Abstracts of the 6th Annual Scientific Meeting of the British Obesity & Metabolic Surgery Society (BOMSS), 22–23 January 2015, Newcastle Gosforth Park Marriott Hotel

CONTENTS

Abstracts

Session 9: Council Prize Session

Friday 23 January 2015 (12:00–13:00)

A01

Bone health in adolescents following Roux-en-Y gastric bypass

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Background: Laparoscopic Roux-en-Y gastric bypass (LRYGB) is known to cause changes in bone metabolism and structure, yet little is known about its effects in the adolescent. No previous study has reported serum bone markers to assess bone turnover after bariatric surgery in the adolescent.

Methods: Seventy-two adolescents (22 males; mean age 16.5years; mean BMI 44.8 kg/m^2) undergoing LRYGB for morbid obesity underwent prospective DXA body composition and serum bone marker analysis preoperatively and at one- and two-year follow up.

Results: Mean BMI reduction at two years was 15.1 kg/m^2. Body composition changes included a reduction in the percentage fat mass (51.8% to 40.9%, $p < 0.0001$) and relative increase in (preservation of) lean mass (47.0% to 56.8%, $p < 0.0001$). Boys lost more fat than girls (−17.3% vs. −9.5%, $p < 0.0001$). Bone mineral density Z-score (BMD-Z) at baseline was within or above the normal range of −1 to 1 in all subjects. The mean BMD-Z was 1.85 +/−1.24 at baseline, decreasing to 0.52 +/−1.18 at two years. Four patients reached >1 standard deviation (SD) below the accepted mean for age and gender at two years, all of whom began from a low baseline (−0.6 to −0.5). None was >2 SD below baseline.

Bone markers demonstrated a greater bone turnover in boys than girls at baseline. Increased concentrations of serum markers of bone resorption (CTX $p < 0.0001$) and synthesis (osteocalcin $p < 0.0001$, P1NP $p = 0.003$) were observed after LRYGB, rising in the first year, before more modest reductions in the second. Absolute levels of these markers were higher in boys, in whom skeletal maturity is known to occur later.

Conclusion: Bone turnover increased significantly following LRYGB. Marked differences exist in the changes in body composition of adolescent males and females following LRYGB, males losing more fat and preserving more lean mass than females. The downward trend in BMD-Z appears to bring the majority of individuals back in line with the non-obese population within two years, but it will be crucial to observe and test this cohort in the longer-term, remaining particularly vigilant for potential or actual clinically relevant reductions.

A02

Is vitamin D replacement required after laparoscopic sleeve gastrectomy? Results from a large UK prospective study

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Background: There is a paucity of data examining the effects of laparoscopic sleeve gastrectomy (LSG) on serum vitamin D (VD) levels, and the effect of post-operative VD supplementation.

Methods: A prospective, longitudinal, observational study (2007–2014) was conducted at a UK bariatric centre. LSG patients were not routinely supplemented (VD-) from 2007–11. However, from 2012 VD supplements were routinely prescribed (VD+) post-LSG. Serum VD levels were measured at baseline and at 6- and 12- months (mth) post-LSG. Data from 376 patients were available at 6 mths post-LSG (VD- n = 240, VD+ n = 136) and from 257 patients at 12 mths post-LSG (VD- n = 175, VD+ n = 82). Prevalence of VD deficiency (<25 nmol/L), insufficiency (25–50 nmol/L), and VD net decline post-surgery were compared between VD- and VD+ groups (adjusted for age, sex, ethnicity, seasons, eGFR, LFTs, post-op BMI). Results were compared to UK general population VD data (1958 British Birth Cohort study).

Results: There were no differences in baseline age, sex, ethnicity, and pre-op VD levels (39.2 ± 1.4 *vs.* 39.1 ± 2.1 nmol/L) between VD- and VD+ groups. Mean prescribed VD dosage in VD+ group was 485 iu/day. At 6- and 12-mth post-LSG, prevalence of VD deficiency was significantly higher in the VD- group (20.0% *vs.* 6.6% and 20% *vs.* 6.1% respectively, $p < 0.001$), and was also greater than in the UK general population (20% *vs.* 7.9%, $p < 0.001$). The prevalence of VD deficiency in VD+ group remained comparable to the general UK population (*vs.* 7.9%, p = ns). At both time-points the proportion of pts with VD net decline was greater in the non-replaced group (34.2 *vs.* 27.2% and 37.7% *vs.* 20.7% respectively, $p = 0.02$). However, post-LSG VD insufficiency prevalence was similar in both groups (39.2% *vs.* 38.2% at 6-mth; 34.9% *vs.* 39.0% at 12-mth, p = ns) and significantly higher than in the UK general population (*vs.* 19.4%, $p < 0.001$).

Conclusion: VD replacement in the first year post-LSG significantly reduces VD deficiency. Further studies are warranted to establish the VD dosage required to further reduce VD deficiency and insufficiency. Our data supports the BOMSS recommendations for VD supplementation post-LSG.

A03

The effect of social deprivation on the provision of bariatric surgery across two UK regions

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Background: Bariatric surgery is provided by specialist regional centres. There is concern that a 'postcode lottery' exists in access to bariatric surgery in the UK despite NICE guidance. The aim of this study was to investigate the effect of social deprivation on provision of bariatric surgery across two UK regions.

Methods: Demographic details were collected retrospectively from all patients who resided within a predetermined catchment area around each of the two study centres and had received a bariatric operation between 2003 and 2013. The Index of Multiple Deprivation (IMD 2010) was used to compare regional social deprivation rates. Local obesity prevalence rates were obtained using data from Public Health England 2006. Cases were plotted onto maps displaying obesity prevalence and deprivation to visualise their geographical distribution. Patients were split into three tertiles of deprivation (high, median, low). A generalised linear model was generated for each tertile to investigate the effect of social deprivation on the relationship between bariatric case count and prevalence of obesity.

Results: Data were included from 1163 bariatric cases (414 from Centre 1 and 749 from Centre 2, 77.2% female in total). The median BMI of patients treated at Centre 1 was significantly higher than at Centre 2 (48.8 kg/m^2 v 52.0 kg/m^2, $p < 0.01$). Local obesity rates around Centre 1 were found to be higher than around Centre 2 ($p < 0.05$). There was also a higher level of social deprivation around Centre 1. Incidence rate ratios (IRRs) were calculated using generalised linear models. For Centre 1, higher levels of social deprivation increased the dependence of bariatric cases on obesity prevalence. (IRR 1.0019, 95% CI 1.0018 - 1.0019, $p < 0.001$). The effect of social deprivation at Centre 2 was less than Centre 1. (IRR 1.0009, 95% CI 1.0008 - 1.0009, $p < 0.001$).

Conclusion: There were significant demographic differences between the patients treated in each region. Social deprivation was found to have influenced the likelihood of receiving bariatric surgery in one region of the UK but not in another. This study provides the first statistical evidence of the possibility of a 'postcode lottery' in the provision of bariatric surgery in the UK. Further research is required to establish causes for this disparity in order to ensure adequate and equal access to bariatric surgery.

A04

The Effect of Pre-Operative Psychological Factors on Weight Loss in Bariatric Surgery Patients

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Background: Bariatric Surgery (BS) is an effective treatment for morbid obesity however its success can be affected by many factors. Psychological factors can play a significant role in this regard. Patients who are obese have an increased risk of anxiety and depression which in turn, may reinforce unhealthy eating behaviours. The pre-operative level of Anxiety, Depression and Impulsivity and their effect on weight loss following BS is not fully understood.

Aim: To assess the effect of pre-operative psychological factors on weight loss post-BS.

Methods: Between 2009 and 2014, 610 patients from a single centre underwent comprehensive pre-op psychological assessment using validated Hospital Anxiety and Depression (HADS) and Impulsivity scales along with information about their eating behaviours (EB). Pre- and post-op weight loss data were obtained at various time points (n = 47 to 87) and compared against psychological scores.

Results: Anxiety and depression often co-existed in morbidly obese patients and led to more impulsive behaviour. High HADS and Impulsivity scores promoted uncontrolled and emotional eating ($P < 0.0001$) but pre-op BMI was not significantly affected by these ($P = 0.06–0.35$). However, scoring high on Impulsivity or having an uncontrolled or emotional EB had a strong negative correlation with post-op weight loss ($P = 0.01$) in Gastric Sleeve and Bypass patients. Weight loss was quite variable in Gastric Band patients and did not correlate with any of the psychological parameters. On the other hand, a favourable diet-controlled pre-op weight loss (using 800–1000 Kcal/d diet) was a strong indicator of success of all bariatric procedures including Gastric Bands, highlighting the importance of individual metabolic variations.

Conclusion: We show that pre-op impulsivity and emotional/uncontrolled eating behaviours are strong indicators of poor outcomes of BS, even in restrictive and malabsorptive procedures. Therefore, a thorough psychological assessment is valuable in recognising patients who may not benefit optimally from bariatric surgery. Combining this with appropriate psychological interventions may promote better outcomes and quality of life which is an area of further investigation.

A05

What is a 'typical' UK bariatric operation: results of over 30000 patient data from the UK National Bariatric Surgery Registry (NBSR)

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Background: The NBSR is self-reported data from member surgeons of British Obesity and Metabolic Surgery Society. With a global trend for increasing numbers of weight-loss operations each year large national registries help provide for quality assurance and patient safety and to advance the standards of safety and efficacy of bariatric surgery.

Methods: Data released, approved by NBSR data committee, from Jan 2009 to Dec 2013 was analysed retrospectively for the 3 commonest primary bariatric operations in the UK.

Results: 30,925 primary operations were: 6580 (21.3%) adjustable gastric band (AGB), 6522 (21.1%) sleeve gastrectomy (LSG) & 17823 (57.6%) Roux-n-Y gastric bypass (RnY). From 2009 to 2013 AGB decreased from 29.9% to 12.5% of performed operations and LSG increased from 8.5% to 28.4%. Operations done laparoscopically were AGB 99.6%, LSG 99.3% and RnY 91.6%, but increasing from 84.6% (2009) to 98.1% (2013). Recorded re-operation rates for all procedures decreased from 2009–2013: AGB 4.0% - 0.8%, LSG 5.3% - 2.0% & RnY 5.2 % - 3.0%, similarly those staying in hospital ≤1 night increased for AGB (81.1%–89.7%) & LSG (45.1% - 66.0%) and ≤2 nights for RnY (50.3% - 69.8%).

Individual operative details for the 5 year cohort (and changes 2009–2013) were as follows. **AGB:** pars flacida approach 98.8%; Gastro-gastric suturing 92.3% & two bands accounted for 92.7%.**LSG:** Staple thickness 1.5 mm 39.5% (56.9% - 33.5%), 1.8 mm 25.3% (17.9% - 32.0%), ≥2.0 35.2% (25.2% - 34.5%); Use of reinforcement was 57.3% (69.7% - 48.9%), bougie use 96.6%, 61.6% 32–34 Fr. **RnY:** Vertical lesser curve pouch 92.8% (89.4% - 96.4%); GJ anastomosis linear 59.7% (39.5% - 70.8%), circular 20.2% (24.6% - 14.6%), hand sewn 20.1% (34.0% - 14.6%); JJ anastomosis single stapler 50.0% (35.3% - 61.9%), triple stapler 31.4% (36.9% - 28.5%) with 94.1 % using a ≤1.0 mm staple thickness; Roux limb placement ante-ante 80.6% (76.7% - 85.4%), retro-ante 18.2% (21.5% - 13.5%). Limb lengths varied widely 2009–2013: most frequent

was a 40-50 cm BP limb (29.6%); 100 cm or 150 cm Roux limb (34.8% & 38.3%). Internal hernia defects were not closed at all by 26.8%, Petersen's defects closed by 44%, JJ by 62.5% & mesocolic by 13.9%.
Conclusion: We have shown the typical characteristics of the 3 commonest UK weight-loss operations and variations over 2009–2013 for over 30 000 primary procedures.

A06

Impact of bariatric surgery on clinical depression- a large scale cohort matched comparison study

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Background: Although bariatric surgery has been shown to result in weight loss and improvement in metabolic conditions, there is limited evidence as to the efficacy of surgery on depression. This aim of this study was to evaluate the impact of bariatric surgery on the long-term incidence of clinical depression using data from a large-scale prospectively collated primary care database.
Methods: An interrupted time series design, with matched controls, was conducted from three years before, to a maximum of seven years after surgery. Obese adults who received BS procedures from 2002 to 2014 were sampled from the UK Clinical Practice Research Datalink. Controls were matched for body mass index (BMI), age, gender and year of procedure. Clinical depression was evaluated from medical diagnoses and antidepressant prescriptions in primary care electronic health records. Analyses were adjusted for comorbidity and co-prescribing.
Results: There were 3,045 participants who received BS, including laparoscopic gastric banding in 1,297 (43%), gastric bypass in 1,265 (42%), sleeve gastrectomy in 477 (16%) and six undefined. The mean age was 45.9 (SD 10.2) years and mean BMI 44.0 Kg/m^2(SD 8.3).In the year before surgery, 36% of BS patients, and 21% of controls, had clinical depression, (adjusted odds ratio 2.02, 95% confidence interval 1.75 to 2.33, $P < 0.001$). Following bariatric surgery, the proportion with clinical depression declined to 32% in the second post-operative year; adjusted odds ratio 0.83 (0.76 to 0.90, $P < 0.001$). By the seventh post-operative year, the prevalence of clinical depression increased to 37%; adjusted odds ratio 0.99 (0.76 to 1.29, $P = 0.959$).
Conclusion: Depression is common among individuals selected to undergo bariatric surgery. Bariatric surgery may be associated with a modest reduction in clinical depression over the first two to three post-operative years but this is not maintained.

Session 3: Parallel Free Paper Session - Surgical

Thursday 22 January 2015 (13:30–14:50)

B01

Laparoscopic Mini Gastric Bypass (LMGB): Our experience with 100 cases

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Background: MGB was first reported in 2001 but remains controversial. The uptake of this procedure in bariatric society in UK has been slow. Recently there has been increasing data published by its proponents claiming it to be safer, easier than the gold standard Roux-en-Y gastric bypass (RYGB) and with one less anastomosis. Our unit is the first unit within the National Health Service of United Kingdom performing this procedure. The aim of this study was to present our experience with first 100 LMGB.
Method: We retrospectively analysed our prospectively collected data of first consecutive 100 LMGB procedures performed in a single centre in the UK since Oct 2012. Where needed, records were supplemented by referring to hospital computer records, notes or by telephoning patient and/or General Practitioner.
Results: 74% patients were female. The mean age was 44 years. The mean weight at presentation to bariatric unit was 135.1kgs and mean BMI of 48. Eleven patients had prior gastric balloon insertion and 1 had previous sleeve gastrectomy. The average post-operative stay was 3.1 days and an early complication rate was 1%(Wound infection treated with antibiotics and leading to colitis). Post-operative leak rate was 0%. Readmission rate was 6%. Mean weight of patients at up to 2 year follow up was 96.4kgs and average weight loss was 38.9kgs. Three patients developed post-operative marginal ulcer. 3 patients required long-term (>30 day) reoperation (1 = marginal ulcer perforation, 2 = diagnostic laparoscopy). The 30 day mortality was 0%.
Conclusion: The results of our first 100 LMGB are comparable to those published in literature. We consider MGB to be safe and effective operation. The weight loss was satisfactory. The marginal ulcer rate and reoperation rate was lower than that published in literature. The leak rate and mortality was 0%. Long term follow up results are awaited.

B02

Predictors of inadequate excess weight loss 12-month after laparoscopic gastric bypass for morbid obesity

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Background: Laparoscopic Roux en-Y gastric bypass (LRYGB) is an effective treatment for morbid obesity resulting in approximately 70% excess weight loss (EWL) at 2-years. The aim of this study was to identify factors predictive of inadequate EWL following primary LRYGB.
Methods: Data on consecutive patients who underwent primary LRYGB between September 2009 and March 2013 were collected prospectively. The effects of age, gender, baseline body mass index (BMI), preoperative EWL, length of time between initial consultation and surgery (TtS), presence of diabetes mellitus (DM), arthritis, obstructive sleep apnoea (OSA), and postoperative length of hospital stay (LOS) on EWL at 12-months were studied. General linear regression models were used to evaluate group differences in EWL and to assess independent associations between baseline variables and EWL at 12-months. Stepwise regression analyses were used to estimate individual contributions of independent variables to the variance in EWL at 12-months. In this study, inadequate EWL was defined as <50% EWL at 12-months.
Results: LRYGB was performed in 227 patients with a mean ± SD age and BMI of 48.6 ± 11 years and 53.6 ± 7.1 kg/m^2, respectively. Female to male ratio was 3:1. EWL at 12-months had an inverse correlation with age ($p = 0.01$), baseline BMI ($p < 0.001$), TtS ($p = 0.001$), OSA ($p = 0.039$) and DM ($p = 0.039$). Conversely, there was a significant positive association between preoperative EWL and that at 12-months ($p = 0.009$). There was no effect of gender, arthritis, or LOS on EWL at 12-months. Multiple regression analysis demonstrated inadequate EWL at 12-months to be predicted by older age (>60 years), patients with diabetes, higher baseline BMI (>60), those who gained weight preoperatively and in patients who waited longer than 18-months for surgery ($p = 0.027$).
Conclusion: Preoperative factors that predict inadequate EWL at 12-months following primary LRYGB include higher initial BMI, older age, presence of DM, and preoperative weight gain. Identification of these factors preoperatively should aid in counselling these patients.

