	85.7%	3.3	92.5%	–	–	–	–	–	–
Mid Yorkshire Hospitals NHS Trust [2]	5	1 20.00%	-	26.4	3.6	86.4%	–	–	–	–	–	–	–	–	–	–
Northamptonshire Healthcare NHS Foundation Trust [3]	33	3 9.09%	-	28.9	2.7	90.7%	5.4	81.3%	11.7	59.5%	5.5	81.0%	–	–	–	–
Nuffield Health [15]	1	-	-	32.0	1.0	96.9%	–	–	–	–	–	–	–	–	–	–
Portsmouth Hospitals NHS Trust [5]	5	-	-	24.6	1.0	95.9%	–	–	–	–	–	–	–	–	–	–
Ramsay Health Care UK [11]	1	1 100.00%	-	11.0	–	–	–	–	–	–	–	–	–	–	–	–
Royal Cornwall Hospitals NHS Trust [3]	4	2 50.00%	-	8.0	1.3	83.8%	–	–	–	–	–	–	–	–	–	–
Royal United Hospitals Bath NHS Foundation Trust [1]	1	-	-	25.0	–	–	–	–	–	–	–	–	–	–	–	–
Sandwell and West Birmingham Hospitals NHS Trust [2]	1	-	-	6.0	–	–	–	–	–	–	–	–	–	–	–	–
South Tees Hospitals NHS Foundation Trust [1]	13	1 7.69%	-	26.2	2.7	89.7%	4.1	84.4%	11.8	55.0%	–	–	–	–	–	–
Southern Health and Social Care Trust [1]	21	4 19.05%	-	30.2	8.5	71.9%	7.8	74.2%	8.2	72.8%	–	–	–	–	–	–
The Dudley Group NHS Foundation Trust [2]	9	3 33.33%	-	27.0	3.8	85.9%	0.3	98.9%	–	–	–	–	–	–	–	–
Torbay and South Devon NHS Foundation Trust [6]	21	1 4.76%	-	31.3	7.1	77.3%	4.6	85.3%	4.0	87.2%	–	–	–	–	–	–
University Hospital Southampton NHS Foundation Trust [4]	15	-	-	32.7	3.0	90.8%	6.7	79.5%	–	–	–	–	–	–	–	–
University Hospitals Coventry and Warwickshire NHS Trust [4]	4	-	-	17.3	6.3	63.6%	6.3	63.6%	3.0	82.7%	7.0	59.5%	–	–	–	–
University Hospitals Sussex NHS Foundation Trust [2]	3	-	-	39.0	1.0	97.4%	–	–	–	–	–	–	–	–	–	–
West Suffolk NHS Foundation Trust [2]	9	1 11.11%	-	24.6	0.7	97.2%	1.7	93.1%	1.0	95.9%	–	–	–	–	–	–

174 trusts found for **Primary Hiatus Hernia Repair Surgery** sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Primary Hiatus Hernia Repair Surgery

Patient Reported Outcome Measures (PROMs) NHS Trusts- (Trust vs Peer Trusts)

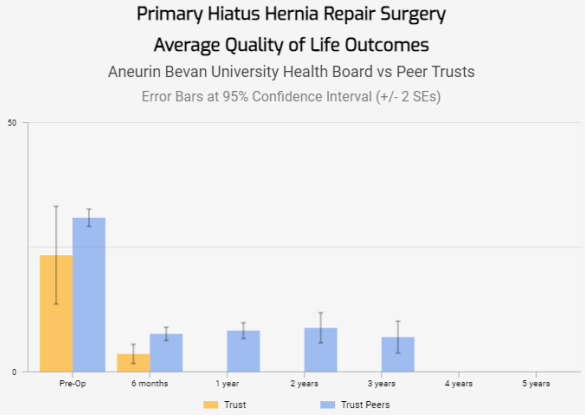
Included- NHSR registered NHS Trusts who have entered at least 1 patient into any NHSR reporting category

Excluded- NHSR registered NHS Trusts that have not entered any patients into any category

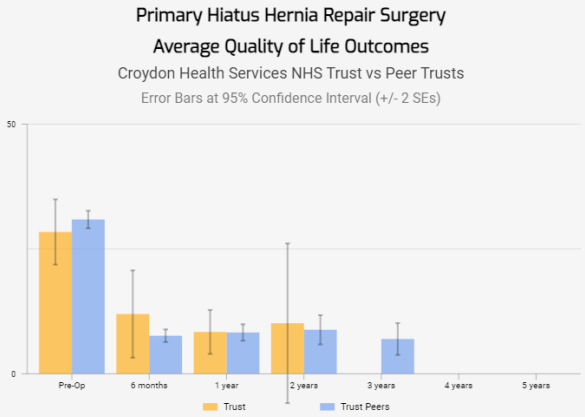
*To appear in statistical analysis the patient must have a complete status or in PROM status

*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

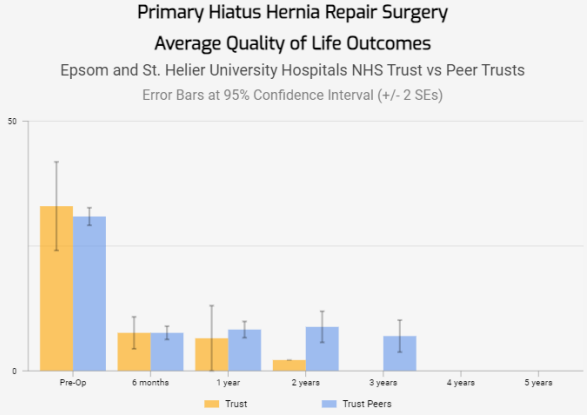
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	6 / 181	21.5	28.4	-24.3% ↓
6 months:	3 / 94	3.3	7.0	-52.9% ↓
1 year:	– / 64	–	7.6	-100% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		84.7%	77.5%	9.3% ↑
PROM Ratio:		100.0%	101.1%	-1.1% ↓



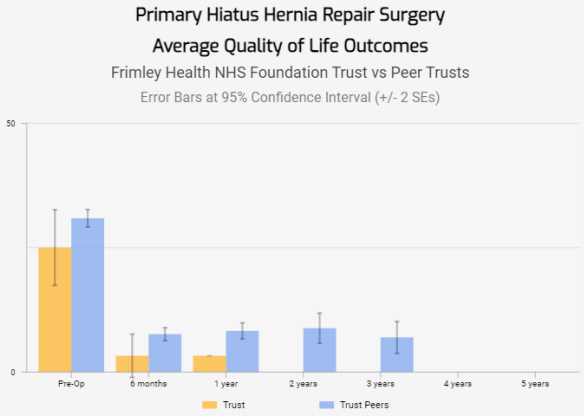
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	7 / 180	26.1	28.4	-8.1% ↓
6 months:	4 / 93	11.0	7.0	57.1% ↑
1 year:	3 / 61	7.7	7.6	1.3% ↑
2 years:	3 / 23	9.3	8.1	14.8% ↑
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		64.4%	77.5%	-16.9% ↓
PROM Ratio:		100.0%	101.1%	-1.1% ↓



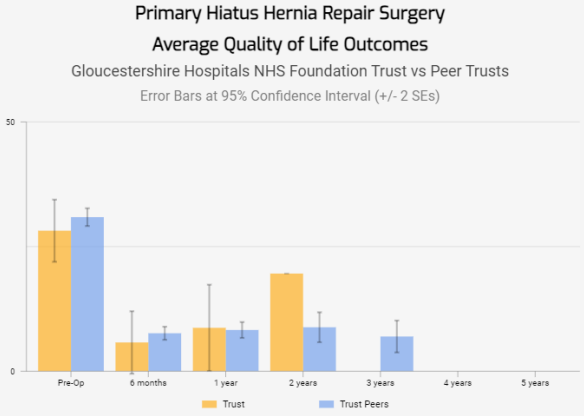
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	7 / 180	30.3	28.4	6.7% ↑
6 months:	4 / 93	7.0	7.0	0.0% -
1 year:	2 / 62	6.0	7.6	-21.1% ↓
2 years:	1 / 25	2.0	8.1	-75.3% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		93.4%	77.5%	20.5% ↑
PROM Ratio:		100.0%	101.1%	-1.1% ↓



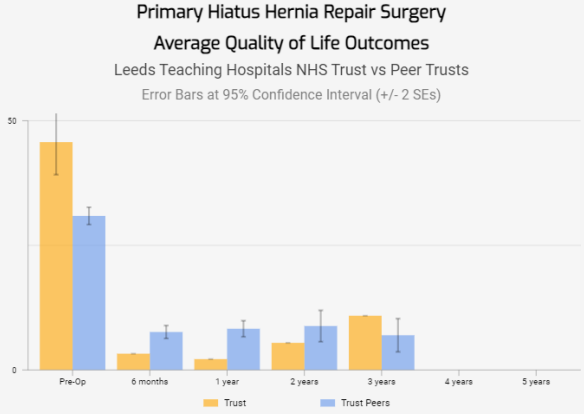
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	5 / 182	23.0	28.4	-19.0% ↓
6 months:	2 / 95	3.0	7.0	-57.1% ↓
1 year:	1 / 63	3.0	7.6	-60.5% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		87.0%	77.5%	12.3% ↑
PROM Ratio:		100.0%	101.1%	-1.1% ↓



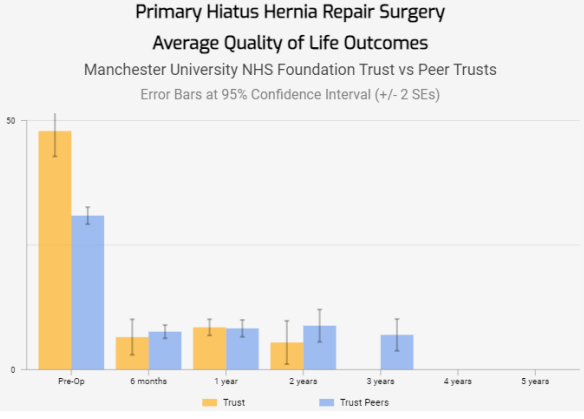
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	8 / 179	25.9	28.4	-8.8% ↓
6 months:	6 / 91	5.3	7.0	-24.3% ↓
1 year:	5 / 59	8.0	7.6	5.3% ↑
2 years:	1 / 25	18.0	8.1	122.2% ↑
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		30.5%	77.5%	-60.6% ↓
PROM Ratio:		100.0%	101.1%	-1.1% ↓



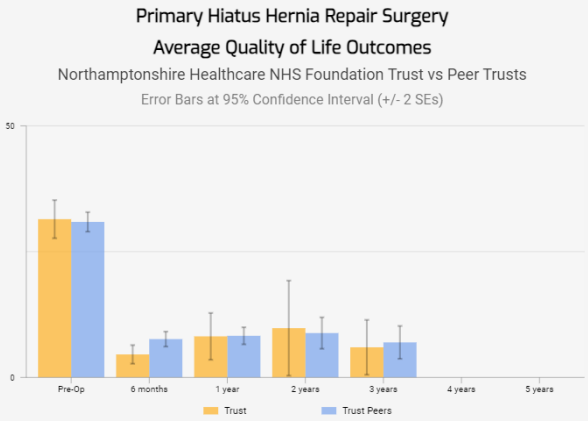
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 185	42.0	28.4	47.9% ↑
6 months:	1 / 96	3.0	7.0	-57.1% ↓
1 year:	1 / 63	2.0	7.6	-73.7% ↓
2 years:	1 / 25	5.0	8.1	-38.3% ↓
3 years:	1 / 3	10.0	6.4	56.3% ↑
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		76.2%	77.5%	-1.7% ↓
PROM Ratio:		100.0%	101.1%	-1.1% ↓



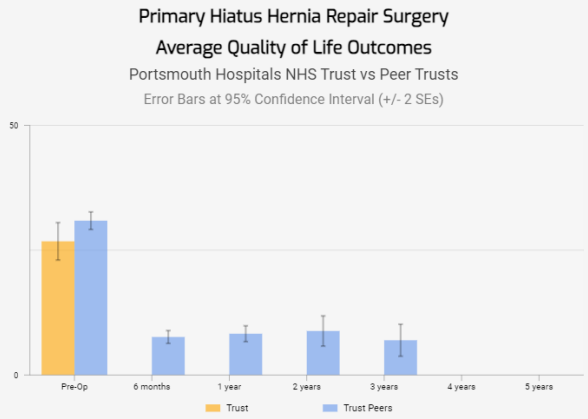
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	6 / 181	44.0	28.4	54.9% ↑
6 months:	5 / 92	6.0	7.0	-14.3% ↓
1 year:	4 / 60	7.8	7.6	2.6% ↑
2 years:	2 / 24	5.0	8.1	-38.3% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		88.6%	77.5%	14.3% ↑
PROM Ratio:		100.0%	101.1%	-1.1% ↓



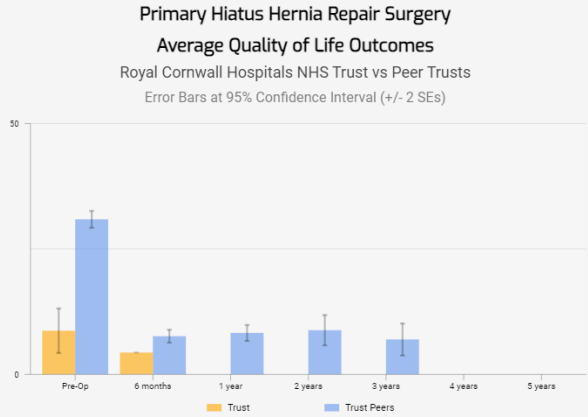
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	33 / 154	28.9	28.4	1.8% ↑
6 months:	17 / 80	4.2	7.0	-40.0% ↓
1 year:	10 / 54	7.5	7.6	-1.3% ↓
2 years:	5 / 21	9.0	8.1	11.1% ↑
3 years:	2 / 2	5.5	6.4	-14.1% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		81.0%	77.5%	4.5% ↑
PROM Ratio:		100.0%	101.3%	-1.3% ↓



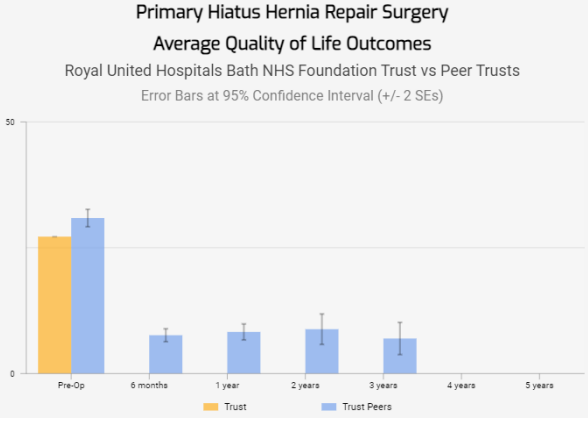
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	5 / 182	24.6	28.4	-13.4% ↓
6 months:	– / 97	–	7.0	-100% ↓
1 year:	– / 64	–	7.6	-100% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		0.0%	77.5%	-100% ↓
PROM Ratio:		–	101.1%	-100% ↓



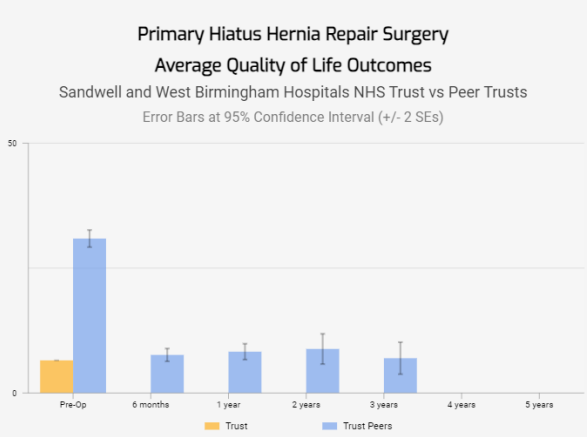
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	4 / 183	8.0	28.4	-71.8% ↓
6 months:	1 / 96	4.0	7.0	-42.9% ↓
1 year:	– / 64	–	7.6	-100% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		50.0%	77.5%	-35.5% ↓
PROM Ratio:		100.0%	101.1%	-1.1% ↓



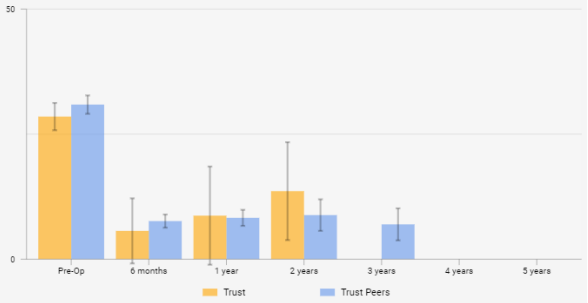
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 186	25.0	28.4	-12.0% ↓
6 months:	– / 97	–	7.0	-100% ↓
1 year:	– / 64	–	7.6	-100% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		0.0%	77.5%	-100% ↓
PROM Ratio:		–	101.1%	-100% ↓



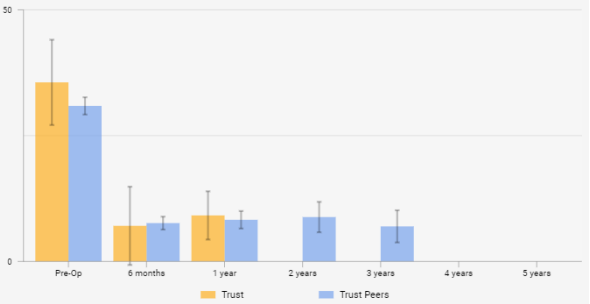
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 186	6.0	28.4	-78.9% ↓
6 months:	– / 97	–	7.0	-100% ↓
1 year:	– / 64	–	7.6	-100% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		0.0%	77.5%	-100% ↓
PROM Ratio:		–	101.1%	-100% ↓



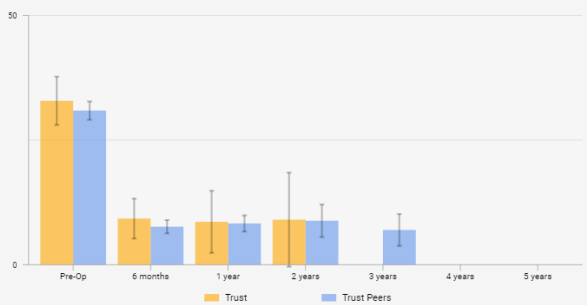
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	13 / 174	26.2	28.4	-7.7% ↓
6 months:	5 / 92	5.2	7.0	-25.7% ↓
1 year:	4 / 60	8.0	7.6	5.3% ↑
2 years:	2 / 24	12.5	8.1	54.3% ↑
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		52.3%	77.5%	-32.5% ↓
PROM Ratio:		100.0%	101.1%	-1.1% ↓



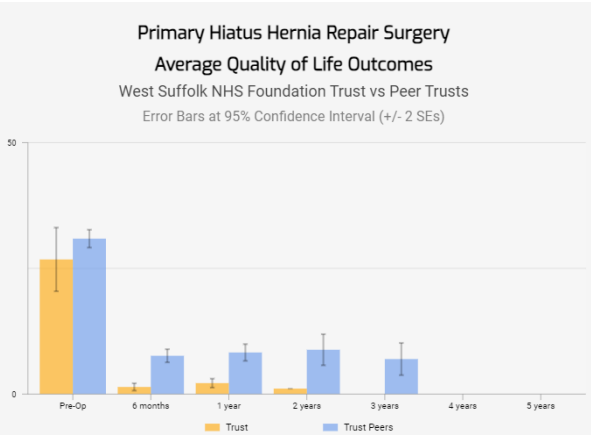
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	15 / 172	32.7	28.4	15.1% ↑
6 months:	6 / 91	6.5	7.0	-7.1% ↓
1 year:	7 / 57	8.4	7.6	10.5% ↑
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		74.3%	77.5%	-4.1% ↓
PROM Ratio:		100.0%	101.1%	-1.1% ↓



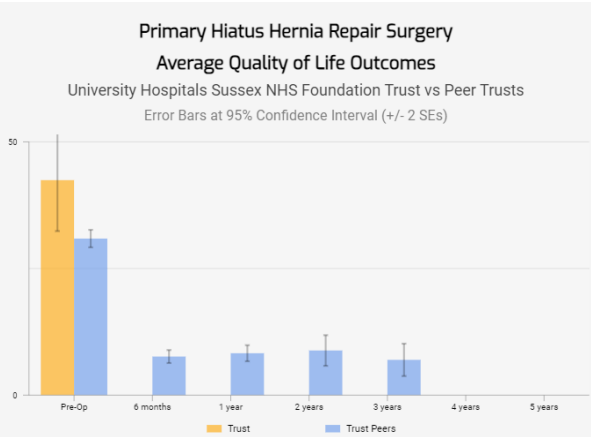
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	21 / 166	30.2	28.4	6.3% ↑
6 months:	14 / 83	8.5	7.0	21.4% ↑
1 year:	8 / 56	7.9	7.6	3.9% ↑
2 years:	3 / 23	8.3	8.1	2.5% ↑
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		72.5%	77.5%	-6.5% ↓
PROM Ratio:		100.0%	101.2%	-1.2% ↓



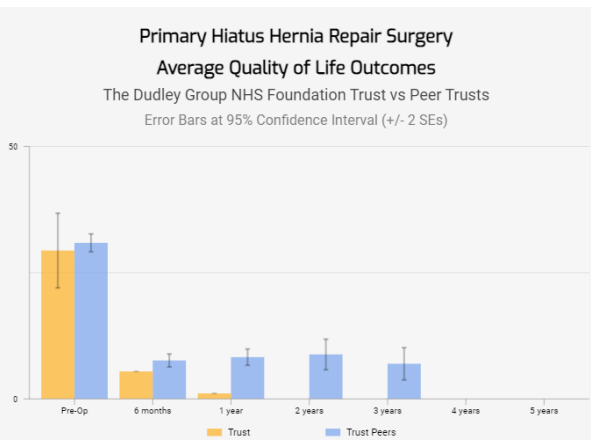
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	9 / 178	24.6	28.4	-13.4% ↓
6 months:	3 / 94	1.3	7.0	-81.4% ↓
1 year:	4 / 60	2.0	7.6	-73.7% ↓
2 years:	1 / 25	1.0	8.1	-87.7% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		95.9%	77.5%	23.7% ↑
PROM Ratio:		100.0%	101.1%	-1.1% ↓



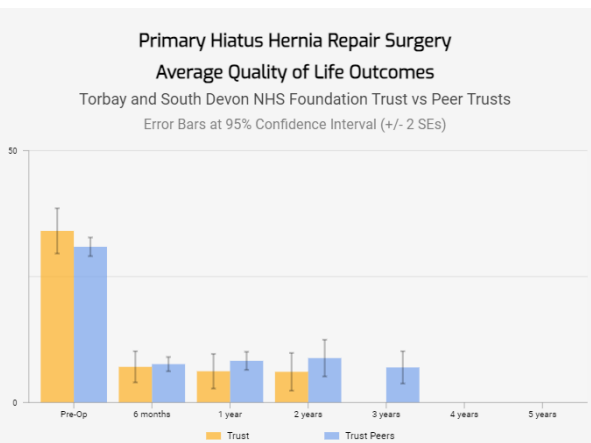
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 184	39.0	28.4	37.3% ↑
6 months:	– / 97	–	7.0	-100% ↓
1 year:	– / 64	–	7.6	-100% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		0.0%	77.5%	-100% ↓
PROM Ratio:		–	101.1%	-100% ↓



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	9 / 178	27.0	28.4	-4.9% ↓
6 months:	1 / 96	5.0	7.0	-28.6% ↓
1 year:	1 / 63	1.0	7.6	-86.8% ↓
2 years:	– / 26	–	8.1	-100% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		96.3%	77.5%	24.3% ↑
PROM Ratio:		100.0%	101.1%	-1.1% ↓



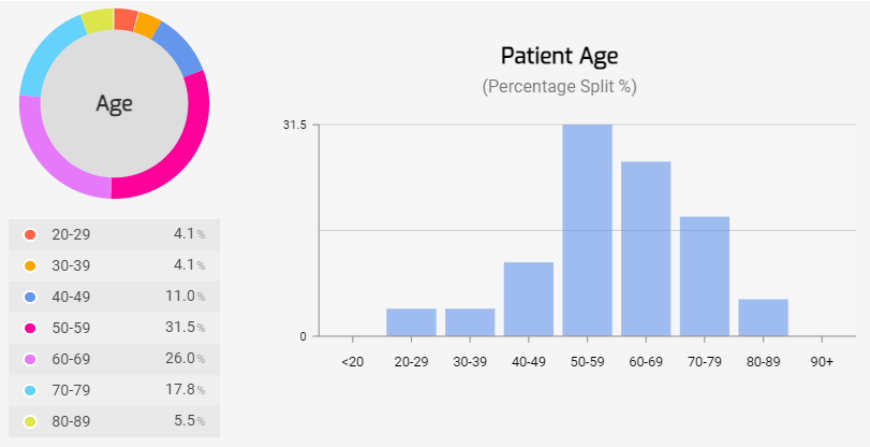
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	21 / 166	31.3	28.4	10.2% ↑
6 months:	17 / 80	6.5	7.0	-7.1% ↓
1 year:	11 / 53	5.7	7.6	-25.0% ↓
2 years:	5 / 21	5.6	8.1	-30.9% ↓
3 years:	– / 4	–	6.4	-100% ↓
4 years:	– / –	–	–	–
5 years:	– / –	–	–	–
Improvement:		82.1%	77.5%	5.9% ↑
PROM Ratio:		75.0%	100.0%	-25.0% ↓

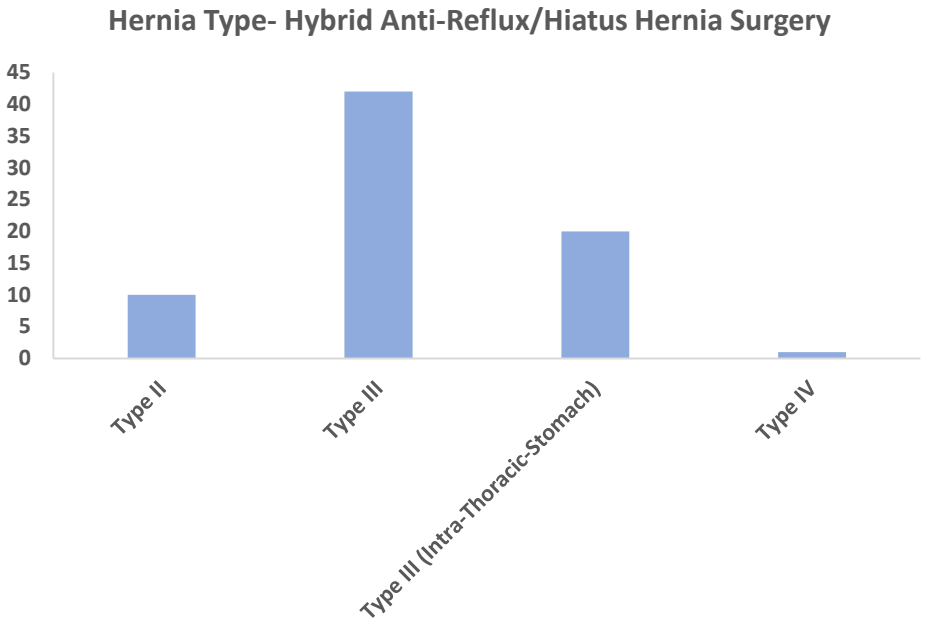


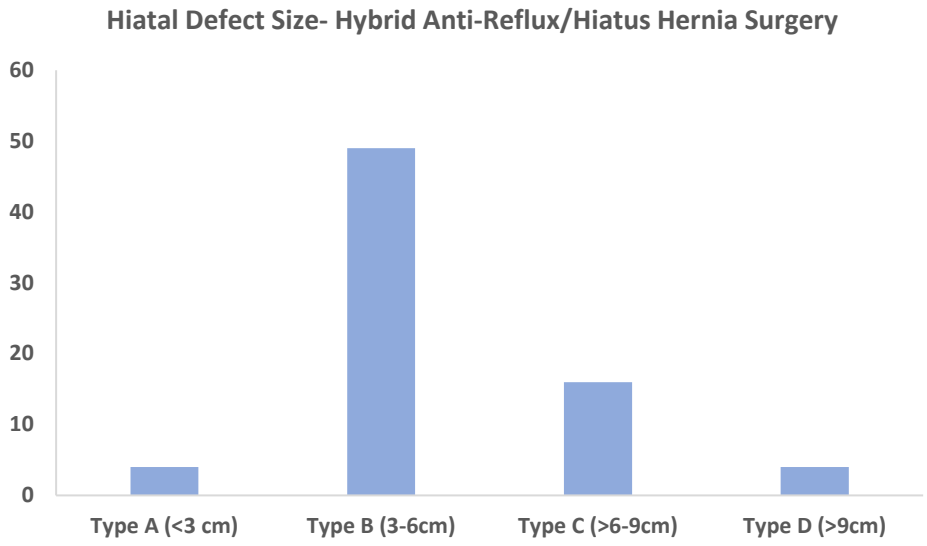
Hybrid Anti-Reflux/Hiatus Hernia Surgery- All Trusts/Organisations

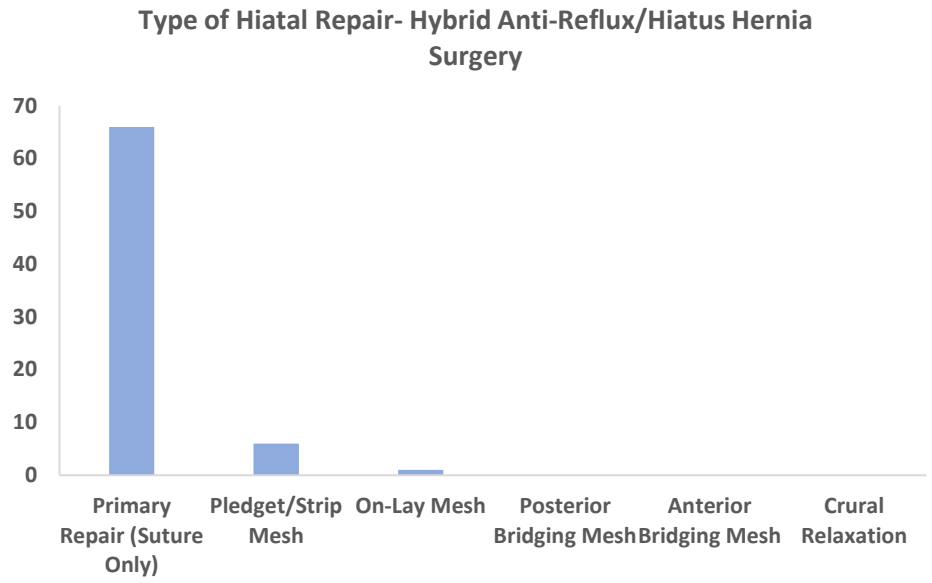
94 registered patients, 21 active, 73 complete from 16 NHS Trusts/Independent HealthCare Organisations

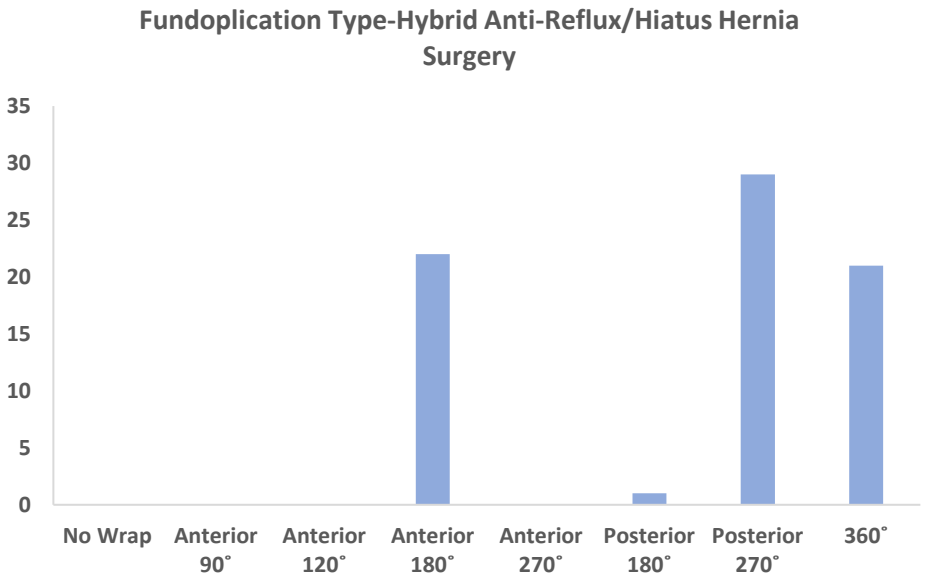
*To appear in statistical analysis the patient must have a complete or in PROM status

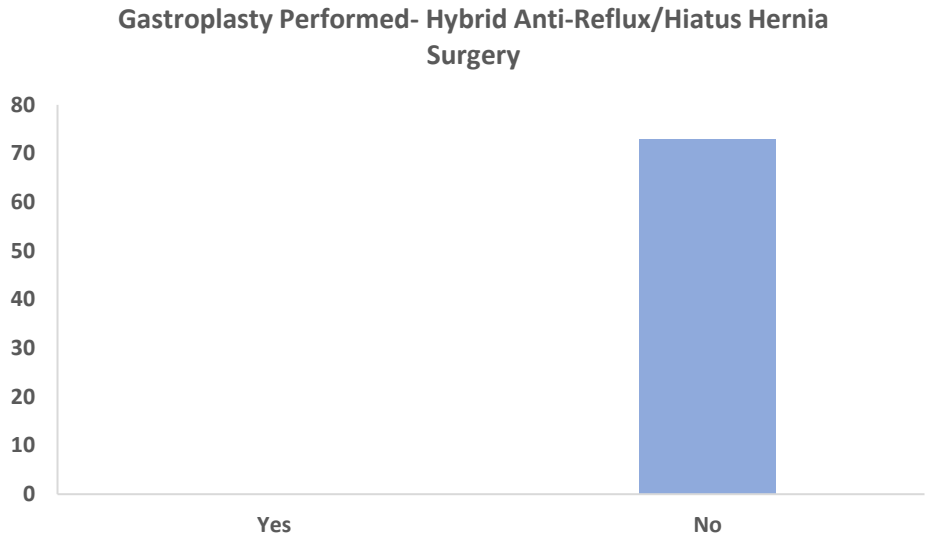





Hiatal Defect Size- Hybrid Anti-Reflux/Hiatus Hernia Surgery
60
50
40
30
20
10
0
Type A (<3 cm)
Type B (3-6cm)
Type C (>6-9cm)
Type D (>9cm)


Type of Hiatal Repair- Hybrid Anti-Reflux/Hiatus Hernia Surgery
70
60
50
40
30
20
10
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Posterior Bridging Mesh
Anterior Bridging Mesh
Crural Relaxation