B03

Systematic review of qualitative and quantitative definitions of failure in revisional bariatric surgery

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Background: Whilst bariatric surgery is effective in achieving weight loss and remission of type 2 diabetes, 7-8% of patients undergo repeat procedures. However there are no agreed definitions as to what constitutes a 'failure' of the primary bariatric procedure. We aimed to describe how failure is defined in published studies of bariatric surgery.

Methods: Search of MEDLINE database for primary research articles using: (obesity[Title]) OR bariatric[Title]) AND (revision[Title]) OR revisional[Title]). Reviews, editorials, letters, and case reports were excluded. Data extracted included: patient demographics, primary and revisional bariatric procedures performed, indications for revision, and definitions used for each indication.

Results: MEDLINE search retrieved 174 studies. After duplicates and exclusions were removed 60 articles underwent analysis, which included 4148 revisional bariatric procedures; average age 44 years, 82% female (4/52 studies listed no demographics). 8/52 studies did not list indications for revisional procedures. 2741 indications were listed: 1614 (59%) for inadequate weight loss or weight regain, 832 (30%) for mechanical complications, 211 (8%) for intolerance or other patient factors, and 84 (3%) for nutritional deficiencies. 51 studies included inadequate weight loss or weight regain as a indication for revision; 31/51 (61%) gave no definition for failure. 20/51 studies offered a definition, including 11 different measures of weight loss or gain. 7/20 quoted the 1991 NIH criterion (<50% of excess weight loss at 18 months) and 6/20 used the Reinhold criterion (<25% excess weight loss). The remaining 7/20 used a wide variety of absolute values and units.

Conclusion: The majority of published studies do not describe how patients were deemed to have failed their primary bariatric procedure, and in those that do these is great variation. There is a need for increased reporting of patient selection and a uniform definition of failure in revisional bariatric surgery.

B04

The Adolescent Morbid Obesity Surgery (AMOS) study: preliminary outcomes at five years following laparoscopic Roux-en-Y gastric bypass in a Swedish nationwide study

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Background: AMOS is a prospective, non-randomised controlled study, comparing laparoscopic gastric bypass (LRYGB) with a maximal medical intervention programme for adolescents with severe obesity.

Methods: Eighty-one adolescents (mean 16.5years) underwent LRYGB (Surgery group), centralised to a single unit. The weight inclusion criteria were BMI >40, or >35 kg/m^2 with co-morbidities. Follow-up was at one, two and five years. Eighty-one age-matched adolescents undergoing medical management were identified within a national registry and assessed after five years (Control group). A third group comprising eighty-one weight and gender matched adults undergoing LRYGB was followed prospectively (Adult group).

Results: Mean weight and BMI at inclusion by group were: Surgery group 133 kg, 45.5 kg/m^2; Control group 124 kg, 42.2 kg/m^2; and Adult group 127 kg, 43.5 kg/m^2. At five-year postoperative follow-up mean weight and BMI in Surgery group were 96 kg (total weight loss 27%) and 32 kg/m^2 ($p < 0.001$); while a 10% weight gain was observed in Control group. Mean weight loss in Adult group was 37 kg (29%) to reach a mean BMI 31 kg/m^2. Waist circumference decreased from 134 to 98 cm in Surgery group ($p < 0.001$). Cardiovascular risk factors and inflammatory markers were significantly reduced in Surgery vs. Control adolescent groups. There were eleven (13.6%) laparoscopic remedial operations, indications including internal hernia and symptomatic gallstone disease. Unresolved problems were observed in patients with known neuropsychiatric or psychiatric diagnoses, or hidden addiction at baseline.

Conclusion: LRYGB appears well-tolerated and equally as effective in adolescents as in adults regarding weight loss and metabolic improvements and was generally well tolerated. About one in seven needed a remedial surgical procedure, possibly preventable. Psychosocial postoperative support is necessary.

B05

Single dose prophylactic antibiotic policy associated with higher rates of port site infection after laparoscopic Roux-en-Y gastric bypass (LRYGB)

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Background and Purpose: Port site infection (PSI) can result from extraction of resected stomach (sleeve) or use of circular staplers (LRYGB). It causes patient distress and increased treatment costs due to readmission and reoperation. Prior to this study, enforcement of Trust antibiotic prophylaxis policy required a change in our established regime, reducing the frequency of antibiotics from 3 doses in the first 24 hrs to a single dose. This led to a subjective increase in the incidence of PSI. We audited the baseline incidence of PSI on the new single dose regime and then assessed the effect of changing back to our historical 3 dose antibiotic regime.

Methods: Prospective audit over a 4-month period (Feb-May 2014) to assess the incidence of PSI following LRYGB using a single dose prophylactic antibiotic regime (Cefuroxime 1.5gm IV and Metronidazole 500 mg IV). We then reverted to our historical 3 dose antibiotic regimen of Cefuroxime 1.5 g IV and Metronidazole 500 mg IV, given intra-operatively and at 12 and 24 hours post-operatively and continued the audit of PSI for a further 4 months (June-Sept 2014).

PSI was defined as any combination of localised erythema and swelling, purulent discharge or positive microbiological culture from any laparoscopic port sites. Fishers exact test was used for statistical analysis.

Results: Both the groups were well matched in terms of demographics, BMI, gender and associated morbidities.

	No patients	No. patients with PSI	PSI rate (%)	*P* value
Single dose regime	52	14	26.4%	
Three dose regime	74	1	1.4%	*0.001*

All PSI were confined to the port used for the introduction of the circular stapling device.

Conclusion: Perioperative prophylactic antibiotic policies recommending use of a single dose of antibiotics put patients at an increased risk of PSI after LRYGB using a circular stapled GJ anastomotic technique. Prescribing 3 antibiotic doses over a 24-hour period resulted in significant reduction in the incidence of PSI.

B06

True Mortality from Bariatric Surgery: Data from HES and ONS Births, Marriages and Deaths Register

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Background: Bariatric surgery is the only long term solution for severe obesity and its related illnesses. The perceived high risk nature of surgery has been one of the main factors limiting referral and uptake of this procedure. Like many other countries, the UK has a national bariatric registry (NBSR); however like most registries it relies on self-reported outcomes. Recent publication of consultant reported outcomes by the NBSR indicates an in hospital mortality rate of 0.10%.We thus conducted an analysis on the national Hospital Episodes Statistics (HES) data to confirm the validity of NBSR reported outcomes.
Methods: The HES database was used to identify all of the patients who had undergone a primary bariatric procedure between 2009 and 2014. OPCS Classification of Interventions and Procedure codes were used to identify all bariatric procedures (gastric bypass, gastric banding, sleeve gastrectomy) but exclude gastrectomy for malignant/ benign disease. In hospital and the Office of National Statistics (ONS) recorded 30 day post discharge mortality were used as the primary outcome measures.
Results: 29,825 primary bariatric procedures were carried out in the NHS between 2009 and 2014. A mean of 5965 procedures were performed yearly over the 5 years. There were 28 in-hospital mortalities over the study period (0.094%; 28/29,825). The overall 30 day post discharge mortality was 0.17% (52/29825). There were no significant variations in the in-hospital or 30 day mortality during the study period.
Conclusion: Despite the continued growth in primary bariatric surgery within England, the overall in-hospital and 30 day mortality rate remains very low. These findings are concordant with the recent surgeon outcome reports from the NBSR and confirm their validity. It furthermore highlights the low risk nature of bariatric surgery. As such, the increased uptake and use of bariatric surgery within the English NHS has been safely facilitated by the offering centres.

B07

Medium term outcome of type 2 diabetes mellitus after laparoscopic Roux-en-Y Gastric Bypass

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Background: Laparoscopic Roux en-Y gastric bypass (LRYGB) has emerged as a therapeutic option for type 2 diabetes mellitus (T2DM). However, there is a paucity of data on the effects of LRYGB on T2DM beyond 2 years. This study aimed to analyse medium-term effects of LRYGB on T2DM and to determine predictors of resolution/remission.
Methods: Data on consecutive patients with T2DM who underwent primary LRYGB between September 2009 and November 2010 were collected prospectively. T2DM outcomes were classified according to the American Diabetes Association guidelines: T2DM remission defined as no medication with HbA1C <48 mmol/mol (Complete, CR) or HbA1c 48–53 mmol/mol (Partial, PR). T2DM was considered improved when there was >50% reduction in the dose of medications. The effects of age, gender, baseline body mass index (BMI), preoperative excess weight, length of T2DM, preoperative T2DM medications, percentage excess weight loss (EWL %) at 4-years and BMI at 4-years on T2DM resolution were studied.
Results: Forty-six patients with T2DM underwent LRYGB with mean ± SD age and BMI of 48.6 ± 9.6 years and 50.4 ± 6.5 kg/m^2, respectively. Median (IQR, interquartile range) duration of T2DM was 60 (36–126) months. Median (IQR) follow up was 52 (50–57) months. T2DM resolution was achieved in 76% of patients (CR = 61%, PR =15%), and further 15% of patients had improvement in their T2DM. Only 4 patients (9%) had no change in diabetes status. On univariate and multivariate analysis, significant EWL ($p = 0.0027$) and lower BMI ($p = 0.018$) at 4-years were the only independent clinical predictors of medium-term T2DM outcome.
Conclusion: In this study, LRYGB seems to offer excellent medium-term T2DM resolution. Moreover, significant EWL and lower BMI were predictors of T2DM remission.

B08

Cardiac referrals: a heartache for bariatric patients

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Background: Morbid obesity is a risk factor for ischaemic heart disease and perioperative cardiac events. Pre-operative cardiology assessment is an integral part of the clinical evaluation for some patients undergoing weight loss surgery, but this can be burdensome to the service and increase waiting times for surgery. The revised cardiac risk index (RCRI) is a validated risk stratification tool for predicting the risk of major cardiac events in the non-cardiac surgical setting. Multiple factors stratify individuals into four categories (I, II, III, and IV), the risk of cardiac events increases with each category (0.4%, 0.9%. 6.6%, 11% respectively). The aim of this study is to assess whether the number of referrals to cardiology could be reduced by applying RCRI, yet still capture all of the pre-operative cardiac therapeutic interventions. We studied the impact of cardiology referral on waiting times.
Methods: Between 2007–2013, a cohort of 252 patients that had been evaluated for weight loss surgery was identified. Retrospective analysis of the clinical records was undertaken. Referrals to cardiology at this time were based on clinical judgement. Data collected included: RCRI, referral to cardiology, cardiac investigations and interventions, waiting time and morbidity and mortality.
Results: Of the 252 patients, 72 (29%) were referred to cardiology. 4 of the 72 patients (5%) required a cardiac intervention, all had a RCRI that placed them in categories III and IV (4 intervention, n = 17). There were no cardiac intervention in the categories I and II (n = 55). Patients in Categories III & IV were significantly more likely to require a cardiac intervention than the category I & II ($p < 0.05$) and also had a significantly greater waiting time to surgery (441 vs 271 days, respectively, $p < 0.05$). Of the 180 patients that were not referred to cardiology, none required any cardiac intervention and they did not have any major complications. There waiting time for surgery was significantly less than those referred to cardiology ($p < 0.001$).
Conclusion: Cardiology referrals increase waiting time. Cardiac interventions are more likely in patients with a RCRI III and IV. Limiting cardiology referrals predominantly to this group would substantially reduce both waiting times and the number of cardiology referrals.

Session 3: Parallel Free Paper Session - AHP

Thursday 22 January 2015 (13:30–14:50)

C02

An exploration of patient experiences of adjustment after bariatric surgery: a PhD research study

Yitka Graham[1], Ann Crosland[1], Jonathan Ling[1], Scott Wilkes[1], Catherine Hayes[1], Peter K Small[2]

[1] *University of Sunderland, Sunderland, Tyne and Wear, UK,* [2] *City Hospitals Sunderland NHS Foundation Trust, Sunderland, Tyne and Wear, UK*

Background: Studies on bariatric surgery tend to focus on weight-loss or improvements in obesity-related comorbidities and quality of life. These outcomes are measured empirically using quantitative methods which provide information on the efficacy of bariatric surgery, but do not provide data appropriate for the analysis of patients' personal experiences. Little is known about the impact of surgery on patients' everyday lives in the first two years after bariatric surgery.
Methods: Recruitment was initial purposive sampling, followed by theoretical sampling, which allowed concepts identified in the participant narratives to be explored further. Participants were recruited through the bariatric surgical service at a large NHS hospital. Participants with active mental health problems were excluded from the research. Data collection was semi-structured interviews with participants (9 women, 6 men) who had undergone either gastric bypass or sleeve gastrectomy procedures within the last two years. Grounded theory methodology was used, with constant comparative tenets which simultaneously combine data collection and analysis, with the aim of constructing an explanatory theory of patient experiences of adjustment after bariatric surgery.
Results: Patient experiences of adjustment following bariatric surgery were embedded in subjective interpretation and meaning of the perceptions of risk. Three different patient types were constructed: Risk Accepters, Risk Challengers and Risk Contenders. Risk Accepters were more positive towards adjusting to life after bariatric surgery. Risk Challengers were more defiant towards surgically-imposed adjustments. Risk Contenders were still adjusting to the risks and perceived themselves as having an incomplete adaptation to post-surgical life.
Conclusion: Understanding the risk adjustment profile will help articulate likely outcomes, benefits and expectations of surgery, which will contribute to the basis of 'informed consent'. Dissemination of findings to healthcare practitioners, policy makers and patients will positively contribute to the understanding of patient-perceived risk and aid management of patient expectations in relation to their surgery.

C03

The Effectiveness of Nurse-Dietitian Led Pre-operative Group Sessions

Neha Shah, Jenny Abraham, Jo Wood, Milan K Piya, Vinod Menon

University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK

Background: Bariatric surgery is increasingly being performed in the NHS, but resources are limited. Patients planned for bariatric surgery are required to attend appointments with multiple health professionals, usually on different dates. Multi-professional group sessions are a cost-effective method of providing information to patients, and also reduce the number of appointments that patients need to attend. Failure to attend appointments is a major loss of resources. Planning and co-ordination of timely joint appointments based on patient needs are likely to reduce DNA rates and improve compliance.
Aim: To reduce the length of time between nurse/dietitian appointment and surgery and to reduce DNA rates. To assess the effect of pre-operative group sessions on patient satisfaction, compliance and weight loss following the pre-operative diet.
Method: A bariatric coordinator was employed at the end of 2013. A nurse-dietitian group session was introduced 3-weeks prior to their operation in 2014, instead of existing individual nurse and dietitian clinics. Length of time from last nurse/dietitian appointment to surgery was compared between March to October 2013 (n = 28) and 2014 (n = 26). The group sessions were evaluated using patient satisfaction questionnaires. Weight loss data was collated during the immediate pre-operative period. DNA rates were also compared.
Results: Median length of time from last dietitian appointment to surgery in 2013 was 10 weeks, compared to group sessions in 2014 which was 3 weeks. Patient average weight loss on the pre-operative diet was 7.8 ± 5.3 kg (mean $\pm$ SD) in 2014. DNA rates were drastically reduced from 33 missed appointments in 2013, compared to no patients missing the group session in 2014. Patients found the session informative, informal, fun, and valued the opportunity to ask questions and have peer support before the operation. Patients felt the information provided by the group sessions was very useful with a score of 9.5 (scale 0–10).
Conclusion: A combined nurse-dietitian led group session scheduled 3 weeks prior to surgery provides excellent patient satisfaction and weight loss during the immediate pre-operative period. The presence of a bariatric co-ordinator booking the group sessions based on the date of surgery are key for the group sessions to be effective and efficient.

C04

The design of an educational course for pre-operative bariatric surgery patients

Corinne Owers[1], Vanessa Halliday[2], Roger Ackroyd[1]

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Background: No standardised pre-operative educational course for bariatric surgery patients exists in the UK (BOMSS survey conducted 2014). Pre-operative education is based mainly on clinical experience, with little evidence based research to support its design. We aimed to design an educational course using qualitative research and a structured framework to include information that patients feel are the most important aspects of bariatrics surgery and are most keen to be taught about.
Methods: Qualitative interviews were performed on 12 previous bariatric surgery patients, asking their opinion of pre-operative bariatric education. An interpretative phenomenological analysis (IPA) was performed to identify master and subthemes. Once complete, a previously designed educational course was analysed, and content added to include any missing subthemes identified from the (IPA). Patient and public involvement (PPI) was then used to assess and evaluate this newly designed educational course.
Results: Themes identified from the IPA included: physical health, psychological health, diet and social factors. New topics not previously included within pre operative education included: side effects (not complications) of surgery, guilt and shame, accessing psychological support, social life/ eating out, public perception of bariatric surgery, addiction transference and clothing issues. Patient and public involvement was used to evaluated the course which has been used as the intervention in a pilot randomised controlled study with excellent feedback regarding it's usefulness and ability to prepare patients for surgery.
Discussion: Although each trust within the UK provides educational material for patients pre-operatively, this is not standardised, and is not always performed in the private sector. In order to give patients equal access to education and preparation around the UK, a standardised educational course would be useful both for research and educational courses. Using qualitative research and patient and public involvement to design such a course would ensure that it is both useful and of maximum benefit to patients. Further research to evaluate the utility of courses such as this in preparing patients for bariatric surgery is now needed so that education becomes evidence rather than experience based.