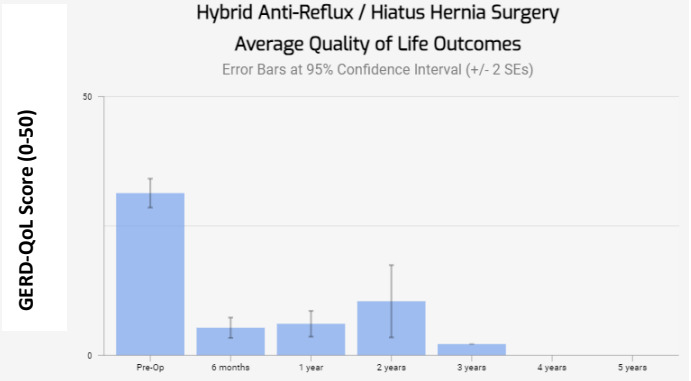

Fundoplication Type-Hybrid Anti-Reflux/Hiatus Hernia Surgery
35
30
25
20
15
10
5
0
No Wrap
Anterior 90˚
Anterior 120˚
Anterior 180˚
Anterior 270˚
Posterior 180˚
Posterior 270˚
360˚


Gastroplasty Performed- Hybrid Anti-Reflux/Hiatus Hernia Surgery
80
70
60
50
40
30
20
10
0
Yes
No

Hybrid Anti-Reflux/Hiatus Hernia Surgery						
Total	**73**					
Sex						
Male/Female/Other	**31**	**42**	-			
Age						
Median	**59**					
Range	**24-83**					
Episodes						
Day Case	**13 (17.8%)**					
Inpatient	**60 (82.2%)**					
Time on Waiting List						
Median	**146**					
Range	**2-929**					
Method						
Open	-					
Laparoscopic	**69 (94.5%)**					
Robotic	**4 (5.5%)**					
Converted	-					
Hiatus Hernia Type	Type II	Type III	Type III (Intra-Thoracic-Stomach)	Type IV		
	10	**42**	**20**	**1**		
Hiatal Defect	Type A (<3 cm)	Type B (3-6cm)	Type C (>6-9cm)	Type D (>9cm)		
	4	**49**	**16**	**4**		
Hiatal Repair	Primary Suture	Pledget/Strip Mesh	On-Lay Mesh	Bridging Mesh	Crural Relaxation	
	66	**6**	**1**	-	-	
Fundoplication Type	Anterior Partial 90˚	Anterior Partial 120˚	Anterior Partial 180˚	Posterior Partial 180˚	Posterior Partial 270˚	360˚ Complete
	-	-	**22**	**1**	**29**	**21**
Gastroplasty	Yes		No			
	-		**73**			
Length of Stay (Days)						
Median	**1**					
Range	**0-1111**					
Complications						
Morbidity (Overall)	**2 (2.7%)**					
Return to Theatre	-					
Readmission (90 days)	**6 (8.2%)**					
Mortality	-					
QoL Outcomes						
	N	Mean (x̄)	Range	SD	SE	95% CI
Pre-Procedure QoL	**73**	**28.8**	**1-50**	**10.87**	**1.27**	**26.3-31.3**
6 Month QoL	**39**	**4.9**	**1-24**	**5.65**	**0.9**	**3.1-6.7**
1 Year QoL	**34**	**5.6**	**1-28**	**6.67**	**1.14**	**3.3-7.9**
2 Year QoL	**10**	**9.6**	**1-29**	**10.15**	**3.21**	**3.2-16.0**
3 Year QoL	**1**	**2.0**	**2-2**	-	-	-
4 Year QoL	-	-	-	-	-	-
5 Year QoL	-	-	-	-	-	-

Combined UK GERD-QoL Score PROMs- Hybrid Anti-Reflux/Hiatus Hernia Surgery All NHS Trusts & Independent HealthCare Organisations

QoL Average Scores	PROMs	Mean
Pre-Op:	73	28.8
6 months:	39	4.9
1 year:	34	5.6
2 years:	10	9.6
3 years:	1	2.0
4 years:	–	–
5 years:	–	–
Improvement:		93.1%
PROM Ratio:		100.0%



Individual UK GERD-QoL Score PROMs- Hybrid Anti-Reflux/Hiatus Hernia Surgery All NHS Trusts & Independent HealthCare Organisations who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Avg.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	73	2 2.74%	-	28.8	3.9	86.5%	5.3	81.6%	6.2	78.5%	2.0	93.1%	–	–	–	–
Aneurin Bevan University Health Board [4]	10	-	-	25.9	4.4	83.0%	6.6	74.5%	18.0	30.5%	–	–	–	–	–	–
Croydon Health Services NHS Trust [2]	8	1 12.50%	-	24.3	4.0	83.5%	12.2	49.8%	–	–	–	–	–	–	–	–
Epsom and St. Helier University Hospitals NHS Trust [2]	3	-	-	15.0	–	–	–	–	–	–	–	–	–	–	–	–
Manchester University NHS Foundation Trust [3]	8	1 12.50%	-	45.6	2.5	94.5%	2.8	93.9%	14.5	68.2%	–	–	–	–	–	–
Northamptonshire Healthcare NHS Foundation Trust [3]	5	-	-	22.8	0.3	98.7%	0.7	96.9%	–	–	2.0	91.2%	–	–	–	–
Nuffield Health [15]	2	-	-	24.5	1.5	93.9%	3.5	85.7%	–	–	–	–	–	–	–	–
Portsmouth Hospitals NHS Trust [5]	1	-	-	16.0	3.0	81.3%	3.0	81.3%	–	–	–	–	–	–	–	–
Ramsay Health Care UK [11]	1	-	-	36.0	–	–	–	–	–	–	–	–	–	–	–	–
South Tees Hospitals NHS Foundation Trust [1]	15	-	-	29.3	4.1	86.0%	2.2	92.5%	2.9	90.1%	–	–	–	–	–	–
St. Josephs Hospital, Newport [1]	1	-	-	29.0	–	–	–	–	–	–	–	–	–	–	–	–
The Dudley Group NHS Foundation Trust [2]	3	-	-	28.0	–	–	–	–	–	–	–	–	–	–	–	–
Torbay and South Devon NHS Foundation Trust [6]	8	-	-	30.4	3.1	89.8%	5.0	83.6%	3.0	90.1%	–	–	–	–	–	–
University Hospital Southampton NHS Foundation Trust [4]	2	-	-	28.5	3.0	89.5%	–	–	–	–	–	–	–	–	–	–
University Hospitals Coventry and Warwickshire NHS Trust [4]	2	-	-	21.0	2.5	88.1%	7.5	64.3%	14.0	33.3%	–	–	–	–	–	–
University Hospitals Sussex NHS Foundation Trust [2]	2	-	-	39.5	24.0	39.2%	28.0	29.1%	–	–	–	–	–	–	–	–
West Suffolk NHS Foundation Trust [2]	2	-	-	24.5	9.5	61.2%	3.0	87.8%	1.0	95.9%	–	–	–	–	–	–

174 trusts found for **Hybrid Anti-Reflux / Hiatus Hernia Surgery** sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Hybrid Anti-Reflux/Hiatus Hernia Surgery

Patient Reported Outcome Measures (PROMs) NHS Trusts- (Trust vs Peer Trusts)

Included- NHSR registered NHS Trusts who have entered at least 1 patient into any NHSR reporting category

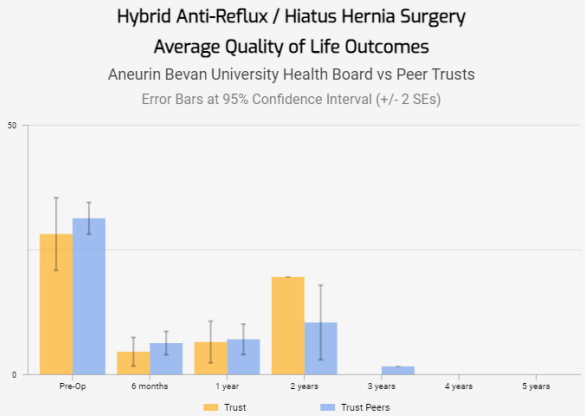
Excluded- NHSR registered NHS Trusts that have not entered any patients into any category

*To appear in statistical analysis the patient must have a complete status or in PROM status

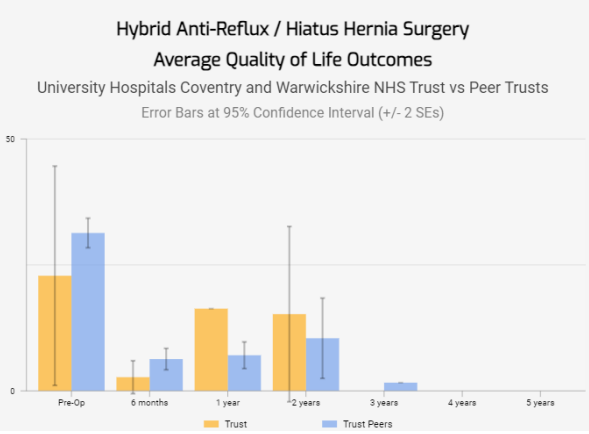
*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

Quality of Life

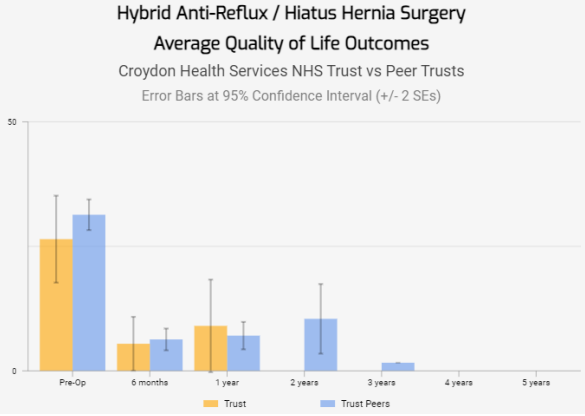
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	10 / 59	25.9	28.8	-10.1% ↓
6 months:	6 / 32	4.2	5.8	-27.6% ↓
1 year:	5 / 27	6.0	6.5	-7.7% ↓
2 years:	1 / 9	18.0	9.6	87.5% ↑
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		30.5%	94.8%	-67.8% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



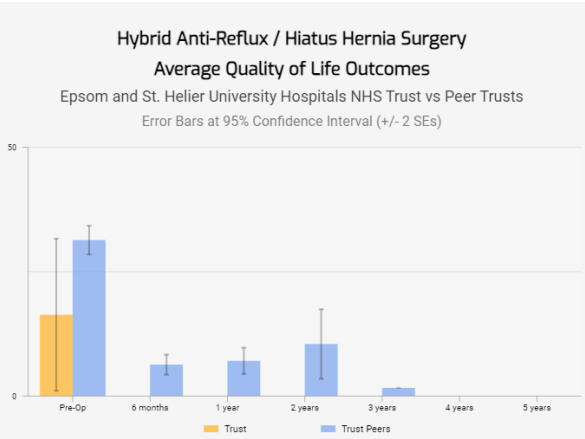
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 67	21.0	28.8	-27.1% ↓
6 months:	2 / 36	2.5	5.8	-56.9% ↓
1 year:	1 / 31	15.0	6.5	130.8% ↑
2 years:	2 / 8	14.0	9.6	45.8% ↑
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		33.3%	94.8%	-64.9% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



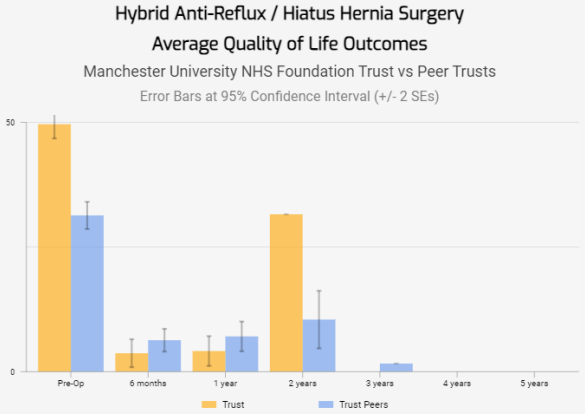
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	8 / 61	24.3	28.8	-15.6% ↓
6 months:	4 / 34	5.0	5.8	-13.8% ↓
1 year:	4 / 28	8.3	6.5	27.7% ↑
2 years:	– / 10	–	9.6	-100% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		65.8%	94.8%	-30.6% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



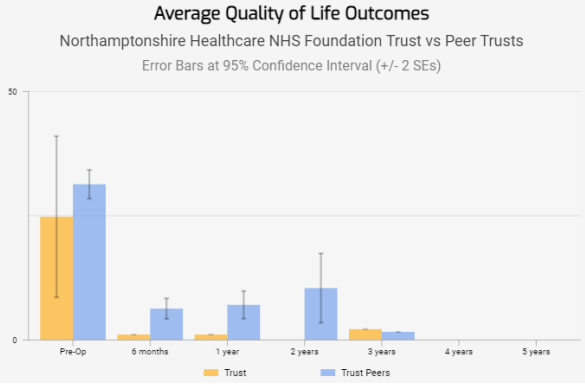
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 66	15.0	28.8	-47.9 % ↓
6 months:	– / 38	–	5.8	-100 % ↓
1 year:	– / 32	–	6.5	-100 % ↓
2 years:	– / 10	–	9.6	-100 % ↓
3 years:	– / 1	–	1.5	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0 %	94.8 %	-100 % ↓
PROM Ratio:		–	100.0 %	-100 % ↓



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	8 / 61	45.6	28.8	58.3 % ↑
6 months:	5 / 33	3.4	5.8	-41.4 % ↓
1 year:	4 / 28	3.8	6.5	-41.5 % ↓
2 years:	1 / 9	29.0	9.6	202.1 % ↑
3 years:	– / 1	–	1.5	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		36.4 %	94.8 %	-61.6 % ↓
PROM Ratio:		100.0 %	100.0 %	0.0 % -

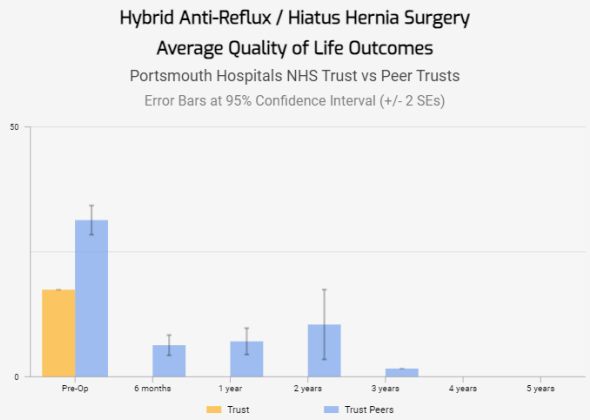


QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	5 / 64	22.8	28.8	-20.8 % ↓
6 months:	1 / 37	1.0	5.8	-82.8 % ↓
1 year:	2 / 30	1.0	6.5	-84.6 % ↓
2 years:	– / 10	–	9.6	-100 % ↓
3 years:	1 / –	2.0	1.5	33.3 % ↑
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		91.2 %	94.8 %	-3.8 % ↓
PROM Ratio:		100.0 %	100.0 %	0.0 % -

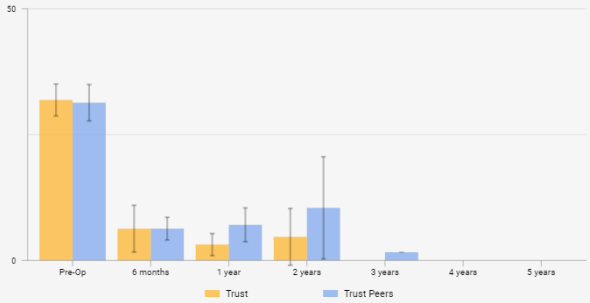


Quality of Life

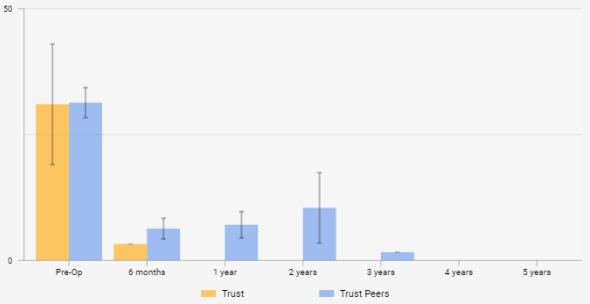
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 68	16.0	28.8	-44.4% ↓
6 months:	– / 38	–	5.8	-100% ↓
1 year:	– / 32	–	6.5	-100% ↓
2 years:	– / 10	–	9.6	-100% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	94.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



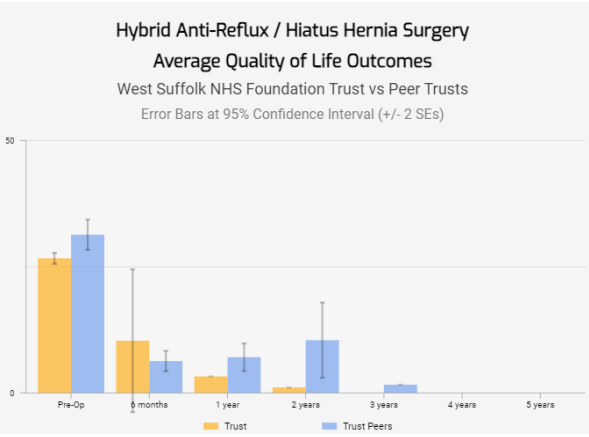
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	15 / 54	29.3	28.8	1.7% ↑
6 months:	9 / 29	5.8	5.8	0.0% -
1 year:	8 / 24	2.9	6.5	-55.4% ↓
2 years:	4 / 6	4.3	9.6	-55.2% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		85.3%	94.8%	-10.0% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