C05

Is nutritional screening and supplementation necessary after gastric band surgery?

Anita Attala, Terry Sergeant, Amy Jamieson, Sue Colley

Northumbria Healthcare NHS Foundation Trust, Tyne and Wear, UK

Background: Studies suggest that malnutrition is prevalent in both the obese population as a whole and post gastric band. As gastric banding does not cause malabsorption of nutrients from food, some units do not routinely perform micronutrient surveillance on gastric band patients. In addition, they do not tend to recommend vitamin and mineral supplementation for gastric band patients. However, through observation it has been noted that often patients restrict nutrient dense foods such as beef, pork, lamb, bread etc and, by nature of the surgery, portion size is restricted.
Methods: A total of 18 randomly selected patients from our unit who had had their gastric band placed for over a year, gave consent to have their micronutrient status measured. The micronutrients measured were the same as those monitored in the roux-en-y gastric bypass patients and sleeve gastrectomy patients. These included B12, Magnesium, Phosphate, Folate, Copper, Zinc, Selenium, Haemoglobin, Calcium and Vitamin D.
Results: Of the 18 randomly selected patients, two patients did not have any micronutrient deficiencies. The 16 remaining patients showed deficiencies in one or more micronutrients.
Conclusion: Further studies are needed to be completed to determine if the gastric banding procedure is detrimental to micronutrient status or if these are deficiencies to be expected in the obese population as a whole in our region. In the meantime, based on this audit, a literature search and BOMSS recommendations, it may be prudent to supplement and survey the micronutrients in the gastric band population as it is in all other bariatric procedures.

C06

The incidence of Copper deficiency in a sample of patients before and after bariatric surgery.

Aimee Newton, David Locker

York Teaching Hospital NHS Foundation Trust, York, UK

Background: The frequency of copper deficiency in bariatric patients is unknown and research is limited. Copper levels are not routinely measured in patients following bariatric surgery. Copper is absorbed in the proximal stomach and proximal small bowel. Deficiencies can cause anaemia, myelopathy, and neuropathy. Routine vitamin and mineral supplementation following bariatric surgery should meet copper requirements. However, some clinical cases of bariatric patients experiencing symptoms of neuropathy highlighted severe deficiencies in copper. Locally, a decision was made to check copper levels pre operatively and post operatively, at 3, 6, 9, 12, 18 and 24 months.
Methods: We set out to identify how many bariatric patients had low copper levels. The normal range for copper is 11–22 umol/L and 12.6-24.4 umol/L for males and females, respectively. Low levels were classified as <10 umol/L. Data were obtained between the dates of 1/10/13 and 23/4/2014. Patients were evaluated within three groups: 1) Pre-operative, 2) Post-operatively < 2 years from surgery and 3) Post operatively >2 years from surgery. None of these patients had received additional copper supplementation.
Results

Pre-op (n = 32)		Post op <2 yrs (n = 133)		Post op >2 years (n =97)	
Low Cu	High Cu	Low Cu	High Cu	Low Cu	High Cu
1 (3%)	9 (28%)	10 (7.5%)	22 (16.5 %)	12 (12.4%)	8 (8.2%)

Conclusion: In this population, the incidence of copper deficiency increases with time post bariatric surgery. The incidence of copper deficiency pre-operatively is low; however this may be due to the small sample size. The cost of copper testing is £23 per test. Based on 80 procedures completed annually the total cost would equate to £12,880 for that cohort of patients over the two year follow up period. Based on these results copper testing is warranted, however, we propose testing is only required pre-operatively, post operatively at 6 and 12 months, and then annually thereafter. This would reduce cost to £7,360. This would be a cost saving of £5520.

C07

The Impact of Dietary Education on Patients' Knowledge and Confidence to Self- Manage their Condition Following Bariatric Surgery

Rochelle Blacklock, Sara Kitching, Clare Grace

King's College Hospital, London, UK

Background: Self-management education before bariatric surgery is widely recognised as a key component of high quality care. Equipping patients with the knowledge and confidence to implement post-operative dietary changes is essential to reduce risk of post eating complications and improve nutritional well-being. However little is known about the impact of such education on patients' perceived knowledge and confidence.
Methods: Patients attended a one hour education session delivered by the dietitian that covered five domains: texture progression, healthy foods, optimal eating behaviours, vitamins and minerals and post eating symptoms. Attendees scored their perceived knowledge of these domains before and after the education session using a 5 point scale (1 = low, 5 = high). Confidence to implement changes after surgery and satisfaction with training were assessed using the same scale. Results were presented as median scores and the Wilcoxon signed rank test used to compare pre and post education scores.
Results: 38 patients (59% of invitees) attended the education sessions and 97% completed the evaluation. Pre-education, low perceived knowledge scores (<3 on the 5 point scale) were found in 3 of the 5 domains; vitamin and mineral supplements, post eating symptoms and healthy food choices. However a disparity existed with confidence levels which were high (median 4; IQR 2–5) despite low perceived knowledge. After the education session significant improvements in knowledge were reported for each domain [$p < 0.01$] and confidence also increased [$p < 0.01$]. The median overall satisfaction score was 5 (IQR 5–5).
Conclusion: Implementation of a Dietetic led nutrition education session is associated with significant improvements in patients' perceived knowledge and confidence and very high overall patient satisfaction. Low pre-operative dietary knowledge emphasises the importance of providing education to optimise patients understanding of how to self-manage their condition following bariatric surgery.

C08

Do all patients need to be discussed at a bariatric multidisciplinary team meeting (MDT)?

Jennifer Darrien, Terry Sargent, James Brown, Keith Seymour, Sean Woodcock

North of Tyne Bariatric Service North Tyneside Hospital, North Shields, UK

Background: Our bariatric service has been operational for ten years. Based on the experience of the surgeons and allied health care professionals we no longer consider it necessary to discuss all patients. We have now adopted a selective approach of referral to the MDT to make better use of time and resources. We describe the referrals and outcomes of this practice.
Methods: All patients discussed at our bariatric MDT between June 2011 and May 2012 were reviewed retrospectively using prospectively collected data. Data collected included simple patient demographics, reasons for referral, pre vs post-operative discussion and outcomes.
Results: 161 patients were identified. 127 (79%) females and 34 (21%) males, age range 20–68 years. 115/161 (71%) patients were discussed preoperatively

with 159 concerns; 83 (52%) psychological, 35 (22%) medical, 5 (3%) surgical, 7 (4%) smokers and 29 (19%) others. 43/115 (37%) patients were considered not suitable for surgery. 6/115 (5%) proceeded to surgery. 21/115 (19%) were re-discussed at a future MDT. 26/115 (23%) were reviewed in the surgical out patients. 10/115 (9%) were referred to bariatric psychology. 5/115 (4%) had to complete Tier 3. 4/115 (3%) miscellaneous outcomes. 46/161 (29%) patients were discussed post-operatively with 48 concerns; 12 (25%) were recurrent non-attenders, 13 (27%) had complications of their surgery, 13 (27%) failed to lose weight or gained weight thereafter and 10 (21%) had psychological problems. 11/46 (23%) were reviewed in the out patients, 16/46 (35%) were discharged from the service, 15/46 (33%) underwent psychological interventions and 4/46 (9%) had further surgery.

Conclusion: The low surgical yield from our patients discussed preoperatively indicates our ability to correctly identify those patients who would benefit from MDT discussion and further non-surgical intervention. This is a novel practice which we therefore believe to be time and resource efficient.

Session 4: Parallel Surgical DVD

Thursday 22 January 2015 (14:50–15:40)

D01

Transgastric ERCP for bile duct stones after Roux- en- Y gastric bypass

Naim Fakih, Bruno Lorenzi, Davinder Bansi, Ahmed Ahmed

Imperial College Healthcare, London, UK

Background: The configuration of anatomy in the Roux-en-Y gastric bypass (RYGB) excludes the biliary tree from traditional endoscopic evaluation and treatment. The way to overcome this limitation is having access to the biliary tree through an endoscope introduced through the gastric remnant.

Methods: We present the case of a 62 year old patient with a RYGB performed 3 years ago, who developed numerous episodes of cholangitis. A Magnetic Resonance Cholangiopancreatography was performed showing a common bile duct stone 0.6 mm in size.

Results: A laparoscopic approach was used to access the gastric remnant. Adhesions were lysed, and a purse-string suture was placed on the anterior portion of the stomach. A gastrotomy was made with monopolar electrocautery and the side-viewing duodenoscope is introduced through a 15 mm port and into the gastric remnant. An intestinal clamp was placed on the biliopancreatic limb. A papillotomy was performed and the bile duct stone was extracted. The gastrostomy is closed using non absorbable sutures in 2 layers.

Conclusion: Transgastric ERCP is a safe and feasible method to treat bile duct problems in patients with RYGB.

D02

Unusual case of radiolucent gastric band with no port for band adjustments inserted abroad

Christos Tsironis, Sherif Hakky, Ahmed Ahmed, Sanjay Purkayastha

Imperial College, London, UK

Background: Laparoscopic adjustable gastric band (LAGB) insertion has been carried out worldwide in well established bariatric provider health care systems and by some unregulated providers who often provide little or no follow up. Consequently, surgeons in the UK face complications of LAGB inserted abroad.

Presentation of Case: We report a case of a 38-year-old lady with a background of a gastric band inserted laparoscopically in Ukraine in 2006, presenting with symptoms of nausea and vomiting. Deflation of the band was attempted but the band port position could not be identified. Plain films and barium contrast studies did not demonstrate evidence of a gastric band or any other radio-opaque structures in the abdomen. Subsequently, CT scan with iv and oral contrast suggested a gastric band with a possible slippage but with the tube not connected to a port and no port was identified in the subcutaneous tissues. OGD did not show erosion of gastric wall. Diagnostic laparoscopy revealed a slipped gastric band of an unusual appearance with the tube not connected to the band port. Band removal and capsulotomy followed and symptoms resolved.

Discussion: The complications of LAGBs inserted by unregulated providers can be difficult to manage due to lack of information regarding the operation. This also increases the cost as additional imaging may be required preoperatively. Patients going abroad to undertake bariatric surgery should be more informed about what procedure and who is carrying this out on them. Complications of health tourism for bariatric surgery carry a significant cost burden to the NHS from follow up and complication management.

D03

Spontaneous splenic rupture after revisional surgery of Roux-en-Y gastric bypass

Naim Fakih, Alvaro Bueno, Ahmed Ahmed

Imperial College Healthcare, London, UK

Background: Revisional surgery after bariatric surgery is not exempt from complications, which can present in 5-15% of the patients. Splenic rupture is an uncommon complication and can be associated to portal vein thrombosis (PVT). Only few cases have been reported in the literature.

Methods: We present the case 57-year-old woman who underwent laparoscopic Roux-en-Y gastric bypass 5 years ago, and presented a gastrogastric fistula (GGF) causing weight regain. She underwent surgery where the GGF was excised and the roux limb was lengthened to 150 cm. On the third postoperative day, the patient presented sudden onset of left shoulder tip pain with a drop in her haemoglobin levels. The CT showed perisplenic hematoma.

Results: A laparoscopy was performed and a ruptured spleen was observed with 3 liters of hemoperitoneum and active bleeding. The gastrosplenic ligament was opened and the splenic pedicle was stapled off. A splenectomy was performed afterwards.

Conclusion: Splenic rupture is a serious but uncommon complication after bariatric surgery that can present even weeks after surgery. A splenectomy is usually mandatory. PVT must be ruled out.

D04

Petersen's small bowel obstruction after laparoscopic Roux-en-Y gastric bypass (RYGB) surgery

Umesh Parampalli, Adam Goralczyk, Kesava Reddy Mannur

Homerton University Hospital, London, UK

Background: Internal hernia is a relatively common complication after laparoscopic RYGB surgery. It has been reported that internal hernias develop in 1-9% after RYGB. Petersen's hernias are relatively infrequent compared to mesenteric hernias but have generally more devastating consequences. We present a video on the successful management of one such case managed through laparoscopic approach.

Methods: A 41 year old gentleman who had underwent a laparoscopic RYGB four years ago. He presented to the accident and emergency with generalised abdominal pain and passage of black stools. He was tender on abdominal examination and his blood tests were unremarkable. A computerised tomogram (CT) of his abdomen showed a possible left paracolic internal herniation. He underwent a laparoscopy and repair of Petersen's Hernia, he had areas of ischaemia at the site of the jejunojejunal anastomosis were invaginated. He recovered well, a post-operative barium study suggested smooth passage without any evidence of obstruction.

Conclusion: We have demonstrated successful management of Petersen's hernia. We also advocate the importance of emergency laparoscopy when any patient with RYGB presents with abdominal pain as computerised tomography findings are not always confirmatory. Of course other investigations like ultrasound scan to exclude gallstones and gastroscopy to rule out ulcer should be performed on clinical grounds

D05

Single incision sleeve gastrectomy using spider® surgical system

Naim Fakih, Alvaro Bueno, Ahmed Ahmed

Imperial College Healthcare, London, UK

Background: The SPIDER® Surgical System (TransEnterix, Durham, NC) is a novel technology for single incision surgery that provides instrument triangulation and eliminates instrument crossing.
Methods: This video shows a sleeve gastrectomy done with SPIDER® Surgical system. The procedure was performed on a 35 year-old female with a BMI 40 Kg/m^2. She has benign intracranial hypertension as well as obstructive sleep apnoea associated to her obesity.
Results: The SPIDER® Surgical system offers the surgeon a less invasive alternative to laparoscopic surgery. The device is inserted through a small incision into the abdomen and it opens inside like an umbrella. The 360 degree rotating and flexible instruments offer the surgeon triangulation during the surgical procedure and eliminate the crossover of the instruments, one of the major limitations of the single incision surgery.
Conclusion: The SPIDER® Surgical system appears to be a feasible system to perform sleeve gastrectomies through a single incision.

Session 7: Free Paper Session - Surgical and AHP

Friday 23 January 2015 (08:30–10:00)

E01

The Bariatric Pharmacist–a vital member of the Bariatric Team

Chloe Palmer, Nicola Hill, Alison Sutton, Nicholas Carter

Queen Alexandra Hospital, Hampshire, UK

Background: Following bariatric surgery, the ability to handle medication can be impeded due to compromised stomach capacity and impaired bioavailability of drugs absorbed in the upper gastrointestinal tract. Patients undergoing bariatric surgery often have many medications which can be difficult to administer in the early post-operative phase leading to potential issues with compliance and under treatment of medical comorbidities.
Methods: Since February 2014, pharmacists have been working alongside the nurse specialist in the bariatric pre-operative assessment clinic. Patients are seen by the pharmacist, who carries out a complete pharmaceutical history and assesses the suitability of any regular medicines post-operatively.
Using appropriate resources the pharmacist reviews patient's regular medication and assesses the need for any changes to drug choice or formulation.
Changes to medications have been recorded and analysed accordingly along with interventions since the introduction of the program.
Results: 71 patients have been reviewed by a pharmacist; 74.6% of these patients have required an intervention for their medication. Of the 71 patients, 67.6% have required a manipulation of medication formulation and 45% of patients have required a change in the drug choice. A total of 193 interventions have been made.
Conclusion: Pharmacists play a vital role in the multidisciplinary management of bariatric patients undergoing surgery. Intensive assessment from pharmacists leads to multiple changes in medications and formulation. This makes the early postoperative course more manageable in terms of numbers of medications and formulation and we suggest leads to more compliance with medication use and thus less drug errors.

E02

Static and dynamic measurements of C-peptide predict 6 months resolution of type 2 diabetes following bariatric surgery

Akhila Mallipedhi[1], Thinzar Min[1], Claire MacIver[2], Sarah Prior[1], Gareth Dunseath[1], Richard Bracken[1], Kathie Wareham[3], Jane Griffiths[3], Jonathan Barry[4], Scott Caplin[4], Nia Eyre[4], James Morgan[4], John Baxter[4], Stephen Bain[1], Steve Luzio[1], Jeffery Stephens[1]

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Background: Bariatric surgery results in type 2 diabetes mellitus (T2DM) remission in morbidly obese subjects. Certain preoperative clinical and biochemical information might provide potential predictors in relation to T2DM outcome postoperatively.
Methods: A non-randomized prospective study of 24 participants with T2DM undergoing bariatric surgery. Measurements of fasting and 2-hour plasma glucose, lipids, insulin, C-peptide and measures of insulin sensitivity were recorded pre-operatively and 6 months post-operatively. A responder was defined as a subject with a normal Oral glucose tolerance test (OGTT), a non responder was a subject not achieving this.
Results: Within the sample there were 11 responders and 13 non responders at 6 months. There was a significant difference in the duration of diabetes between the groups. Fasting C-peptide ($P \leq 0.05$) and 2-hour C-peptide ($P \leq 0.05$) were higher in responders compared to non responders. Significantly higher C-peptide levels were observed preoperatively at all time points for responders, with significantly higher area under the curve (AUC0-60 and AUC0-120) for responders. Using the lower quartile cut-off for C-peptide levels (<2.5 ng/mL), both fasting C-peptide and 2-hour C-peptide had a specificity and positive predictive value of 100%.
Conclusion: Static and dynamic measurement of C-peptide level has a role in prediction of diabetes resolution following bariatric surgery.