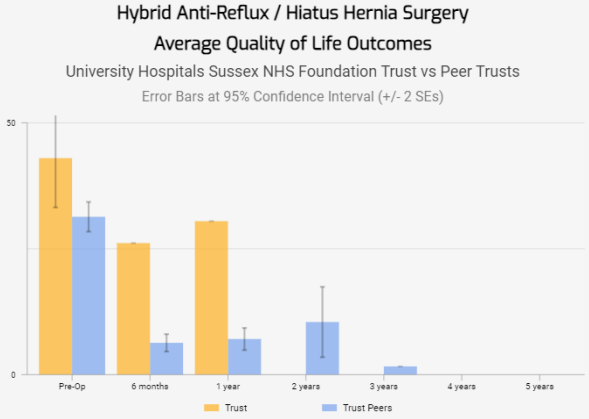
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 67	28.5	28.8	-1.0% ↓
6 months:	1 / 37	3.0	5.8	-48.3% ↓
1 year:	– / 32	–	6.5	-100% ↓
2 years:	– / 10	–	9.6	-100% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		89.5%	94.8%	-5.6% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



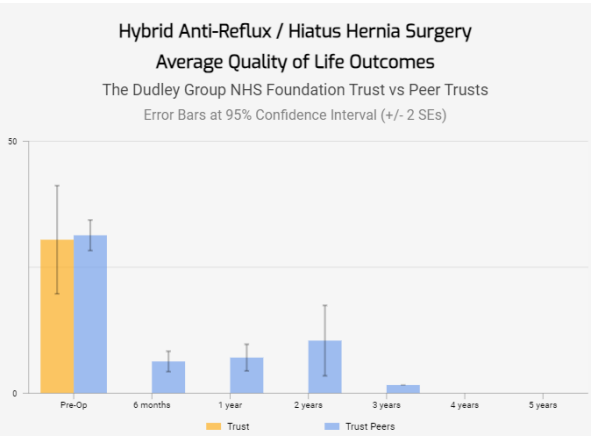
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 67	24.5	28.8	-14.9% ↓
6 months:	2 / 36	9.5	5.8	63.8% ↑
1 year:	1 / 31	3.0	6.5	-53.8% ↓
2 years:	1 / 9	1.0	9.6	-89.6% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		95.9%	94.8%	1.2% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



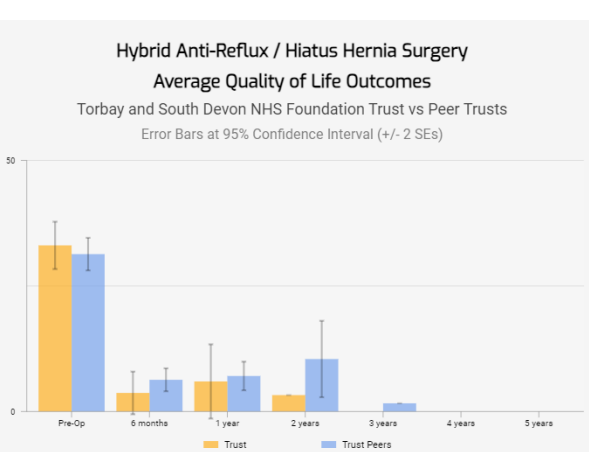
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 67	39.5	28.8	37.2% ↑
6 months:	1 / 37	24.0	5.8	313.8% ↑
1 year:	1 / 31	28.0	6.5	330.8% ↑
2 years:	– / 10	–	9.6	-100% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		29.1%	94.8%	-69.3% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 66	28.0	28.8	-2.8% ↓
6 months:	– / 38	–	5.8	-100% ↓
1 year:	– / 32	–	6.5	-100% ↓
2 years:	– / 10	–	9.6	-100% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	94.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



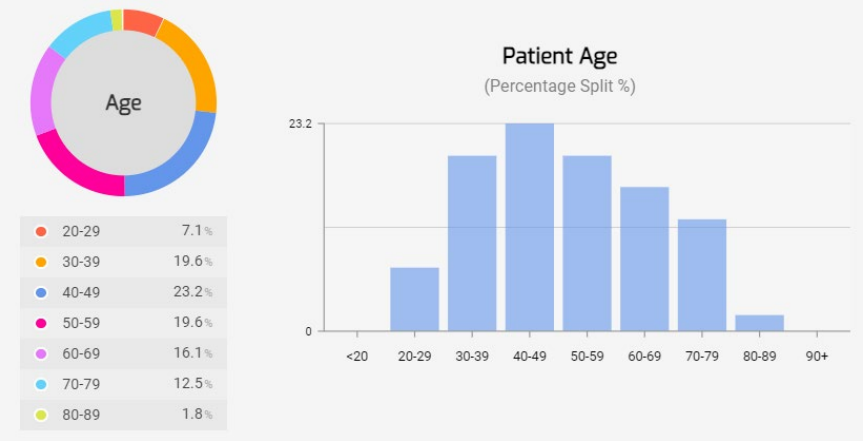
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	8 / 61	30.4	28.8	5.6% ↑
6 months:	7 / 31	3.4	5.8	-41.4% ↓
1 year:	6 / 26	5.5	6.5	-15.4% ↓
2 years:	1 / 9	3.0	9.6	-68.8% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		90.1%	94.8%	-5.0% ↓
PROM Ratio:		100.0%	100.0%	0.0% -

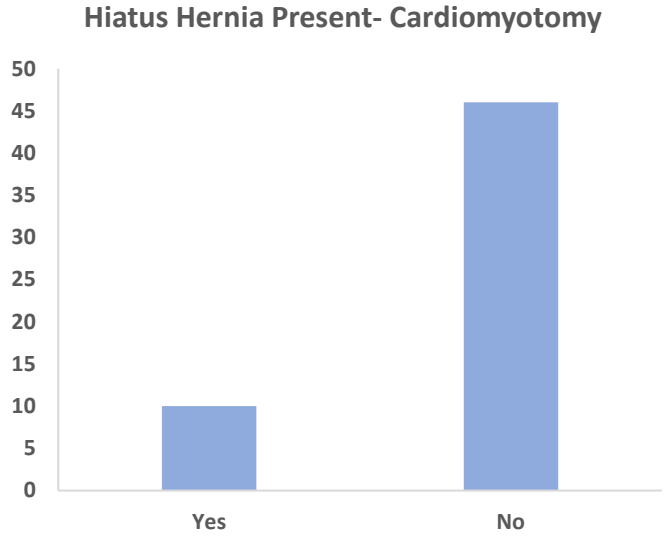


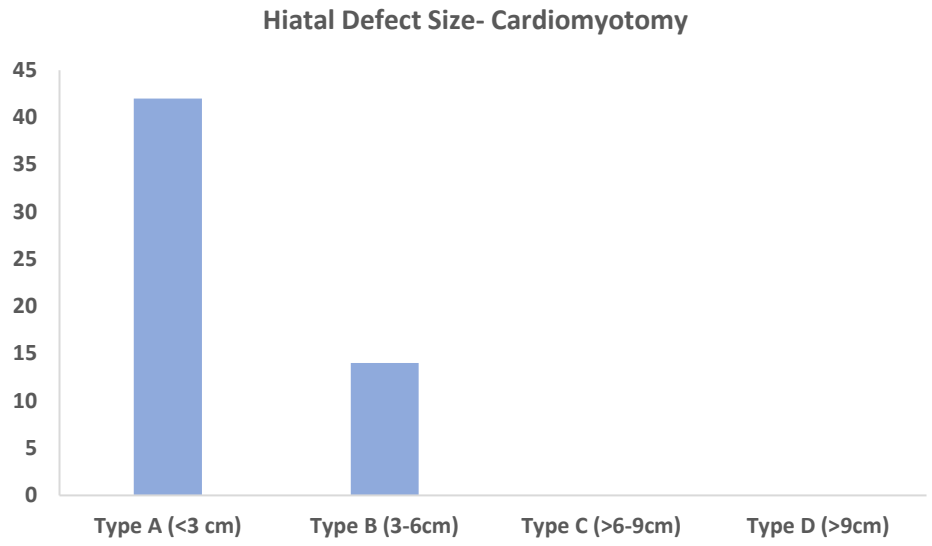
Cardiomyotomy Surgery- All Trusts/Organisations

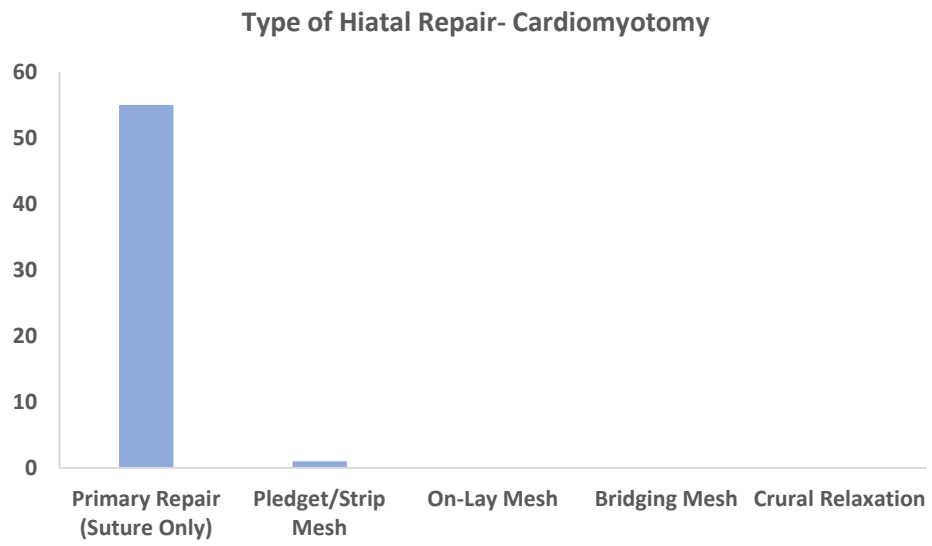
72 registered patients, 14 active, 56 complete, from 18 NHS Trusts/Independent HealthCare Organisations

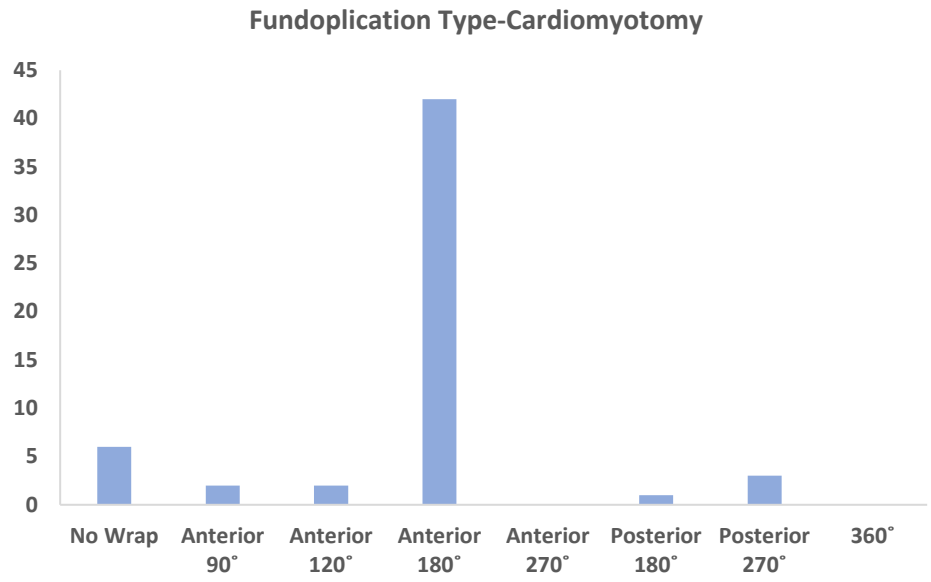
*To appear in statistical analysis the patient must have a complete or in PROM status






Hiatal Defect Size- Cardiomyotomy
45
40
35
30
25
20
15
10
5
0
Type A (<3 cm)
Type B (3-6cm)
Type C (>6-9cm)
Type D (>9cm)


Type of Hiatal Repair- Cardiomyotomy
60
50
40
30
20
10
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Bridging Mesh
Crural Relaxation

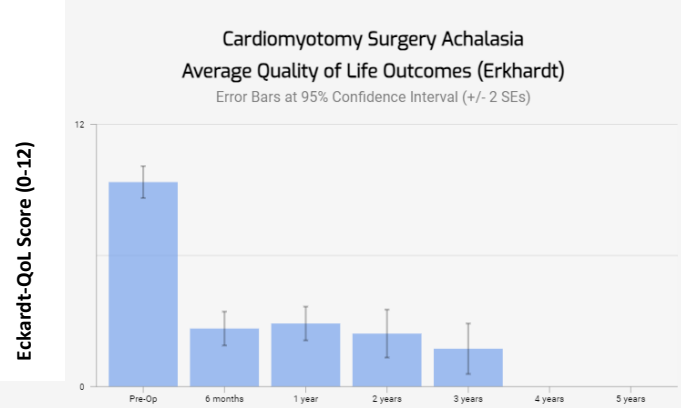

Fundoplication Type-Cardiomyotomy
45
40
35
30
25
20
15
10
5
0
No Wrap
Anterior 90˚
Anterior 120˚
Anterior 180˚
Anterior 270˚
Posterior 180˚
Posterior 270˚
360˚

Cardiomyotomy Surgery							
Total	**56**						
Sex							
Male/Female/Other	**31**	**25**	**-**				
Age							
Median	**50**						
Range	**25-82**						
Episodes							
Day Case	**1 (1.8%)**						
Inpatient	**55 (98.2%)**						
Time on Waiting List							
Median (Days)	**60**						
Range (Days)	**4-765**						
Method							
Open	**-**						
Laparoscopic	**55 (98.2%)**						
Robotic	**1 (1.8%)**						
Converted	**-**						
Hiatus Hernia Present	Yes				No		
	10				**46**		
Hiatal Defect	Type A (<3 cm)		Type B (3-6cm)		Type C (>6-9cm)		Type D (>9cm)
	42		**14**		**-**		**-**
Hiatal Repair	Primary Suture		Pledget/Strip Mesh		On-Lay Mesh	Bridging Mesh	Crural Relaxation
	55		**1**		**-**	**-**	**-**
Fundoplication Type	None	Anterior Partial 90˚	Anterior Partial 120˚	Anterior Partial 180˚	Posterior Partial 180˚	Posterior Partial 270˚	360˚ Complete
	6	**2**	**2**	**42**	**1**	**3**	**-**
Gastroplasty	Yes				No		
	-				-		
Length of Stay (Days)							
Median	**2**						
Range	**1-33**						
Complications							
Morbidity (Overall)	**1 (1.8%)**						
Return to Theatre	**1 (1.8%)**						
Readmission	**-**						
Mortality	**-**						
QoL Outcomes							

	N	Mean (x̄)	Range	SD	SE	95% CI
Pre-Procedure QoL	**56**	**8.1**	**3-12**	**2.28**	**0.30**	**7.5-8.7**
6 Month QoL	**28**	**2.3**	**1-8**	**1.72**	**0.33**	**1.6-3.0**
1 Year QoL	**23**	**2.5**	**1-6**	**1.56**	**0.33**	**1.8-3.2**
2 Year QoL	**12**	**3.5**	**1-5**	**1.51**	**0.44**	**1.2-3.0**
3 Year QoL	**2**	**1.5**	**1-2**	**0.71**	**0.50**	**0.5-2.5**
4 Year QoL	-	-	-	-	-	-
5 Year QoL	-	-	-	-	-	-

Combined UK Eckardt-QoL Score PROMs- Cardiomyotomy All NHS Trusts & Independent HealthCare Organisations

QoL Average Scores	PROMs	Mean
Pre-Op:	56	8.1
6 months:	28	2.3
1 year:	23	2.5
2 years:	12	2.1
3 years:	2	1.5
4 years:	–	–
5 years:	–	–
Improvement:		81.5%
PROM Ratio:		100.0%



Individual UK Eckardt-QoL Score PROMs- Cardiomyotomy All NHS Trusts & Independent HealthCare Organisations who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Ave.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	56	1 1.79%	-	8.1	1.8	77.8%	1.7	79.0%	1.7	79.0%	1.8	77.8%	–	–	–	–
Aneurin Bevan University Health Board [4]	3	-	-	9.7	3.0	69.1%	–	–	–	–	–	–	–	–	–	–
Croydon Health Services NHS Trust [2]	3	-	-	8.7	1.0	88.5%	–	–	–	–	–	–	–	–	–	–
Epsom and St. Helier University Hospitals NHS Trust [2]	1	-	-	10.0	–	–	–	–	–	–	–	–	–	–	–	–
Forth Valley NHS [3]	2	-	-	5.5	–	–	1.0	81.8%	–	–	–	–	–	–	–	–
Frimley Health NHS Foundation Trust [4]	5	-	-	8.6	1.6	81.4%	1.0	88.4%	–	–	–	–	–	–	–	–
Hull University Teaching Hospitals NHS Trust [1]	4	-	-	8.8	2.5	71.6%	4.3	51.1%	–	–	–	–	–	–	–	–
Leeds Teaching Hospitals NHS Trust [4]	2	-	-	7.5	1.0	86.7%	–	–	–	–	–	–	–	–	–	–
Manchester University NHS Foundation Trust [3]	1	-	-	12.0	–	–	2.0	83.3%	–	–	–	–	–	–	–	–
Mid Yorkshire Hospitals NHS Trust [2]	1	-	-	10.0	–	–	2.0	80.0%	–	–	–	–	–	–	–	–
Northamptonshire Healthcare NHS Foundation Trust [3]	7	-	-	6.9	4.0	42.0%	2.6	62.3%	2.0	71.0%	–	–	–	–	–	–
Nuffield Health [15]	2	-	-	8.5	1.0	88.2%	1.0	88.2%	1.0	88.2%	–	–	–	–	–	–
Royal United Hospitals Bath NHS Foundation Trust [1]	1	-	-	4.0	4.0	0.0%	–	–	1.0	75.0%	2.0	50.0%	–	–	–	–
Sandwell and West Birmingham Hospitals NHS Trust [2]	1	-	-	8.0	4.0	50.0%	–	–	1.0	87.5%	2.0	75.0%	–	–	–	–
South Tees Hospitals NHS Foundation Trust [1]	4	-	-	9.8	2.3	76.5%	1.0	89.8%	3.0	69.4%	2.0	79.6%	–	–	–	–
Southern Health and Social Care Trust [1]	10	-	-	6.6	1.1	83.3%	1.2	81.8%	1.5	77.3%	–	–	–	–	–	–
St. Josephs Hospital, Newport [1]	1	-	-	11.0	3.0	72.7%	–	–	–	–	–	–	–	–	–	–
Torbay and South Devon NHS Foundation Trust [6]	7	1 14.29%	-	9.0	1.2	86.7%	1.7	81.1%	1.6	82.2%	1.0	88.9%	–	–	–	–
University Hospital Southampton NHS Foundation Trust [4]	1	-	-	7.0	2.0	71.4%	5.0	28.6%	–	–	–	–	–	–	–	–

174 trusts found for **Cardiomyotomy Surgery (Achalasia)** sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Cardiomyotomy (Achalasia)- Patient Reported Outcome Measures (PROMs) Eckardt Score 0-12 Reported Outcome Measures (PROMs) NHS Trusts- (Trust vs Peer Trusts)

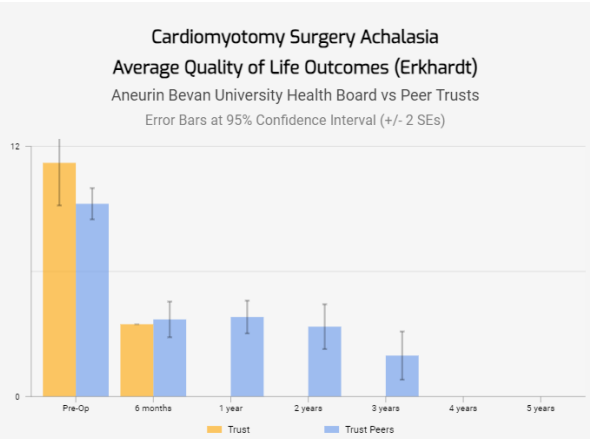
Included- NHSR registered NHS Trusts who have entered at least 1 patient into any NHSR reporting category

Excluded- NHSR registered NHS Trusts that have not entered any patients into any category

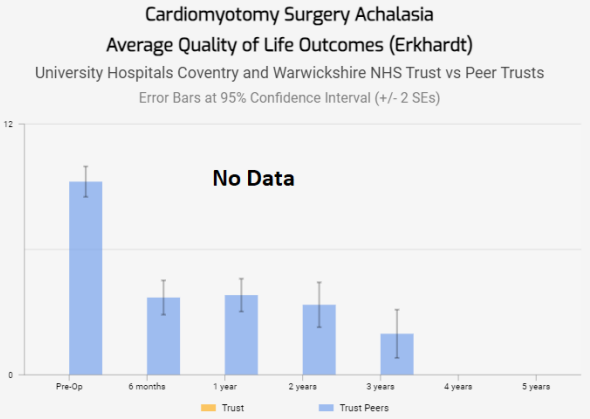
*To appear in statistical analysis the patient must have a complete status or in PROM status

*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

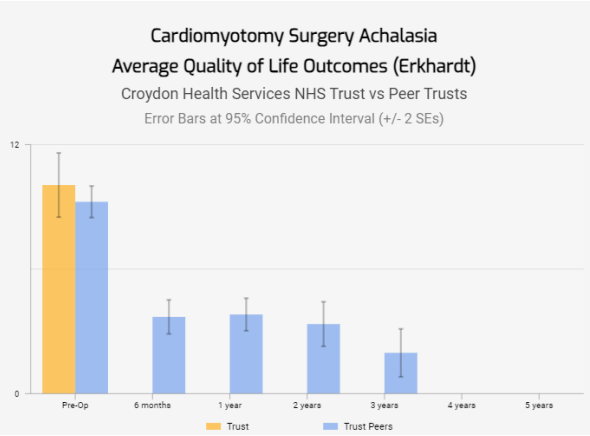
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 50	9.7	8.0	21.3% ↑
6 months:	1 / 24	3.0	3.2	-6.3% ↓
1 year:	– / 22	–	3.3	-100% ↓
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		69.1%	78.8%	-12.3% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



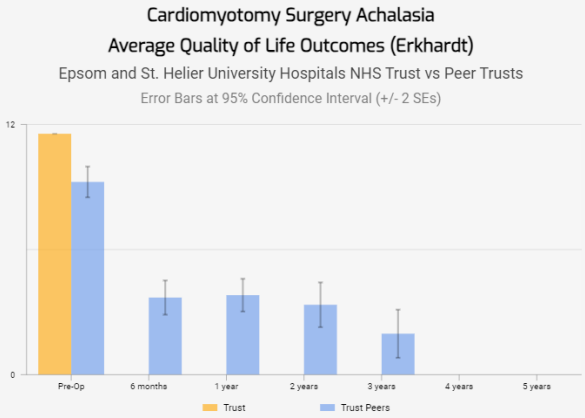
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	– / 53	–	8.0	-100% ↓
6 months:	– / 25	–	3.2	-100% ↓
1 year:	– / 22	–	3.3	-100% ↓
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		–	78.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



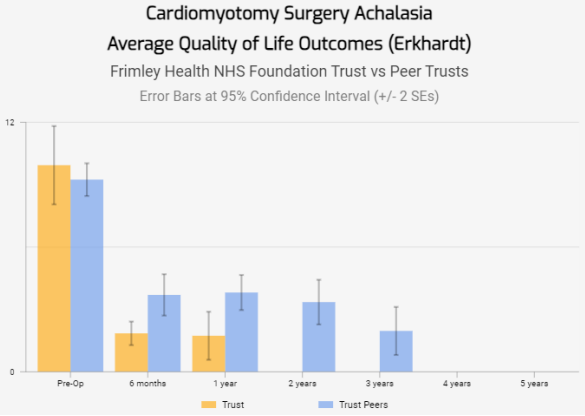
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 50	8.7	8.0	8.7% ↑
6 months:	– / 25	–	3.2	-100% ↓
1 year:	– / 22	–	3.3	-100% ↓
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	78.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



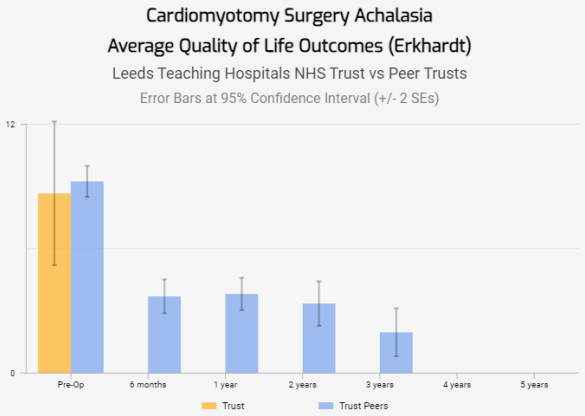
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 52	10.0	8.0	25.0% ↑
6 months:	– / 25	–	3.2	-100% ↓
1 year:	– / 22	–	3.3	-100% ↓
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	78.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



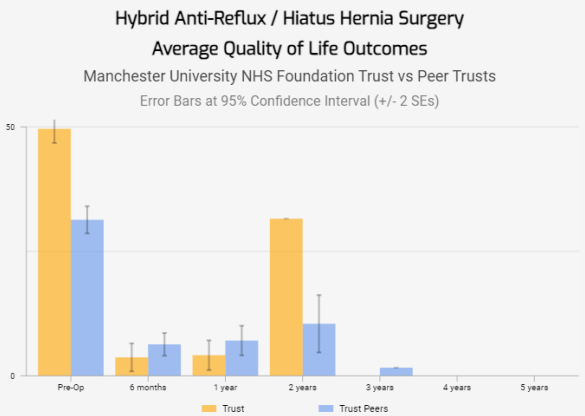
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	5 / 48	8.6	8.0	7.5% ↑
6 months:	5 / 20	1.6	3.2	-50.0% ↓
1 year:	2 / 20	1.5	3.3	-54.5% ↓
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		82.6%	78.8%	4.8% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



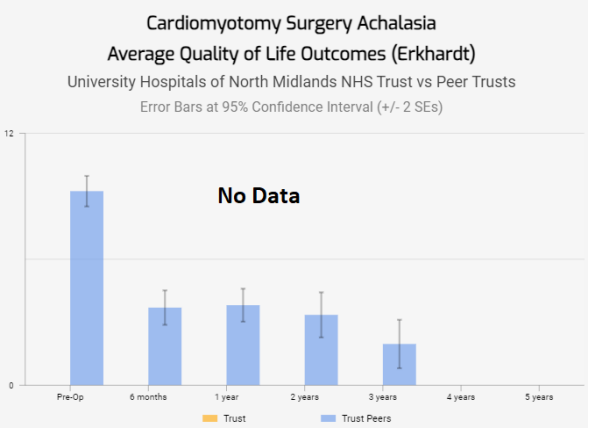
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 51	7.5	8.0	-6.3% ↓
6 months:	– / 25	–	3.2	-100% ↓
1 year:	– / 22	–	3.3	-100% ↓
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	78.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



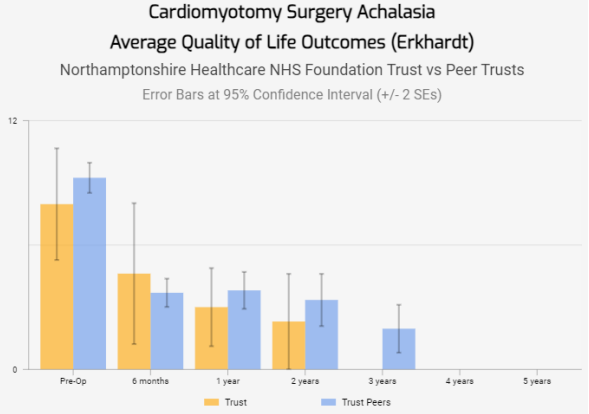
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	8 / 61	45.6	28.8	58.3% ↑
6 months:	5 / 33	3.4	5.8	-41.4% ↓
1 year:	4 / 28	3.8	6.5	-41.5% ↓
2 years:	1 / 9	29.0	9.6	202.1% ↑
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		36.4%	94.8%	-61.6% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



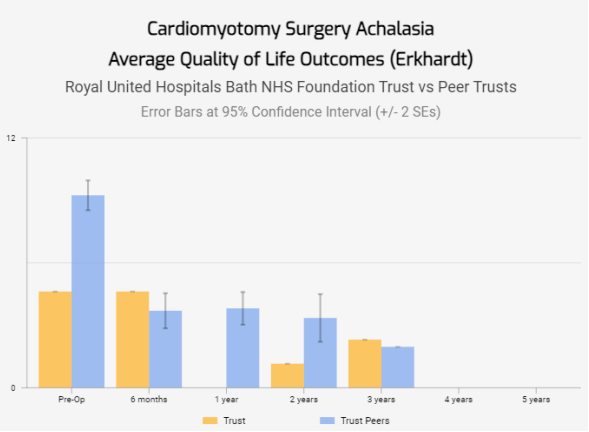
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	– / 53	–	8.0	-100 % ↓
6 months:	– / 25	–	3.2	-100 % ↓
1 year:	– / 22	–	3.3	-100 % ↓
2 years:	– / 11	–	2.9	-100 % ↓
3 years:	– / 2	–	1.7	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		–	78.8 %	-100 % ↓
PROM Ratio:		–	100.0 %	-100 % ↓



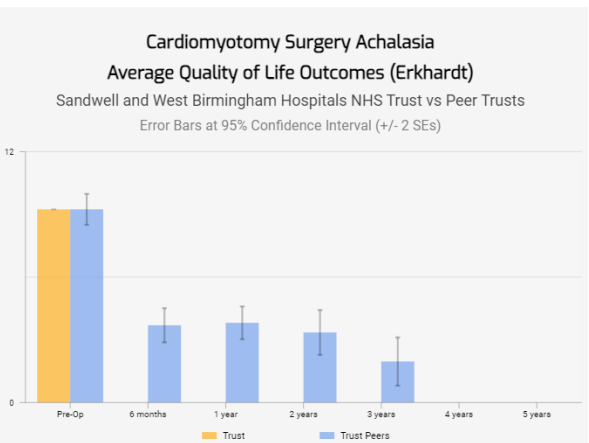
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	7 / 46	6.9	8.0	-13.8 % ↓
6 months:	4 / 21	4.0	3.2	25.0 % ↑
1 year:	5 / 17	2.6	3.3	-21.2 % ↓
2 years:	2 / 9	2.0	2.9	-31.0 % ↓
3 years:	– / 2	–	1.7	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		71.0 %	78.8 %	-9.9 % ↓
PROM Ratio:		100.0 %	100.0 %	0.0 % -



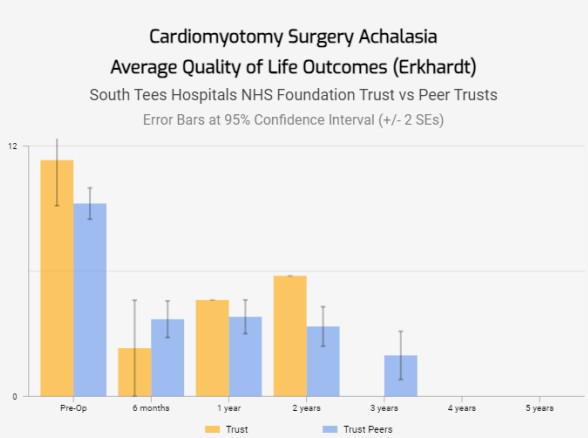
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 52	4.0	8.0	-50.0 % ↓
6 months:	1 / 24	4.0	3.2	25.0 % ↑
1 year:	– / 22	–	3.3	-100 % ↓
2 years:	1 / 10	1.0	2.9	-65.5 % ↓
3 years:	1 / 1	2.0	1.7	17.6 % ↑
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		50.0 %	78.8 %	-36.5 % ↓
PROM Ratio:		100.0 %	100.0 %	0.0 % -



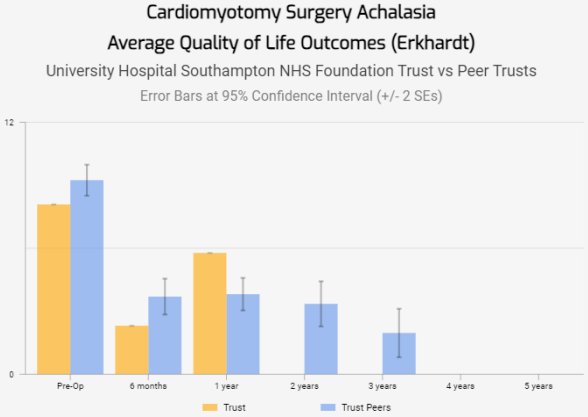
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 52	8.0	8.0	0.0 % -
6 months:	– / 25	–	3.2	-100 % ↓
1 year:	– / 22	–	3.3	-100 % ↓
2 years:	– / 11	–	2.9	-100 % ↓
3 years:	– / 2	–	1.7	-100 % ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0 %	78.8 %	-100 % ↓
PROM Ratio:		–	100.0 %	-100 % ↓



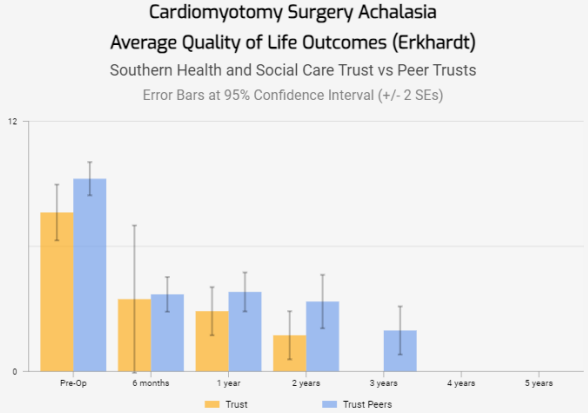
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	4 / 49	9.8	8.0	22.5% ↑
6 months:	2 / 23	2.0	3.2	-37.5% ↓
1 year:	1 / 21	4.0	3.3	21.2% ↑
2 years:	1 / 10	5.0	2.9	72.4% ↑
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		49.0%	78.8%	-37.8% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



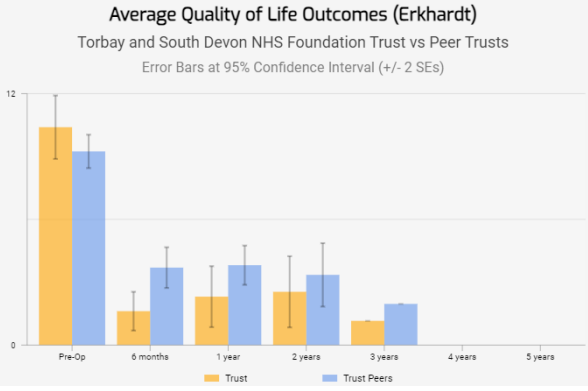
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 52	7.0	8.0	-12.5% ↓
6 months:	1 / 24	2.0	3.2	-37.5% ↓
1 year:	1 / 21	5.0	3.3	51.5% ↑
2 years:	– / 11	–	2.9	-100% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		28.6%	78.8%	-63.7% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	10 / 43	6.6	8.0	-17.5% ↓
6 months:	3 / 22	3.0	3.2	-6.3% ↓
1 year:	4 / 18	2.5	3.3	-24.2% ↓
2 years:	2 / 9	1.5	2.9	-48.3% ↓
3 years:	– / 2	–	1.7	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		77.3%	78.8%	-1.9% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