E03

Ascertaining knowledge of contraceptive practices within bariatric surgical teams

Yitka Graham[1], Peter K Small[2], Diana Mansour[3], Scott Wilkes[1]

[1]University of Sunderland, Sunderland, UK, [2]City Hospitals Sunderland NHS Foundation Trust, Sunderland, UK, [3]Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, UK

Background: Over 80% of patients who present for bariatric surgery are female, 66% of whom may be of child-bearing age (Welbourn et al, 2014). Current advice suggests patients should not conceive for at least a year after surgery (ACOG, 2009). Contraceptive advice is thus an important aspect of patient care, but little is known about the knowledge base of MDT members. This study questioned MDT members on their ability to provide contraceptive advice and need for further education.
Methods: Using the membership database, BOMSS members were sent an on-line questionnaire using Survey Monkey. Potential respondents were given two weeks to complete a 13-question survey, which aimed to establish baseline data of current knowledge regarding existing contraceptive practices among UK bariatric surgical teams.

Results: Questionnaires were sent to 382 BOMSS members, from whom 64 responses were received. Most responses were from surgeons (23), dietitians (22) or nurses (12). The majority had been practicing for less than 6 years. Most (97%) accepted responsibility for patient education, but felt the nurse was best placed to deliver this. Despite the recognised need to educate patients, no leaflets or posters were available in over 93% of bariatric clinics. 78% of respondents were ignorant of appropriate contraceptive methods for morbidly obese women, 56.5% were not confident discussing contraception, 83% wanted better communication with contraceptive providers and 87% wanted more training. The most popular methods of professional education were publication of guidelines, education at BOMSS meetings and on-line learning.
Conclusion: Bariatric surgical teams do not feel confident in discussing contraception with patients. There is a recognised need for education and training of MDT members in giving contraceptive advice to morbidly obese, reproductive-aged female patients. This requires improved communication between bariatric teams and contraceptive providers. The use of internet disseminated guidelines, on-line learning modules and specific BOMSS- accredited educational meetings is recognised.

E05

Dr Who? How safe are YOUR patients following discharge from the bariatric service. Is current GP follow up following bariatric surgery safe and appropriate? Medium term review following gastric bypass surgery.

Simon Walker[1], Maureen Boyle[2], Kamal Mahawar[2], William Carr[2], Shlok Balupuri[2], Peter Small[2], Neil Jennings[2]

[1]University of Newcastle upon Tyne Medical School, Newcastle upon Tyne, UK, [2]Sunderland Royal Hospital, Sunderland, UK

Background: In the NHS two years after bariatric surgery patients are discharged to their GP for lifelong follow up. Lifelong vitamin, calcium and B12 supplementation is recommended following gastric bypass surgery (LRYGB) as well as an annual weight check. We aimed to assess if patients maintained sustained weight loss following discharge from the bariatric centre. We also examined compliance with recommended dietary supplementation following discharge back to the GP.
Methods: We contacted the GP of all patients (n = 104) who had a LRYGB more than 5 years ago. The GP was asked to provide the most recent weight and list all current medications.
Results: All GP's were contacted. Three patients had moved from the area and four GP's refused to participate in the study leaving 97 (94%) for analysis. Median length of follow up was 6.3 years. Total weight loss and percentage excess weight loss were as follows, 2 year (32.2%/64.5%), 3 year (31.1%/62%), 4 year (27.3%/55.8%) and 5 year (27.9%/55.9%). 32 patients (33%) had not been weighed in the last year, 22 patients had not been weighed in two years and 15 patients had never been weighed. Only 38 patients (40%) were receiving regular B12 injections and only 57 patients (61%) were receiving appropriate calcium supplementation.
Conclusions: Medium term weight loss results are excellent; mirroring the weight loss reported in Swedish Obesity Study. However a significant proportion of patients are receiving inadequate follow up from their GP's. One third of patients are not attending their GP for an annual weight check and some patients have never been weighed by their GP. Almost half of all patients are receiving inadequate nutritional support following gastric bypass. Should patients receive medium term review in a bariatric centre or should GP's be doing more?

E06

Why can't they go home? Reasons for delayed discharge despite an enhanced recovery programme following Laparoscopic Roux en Y Gastric Bypass (RYGB)

David Griffith, Omer Eltayeb, Jeremy Gilbert, Allwyn Cota, Michael Clarke, Ian Finlay

Royal Cornwall Hospital, Truro, Cornwall, UK

Background: In 2012 our Unit adopted an enhanced recovery policy, aiming to discharge all RYGB patients within 24 hours; subsequently achieved for 81% of patients. This study aimed to identify reasons why the remaining 19% were discharged at >24 hours after admission.
Methods: We reviewed prospectively collected data of all patients undergoing RYGB between Jan' 2012 & Oct' 2014. For all cases the same operative technique and enhanced recovery protocol was used. Patients were discharged when they satisfied specified criteria. Demographic details and length of inpatient stay were identified. The case notes of patients with an inpatient stay of greater than 24 hours were reviewed to determine reasons for delayed discharge.
Results: Of 252 RYGB procedures, 205 patients (81%) were discharged within 24 hours. 47 patients (19%) had an inpatient stay of more than 24 hours (median 2 days, range 2–14). The early and delayed discharge groups were similar in terms of age (mean 45.7 vs 47.9 years, p = 0.17), BMI (mean 46.1 vs 47.7 Kg/m^2, p = 0.12) & sex distribution (females 171 vs 40, p = 0.17). Number of comorbidities differed significantly (mean 2.6 vs 3.4, p = 0.005).
Reasons for delayed discharge were: pain n = 13 (27.7%), tachycardia >100 n = 12 (25.5%), nausea / vomiting n = 10 (21.3%), hypoxia / apnoea n = 6 (12.8%), bleeding n = 5 (10.6%), hypertension n = 2 (4.3), hypotension n = 1 (2.1%), dysphagia n = 1 (2.1%), urinary retention n = 1 (2.1%), anxiety n = 1 (2.1%) and living alone n = 1 (2.1%).
Conclusion: Two of the commonest reasons for delayed discharge (pain, nausea / vomiting) are potentially preventable with modifications to our enhanced recovery protocol. There is therefore the potential to reduce delayed discharges by around 50%. All other identified causes (including a greater number of comorbidities) are not preventable; therefore a small number of delayed discharges remain inevitable.

E07

A survey of GPs regarding current knowledge and post-operative care of bariatric surgical patients

Jack Allport[1], Hannah Adams[2], Shameen Jaunoo[2], Sarah Toomey[3], Sarah Cairney[2]

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Background: NICE estimates that 257,000 people in England could qualify for and accept bariatric surgery. Less than 9,000 procedures were carried out in 2010–2011. Primary care is the access point to these services for patients and provides critical support afterwards. For the NHS to meet the increasing demand for bariatric services primary care involvement is crucial.
Methods: We undertook a questionnaire of GPs to assess their knowledge of the referral process for bariatric services and post-operative care. GPs throughout the West Midlands, North East, North West and South West of England were invited to answer an electronic questionnaire.
Results: 2417 GPs responded to the questionnaire. 67% thought surgery appropriate for patients with BMI 35 and related co-morbidities whereas only 46% thought it appropriate for BMI > 50 and lower rates for lower BMIs or the absence of co-morbidities. 49% felt the tiered service delayed surgery while 2/3 supported centralisation of services. 90% of GPs felt ill equipped by current guidelines to manage post-operative patients and only 30% knew of guidelines regarding blood tests. Questions relating to specific post-operative management had a large spread of answers (liquid diet requirement: 2 weeks 23%, 4 weeks 37%, 8 weeks + 39%. Appropriate post-operative medication forms: liquid 76%, crushed 34%, chewable 24%, tablet 10%). Free text analysis showed GPs wanted more information about these patients with a preference for detailed discharge summaries, written guidelines and general obesity management study days.
Conclusion: To ensure appropriate patients have access to bariatric services, GPs need further education and guideline dissemination. The majority of GPs feel ill equipped to manage bariatric surgery patients. The importance of detailed plans in discharge letters is clear. GPs would also benefit from post-operative guidelines and overarching obesity study days

E08

Long-term impact of bariatric surgery on type 2 diabetes control and remission: A prospective population-based cohort study

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Background: Although bariatric surgery has been shown to improve diabetes control, there is limited large-scale long term data on the efficacy of this treatment. The purpose of this study was to evaluate the long-term efficacy of bariatric surgical procedures on metabolic control of obese patients with type 2 diabetes.

Methods: Using primary care electronic health records from the UK Clinical Practice Research Datalink, 803 obese participants with type 2 diabetes who received bariatric surgery (ie adjustable gastric banding (LAGB), gastric bypass (GBP) or sleeve gastrectomy (SG)) from 2002 to 2014 were selected. Non-surgical control participants were matched for age, sex, body mass index (BMI) and index year. HbA1c records and diabetes prescriptions were evaluated for up to seven years after operation. Participants were classified as in remission if HbA1c <6.5% and no diabetes prescriptions were received within one year.

Results: There were 803 obese diabetic participants who received bariatric surgery (LAGB-214; GBP- 439; and SG- 147; with three procedures undefined). The mean HbA1c declined from 8.0% before BS to 6.5% in the second post-operative year. The proportion of patients with a HbA1c <6.5% increased from 17% to 47%; and the proportion receiving no diabetes prescriptions increased from 15% to 55%. The adjusted relative rate of diabetes remission after bariatric surgery as compared with controls was 4.45 (3.41 to 5.80, P < 0.001). However, the rate of remission was lower after LAGB 2.65 (1.83 - 3.83) as compared with gastric bypass (4.91(3.76 - 6.42) and sleeve gastrectomy 5.78 (4.21 - 7.94)).

Conclusion: Bariatric surgery is associated with better metabolic control and lower diabetes drug utilisation up to seven years after the procedure as compared with control subjects. LAGB may be less effective than gastric bypass or sleeve gastrectomy.

Posters of Distinction

Thursday 22–Friday 23 January 2015

PoD01

Clinical comparison of gastrojejunal anastomotic techniques; circular stapler (CEEA 25 mm) vs. linear stapler (GIA 60 mm)

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Background: Anastomotic strictures have been identified as a complication following gastric bypass surgery, most commonly at the gastrojejunal anastomosis. Present recommendations are for a gastrojejunal anastomosis using a circular stapler (CEEA 25 mm). The aim of our study was to assess the difference in weight loss and the incidence of strictures comparing circular stapler (CEEA 25 mm) vs. posterior wall anastomosis with a linear stapler (GIA 60 mm) and anterior wall hand sewn in 2 layers using 3–0 PDS.

Method: A retrospective study of a prospective database was conducted between 2010 and 2013 who underwent a roux-en-Y gastric bypass (RYGB) at a level 4 bariatric centre in the UK. 150 patients were randomly selected; 100 patients in the CEEA 25 mm group and 50 patients in the GIA 60 mm group. Patient demographics, oesophagogastroduodenoscopy (OGD) and additional interventions reports were collated from electronic records, pathology and radiology results. All patients were followed up for gastrojejunal anastomotic complications.

Results: From the 150 patients, (n = 16, 16%) patients presented with a symptomatic strictures in the CEEA 25 mm group and (n = 0) in the GIA 60 mm group ($\chi^2 = 8.955$, $p = <0.0028$). All strictures in the CEEA 25 mm group were successfully treated with the first OGD balloon dilation ($\chi^2 = 16$, $p = <0.0011$). There was no statistically significant difference in weight loss between the CEEA 25 mm and GIA 60 mm groups at 6 (23.7% vs. 22.6%, $p = <0.454$), 12 (32.2% vs. 33.34%, $p = <0.598$) and 24 (31.48% vs. 32.15% $p = <0.822$) months respectively.

Conclusion: Literature recommendations are for a circular stapler (CEEA 25 mm) for a gastrojejunal anastomosis. Our study shows that the incidence of gastrojejunal strictures is significantly reduced with a posterior wall anastomosis with a linear stapler (GIA 60 mm) and anterior wall hand sewn in 2 layers using 3–0 PDS in comparison to the circular stapler (CEEA 25 mm) technique with no impact on the overall weigh loss at 6, 12 and 24 months.

PoD02

Provision of bariatric surgery with regards to socio-economic deprivation in the West Midlands

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Background: New innovations diffuse at variable rates in different subpopulations, with early adopters normally of higher socioeconomic status. Minimally invasive bariatric surgery is a relatively new innovation, increasingly used in the management of severe obesity. This study aims to compare the uptake of laparoscopic bariatric procedures with regards to regional socioeconomic deprivation, using cholecystectomy as a novel baseline comparator.

Methods: Data on all laparoscopic bariatric and cholecystectomy procedures conducted between 2003–2013 were collected. For each procedure, postcodes of residence were used to obtain the middle layer super output areas (MSOAs) from which referrals were made. The index of multiple deprivation (IMD) for 2010, a measure of socioeconomic status, was also obtained for each MSOA. The regional IMD was calculated by taking the average IMD of all the MSOAs situated in the area.

Results: 6104 cases were included in the study (4221 cholecystectomies and 1883 bariatric operations). The median IMD score for laparoscopic cholecystectomy was 37.24, and had not significantly changed over the study period (p = 0.07). There were no significant differences between the median IMD for cholecystectomy and that of the local region (37.24 vs. 37.42) Relative to cholecystectomy, the median IMD for bariatric procedures was significantly lower at 25.59 (P < 0.01). The yearly median IMD for bariatric patients was lower than that of cholecystectomy patients (p < 0.001 in 2005, p = 0.02 in 2012) but increased over the study period (p = 0.05).

Conclusion: Early uptake of bariatric surgery was from more affluent areas, with later adoption taking place in more deprived areas. However patients undergoing bariatric surgery remain significantly less deprived than those undergoing cholecystectomy. Laparoscopic cholecystectomy appears to be independent of area of residence or deprivation, and reflects the deprivation score of the local region.

PoD03

Reductions in plasma endocannabinoids following bariatric surgery in morbidly obese females with impaired glucose homeostasis

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Background: The endocannabinoid system (ECS) may play a role in the pathophysiology of diabetes and obesity. Our aim was to examine changes in circulating endocannabinoids (ECs) in relation to weight loss from bariatric surgery and the association between plasma ECs and markers of insulin resistance before and after bariatric surgery.

Methods: A non-randomized prospective study of 20 participants undergoing bariatric surgery. Measurements of fasting and 2-hour plasma glucose, lipids, insulin, C-peptide and measures of insulin sensitivity were recorded pre-operatively and 6 months post-operatively. Plasma ECs (N-arachidonyl ethanolamine (AEA), N-palmitoyl ethanolamine (PEA), N-oleoyl ethanolamine (OEA) and 2-arachidonyl glycerol (2-AG)) were measured.

Results: Gender-specific analysis of ECs revealed significant differences in levels of circulating AEA, OEA and PEA pre-operatively with significant reductions in levels of AEA and PEA in females post-operatively. Pre-operatively, AEA had significant correlations with 2-hour plasma glucose ($r = 0.55$, $p = 0.01$), HOMA-IR (Homeostatic model assessment- Insulin resistance) ($r = 0.61$, $p = 0.009$) and HOMA %S (Insulin sensitivity) ($r = -0.71$, $p = 0.002$). OEA significantly correlated with weight ($r = 0.49$, $p = 0.03$), waist circumference ($r = 0.52$, $p = 0.02$), fasting insulin ($r = 0.49$, $p = 0.04$) and HOMA-IR ($r = 0.48$, $p = 0.05$). PEA had positive correlations with plasma LDL-C ($r = 0.44$, $p = 0.04$) and fasting insulin ($r = 0.49$, $p = 0.04$) and 2-AG had a negative correlation with fasting glucose ($r = -0.59$, $p = 0.04$).

Conclusion: Significant gender differences exist in circulating levels of ECs in morbidly obese subjects. Females show significant changes in AEA and PEA after surgery induced weight loss. Specific correlations exist between different ECs and markers of obesity, and insulin and glucose homeostasis pre-operatively. This suggests that metabolic and clinical measures of obesity are associated with circulating ECs, but with significant weight loss, this association is no longer present.

PoD04

Gastric bypass vs POSE: a comparative metabolic study

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Background: Although Primary Obesity Surgery Endoluminal (POSE) is a well-described endoscopic plication procedure to treat obesity there is limited data on the efficacy of this treatment on metabolic function. The purpose of this study was to compare the metabolic impact of POSE with Roux en Y gastric bypass (RYGB) in the short and medium term.

Methods: 6 Female obese subjects who underwent POSE and 10 female obese who underwent RYGB were studied during fasting, 30 and 120 minutes following a 400 Kcal meal, before and one week, two and six months after surgery. Plasma insulin, glucose, lipids, GLP-1, leptin and adiponectin were determined by ELISA.

Results: Both groups showed significant weight loss at one week and two months following the procedures, however at six months the percentage of excess weight loss was greater in RYGB group (53.47 ± 14.06) as compared to POSE group (26.6 ± 16.6). Leptin levels were decreased significantly in both groups following the surgery. Fasting insulin and glucose were not significantly changed in POSE patients whereas in RYGB, basal insulin levels showed a significant drop at one week, two and six months following surgery. Postprandial GLP-1 at 30 minutes showed significant elevation in RYGB patients at one week, two and six months but not in POSE.

Conclusion: Although both POSE and RYGB result in short-term weight loss, RYGB cause early post-operative and medium-term metabolic changes which are not seen following POSE. In addition RYGB has a better weight loss profile at six months as compared to POSE.

PoD05

Management of the bariatric gallbladder. Is there a need for special treatment?

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Background: Gallstones in the obese are more common and associated with increased morbidity. There are higher rates of gallstone formation following weight loss and metabolic surgery (WLMS). Three main approaches have developed regarding the management of bariatric cholelithiasis. 1) The prophylactic approach: concomitant cholecystectomy during weight loss surgery. 2) The selective approach: concomitant cholecystectomy in those with proven gallstones, regardless of symptoms. 3) The delayed approach: cholecystectomy after WLMS for symptomatic patients only. The latter approach can be combined with the use of the prophylactic ursodeoxycholic acid to try to prevent the incidence of cholelithiasis. The objective of this study was to review the literature and analyse the efficacy, cost and complications associated with each of these approaches with or without the use of ursodeoxycholic acid.

Methods: A systematic literature search using OvidSP and Pubmed search engines was performed.

Results: 13 retrospective studies and 1 meta-analysis were analysed to evaluate each of the three main strategies. Concomitant cholecystectomy is associated with increased postoperative complications and prolonged hospital stay. Cholecystectomy seems safer in the leaner patient following WLMS. Post WLMS cholecystectomy rates are approximately 6%, marginally higher than the non-obese population with gallstones.

Five prospective, randomized trials were analysed with regards to ursodeoxycholic acid. These show that ursodeoxycholic acid reduces the incidence of scan-detected gallstones compared to placebo when administered to patients following WLMS. It is not clear if its use reduces the complications of gallstones or cholecystectomy rates. A recent study showed that routine use of post-operative UDCA was not cost-effective.

Conclusion: Concomitant cholecystectomy is not warranted in patients undergoing WLS. The safest and most cost-effective approach is to treat the bariatric patient as the non-bariatric patient. Further studies are needed to determine the optimum management strategy, especially in preventing cholelithiasis after WLMS.

PoD06

A case of anorexia with extreme weight loss after a sleeve gastrectomy due to excessive PYY secretion. Improvement of symptoms with octreotide therapy.

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Background: A 22 years old lady, patient A, underwent an uneventful sleeve gastrectomy (SG) (weight 135.6 kg, BMI 47 kg/m^2). Her post-operative course was unremarkable for the first 8 months. She then developed severe nausea and food aversion, resulting in a drastic energy intake reduction and excessive weight loss (2 years post-SG weight = 56 kg, BMI 19.4 kg/m^2, percent excess weight loss = 126). She underwent extensive investigations and organic and psychological causes of her anorexia were excluded. Adequate symptom control could not be achieved and she required nasogastric feeding. A random gut hormone assessment revealed very high circulating PYY levels (1200 pg/ml).
Methods: A 3-hour oral mixed test meal study after an overnight fast was performed to assess circulating PYY levels and subjective appetite. This test was repeated after 14 days treatment with octreotide 0.1 mg subcutaneously three times a day. PYY levels were compared to samples from 10 post-SG control patients.
Results: Compared to control SG patients, patient A's fasted and nutrient-stimulated PYY plasma levels were extremely high and coupled with high subjective nausea scores (PYY levels (pg/ml): A fasted = 793, A 60 minutes post-meal = 1326, control SG patients fasted = 88 ± 11 and control SG patients 60 minutes post-meal = 207 ± 28. On octreotide treatment patient A's fasted and nutrient-stimulated PYY levels were suppressed (PYY levels [pg/ml] fasted = 227 and nutrient-stimulated = 299) and her appetite markedly increased and nausea decreased. She has remained on octreotide treatment with complete resolution of her nausea and is consuming regular meals and gaining weight (61 kg).
Conclusion: Gut hormones, and in particular PYY, are thought to mediate the reduced appetite observed following gastric bypass and SG, with poor weight-loss responders exhibiting lower PYY levels compared to good responders The biological mechanisms underlying the variable gut hormone response post-surgery remain to be elucidated. Our case highlights that patients may develop an exaggerated PYY response leading to nausea and excessive weight loss. Assessment of circulating gut hormones should be included in the work-up of patients presenting with nausea and excessive weight loss following bariatric surgery.

Posters

P07

Indications for conversion from to laparoscopic Sleeve Gastrectomy to laparoscopic Roux-en-Y Gastric Bypass: lesson learnt.

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Background: Laparoscopic Sleeve Gastrectomy (LSG) was initially employed by most Centers as one-step approach with conversion to Roux-en-Y Gastric Bypass (LRYGBP) as definitive procedure to prevent or treat weight regain. More recently conversion LSG to LRGYGBP has been considered as revisions for failed LSG. Severe reflux (GORD) after LSG has also been advocated as indication for revision.
Methods: A retrospective analysis of conversions LSG to LRYGBP of patients, undergone LSG between January 2007 and December 2012 was performed. Reason for conversions were weight related with/without associated GORD.
Results: A total of 20 out of 469 LSG patients (4,3%) required conversion to LRYGB after an median period of 34 (17–56) months following SG. Four patients had additional ring inserted and were excluded from this study. GORD improved after conversion in all patients. Median E%WL was 26.59% (6.89–58.89%) at conversion time; %EWL achieved after conversion peaked at 6 months (46.7%) and weight was progressively regained at 1 (46.2%) and 2 years (35.3%)
Conclusion: Conversion LSG to RYGB is rarely required (less than 5% of LSG patients) and is recommended only for GORD. Weight loss medium- term outcomes after conversion are disappointing.

P08

Childhood Characteristics of Adults Undergoing Bariatric Surgery

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Background: To determine whether or not patients undergoing bariatric surgery had weight related issues during childhood that predisposed them to morbid obesity as adults.
Methods: Single centre prospective study between July and September 2014. Patients undergoing bariatric surgery during this period were asked a number of questions relating to their childhood (0–18 years): Q1. Were you overweight? Q2. Did you experience weight related bullying? Q3. Did you have an eating disorder? Q4. Did you suffer from weight related depression? Q5. Did you have overweight parents? Q6. Did you have overweight siblings? The same questions were put to a control group of volunteers who were not undergoing bariatric surgery. Demographic data were calculated on both groups; sex, age, and BMI. Statistical analyses were performed using an unpaired t-test and a Fisher's exact test.
Results: There were 32 individuals in the bariatric surgery group and 34 in the control group. The groups did not differ in the proportion of women 25/32 vs 27/35, $p = 1.0$, nor mean age 44 yrs (bariatric surgery) vs 43 years (control), $p = 0.617$. As expected, the mean BMI of patients in the bariatric surgery group; 46.9 (44.6–49, 95% CI) was significantly higher than in the control group; 27 (25.7–28.6, 95% CI), $p < 0.0001$. The proportion of patients who were overweight in childhood was significantly greater in the bariatric surgery group (17/32) than in the control group (6/35), $p = 0.0041$, odds ratio 5.478. The overall incidence of weight related bullying in overweight children was 48% (11/23). Weight related bullying was significantly more common in the bariatric surgery group (10/32) than in the controls (2/35), $p = 0.0096$. Patients undergoing bariatric surgery as adults were no more likely to have had overweight parents, overweight siblings nor a history of childhood eating disorders compared to controls.
Conclusion: Overweight children are five times more likely to become morbidly obese adults, but this observation appears to be independent of a history of obesity in their close family members and was not associated with a higher prevalence of childhood eating disorder. 48% of overweight children are subjected to bullying because of their weight.

P09

A Nationwide Study in Venous Thrombo-embolism Prophylaxis for Bariatric Surgery–Notable Variance in Practice!

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Background: The National Institute for Health and Care Excellence class bariatric patients as high risk from venous thrombo-embolic (VTE) events during any surgery and as such recommend prophylaxis. However, there is little guidance on what prophylaxis should be given specifically for patients having bariatric surgery. This study therefore looked at how different NHS trusts in the country approached this and what similarities could be seen between them.
Methods: NHS trusts throughout the country and in particular their bariatric nurse specialists were asked to answer a questionnaire regarding VTE prophylaxis in bariatric surgery.
Results: 20 responses from NHS trusts were used to collate information. 3 different VTE prophylatic drugs were used by the trusts. 40% use Enoxaparin, 45% Dalteparin and 15% Tinzaparin. 60% of trusts based the dose of the drug on patient's weight whilst 40% did not. Further disparity continued in the duration of drug prophylaxis ranging from <48 hours to 4 weeks post operatively. Furthermore the range in duration of thrombo-embolic deterrent (TED) stockings being used was from <48 hours to 6 weeks. However some similarities were seen with 100% of centres using TED stockings and 90% using calf pumps intra-operatively. Cases performed by each trust ranged from approximately 150 to 500 per year. 3 VTE events were noted by staff in the last 5 years.

Conclusion: The results demonstrated much variation between NHS trust's approaches to VTE prophylaxis for bariatric surgery, possibly due to the lack of clear national guidelines. However, there were very few VTE events noted despite a high case load. We would recommend BOMSS into considering the research and production of national guidelines.

P10

'Young' bariatric surgeons have surgical outcomes comparable to their 'More Mature' colleagues

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Background: Young bariatric surgeons may worry about the impact of surgeon specific outcome data and how this may affect their carrier progression, revalidation and patient selection. IFSO defines young bariatric surgeons as those less than 45 years of age. The recently published Surgeon Specific Outcome Report (SSOR) makes it possible to compare results between 'Young' and 'More mature/older' bariatric consultant surgeons practicing in the NHS (England).
Methods: Available data from SSOR for each individual bariatric surgeon was collated on a spreadsheet. Surgeons were divided into 2 groups depending on their primary medical qualification date. This was obtained from the GMC website. Bariatric surgeons, currently under 45 years, have to have graduated at or after 1992. The results of the 2 groups were analysed.
Results: 66 surgeons who contributed to the SSOR database were identified as 'Young surgeons. There was no significant difference in the median number of operations (48 vs 69 p:0.08), length of stay (band, bypass, sleeve) and BMI (48 kgm^{-2} vs 50 kgm^{-2} p: 0.25) between the two groups. 'Young' surgeons did not differ from their 'More Mature' colleagues with regards to the percentage of revisional procedures undertaken (2.5% vs 2.4% p: 0.47). There was a significantly higher percentage of Obesity Surgery Mortality Risk score (OSMR) 0 and 1 gastric bypass patients being performed by the young surgeons (46.5% vs 40% of bypass workload p: 0.02). This was not significantly different for patients undergoing sleeve gastrectomy (LSG). There was no statistical difference in the percentage of OSMR 4 and 5 having LSG or bypass in either group.
Conclusion: Currently in England there is no evidence of major differences between the 'Young' and 'More Mature' groups in terms of outcomes after bariatric surgery according to SSOR.

P11

Medium term results with Primary Obesity Surgery Endoluminal (POSE)

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Background: Although POSE is a well described endoscopic definitive or bridging treatment for obesity management, there is limited data regarding the medium term outcomes of this approach. We prospectively reviewed a single surgeon experience of this procedure in order to assess the medium term efficacy of this technique.
Methods: Data was analysed from a prospectively collated database of a single surgeon between March and October 2011. The patient demographics, co-morbidities procedural complications and medium term weight loss profile were then analysed.
The mean follow up period of the cohort was 40 months.
Results: A total of 12 (11 female, 1 male) patients successfully underwent POSE procedure as a day case and were discharged post operatively with no observed complications. 25% of all patients had obesity related co-morbidities (Hypertension, Hypercholesterolemia).The mean age was calculated as 55(SEM 2.9): female 51.1, male 45. The pre-procedure BMI of the cohort was *34.9 kg/m^2 (SEM 1.3)*. BMI at 3 month follow-up had *decreased to 32.8 $kg.m^2$* (SEM 1.56). Results at 40 month follow up indicate a subsequent cohort BMI *increase to 33.1 $kg.m^2$* (SEM 1.79). Clinical follow-up found that one patient subsequently sustained a myocardial infarction; one was diagnosed with Parkinson's disease; no patients were converted to a further weight loss procedure and all patients were alive.
Conclusion: POSE is a safe weight loss device with good efficacy and user safety profile with reasonable short term outcomes but disappointing long term results.

P12

Correlation of endoscopic and radiographic evaluation of patients who have presented symptomatically following laparoscopic sleeve gastrectomy.

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Background: Although Laparoscopic sleeve gastrectomy (LSG) has proven to be a well-established and effective treatment for morbid obesity, it also can be associated with a range of complications in the follow up period.
Upper GI endoscopy is one modality that can be used to investigate the group of patients while radiological modality such as barium swallow is another alternative.
In certain bariatric units, both methods are used for a comprehensive investigation of patients who re-present symptomatically, but whether there is evidence to suggest a good correlation between the 2 modalities is rather limited.
Methods: We identified all patients between January 2011 and October 2014, who re-presented in the outpatient setting following sleeve gastrectomy and were investigated by upper GI endoscopy and barium swallow.
Results: Thirty six patients presented with upper GI symptoms and consequently underwent upper GI endoscopy and barium contrast study post sleeve gastrectomy. Our group demographics were twenty three female and thirteen male patients, with a mean age of 49 (range, 23–70 years). Indications were dysphagia in 11, dyspepsia in 8, nausea and vomiting in 2, abdominal pain in 6 , odynophagia in 1, melaena in 1 , anaemia in 2 and weight gain in 5 patients.
On examination, by endoscopy 5 patients were discovered, to have kinking of the sleeve, in which 4 patients had confirmed findings upon barium swallow. Three patients were detected to have gastric dilation, 2 of whom had confirmed findings upon barium swallow. Furthermore the barium swallow detected 2 oesophageal strictures and 2 gastric strictures, but only half were detected by endoscopy. Finally the endoscopy detected 6 patients with gastritis and 1 patient with a gastric ulcer. The barium swallow alone detected 3 patients with oesophageal dysmotility.
Conclusion: Endoscopy and barium swallow studies demonstrated a good correlation in detecting kinking of the sleeve and gastric dilation.

P13

Survey on Technical Aspects of Laparoscopic Sleeve Gastrectomy at IFSO World Congress 2014- An International Snapshot

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Background: Laparoscopic sleeve gastrectomy has gained worldwide popularity as a primary procedure for morbid obesity and is considered to be safer in high risk patients. Currently there are no UK guidelines regarding the technical aspects of the procedure and a previous BOMSS survey highlighted the variations in the surgical technique among surgeons. The objective was to ascertain variations in intraoperative techniques among surgeons in the international bariatric community.
Methods: A questionnaire survey enquiring about the technical aspects of the procedure was circulated among surgeons at the 19th World IFSO Congress.
Results: 119 responses were received. 66% (n = 79) of surgeons routinely explored for a hiatus hernia. 67% (n = 80) fixed the defect and continued with a

sleeve gastrectomy whilst 9% (n = 11) opted to do a gastric bypass. 24% (n = 28) did not answer. Those who proceeded with a gastrectomy, 89% (n = 94) repaired the hiatus hernia with cruroplasty alone while the remaining 11% (n = 12) used a biological or synthetic mesh and 2 did not answer. 92% (n = 109) of respondants used a bougie, 5% (n = 6) used a midsleeve tube and 3% (n = 4) did not answer the question. 87% (n = 102) of surgeons used a bougie ranging between 32 F and 38 F, whilst 13% (n = 15) opted for a bougie above 40 F and 2 did not specify. Resection distances from the pylorus ranged from 2 to 10 cm. The average distance was 6cms with 75% (n = 88) leaving between 4 and 5cms, 7% (n = 8) resected from 7 cm and 12% (n = 15) from 2 cm from the pylorus. Two surgeons placed either a fixed or adjustable band around the sleeve. 34% (n = 40) of surgeons did not re-inforce the staple line and of those that did 48% (n = 57) oversew the staple line compared to 16% (n = 19) that used a biological method of staple line enforcement. 2% (n = 3) did not answer the question.

Conclusion: There are large variations in the intraoperative techniques amongst surgeons in the international bariatric community. Pre-operative work up varies between centres with some routinely investigating for hiatus hernias. Some surgeons considered a hiatus hernia a contra-indication to performing a sleeve gastrectomy and opted to perform gastric bypass. Non responders to questions may reflect individual surgical practice/preference. In view of emerging evidence, a standardised approach regarding the technical aspects of the procedure needs to be adopted to enable comparison of patient outcomes.