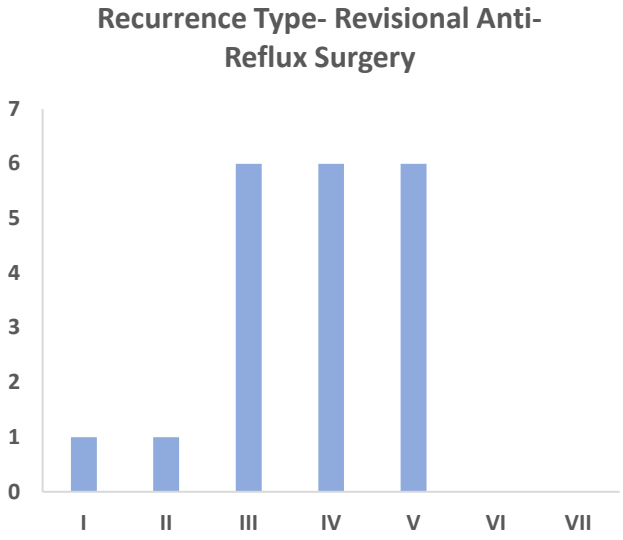
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	7 / 46	9.0	8.0	12.5% ↑
6 months:	5 / 20	1.4	3.2	-56.3% ↓
1 year:	5 / 17	2.0	3.3	-39.4% ↓
2 years:	5 / 6	2.2	2.9	-24.1% ↓
3 years:	1 / 1	1.0	1.7	-41.2% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		88.9%	78.8%	12.8% ↑
PROM Ratio:		100.0%	100.0%	0.0% -

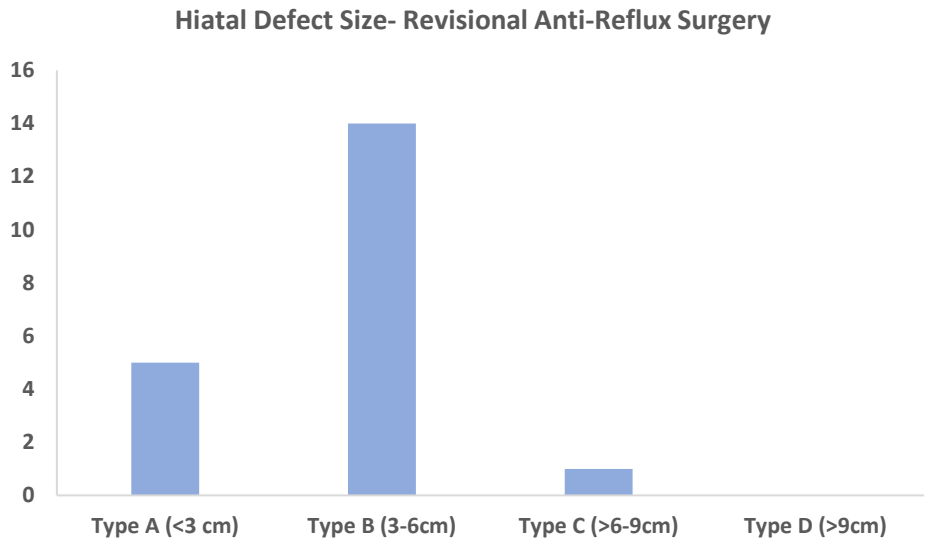


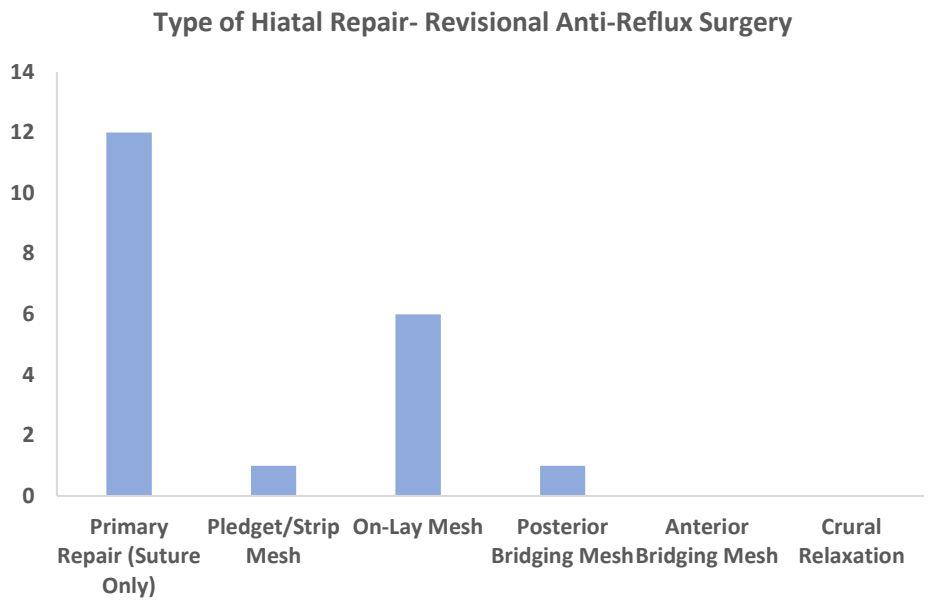
Revisional Anti-Reflux Surgery- All Trusts/Organisations

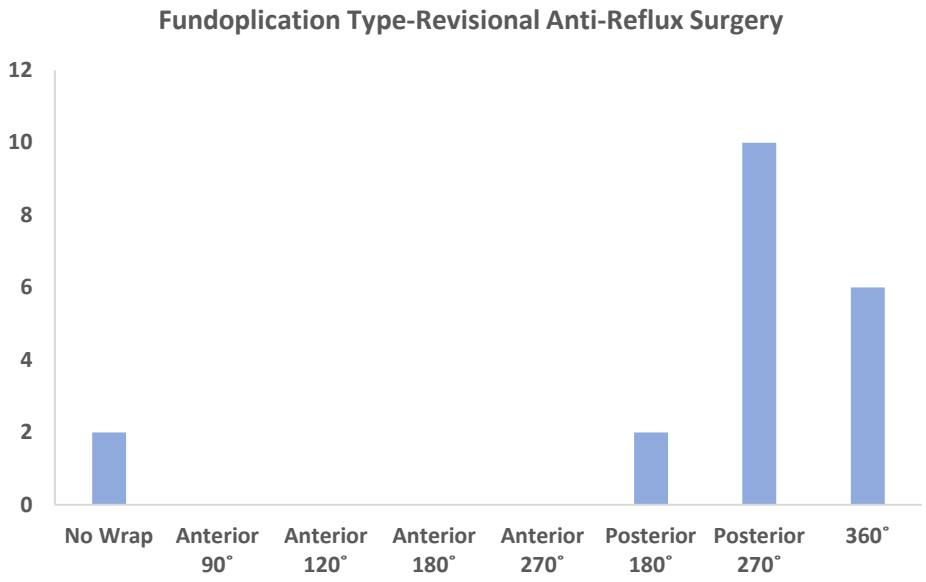
28 registered patients, 20 active, 8 complete from 10 NHS Trusts/Independent HealthCare Organisations

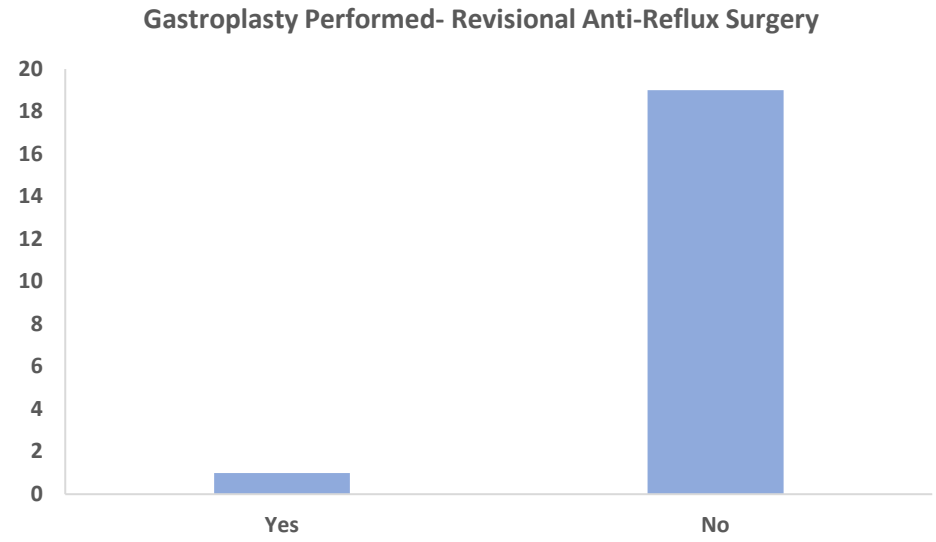
*To appear in statistical analysis the patient must have a complete or in PROM status




Hiatal Defect Size- Revisional Anti-Reflux Surgery
16
14
12
10
8
6
4
2
0
Type A (<3 cm)
Type B (3-6cm)
Type C (>6-9cm)
Type D (>9cm)


Type of Hiatal Repair- Revisional Anti-Reflux Surgery
14
12
10
8
6
4
2
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Posterior Bridging Mesh
Anterior Bridging Mesh
Crural Relaxation

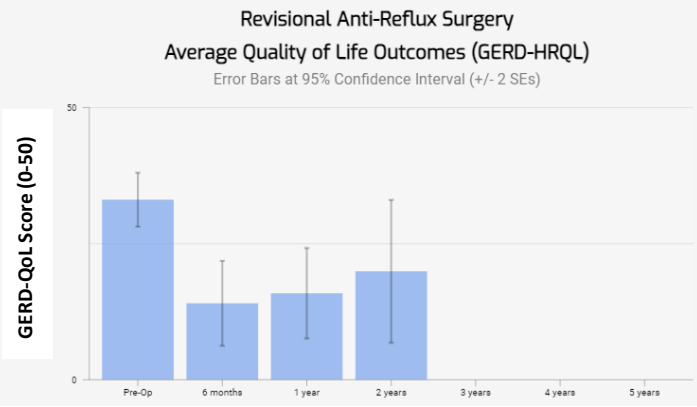

Fundoplication Type-Revisional Anti-Reflux Surgery
12
10
8
6
4
2
0
No Wrap
Anterior 90˚
Anterior 120˚
Anterior 180˚
Anterior 270˚
Posterior 180˚
Posterior 270˚
360˚


Gastroplasty Performed- Revisional Anti-Reflux Surgery
20
18
16
14
12
10
8
6
4
2
0
Yes
No

Revisional Anti-Reflux Surgery						
Total	**20**					
Sex						
Male/Female/Other	**8**	**12**	**--**			
Age						
Median	**53.5**					
Range	**29-73**					
Episodes						
Day Case	**4 (20%)**					
Inpatient	**16 (80%)**					
Time on Waiting List						
Median	**251**					
Range	**140-896**					
Method						
Open	**-**					
Laparoscopic	**19 (95%)**					
Robotic	**1 (5%)**					
Converted	**-**					
Recurrence Type	I	II	III	IV	V	VI
	1	**1**	**6**	**6**	**6**	**-**
Hiatal Defect	Type A (<3 cm)	Type B (3-6cm)	Type C (>6-9cm)	Type D (>9cm)		
	5	**14**	**1**	**-**		
Hiatal Repair	Primary Suture	Pledget/Strip Mesh	On-Lay Mesh	Bridging Mesh	Crural Relaxation	
	11	**2**	**6**	**1**	**-**	
Fundoplication Type	Anterior Partial 90˚	Anterior Partial 120˚	Anterior Partial 180˚	Posterior Partial 180˚	Posterior Partial 270˚	360˚ Complete
	-	**-**	**-**	**2**	**10**	**6**
Gastroplasty	Yes		No			
	1		19			
Length of Stay (Days)						
Median	**1**					
Range	**1-23**					
Complications						
Morbidity (Overall)	**1 (5%)**					
Return to Theatre	**1 (5%)**					
Readmission (90 days)	**2 (10%)**					
Mortality	**-**					
QoL Outcomes						
	N	Mean (x̄)	Range	SD	SE	95% CI
Pre-Procedure QoL	**20**	**30.4**	**12-45**	**10.27**	**2.3**	**25.8-35.0**
6 Month QoL	**12**	**12.9**	**3-37**	**11.97**	**3.46**	**6.0-19.8**
1 Year QoL	**8**	**14.6**	**3-30**	**10.8**	**3.82**	**7.0-22.2**
2 Year QoL	**4**	**18.3**	**2-31**	**12.04**	**6.02**	**6.3-30.3**
3 Year QoL	-	-	-	-	-	-
4 Year QoL	-	-	-	-	-	-
5 Year QoL	-	-	-	-	-	-

Combined UK GERD-QoL Score PROMs- Revisional Anti-Reflux Surgery All NHS Trusts & Independent HealthCare Organisations

QoL Average Scores	PROMs	Mean
Pre-Op:	20	30.4
6 months:	12	12.9
1 year:	8	14.6
2 years:	4	18.3
3 years:	–	–
4 years:	–	–
5 years:	–	–
Improvement:		39.8%
PROM Ratio:		100.0%



Individual UK GERD-QoL Score PROMs- Revisional Anti-Reflux All NHS Trusts & Independent HealthCare Organisations Surgery who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Ave.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	20	1 5.00%	-	30.4	9.5	68.8%	10.8	64.5%	15.0	50.7%	–	–	–	–	–	–
Croydon Health Services NHS Trust [2]	1	-	-	12.0	37.0	-208.3%	30.0	-150.0%	–	–	–	–	–	–	–	–
Gloucestershire Hospitals NHS Foundation Trust [4]	1	-	-	37.0	4.0	89.2%	–	–	–	–	–	–	–	–	–	–
Hull University Teaching Hospitals NHS Trust [1]	1	-	-	30.0	31.0	-3.3%	–	–	–	–	–	–	–	–	–	–
Northamptonshire Healthcare NHS Foundation Trust [3]	6	-	-	28.5	7.2	74.7%	16.3	42.8%	21.0	26.3%	–	–	–	–	–	–
Portsmouth Hospitals NHS Trust [5]	2	-	-	23.5	4.0	83.0%	3.0	87.2%	–	–	–	–	–	–	–	–
The Dudley Group NHS Foundation Trust [2]	2	-	-	38.5	7.5	80.5%	3.0	92.2%	–	–	–	–	–	–	–	–
Torbay and South Devon NHS Foundation Trust [6]	1	1 100.00%	-	45.0	25.0	44.4%	–	–	31.0	31.1%	–	–	–	–	–	–
University Hospital Southampton NHS Foundation Trust [4]	1	-	-	42.0	–	–	–	–	–	–	–	–	–	–	–	–
University Hospitals Sussex NHS Foundation Trust [2]	2	-	-	34.5	1.5	95.7%	–	–	–	–	–	–	–	–	–	–
West Suffolk NHS Foundation Trust [2]	3	-	-	25.7	5.0	80.5%	4.7	81.7%	7.7	70.0%	–	–	–	–	–	–

174 trusts found for Revisional Anti-Reflux Surgery sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Revision Anti-Reflux Surgery

Patient Reported Outcome Measures (PROMs) NHS Trusts- (Trust vs Peer Trusts)

Included- NHSR registered NHS Trusts who have entered at least 1 patient into any NHSR reporting category

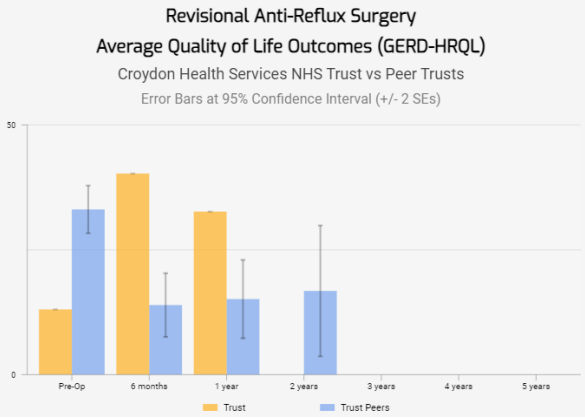
Excluded- NHSR registered NHS Trusts that have not entered any patients into any category

*To appear in statistical analysis the patient must have a complete status or in PROM status

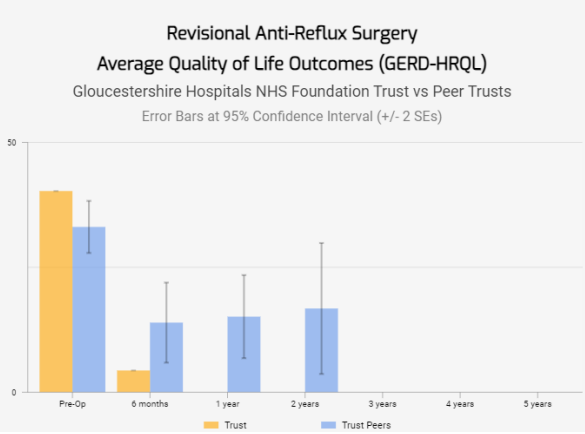
*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

Quality of Life

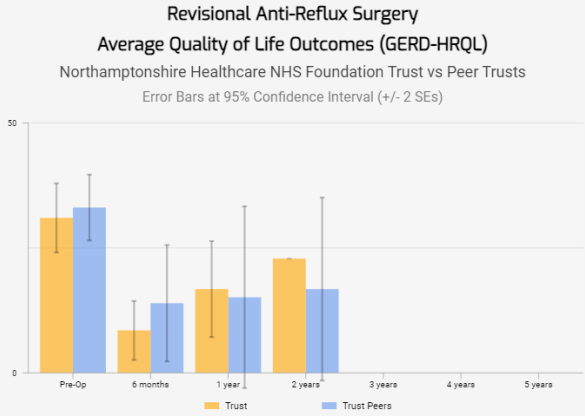
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1/19	12.0	30.4	-60.5% ↓
6 months:	1/11	37.0	12.8	189.1% ↑
1 year:	1/7	30.0	13.9	115.8% ↑
2 years:	–/4	–	15.4	-100% ↓
3 years:	–/–	–	–	– -
4 years:	–/–	–	–	– -
5 years:	–/–	–	–	– -
Improvement:		-150.0%	49.3%	-404.3% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



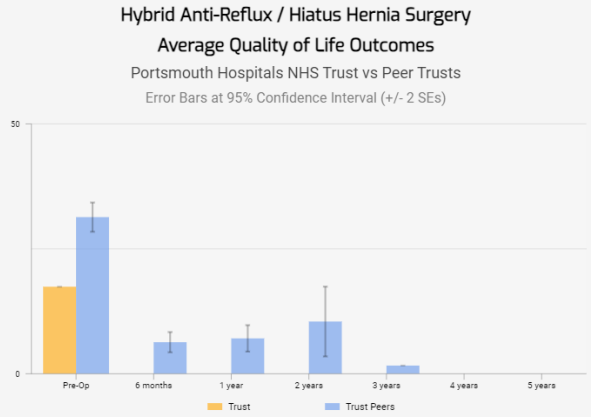
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1/19	37.0	30.4	21.7% ↑
6 months:	1/11	4.0	12.8	-68.8% ↓
1 year:	–/8	–	13.9	-100% ↓
2 years:	–/4	–	15.4	-100% ↓
3 years:	–/–	–	–	– -
4 years:	–/–	–	–	– -
5 years:	–/–	–	–	– -
Improvement:		89.2%	49.3%	80.9% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



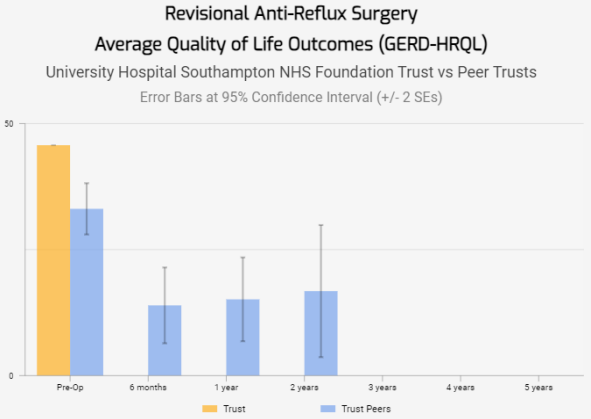
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	6/14	28.5	30.4	-6.3% ↓
6 months:	5/7	7.8	12.8	-39.1% ↓
1 year:	5/3	15.4	13.9	10.8% ↑
2 years:	1/3	21.0	15.4	36.4% ↑
3 years:	–/–	–	–	– -
4 years:	–/–	–	–	– -
5 years:	–/–	–	–	– -
Improvement:		26.3%	49.3%	-46.7% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



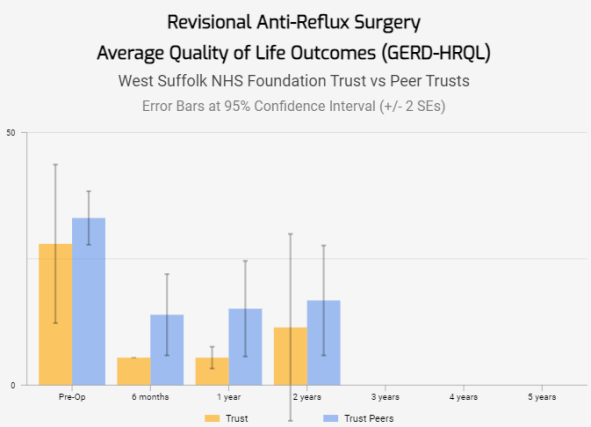
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 68	16.0	28.8	-44.4% ↓
6 months:	– / 38	–	5.8	-100% ↓
1 year:	– / 32	–	6.5	-100% ↓
2 years:	– / 10	–	9.6	-100% ↓
3 years:	– / 1	–	1.5	-100% ↓
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	94.8%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



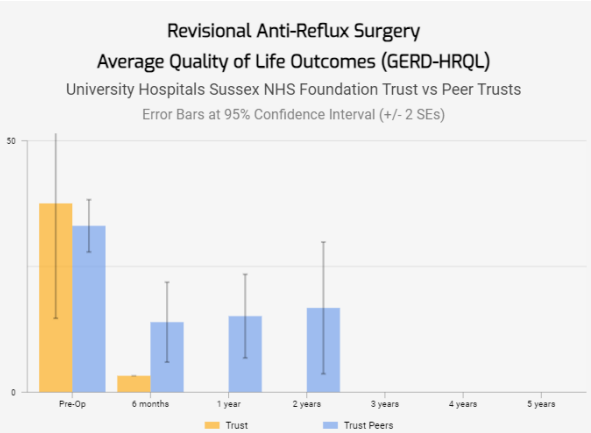
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 19	42.0	30.4	38.2% ↑
6 months:	– / 12	–	12.8	-100% ↓
1 year:	– / 8	–	13.9	-100% ↓
2 years:	– / 4	–	15.4	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	49.3%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



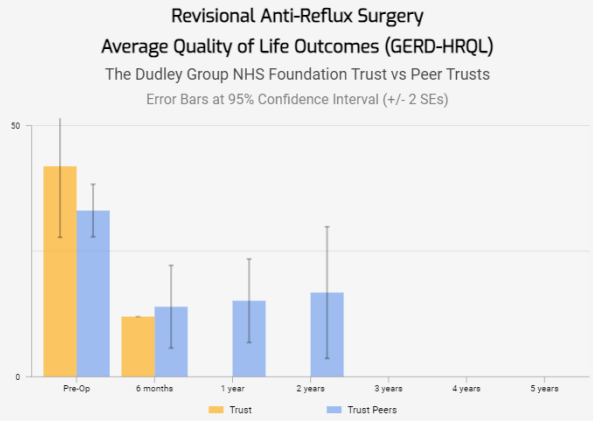
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	3 / 17	25.7	30.4	-15.5% ↓
6 months:	1 / 11	5.0	12.8	-60.9% ↓
1 year:	2 / 6	5.0	13.9	-64.0% ↓
2 years:	2 / 2	10.5	15.4	-31.8% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		59.1%	49.3%	19.9% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



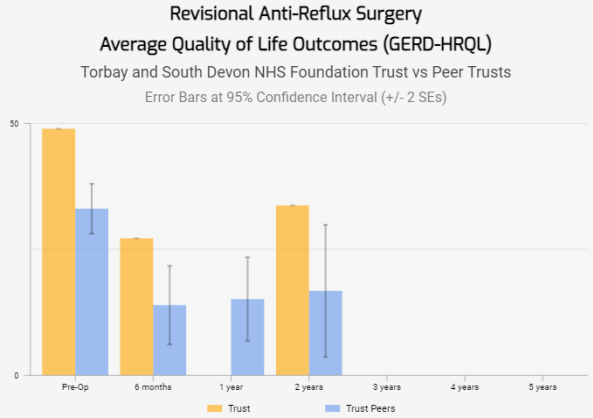
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 18	34.5	30.4	13.5% ↑
6 months:	1 / 11	3.0	12.8	-76.6% ↓
1 year:	– / 8	–	13.9	-100% ↓
2 years:	– / 4	–	15.4	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		91.3%	49.3%	85.2% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 18	38.5	30.4	26.6% ↑
6 months:	1 / 11	11.0	12.8	-14.1% ↓
1 year:	– / 8	–	13.9	-100% ↓
2 years:	– / 4	–	15.4	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		71.4%	49.3%	44.8% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



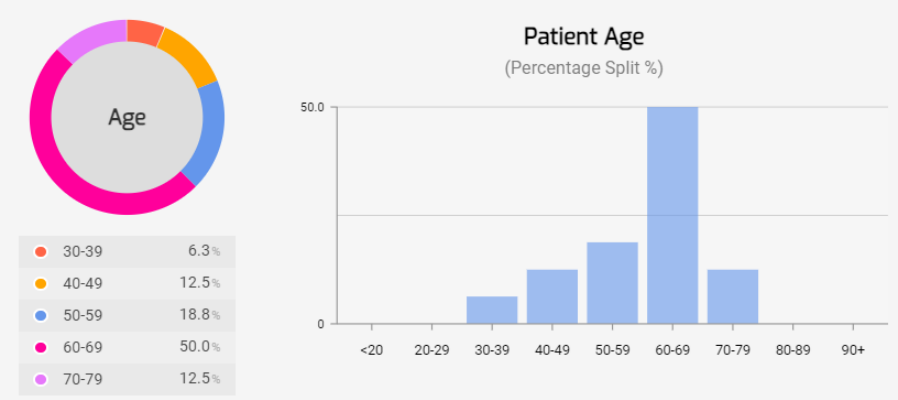
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 19	45.0	30.4	48.0% ↑
6 months:	1 / 11	25.0	12.8	95.3% ↑
1 year:	– / 8	–	13.9	-100% ↓
2 years:	1 / 3	31.0	15.4	101.3% ↑
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		31.1%	49.3%	-36.9% ↓
PROM Ratio:		100.0%	100.0%	0.0% -

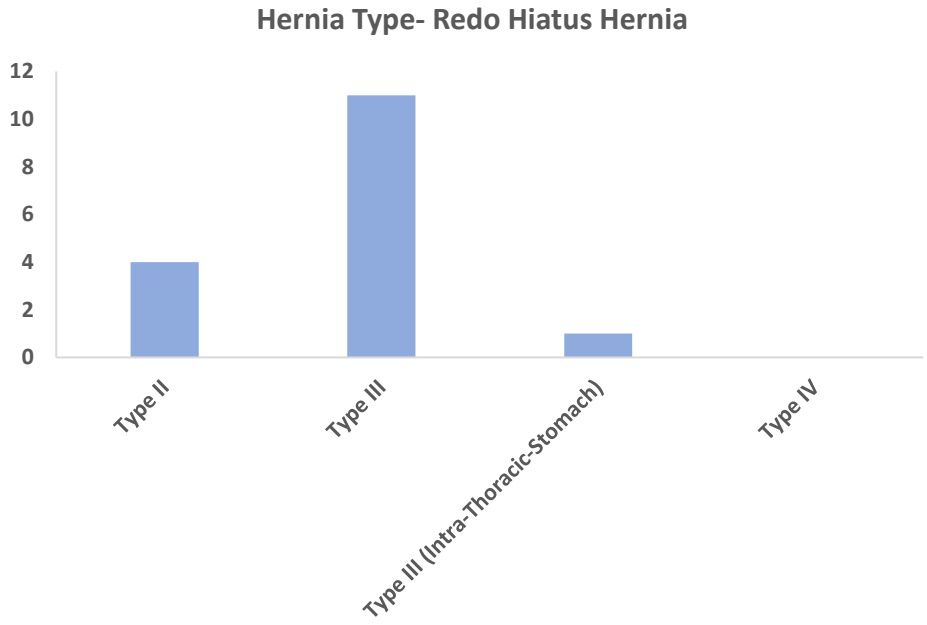


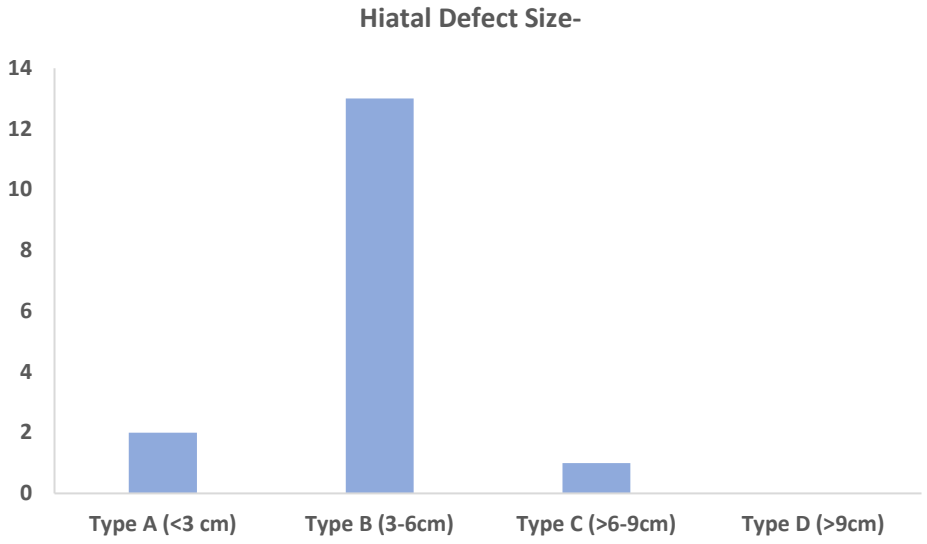
Revisional Hiatal Hernia Surgery- All Trusts/Organisations

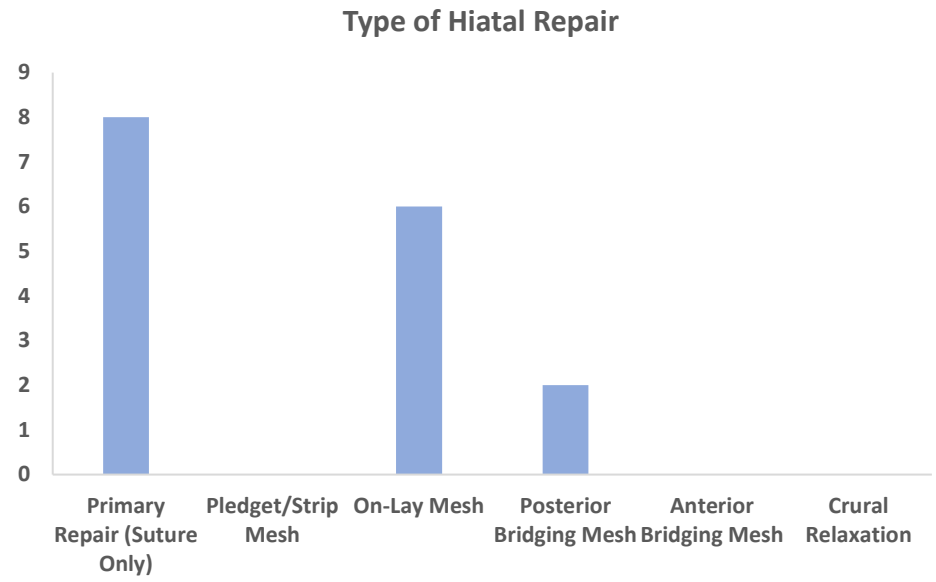
22 registered patients, 6 active, 16 complete, from 9 NHS Trusts/Independent HealthCare Organisations

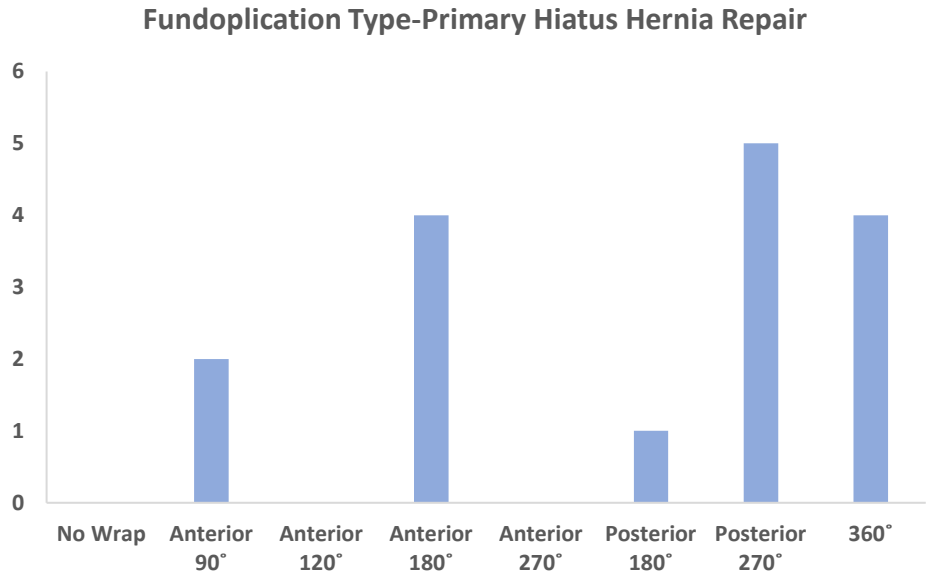
*To appear in statistical analysis the patient must have a complete or in PROM status






Hiatal Defect Size-
14
12
10
8
6
4
2
0
Type A (<3 cm)
Type B (3-6cm)
Type C (>6-9cm)
Type D (>9cm)


Type of Hiatal Repair
9
8
7
6
5
4
3
2
1
0
Primary Repair (Suture Only)
Pledget/Strip Mesh
On-Lay Mesh
Posterior Bridging Mesh
Anterior Bridging Mesh
Crural Relaxation