P14

Tier 4 outpatient follow up of sleeve gastrectomies versus gastric bands: Could follow up be rationalised?

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Background: Sleeve gastrectomy has become widely adopted across the UK in the past 5 years. There is good evidence of its equivalence in terms of medium term outcome when compared with gastric band.

Successful outcomes for gastric band patients requires intensive follow up in the clinic. As the proportion of bands performed in bariatric centres has decreased, the need for this intensity of follow up and who performs it requires evaluation as this approach may no longer remain necessary for patients to achieve successful outcomes.

Methods: We performed a retrospective analysis of all primary restrictive bariatric procedures carried out in our centre between June 2010 and December 2013. Consecutive patients were identified using our in house database; this was cross referenced with hospital correspondence records to establish postoperative follow up attendances prior to discharge from Tier 4. 1 patient was excluded due to pregnancy during follow up.

Results: 56 gastric bands and 26 sleeve gastrectomies were performed during the study period.

The median number of follow up appointments for gastric bands was 8 (range 2–22) with median duration 12 months (5–48). The median number of follow up appointments for sleeve gastrectomy was 7 (1–13) and duration 6 months (3–20). Median attendances to surgical clinics were 2 (0–13) for bands and 2 (1–8) for sleeves, median attendances to Nurse Specialist or Dietician clinics were 5 (1–19) for bands and 4 (0–9) for sleeves.

Conclusion: Sleeve gastrectomy patients require much shorter follow up prior to discharge but we review them more frequently. This could potentially be rationalised, reducing the burden on both patient and healthcare provider.

P15

Early effect of bariatric surgery on urogenital function in morbidly obese male patients: preliminary observations

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Objective: Obesity is a complex psycho-social and endocrine disorder that has a negative impact on urinary and erectile function. Previous studies have investigated the effect of bariatric surgery on urogenital function at late time points postoperatively. The aim of this study is to assess the early effects of bariatric surgery on urogenital function, before maximum weight loss is achieved.

Design: A prospective study investigating the urogenital function in obese men aged > 30 years with a body mass index (BMI) of >35 kg/m^2 undergoing bariatric surgery. The assessment was performed using two questionnaires: International Index of Erectile Function (IIEF) and International Prostate Symptom Score (IPSS) which were completed before the surgery and four weeks, three months and six months after the surgery. The influence of bariatric surgery on urogenital function and BMI were analysed using non-parametric tests for paired samples.

Results: 50% of the patients who have completed the study so far (total18) reported erectile dysfunction before the operation (EF domain <25). BMI decreased gradually after the surgery reaching significance at 3-months post-op ($P < 0.05$). There was a progressive improvement in EF score after the surgery reaching significance at 3-months post-op (Delta 3.7, $P < 0.05$). A trend towards improvement in the IPSS score was also observed which reached significance at 3-months post-op (Delta 2.9, $P < 0.05$). Fasting blood glucose and HbA1c improved at 1 month post-op ($P < 0.05$).

Conclusion: The preliminary findings suggest that bariatric surgery leads to improvement in erectile and urinary function within 3-months post operatively. The results also show that glycaemic improvement preceded weight loss and urogenital function recovery.

P16

Assessing quality of life after bariatric surgery.

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Background: Obesity is becoming a world wide pandemic. In 2008 the World Health organisation reported that 35% of the population over the age of 20 were overweight. More than half a billion adults worldwide are obese. In England in 2012, 62% of adults were overweight or obese. Obesity is associated with the metabolic syndrome, which includes diabetics, non-alcoholic fatty liver disease, Sleep apnoea etc. These conditions impose a substantial financial burden on the NHS. Therefore obesity surgery is cost effective in the long term, whilst providing a significant improvement in the health and quality of life of patients. In this study we assessed impact of bariatric surgery on Quality of Life.

Methods: The SF36 Heath Survey is a validated assessment tool and has traditionally been used for routine monitoring and assessment of care outcomes in adult patients with various adaptations as appropriate. This assessment tool was adapted to allow for assessment in changes experienced by patients' pre and post surgery. Questionnaires were mailed to patients that had bariatric surgery during 2013. These were analyzed by splitting them into 8 health concepts physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions and by scoring responses as per RAND 36-Item Health Survey 1.0.

Results: 158 surveys were sent to patients that had bariatric surgery. A total of 61 surveys were returned. 19 men and 42 women, mean age 52 (range 23–72 years), mean BMI before surgery 47 (range 27.7-66), mean BMI at 6 months post op 36.2 (range 21.7-51.3) and at 1 year post operation mean BMI 32.3 (range 24.8-45.7). In each of the 8 domains there had been a statistically significant quality of life improvement post operatively in patients who had under gone either Sleeve gastrectomy or Roux-en-Y gastric bypass procedures.

Conclusion: Obesity surgery had a significant impact on quality of life. Given the reduction in co-morbidities and improved physical and mental health bariatric surgery provides a cost effective treatment to deal with the continuing rise in obesity worldwide.

P17

Current status of preoperative oesophago-gastro-duodenoscopy (OGD) in Bariatric NHS units–A BOMSS Survey

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Background: Value of preoperative OGD (p-OGD) in patients undergoing bariatric surgery is still unclear. Since all bariatric procedures modify the stomach in different ways, the question arises whether there is a rational for including it routinely in the preoperative pathway.
Methods: To assess the current status of p-OGD in UK, we sent to BOMSS' members a Survey on pre-operative evaluation of patients, focusing on the role of p-OGD. 49 NHS bariatric units (in excess of 5000 patients estimated caseload/year) answered.
Results: From this Survey emerged that 44 units (90%) include OGD in the preoperative workout, routinely or selectively. After OGD 25 units (51%) changed operative plans, because of: peptic ulcer (46%), hiatus hernia (43%), Barrett's esophagus (32%) or GIST (25%). Only 2 units (7%) found incidental GI cancer. When specifically asked, p-OGD was believed to be essential in patients with family history of gastrointestinal cancer (61%), pernicious anemia (57%) and reflux symptoms (54%). 5 units (10%) considered p-OGD completely unnecessary. Only 11 units (25%) wouldn't be able to accommodate routine p-OGD in all patients.
Conclusion: Most units value p-OGD, either selectively or routinely, in preparation for bariatric surgery. However it seems to be a discrepancy on the specific risk factors involved in selection process. National guidelines on p-OGD are advocated.

P18

Laparoscopic Sleeve Gastrectomy Using a Synthetic Bioabsorbable Staple Line Reinforcement Material: 6 year outcomes

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Background: Gastric leak after laparoscopic sleeve gastrectomy (LSG) is a serious complication. Surgeons have investigated staple line reinforcement to reduce gastric leaks after LSG. Long-term outcomes of LSG and complication rates specifically associated with synthetic bioabsorbable reinforcement materials are lacking in the literature. To present the outcomes including complication rates, resolution of obesity-related comorbidities and long-term weight loss of LSG when using a synthetic bioabsorbable reinforcement material of the staple line.
Methods: This is a single-institution, prospectively recorded and retrospectively reviewed study of 236 patients. Data from all patients undergoing LSG between December 2007 and May 2013 was collected via medical records and telephoning.
Results: The total complication rate was 8.4% (20/236), with the staple line leak rate at 1.3% (3/236). The mean postoperative BMI at 1 year, 2 years, 3 years, 4 years, 5 years, and 6 years was 39.2 ± 8, 38.6 ± 8, 39.9 ± 9, 39.9 ± 10, 41.5 ± 10, and 43.3 ± 8, respectively. The mean % excess weight loss at 1 year, 3 years, and 6 years was 49.0 ± 19, 52.3 ± 29, and 43.4 ± 20, respectively. The resolution rates for all patients were 78%, 60%, 81%, and 96% for hypertension, hypercholesterolaemia, diabetes mellitus type 2 and obstructive sleep apnoea, respectively.
Conclusion: LSG using the synthetic bioabsorbable reinforcement material shows good outcomes with respect to low complication rates, resolution of comorbidities and long-term weight loss. LSG, using this material, is safe and efficacious.

P19

An exploration of sleep experience in weight management patients.

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Background: "Food For Thought" (FFT) is a weight management programme which has been running since 1999. The group is suitable for those with a BMI > 28 with co-morbidities and a BMI >30. It is a 12 week programme held in community venues or hospitals. The team comprises of Dietitians, Physiotherapists and Psychologists.
Many group members of FFT reported sleep concerns/problems. Studies suggest that there may be a link between sleep duration and weight gain. As a result, it was decided to examine the experience of sleep within group members and explore the usefulness of incorporating a sleep hygiene topic within the FFT programme.
Methods: 227 respondents completed a questionnaire which explored their experience of sleep. The form was completed by those attending an introductory seminar for the FFT programme.
Results: 46% of respondents (94 participants) experienced difficulty falling asleep. 65% of respondents (133 participants) reported disturbed sleep which involved wakening several times per night. The results suggested that it be would be beneficial to continue the sleep hygiene section within the FFT programme.
Conclusion: Sleep is not only an important aspect of weight management as it regulates hormones associated with appetite and satiety but it is a fundamental aspect of general wellbeing e.g. mental health, functioning and quality of relationships. Sleep hygiene will continue to be included within the FFT programme.

P20

Is initial BMI an independent predictor of balloon results? Single centre 4 year experience

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Background: Intra-gastric balloon insertion involves endoscopic placement of a deflated balloon. It is subsequently inflated in order to aid in weight loss by decreasing gastric volume. It is often used to further reduce weight prior to a definitive bariatric procedure.
Methods: Data on all patients who underwent intra-gastric balloon insertion over a 4 year period between June 2009 and June 2013 in a single centre, was retrospectively collected. 75 patients were identified.
Results: Of the 75 patients; male: female ratio was 41:34, age range 66–22; mean 44.7: ST dev 11.2. 5 patients had early removal due to intolerance or complication. For the purposes of this review we divided the remaining 70 patients into 3 BMI catagories achieving 6 month completion with balloon: 19 patients in the BMI (40–50), 28 patients in the BMI (50–60), 23 patients in the BMI (over 60).
BMI over 60 group: 6 month mean weight loss: 17 kg.
6 month BMI reduction: 6 points.
6 month % excess weight loss: range −9.8–42.1; Mean 12.2: St dev 11.1
BMI 50–60 group: 6 month mean weight loss: 15.3 kg
6 month BMI reduction: 5.1 points
6 month % excess weight loss: range −0.8–49.4; Mean 14.9: St dev 12.9
BMI 40–50 group: 6 month mean weight loss: 14.3 kg
6 month BMI reduction: 5 points
6 month % excess weight loss: range 6.4–45.7; Mean 23.2: St dev 11.9
Conclusion: A consistent loss of BMI was seen in all groups (5–6 BMI points).Higher BMI patients did not lose more weight than lower BMI groups. The 40–50 BMI group did show a more significant % excess weight loss compared to the over 60 BMI group (paired t-test $p = 0.0031$). We did not find initial BMI as an independent factor for outcome.

P21

Competencies and skills for the bariatric multi-disciplinary team: a systematic review

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Background: Variability across services and lack of clarity on competencies and skills required for roles within the multidisciplinary bariatric surgery team.
Methods: Joanna Briggs Institute (JBI) systematic review methods were employed. Databases searched: CINAHL; Medline; IngentaConnect; ERIC; PsycINFO. Papers selected were independently reviewed by two reviewers using JBI critical appraisal tools.
Results: Thirty six papers reviewed. Literature largely consisted of text and opinion and lacked evaluative content. Staff in each role should achieve a minimum set of competencies for delivery of safe, meaningful and appropriate patient care. Key competencies are: sensitive person centred approach; pre-operative assessment; understanding of procedures; identification of complications; follow up care; safe moving and handling. Specialist skills identified for surgeons, psychologists, anaesthetists and managers.
Conclusion: Competencies and skills identified seem essential and there may be areas in which educational interventions should be developed, but the conclusion remains tentative because of lack of empirical research.

P22

Severe symptomatic vitamin A deficiency in Duodenal switch surgery patients - Revisited

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Background: Duodenal switch surgery (DSS) and associated weight loss in morbidly obese patients improves metabolic and cardiovascular risk profile significantly. However prevalence of vitamin A (Vit A) deficiency postoperatively can be as high as 69% after 4 years.
Methods: Case review of 4 DSS patients symptomatic of severe Vit A deficiency (Normal level 1.05-3.84 umol/L, who were refractory to high doses of oral vitamin A supplementation and were given lipid based Vit A infusions (3–5), was done.
Results:

Abstract P22 results Patient details (M/F)	Symptoms	Vit A level on oral VitA high dose	Vit A level post lipid based VitA infusions	Clinical outcomes
29 yr, M	Mild visual symptoms	0.56	0.79	Improved energy levels
43 yr, F	Night blindness	<0.40	2.26	Marked visual improvement
41 yr, F	Night blindness	<0.40	0.70	Marked visual improvement
61 yr, F	Low energy levels	<0.40	0.67	Improved energy levels

Conclusions: Severe Vit A deficiency refractory to oral vitamin A supplementation can lead to night blindness and permanent visual impairment if left untreated. Parenteral lipid based Vit A infusions should be considered as an effective treatment protocol in such patients. Increasing the length of common channel to increase Vit A absorption might be required in patient with severe Vit A deficiency. Regular monitoring of Vit A levels post DSS in blood samples protected from light is warranted as Vit A degrades on exposure to light.

P23

The role of Laparoscopic Sleeve Gastrectomy as a treatment for Morbid Obesity; Review of outcomes in a consecutive series with a minimum follow-up of 2 years.

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Background: Global prevalence of obesity has soared. Where lifestyle and medical treatments has failed, laparoscopic sleeve gastrectomy (LSG) is increasingly regarded as the primary surgical restrictive procedure for extreme morbid obesity.
Following the introduction of LSG to institutions, we assessed objective outcomes of this surgery.
Methods: A review of all LSG cases was performed to determine the effect of percent excess body weight loss (%EBWL) and the effect on Body Mass Index (BMI), Hypertension and Diabetes. Intra and post-operative complications were also reviewed.
Results: 108 consecutive patients with a minimum 2 years follow up were included. Average age was 45 (24–71). 71.3% were female and 28.7% male. After one year, median %EBWL was 55.7(21.3–50.3) with a drop in median BMI of 16Kg/m^2 (6.5–32.6). After two years, median %EBWL was sustained at 54.7 (21.5 - 102.4), with median the drop in BMI remaining low at 18 kg/m^2 (4.5–36.8). Of the patients who had pre-existing hypertension (43.3) 83.3% of patients had their medications reduced and 38.1% of the total had their antihypertensive medications discontinued. Pre-existing diabetes was identified in 32%. Post-operatively, 96% of these patients had their medications reduced, while 71% had their medications discontinued. There was no mortality. Post-operative complications were identified in 9% of patients of which 5 required prolonged and/or repeat admissions. The complication rate was highest in the first 30 patients.
Conclusion: LSG is a proven management approach for morbid obesity and associated co-morbidities. Resorting to surgery for morbid obesity requires careful preparation, to ensure optimal outcome in suitable candidates. Although associated with significant risks, our results indicate that the benefits of LSG outweigh these risks. We have experienced a learning curve with regard to post-operative complications. Our results are comparable to international standards.

P24

Intra-gastric balloon outcome data: a single centre 4 year experience

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Background: Intra-gastric balloon insertion involves endoscopic placement of a deflated balloon. It is subsequently inflated in order to aid in weight loss by decreasing gastric volume. It is often used to further reduce weight prior to a definitive bariatric procedure.

Methods: Data on all patients who underwent intra-gastric balloon insertion over a 4 year period between June 2009 and June 2013 in a single centre, was retrospectively collected. 75 patients were identified.
Results: Of the 75 patients; male: female ratio was 41:34, age range 66–22; mean 44.7: ST dev 11.2. We recorded weight associated pre balloon co-morbidity was as follows; Diabetes 52 patients (69%), Hypertension 48 (64%), Sleep apnoea 53 (71%)
Pre balloon initial weight (kg): range 101.8-280; Mean 182.3: St dev 37.8.
Pre balloon BMI: range 39.8-87.1; mean 60.1: St dev 10.1
Pre balloon % excess weight (kg): range 39.4–197.2; mean 106.6: St dev 33.5
5 balloons were removed early, 3 due to intolerance and 2 due to complications. Of the 70 patients progressing to 6 month balloon removal the outcome data was as follows:6 month weight mean weight loss 26.5 (kg), 6 month mean BMI loss: 8.8
6 months % excess weight loss: range –9.77–59.64; mean 15.7: St dev 12.3
25 patients had no further procedure (36%). 2 patients proceeded to having a second balloon insertion (3%). 43 patients underwent definitive bariatric surgery (61%); 20 roux-en- gastric bypass, 20 vertical sleeve gastrectomy, 1 adjustable gastric band.
Conclusion: Mean BMI loss in the surgery group was 6.3 points. Mean BMI loss in the no surgery group was 3.0 points. This was statistically significant (paired t-test) p = 0.00036.
Failure to progress from balloon to definitive operation correlates with poorer BMI loss.