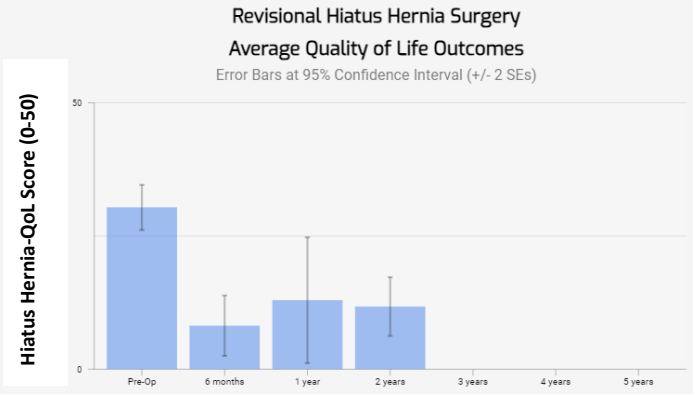


Revisional Hiatus Hernia Repair							
Total	**16**						
Sex							
Male/Female/Other	**4**	**12**	-				
Age							
Median	**63.5**						
Range	**37-76**						
Episodes							
Day Case	**2 (12.5%)**						
Inpatient	**14 (87.5%)**						
Time on the Waiting List							
Median (Days)	**237**						
Range (Days)	**43-966**						
Method							
Open	-						
Laparoscopic	**15 (93.8%)**						
Robotic	**1 (6.3%)**						
Converted	-						
Hiatus Hernia Type	Type II	Type III	Type III (Intra-Thoracic-Stomach)	Type IV			
	4	**11**	**1**	-			
Hiatal Defect	Type A (<3 cm)	Type B(3-6cm)	Type C (>6-9cm)	Type D (>9cm)			
	2	**8**	**3**	-			
Hiatal Repair	Primary Suture	Pledget/Strip Mesh	On-Lay Mesh	Bridging Mesh	Crural Relaxation		
	5	-	**6**	**2**	-		
Fundoplication Type	None	Anterior Partial 90˚	Anterior Partial 120˚	Anterior Partial 180˚	Posterior Partial 180˚	Posterior Partial 270˚	360˚ Complete

	1	3	1	1	-	3	4
Gastroplasty	Yes			No			
	-			16			
Length of Stay							
Median (Days)	2						
Range (Days)	3-4						
Complications							
Morbidity (Overall)	-						
Return to Theatre	-						
Readmission (90 days)	1 (6.3%)						
Mortality	-						
QoL Outcomes							
	N	Mean ($\bar{x}$)	Range	SD	SE	95% CI	
Pre-Procedure QoL	16	27.9	15-43	7.8	1.95	24.0-31.8	
6 Month	12	7.4	1-35	9.02	2.60	2.3-12.7	
1 Year QoL	7	11.9	2-43	14.35	5.42	1.1-22.7	
2 Year QoL	5	10.8	3-19	5.67	2.54	5.7-15.9	
3 Year QoL	-	-	-	-	-	-	
4 Year QoL	-	-	-	-	-	-	
5 Year QoL	-	-	-	-	-	-	

Combined UK Hiatus Hernia-QoL Score PROMs- Revisional Hiatus Hernia Repair
All NHS Trusts & Independent HealthCare Organisations

QoL Average Scores	PROMs	Mean
Pre-Op:	16	27.9
6 months:	12	7.5
1 year:	7	11.9
2 years:	5	10.8
3 years:	–	–
4 years:	–	–
5 years:	–	–
Improvement:		61.3%
PROM Ratio:		100.0%



Individual UK Hiatus Hernia-QoL Score PROMs- Revisional Hiatus Hernia Repair All NHS Trusts & Independent HealthCare Organisations who have entered a patient in this category

Individual Trusts and Organisations compared to Overall Trusts/Organisations Data — Inside +/- 2 SEs (95% CI) — Outside +/- 2 SEs (95% CI)

Trust/Organisation Name	Complete Cases	Morbidity	Mortality	Pre-Op QoL (Mean Avg.)	6 month QoL Improvement Score	6 month QoL Improvement +/-	1 year QoL Improvement Score	1 year QoL Improvement +/-	2 year QoL Improvement Score	2 year QoL Improvement +/-	3 year QoL Improvement Score	3 year QoL Improvement +/-	4 year QoL Improvement Score	4 year QoL Improvement +/-	5 year QoL Improvement Score	5 year QoL Improvement +/-
Overall Trusts/Organisations	16	-	-	27.9	6.7	76.0%	10.6	62.0%	9.9	64.5%	–	–	–	–	–	–
Croydon Health Services NHS Trust [2]	1	-	-	18.0	–	–	–	–	–	–	–	–	–	–	–	–
Gloucestershire Hospitals NHS Foundation Trust [4]	2	-	-	33.0	7.0	78.8%	6.0	81.8%	3.0	90.9%	–	–	–	–	–	–
Leeds Teaching Hospitals NHS Trust [4]	2	-	-	30.5	8.0	73.8%	7.5	75.4%	19.0	37.7%	–	–	–	–	–	–
Northamptonshire Healthcare NHS Foundation Trust [3]	2	-	-	38.0	2.0	94.7%	14.0	63.2%	11.0	71.1%	–	–	–	–	–	–
Portsmouth Hospitals NHS Trust [5]	1	-	-	19.0	2.0	89.5%	14.0	26.3%	11.0	42.1%	–	–	–	–	–	–
South Tees Hospitals NHS Foundation Trust [1]	2	-	-	26.0	5.5	78.8%	3.0	88.5%	–	–	–	–	–	–	–	–
Southern Health and Social Care Trust [1]	4	-	-	27.3	11.8	56.8%	21.5	21.2%	10.0	63.4%	–	–	–	–	–	–
St. Josephs Hospital, Newport [1]	1	-	-	30.0	6.0	80.0%	–	–	–	–	–	–	–	–	–	–
West Suffolk NHS Foundation Trust [2]	1	-	-	15.0	1.0	93.3%	2.0	86.7%	11.0	26.7%	–	–	–	–	–	–

174 trusts found for **Revisional Hiatus Hernia Surgery** sorted by name (alphabetically ascending).

* Outcome data may or may not be representative of all activity in a specific Trust/Organisation.

Revisional Hiatus Hernia Surgery

Patient Reported Outcome Measures (PROMs) NHS Trusts- (Trust vs Peer Trusts)

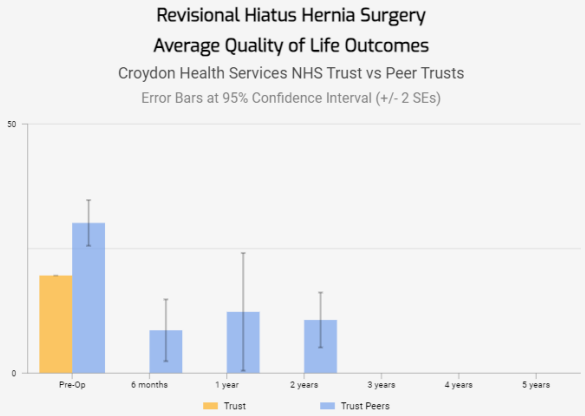
Included- NHSR registered NHS Trusts who have entered at least 1 patient into any NHSR reporting category

Excluded- NHSR registered NHS Trusts that have not entered any patients into any category

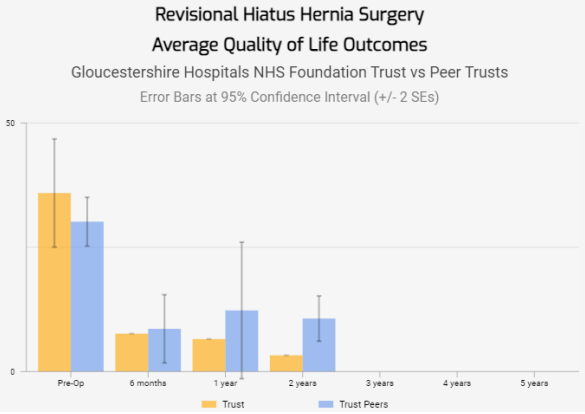
*To appear in statistical analysis the patient must have a complete status or in PROM status

*Outcome data may or may not be representative of all activity in a specific Trust/Organisation

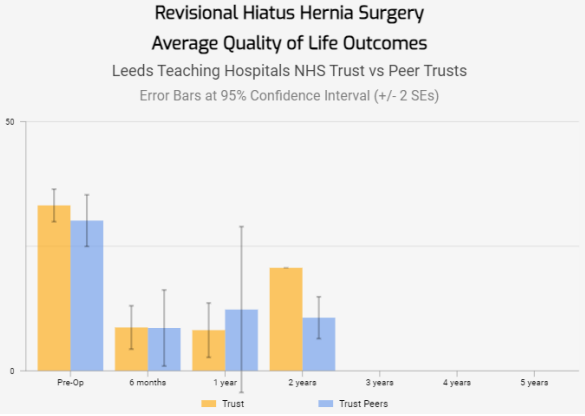
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 14	18.0	27.7	-35.0 % ↓
6 months:	– / 11	–	7.9	-100 % ↓
1 year:	– / 7	–	11.3	-100 % ↓
2 years:	– / 5	–	9.8	-100 % ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0 %	64.6 %	-100 % ↓
PROM Ratio:		–	100.0 %	-100 % ↓



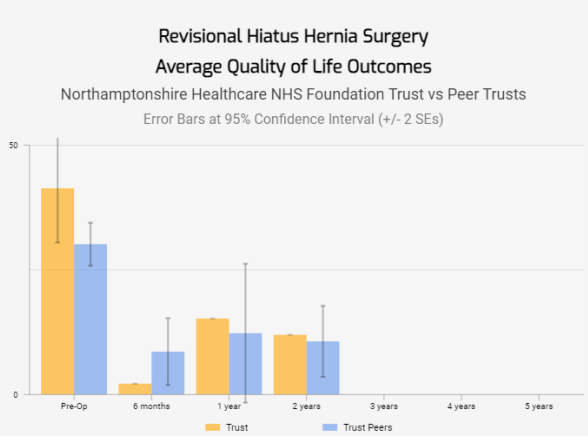
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 13	33.0	27.7	19.1 % ↑
6 months:	1 / 10	7.0	7.9	-11.4 % ↓
1 year:	1 / 6	6.0	11.3	-46.9 % ↓
2 years:	1 / 4	3.0	9.8	-69.4 % ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		90.9 %	64.6 %	40.7 % ↑
PROM Ratio:		100.0 %	100.0 %	0.0 % -



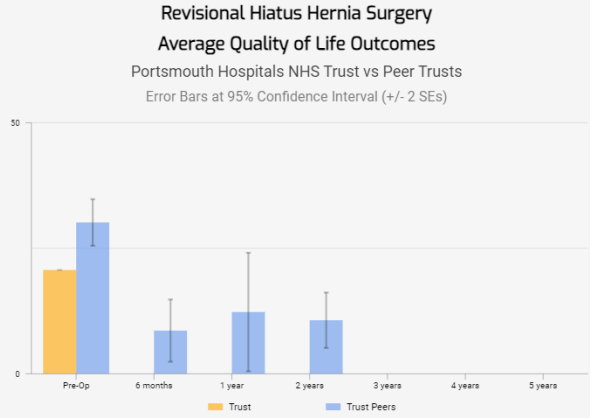
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 13	30.5	27.7	10.1 % ↑
6 months:	2 / 9	8.0	7.9	1.3 % ↑
1 year:	2 / 5	7.5	11.3	-33.6 % ↓
2 years:	1 / 4	19.0	9.8	93.9 % ↑
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		37.7 %	64.6 %	-41.6 % ↓
PROM Ratio:		100.0 %	100.0 %	0.0 % -



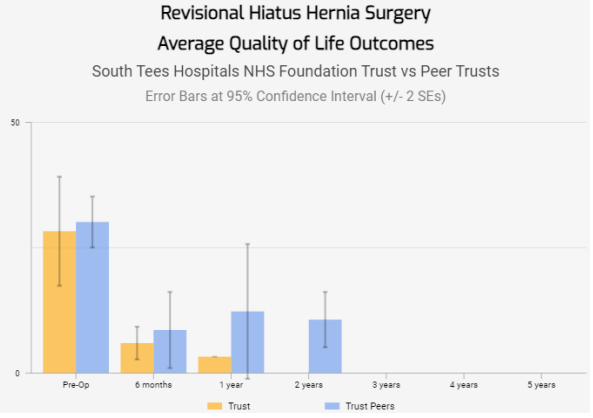
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 13	38.0	27.7	37.2% ↑
6 months:	1 / 10	2.0	7.9	-74.7% ↓
1 year:	1 / 6	14.0	11.3	23.9% ↑
2 years:	1 / 4	11.0	9.8	12.2% ↑
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		71.1%	64.6%	10.1% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



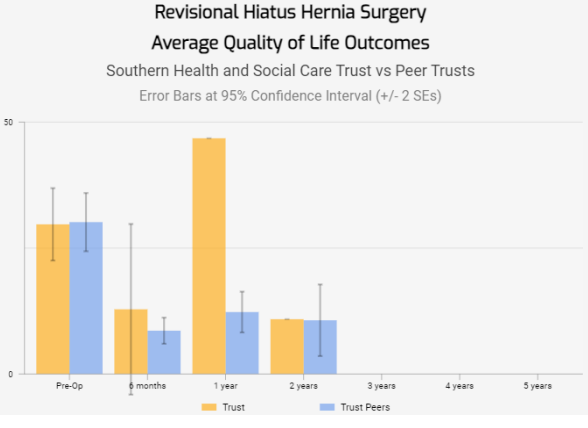
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 14	19.0	27.7	-31.4% ↓
6 months:	– / 11	–	7.9	-100% ↓
1 year:	– / 7	–	11.3	-100% ↓
2 years:	– / 5	–	9.8	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		0.0%	64.6%	-100% ↓
PROM Ratio:		–	100.0%	-100% ↓



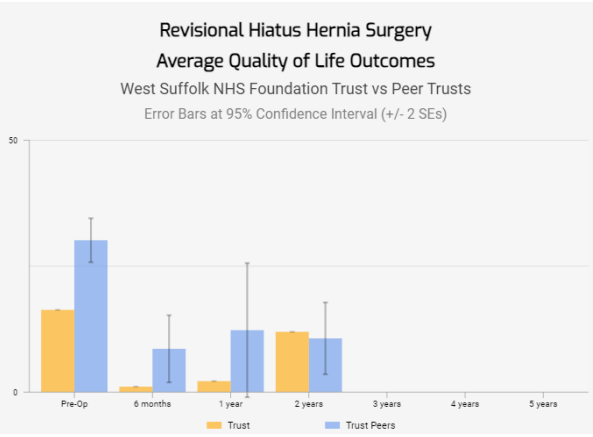
QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	2 / 13	26.0	27.7	-6.1% ↓
6 months:	2 / 9	5.5	7.9	-30.4% ↓
1 year:	1 / 6	3.0	11.3	-73.5% ↓
2 years:	– / 5	–	9.8	-100% ↓
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		88.5%	64.6%	37.0% ↑
PROM Ratio:		100.0%	100.0%	0.0% -



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	4 / 11	27.3	27.7	-1.4% ↓
6 months:	4 / 7	11.8	7.9	49.4% ↑
1 year:	1 / 6	43.0	11.3	280.5% ↑
2 years:	1 / 4	10.0	9.8	2.0% ↑
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		63.4%	64.6%	-1.9% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



QoL Average Scores	PROM Qty (Trust / Peers)	Trust (Ave.)	Peers (Ave.)	Difference v Peers
Pre-Op:	1 / 14	15.0	27.7	-45.8% ↓
6 months:	1 / 10	1.0	7.9	-87.3% ↓
1 year:	1 / 6	2.0	11.3	-82.3% ↓
2 years:	1 / 4	11.0	9.8	12.2% ↑
3 years:	– / –	–	–	– -
4 years:	– / –	–	–	– -
5 years:	– / –	–	–	– -
Improvement:		26.7%	64.6%	-58.7% ↓
PROM Ratio:		100.0%	100.0%	0.0% -



9 Conclusion and Summary

Currently, the NHSR Registry voluntarily submits data, and the level of engagement is variable. There are several potential causes of bias in this report; the data submitted may or may not be representative of an entire individual, centre/unit, depending on the level of engagement. Early adopters of this Registry are potential higher performers in hiatal surgery; it perhaps couples with interest and performance in this area.

Parts of the data collection are self-reporting and thus vulnerable to bias, which includes entering all cases and complications. However, one of the most exciting elements of this Registry, QoL improvement data, is populated independently of the surgeon by the intrinsic mechanism of the NHSR and thus is independent, high-quality feedback data.

Currently, the centres that have engaged the NHSR report remarkable improvement in patient-reported QoL outcomes post-operatively for all aspects of benign hiatal surgery. Significant improvement in QoL score is shown from the pre-procedure baseline in all sub-sets of primary hiatal surgery, validating the quality of surgery being performed by submitting centres.

Data is currently limited as the Registry is in the infancy of its growth, and only those patients with complete status or in PROMs can be included for statistical analysis. Many patients are still in the 'active' stage, but these will filter through with time.

In terms of ambitions for the future, as more data populates, we hope to report more detailed outcomes in terms of techniques used for hiatal surgery, fundoplication type, mesh technique, robotic hiatal surgery, etc, at a national level.

We are currently working with GIRFT (Getting It Right First Time – GIRFT) and NHS Digital on integrating HES data to cross-reference activity in hiatal surgery to address the vulnerability of self-reporting volume of activity and complication rates.

We are also working with Electronic Patient Record Systems (EPR) providers to integrate and allow the use of NHSR in a paperless hospital.

Finally, the NHSR hopes to publish a public-facing page detailing the outcome of hiatal surgery for different centres in both NHS and Private healthcare organisations in the UK.