P25

Deprivation and Bariatric Surgical referral patterns within Scotland

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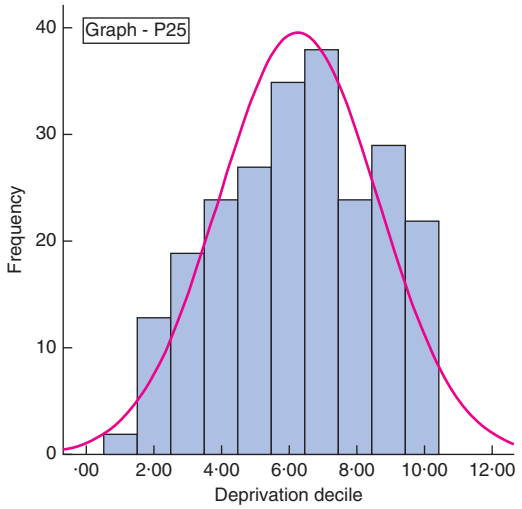
Background: It is well known that lower socio-economic status and more deprived populations have an increased prevalence of obesity [1]. It is currently unclear as to whether deprivation is associated with referral rates to bariatric services. We aimed to identify the Scottish referral pattern to our bariatric surgical practice by identifying the geographical distribution and deprivation status of patients referred.
Methods: A prospective database of all bariatric patients within our department was interrogating using postcodes to identify Scottish Index of Multiple deprivation (2012). Our practice accepts referrals Scotland wide offering intra-gastric balloon, gastric banding, bypass, sleeve gastrectomy and revisional surgery.
Results: From 2004 to present we have 239 patients who have underwent or are this year awaiting a bariatric procedure within our unit. Mean age was 45 years. The commonest procedure was primary gastric bypass (n = 87, 36.4%). The referral origin for all patients was spread across 9 health boards with the majority of patients residing within Grampian (n = 160), the second most common referral board was Highland (n = 25) and the least referrals from Tayside (n = 1), Borders (n = 4) and Forth Valley (n = 5). There was a scew towards referral from the least deprived areas. Postcodes were used to categorise datazones ranging from Decile 1 (most deprived) to Decile 10 (least deprived). Only 2 referrals were categorised as Decile 1 with 29 and 22 referrals from Decile 9 and 10 respectively. See graph.
Conclusion: We identified that there is a trend for referral of the least deprived in Scotland to our unit for bariatric surgery despite evidence to suggest obesity is more prevalent in the most deprived. Such areas may benefit from targeted awareness campaigns regarding bariatric services in order to increase bariatric surgery referrals and target the global obesity crisis.

[1] Strategic Review of Health Inequalities in England Post-2010 (The Marmot Review), 11 February 2010



P26

The real costs of treating early post-operative leaks following sleeve gastrectomy procedures

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Background: One of the most clinically significant complications of sleeve gastrectomy is leakage along the staple line. Management and treatment of leaks varies depending on time of leak onset, severity of the leak, and on clinician treatment preference. Our previous work noted the NHS costs of treating leaks, in the current study we examine the true costs in self-pay hospitals.
Methods: A cost model was developed to estimate the combined cost of different procedures used to diagnose, manage, and treat a patient with a post-operative early leak. Procedures included diagnostic tests, drainage, stenting, surgical repairs, IV antibiotics, IV feeding, hospital bed days on ward and ICU. Costs were from WPA Reference Costs (2014) & BNF (2014).
Results: Three scenarios of early septic leaks were compiled, based on current treatment pathways previously established by our leak study panel. The financial cost of treating a patient with each scenario was modelled. Results are in the table below.

Scenario	Financial cost of treating patient [SELF-PAY]	Financial cost of treating patient [NHS]
Leak -treated with early surgical repair, washout, drainage, IV antibiotics & feeding, 2 weeks hospital stay	£29,212	£14,543
Leak -cannot be repaired surgically, washout, drainage, IV antibiotics & feeding, treated with repeated stenting, 6 weeks hospital stay	£63,567	£35,639
Leak - cannot be repaired surgically, washout, drainage, IV antibiotics & feeding, multiple stents, healing unsuccessful, requires salvage bypass, 12 weeks hospital stay	£115,009	£68,980

Conclusions: The true costs of treating a post-operative leak is significant and wide ranging. The cost is underestimated if NHS tariffs are used as these under represent real costs. At a time of considerable financial pressures, avoiding such leaks would be substantially cost-saving.

P27

Is marginal ulceration more common after Mini Gastric Bypass?

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Background: Marginal ulceration at the gastro-jejunal anastomosis remains an uncommon but significant complication of bypass surgery which can be resistant to conservative therapy. The Mini Gastric Bypass (MGB) has become more popular due to its lower incidence of complications and weight reduction comparable with Roux-en-Y Gastric Bypass (RYGBP). We sort to compare the incidence of marginal ulceration for MGB and RYGBP at our high volume UK centre.
Methods: Review of a prospective database of both MGB and RYGBP focusing on marginal ulceration and associated risk factors–age, sex, current smoking history, diabetes, NSAID usage.
Results: Since 2012 117 MGB procedures have been performed; median age 44 year (20–69), 24.7% (29) had diabetes. This compares with over 1400 RYGBP since 2007 and 831 since 2012; median age 45 years (18–75). Three (2.6%) of MGB patients developed symptomatic marginal ulceration one requiring urgent surgery for perforation (20+/ day smoker). One other had pouch inflammation, one requiring a diagnostic laparoscopy. With RYGBP 3.1% (35/1144 analysed to date) developed ulceration, five resulting in gastro-gastric fistulae and two in perforation.
Conclusion: The incidence of marginal ulceration after MGB is comparable to that for RYGBP. Smoking is a risk factor and we advocate cessation prior to bariatric surgery

P28

Impact of a prolonged pre-operative low calorie diet in the super-super obese- a prospective study

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Background: Patients with super-super morbid obesity (BMI greater than 60) pose a particular technical challenge in the performance of bariatric surgery due to increased intra-abdominal adiposity and liver enlargement. In an attempt to address these technical issues a number of pre-operative interventions have been proposed such as intra-gastric balloon placement. In our institution we prospectively introduced the 'POWER' diet, a prolonged low energy pre-operative diet for all super-super obese patients. We prospectively evaluated the effectiveness of this regime.
Methods: From September 2013- September 2014 all super –super obese patients placed on the waiting list for bariatric surgery at our institution underwent a pre-operative POWER diet. This consisted of either 4 to 5 daily meal replacement milkshakes per day giving 800-920 kcal/day or 2 to 3 milkshakes with a single meal giving daily intake of 700-775 kcal/day. The demographic data including age, co-morbidity and weight at referral were prospectively collated as was planned bariatric procedure, weight loss after POWER diet and actual procedure performed.
Results: 15 patients with BMI > 60 were enrolled on and completed the POWER diet. Two patients subsequently declined surgery and one other had their procedure cancelled on the day of surgery due to failure to stop anti-coagulation therapy. The remaining 12 patients lost on average 13.0 kg, representing 11.8% of excess body weight before their surgery. Two patients pre-operatively elected for sleeve gastrectomy (SG), one for conversion of gastric band to gastric bypass and nine planned to have gastric bypass (GB). Eleven patients underwent the planned procedure while in one case, an intra-operative decision was made to perform SG rather than GB. No procedures were abandoned due to technical difficulties.
Conclusion: The POWER diet is well tolerated, provides excellent pre-operative weight loss and aids the technical performance of bariatric surgery in super-super obese patients.

P29

"Peritoneal seal technique" to prevent port site complications after Sleeve Gastrectomy

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Background: Trocar entry points are a source of significant pain and port site hernias after minimally invasive bariatric surgeries. Radially expanding ports without fascial closures have reduced analgesic requirements. But in sleeve gastrectomies, 15 mm port sites are still closed with "tight deep fascial sutures" which contribute to pain and delayed recovery. Trocar site hernias are reported to occur in 0.6% of cases from 15 mm ports after bariatric surgeries. We describe a novel peritoneal closure technique which could prevent these complications.
Methods: We looked at all the sleeve gastrectomies performed by a single surgeon from January 2011 to May 2013 from a prospectively maintained database and notes.
The technique: Peritoneal closure is performed after extraction of sleeve gastrectomy specimen from 15 mm port site in right upper quadrant. Betadine soaked gauze is used to seal the open would from the external surface.
Ultrasound energy device, either Thunderbeat™ (Olympus Medical Systems) or Harmonic Scalpel™ (Ethicon Endosurgery), Sonicision™ and Ligasure ™ (Covidien) were used. Peritoneum opening including a small amount of extra peritoneal fat is grasped between the jaws and a minimum mode is used in Harmonic Scalpel /Sonicision and the seal mode in Ligasure/Thunderbeat instruments to obtain adequate seal. Three to four bursts of energy were used to obtain complete closure of the peritoneum. Pneumoperitoneum is decompressed under vision to keep the seal intact. Skin closure is performed with clips or monocryl absorbable subcticular sutures.
Results: This technique was used in most of the 160 sleeve gastrectomies performed from January 2011 to May 2013. A few cases where suture closure was used required additional analgesic requirement in the post-operative period, and this was not observed in patients who had the peritoneal seal closure. There were no port site hernias on clinical examination during the follow up.
Conclusion: "Peritoneal seal technique" offers an economic, safe and quick alternative to suture closure of fascial defects after sleeve gastrectomies. In addition it reduces the incidence of hernias and port site pain and promotes speedy recovery.

P30

The Effects of Immunonutrition in Upper Gastrointestinal Surgery: A Systematic Review and Meta-analysis

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Background: The beneficial of immunonutrition on overall morbidity and mortality remains uncertain. We undertook a systematic review to evaluate the effects of immune-enhancing enteral nutrition (IEN) in upper gastrointestinal (GI) surgery
Methods: Main electronic databases [MEDLINE via Pubmed, EMBASE, Scopus, Web of Knowledge, Cochrane Central Register of Controlled Trials (CENTRAL) and the Cochrane Library, and clinical trial registry (ClinicalTrial.gov)] were searched for studies reported clinical outcomes comparing standard enteral nutrition (SEN) and immunonutrition (IEN). The systematic review was conducted in accordance with the PRISMA guidelines and meta-analysis was analysed using fixed and random-effects models.

Results: Eighteen RCTs with a total of 1785 patients (897 IEN and 888 SEN) were included in the final pooled analysis. IEN significantly reduced post-operative wound infection (risk ratio (RR) 0.60, 95% confidence interval (CI) 0.43 to 0.84). Although, the combined results showed that IEN had a shorter hospital stay (RR −2.68, 95% CI −3.63 to −1.72), but there was significant heterogeneity observed across these studies. There was no statistically significant benefit on other post-operative morbidities of interest (e.g. anastomotic leak) and mortality.
Conclusions: IEN decreases wound infection rates and reduces length of hospital stay. It can be recommended as routine nutritional support in all upper GI surgery.

P31

Experience of Orbera and Medsil gastric balloons

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Background: Gastric balloons are used in our unit to facilitate pre-operative weight loss in super super obese patients. A procurement cost rationalisation decision was made to change gastric balloon type from Orbera to Medsil in October 2013. This study compares outcomes between the devices in our unit.
Methods: All patients undergoing gastric balloon placement in our unit between October 2011 and March 2014 inclusive were identified from a prospective database. Standard demographics, morbidity and weight loss were recorded. Statistical analysis performed using Mann–Whitney and Chi-Square tests.
Results: 45 patients had lignocaine throat spray facilitated day case balloon placement, 33 Orbera & 12 Medsil. Median ages were 45(27–62) years Orbera & 41(28–58) years Medsil, $p = 0.34$. 52%(n = 17) Orbera vs. 83%(n = 10) Medsil were female, $p = 0.07$. Median weight at insertion was 179(137–270) Kg Orbera & 160(145–208) Kg Medsil, $p = 0.21$. Median BMI at insertion was 61(56–75) Kg/m^2 Orbera & 62(60–71) Medsil, $p = 0.76$. Balloons were placed for a median 6(1–8) months Orbera & 6(0–8) months Medsil, $p = 0.51$. Median weight loss was 22(5–58) Kg Orbera & 19(5–37) Kg Medsil, $p = 0.10$. Two Orbera & one Medsil devices were removed early for intolerance, $p = 0.79$. 3%(n = 1) Orbera (GA to complete removal) vs. 25%(n = 3) Medsil (GA to complete removal, GA removal from jejunum, lost device) patients experienced significant morbidity. A further 25%(n = 3) of Medsil devices ruptured during removal.
Conclusion: Although not a randomised study the patients receiving a Medsil balloon appear similar to the historic cohort with an Orbera device. Both devices achieved similar weight loss. The Medsil device complication rate was higher with 50% of patients experiencing device deflation or a complicated removal process. The Orbera balloon has been used again since April 2014.

P32

Do away days have a beneficial effect on the working of bariatric teams?

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Background: The successful management of bariatric patients requires input from a variety of healthcare professionals. These professionals would need to work in a harmonious and co-operative manner to achieve the optimal results for the patient. In the commercial sector, professional relations within teams are established and improved upon by arranging away days where members also have the opportunity to interact on a social basis. In this study, we look at whether away days have a similar beneficial effect on the working of the multidisciplinary bariatric team.
Methods: Questionnaires were sent out to members of bariatric teams in the North East of England which evaluated individual attitudes and opinions of away days and how they influenced subsequent team cohesion. The results were collated and dichotomous variables were analysed using a two tailed Z test to ascertain statistical significance.
Results: 45 responses from consultant surgeons, anaesthetists, registrars, nurses, dieticians, secretaries and other healthcare professionals were obtained. While 64.4% of respondents had not been on an away day before, the majority (88.9%) said they would recommend it to another colleague ($p < 0.05$). 95.5% said they would attend another away day ($p < 0.05$). The responses also favoured improved team relations (92.5%, $p < 0.05$), better team working (94.8%, $p < 0.05$) and provided an opportunity for team members to get to know each other better (95.1%, $p < 0.05$). 85.4% thought that the trust should fund atleast part of the away day ($p < 0.05$)
Conclusion: Away days have a beneficial effect on the overall working of the multidisciplinary bariatric team and lead to better relations between members on a professional and personal level. In order to improve team productivity, hospital trusts should consider funding away days. We would advocate the use of away days to promote and improve team working in bariatric multidisciplinary teams.

P33

Learning from Experience: Using data from a post–bariatric surgery follow-up study to improve clinical practice.

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Background: The clinical team were aware of a wide range of post-surgery outcomes and patient engagement. Therefore, developing an in-depth understanding of the factors contributing to this disparity was deemed appropriate for future service development. The aims were to understand patients' experiences and concerns, and establish a clear picture of outcomes in terms of weight and psychological functioning.
Method: 65 patients who had had bariatric surgery in the service between 2007 and 2011, and were a minimum 2 years post surgery, were invited to take part, of whom 27 participated (47%). Data was gathered from NHS records (percentage change in BMI) and postal questionnaires (Beck Depression Inventory (BDI), a standardised measure of emotional regulation and a post surgery concerns questionnaire developed for the study).
Results: 40.7 % of patients said they were very satisfied with the outcome of surgery, but 30% were disappointed, and 26% felt they had not had post surgery support from the MDT. There was a wide range in the percentage weight loss achieved (mean −21.87, SD 14.42) and mood (mean BDI score 20, SD 16.25). In regression, BDI scores did not predict the percentage of weight lost, however, non-acceptance of emotions was a significant predictor of weight change (adjusted r square = 0.228).
Conclusion: While many bariatric surgery patients do well, a significant minority achieve less than 10% weight loss or gain weight, and / or experience a significant level of depressive symptoms. Non- acceptance of emotions was the strongest predictor of weight loss, suggesting that patients who continue to use food as a way of regulating emotions are less likely to achieve good outcomes post surgery. This supports research linking obesity and emotional regulation. Future works should focus on exploring emotional regulation strategies in pre-surgery assessment and the potential for post surgery intervention applying third wave Cognitive Behaviour Therapy such as Acceptance and Commitment therapy (ACT). Post surgery follow-up groups have now been established applying ACT, and initial patient feedback has been overwhelmingly positive.

P34

Bariatric Surgery in County Durham then and now

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Background: County Durham is England's obesity epicentre. A single-handed consultant general surgeon performed open bariatric procedures between from 1986 to 2006. A modern service was commissioned by NHS England in 2011. This study compares historic and modern day patient outcomes.

Method: All patients undergoing bariatric surgery within what is now a single NHS trust from January 1986 to September 2014 were identified from two prospective databases. Demographic data, weight and BMI at referral, operation type, hospital stay, complication rate and mortality were compared.
Results: 48 patients underwent open vertical banded gastroplasty 1986–2006 & 305 patients underwent laparoscopic surgery October 2011-September 2014. Laparoscopic procedures were: 3%(n = 9) gastric band insertion, 53%(n = 158) gastric bypass, 42%(n = 126) sleeve gastrectomy and 2%(n = 8) gastric band removal. Median age of historic patients was 40(28–52) years vs. 48(20–69) years in modern patients. Median BMI at operation was 41(37–54) Kg/m^2 historic group vs. 47(35–65) modern group. Sex distribution was: 73%(n = 35) female historic and 76%(n = 232) female modern. Significant complications occurred in 21%(n = 10) of historic and 2%(n = 6) of modern patients. Median length of stay was 11(10–32) days historic and 2(0–35) days modern. There was a single death in the modern group (0.3% mortality).
Conclusion: Modern case volume, patient age and patient weight have increased whilst complication rates and hospital stay have fallen. The findings of this study confirm that modern laparoscopic bariatric surgery is safer and dramatically reduces bed occupancy compared to historic open practice.

P35

An Audit of Perioperative Glycaemic Control in Diabetic Patients Undergoing Bariatric Surgery

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Background: Bariatric surgery is known to rapidly alter diabetic medication requirements. However, there is an absence of guidance on perioperative glycaemic control for diabetic patients undergoing bariatric surgery. A local protocol was developed based upon preoperative rationalisation of diabetic medication, regular postoperative capillary blood glucose measurement and prompt treatment of hypo- and hyperglycaemia. In addition pre-discharge assessment and modification of diabetic medications was undertaken. An audit of the compliance with the protocol and its effectiveness in optimising peri-operative blood glycaemic control is presented.
Methods: A retrospective audit of diabetic patients undergoing bariatric surgery was undertaken. The audit standards set were: 1/ There should be 100% compliance with the protocol 2/ There should be a 0% incidence of acute diabetic complications 3/ There should be a reduction in pre-discharge diabetic medication in 100% of patients. A local bariatric surgery database identified those patients with a diagnosis of diabetes and the local audit department produced the relevant case notes. A data collection tool was devised and a single reviewer undertook review of the case notes and electronic prescribing records to collate data.
Results: 36 diabetic patients underwent bariatric surgery over a 14-month period with an average length of stay of 2.9 days. In relation to the audit standards set:
1/ There was clear adherence to the diabetic protocol in 72.2%. Due to poor record keeping, it was unknown whether the protocol had been adhered to in a further 8.3%.
2/ There was a 0% incidence of acute diabetic complications.
3/ 96.9% of those patients requiring preoperative medical management of their diabetes saw a reduction in their medication requirements at discharge. Of these, 71.9% were discharged on no regular diabetic medication.
Conclusion: Despite less than 100% adherence to this protocol, it has been demonstrated to be an effective and safe method of managing perioperative glycaemic control. Widening the application of this protocol to include intra-operative and recovery room care may further increase its effectiveness.

P36

Revisional Roux en Y Gastric Bypass and Sleeve Gastrectomy are safe and effective

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Background: Patients undergoing bariatric surgery often need further bariatric procedures during their lifetime. Such surgery where a patient who has previously had a bariatric procedure undergoes another bariatric procedure at a later date has been referred to as Revisional Bariatric Surgery. Revisional Bariatric Surgery has been under the scanner in United Kingdom lately. Questions have been raised regarding its safety and efficacy. The purpose of this study was to evaluate safety and efficacy of revisional bariatric surgery in comparison to primary bariatric surgery.
Methods: We systematically reviewed published English language scientific literature to find out all studies that directly compared outcomes with primary and revisional bariatric surgery. Since Roux en Y Gastric Bypass and Sleeve Gastrectomy comprise the vast majority of revisional bariatric procedures, our review focuses on the outcomes of Revisional Roux en Y Gastric Bypass and Sleeve Gastrectomy compared to Primary Roux en Y Gastric Bypass and Sleeve Gastrectomy respectively. Studies published in other languages, case series only describing experience with revisional procedures without any attempt at comparison, those describing revisional surgery from a non bariatric anatomy, and those that did not result in a final bariatric anatomy were excluded from the analysis.
Results: Heterogeneity amongst these studies prevented any meaningful quantitative synthesis of data. A thorough qualitative analysis of studies revealed remarkable safety and efficacy of Revisional Bariatric Surgery in comparison with Primary Bariatric Surgery with similar outcomes in terms of safety and weight loss reported in most studies. Even in those studies where revisional surgery yielded inferior weight loss, the final weight loss observed was satisfactory compared to the prevailing norms.
Conclusion: Outcomes from Revisional Roux en Y Gastric Bypass and Sleeve Gastrectomy are not inferior to outcomes seen with Primary Roux en Y Gastric Bypass and Sleeve Gastrectomy in published scientific literature.

P37

Results of a GP Survey: Raising Awareness of the Bariatric Service to Improve Appropriate Referrals

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Background: Referrals for bariatric surgery are received when general practitioners (GPs) identify patients that meet the Scottish National Planning Forum Criteria/NICE guidelines. Following triage of all new patients at the multidisciplinary team meetings, many referrals do not meet the criteria to proceed onto treatment. Therefore we aimed to explore GPs' knowledge of the local bariatric service and referral criteria in order to learn how to improve the number of appropriate referrals for consideration of surgery.
Methods: All 284 GPs within the region were invited to complete an online survey. The respondents were assessed for current awareness of the bariatric service and latest referral criteria. An optional comments box was included into the survey. In conjunction, we examined our electronic database for outcomes of all referrals received from July 2012–July 2014.
Results: Forty seven automated email replies were received from GPs unavailable due to annual/maternity leave or retirement. Taking this into account, 67 (28.3% response rate) surveys were received. Although 95.5% (64/67) GPs were aware of the service, only 62.7% (42/67) GPs had made at least one referral. Whilst 32.8% (22/67) respondents were aware of the service but had yet to make a referral, 35.8% (24/67) respondents declared they were unsure of the referral criteria. Up to 50.8% (34/67) of respondents would like further information and 20.9% (14/67) would prefer a visit to the practice from the bariatric team. 44.4% of GPs commented that the referral criteria were too "restricting". Since

July 2012, there have been 272 referrals of which 55% ($n = 150$) were accepted and 38% (57/150) have undergone surgery; a further 4% (6/150) are scheduled for surgery. A significant 37% ($n = 100$) of GP referrals did not fulfil the criteria.
Conclusion: Our evaluation has shown there is a demand for further information regarding the bariatric service and current guidelines for patient referrals. As such, electronic and printed information leaflets have been distributed and visits to GP practices are planned. Through these means we hope to improve awareness of both the bariatric service and referral criteria, with the aim of increasing the number of appropriate referrals.

P38

Thromboprophylaxis in bariatric surgery in the UK - a national survey

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Background: Obesity is associated with an increased risk of venous thromboembolism (VTE). Incidence of VTE following bariatric surgery varies from 0.3-2% for pulmonary embolism (PE) to 1-3% for deep vein thrombosis (DVT). Currently, there is no consensus on the optimal VTE prophylaxis in the morbidly obese. The aim of this survey was to assess consistency in practice across UK bariatric centres.
Methods: An online questionnaire was distributed to Consultant Bariatric Surgeons and Anaesthetists practising in 47 NHS and various private bariatric centres within the UK. The 12-question survey investigated each hospital's thromboprophylaxis protocols for bariatric surgical patients. Duplicate replies from the same centres were excluded from the analysis.
Results: Responses from 27 bariatric centres were obtained (22 NHS, 5 private). 81.5% of centres declared use of a specific thromboprophylaxis protocol for morbidly obese patients. 74% used that protocol in bariatric surgical patients, 37% in morbidly obese patients undergoing non-bariatric surgical procedures and 14.8% in non-surgical morbidly obese patients. Most of bariatric centres introduce thromboprophylaxis measures pre-operatively in the form of anti-embolic compression stockings (TEDs, 77.8%), low molecular weight heparin (LMWH, 44.4%) and/or intermittent pneumatic compression devices (IPC, 33.3%). All surveyed hospitals use IPC intraoperatively with 96.3% also applying TEDs and 48.1% administering LMWH during surgery. All centres use both TEDs and LMWH postoperatively. Additionally, 96.3% advocate early postoperative mobilisation and adequate hydration, and 59.3% continue using IPC. 66.7% use a standard dose of prophylactic LMWH whereas 33.3% use a weight–adjusted regimen. Thromboprophylaxis with LMWH is extended beyond the in–hospital stay in 55.6% of centres, where it lasts between 7 and 42 days after discharge. 37% of bariatric units supply patients with TEDs on discharge (for 7 to 42 days). For other medications, 37% of centres allow postoperative use of NSAIDS and an equal percentage of hospitals forbid them. Oral anticoagulants are stopped preoperatively (at a variable time) with 74% of bariatric units administering bridging therapy with LMWH. The remaining centres do not routinely replace oral anticoagulation with LMWH or do not have a policy for this. 96.3% stop use of Clopidogrel and 51.9% withhold Aspirin in the perioperative period for a variable length of time. All centres reported a low postoperative DVT rate of 0–1%, whereas bleeding-related mortality was also low at 0–0.2%.
Conclusions: The majority of the bariatric centres surveyed use a specific protocol for VTE prophylaxis in morbidly obese patients. There is consistent use of both LMWH postoperatively as well as mechanical thromboprophylactic devices intra- and immediately postoperatively across the UK. However, a large variation exists in the dose and duration of use of LMWH and TEDs following discharge from hospital. There is no uniform practice in modifying use of oral anticoagulation and antiplatelet medication in the perioperative period. The results of our survey highlight the need for national guidelines on thromboprophylaxis in bariatric patients to ensure consistent best practice across the UK.

P39

An mHealth based pre-operative education and support platform for bariatric patients–Defining user specifications

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Background: Last year more than 5000 bariatric operations were performed in the United Kingdom (UK) and this number is increasing year on year. In preparation for surgery patients are assessed by a multidisciplinary team of healthcare professionals, each providing necessary education. Effective pre-operative education enables patients to actively participate in decision-making regarding choice of surgery and is critical to the consent process. However, current education processes are lacking and, despite the benefits of information technology platforms, the majority of education is still delivered verbally or in printed form. Since the majority of bariatric patients possess smartphones we are supporting the development of an mHealth (mobile health) app based education platform to prepare patients for bariatric surgery.
Objectives: To establish user specifications for an mHealth education platform.
Methods: This single centre study was composed of 2 parts; 1) a structured observational study of current pre-operative education - two experts in user centred design followed patients along the pre-operative pathway and made structured notes regarding education processes and tools used. 2) An interview based study - 20 semi-structured interviews (10 clinicians and 10 patients) were thematically analysed.
Results: The majority of pre-operative patient education was delivered verbally or through printed documents and technology was rarely used. Four key problem areas were identified around current education delivery; 1) time constraints, 2) variable individual patient needs, 3) lack of patient engagement, 4) concerns around the quality of information. User specifications from information technology to address these problem areas were elicited and used to devise a conceptual framework to guide development of our mHealth education platform.
Conclusion: A team of mHealth academics, behavioural scientists, healthcare professionals, and app designers are currently developing the mHealth education platform according to the identified user specifications and conceptual framework. The platform focuses on 5 key areas; 'discover', 'healthy living', 'diary', 'pathway', 'contact'.

P40

Surgeons should not routinely bypass more than 200 cm of small bowel during gastric bypass for morbid obesity

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Background: There is currently no consensus on small bowel length bypassed during performance of gastric bypass. Indeed some surgeons recommend using longer limb lengths for heavier patients. Such recommendations are based on the presumption that bypassing longer lengths results in superior weight loss outcomes. Since previous studies have not found a correlation between body weight and total small bowel length, one wonders if bypassing longer limbs depending on patient weight is safe. The purpose of this study was to evaluate usefulness of bypassing longer lengths of small bowel during gastric bypass, and also establish a safe upper limit for small bowel lengths that can be bypassed.
Methods: We searched PubMed to identify all those studies from published scientific literature where authors have compared different limb lengths in gastric bypass. We further examined studies that have measured the total small bowel length to find out the lower range of small bowel length in obese patients. Since it is widely understood that a common channel of less than 1.0 meters results in significantly higher malnutrition rates, we used the smallest small

bowel length in obese patients thus obtained to ascertain a safe upper range for bypass of small bowel that can be recommended for all patients.
Results: Our review reveals that increasing limb lengths to beyond 2.0 meters has little benefit in terms of weight loss for patients with a Body Mass Index of < 50 and only modest benefits for super obese. A total of 8 studies were identified where authors clearly described total small bowel length in 756 obese patients. The smallest recorded small bowel length in these patients was 302 cm. Presuming that a common channel of at least 1.0 meter is required to avoid significant protein calorie malnutrition, it yields a safe upper limit for small bowel length that can be bypassed in all patients to be nearly 200 cm.
Conclusion: We recommend that surgeons do not routinely bypass more than 200 cm of small bowel during gastric bypass. Longer lengths of small bowel should only be bypassed in association with measurement of total small bowel length.

P41

The Revisional Bariatric Surgery Experience in a Single NHS Tertiary Centre

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Introduction: Bariatric surgery is the only effective treatment for the maintenance of long term weight loss in the morbidly obese. As the bariatric surgery becomes more prevalent, this is associated with a larger population with poorer outcomes some of which require revisional surgery. This has an impact on surgical resources. This audit aims to determine the volume and pattern of revisional bariatric surgery in a NHS tertiary centre.
Method: A retrospective analysis of all patients with revisional bariatric surgery at a single centre in a 10 year period.
Results: 49 patients (16.6%), out of 295 bariatric procedures, underwent revisional surgery. The mean age was 44.4 years (19–68) and mean BMI of 37.1 (24–51.9) at the time of revisional procedure. Of those, 42 (85.7%) were females. Thirty nine cases (79.6%) were performed electively. Forty five (91.8%) were performed using laparoscopic technique, 3 (6.1%) as open procedures and 1 (2%) laparoscopic converted to open. The majority of cases, (34, 69.4%), were revisions of gastric bands. Of those, 18 (51.4%) had their band removed, 9 (25.7%) immediately revised to Gastric Bypass (GBP), 4 (11.4%) had GBP performed after a gastric band removal and 4 (11.4%) had their band replaced. There were 10 (20.4%) Vertical Banded Gastroplasties (VBG) revised to GBP. Three (6.1%) GBP revisions, 1 sleeve gastrectomy revised to GBP and 1 gastric plication revision. The commonest indication for revising a gastric band was slipped bands (9, 30%), there were also 8 cases (26.7%) of infected band systems, 7 (23.3%) band erosion, 4 (13.3%) band intolerance, 1 (3.3%) fractured band and 1 failed weight loss. VBG revisional cases were indicated for stenosis with pouch dilatation in 5 cases (50%), VBG intolerance in 3 (30%), 1 staple line dehiscence and 1 case for failed weight loss. The 3 GBP revisions were due to stricture formation, poor intake and malnutrition and intolerance causing dysphagia.
Conclusion: There is a significant number of admissions for revisional bariatric surgery and this should influence the resource planning.

P42

Retrograde jejuno-jejunal intussusception two years after laparoscopic Roux-en-Y gastric bypass in a pregnant patient

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Background: Intussusception of the small bowel after Roux-en-Y gastric bypass for morbid obesity is a rare but recognised post-operative complication. If left untreated, it can lead to obstruction and perforation or ischaemia of the affected small bowel and can be potentially life-threatening. We describe our experience of this in a pregnant woman and summarise the current literature on this feared complication.
Method/Results: A 32 year-old-woman, 17 weeks pregnant, presented on the general surgical take with a one-day history of severe, colicky abdominal pain. She had had an uncomplicated laparoscopic Roux-en-Y gastric bypass for morbid obesity three years previously. In view of the pregnancy, initial imaging was an ultrasound scan of the abdomen; this suggested a short segment of dilated small bowel, consistent with intussusception. This was confirmed with an urgent MRI scan and she was taken for diagnostic laparoscopy by the bariatric surgeons, where a retrograde jejuno-jejunal intussusception of the common channel, through the J-J anastomosis into the biliary-pancreatic limb was found. It was irreducible laparoscopically, therefore an upper midline laparotomy was performed. The affected jejunum was not viable, so it was resected and the anastomoses refashioned. The patient made a full recovery and the baby remained healthy on subsequent ultrasound scans.
Conclusion: Intussusception of the small bowel through the J-J anastomosis is a rare complication after gastric bypass surgery and has been reported in over 200 case reports and series. The incidence varies from 0.4% to 0.9% and all previous reports cite the importance of prompt diagnosis and treatment. It behaves in a different fashion to regular intussusception as there is often no lead point and it tends to occur in a retrograde manner. The mechanism is thought to be due to stasis of the Roux limb. Virtually all patients received imaging prior to laparoscopy, in this case, a CT scan was contra-indicated which made the management of our patient challenging. This paper shows the value of high-quality ultrasonography and magnetic resonance imaging. The majority of patients required operative intervention. Intussusception should be routinely mentioned as a potential complication when taking informed consent for Roux-en-Y gastric bypass.

P43

Bariatric surgery in the age of austerity

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Background: The recent economic crisis has focused health organisations to examine the cost implications of different treatment options as a result of reduced public sector funding. Laparoscopic Sleeve Gastrectomy (LSG) is one of the most common bariatric surgical procedures in the UK. We investigated the consumable costs of different approaches for LSG to highlight potential cost savings.
Methods: The costs of consumables and reusable equipment were analysed for 4 approaches of LSG using different ports. Individual items and procedure packs costs were analysed.
Results: For laparoscopic re-usable equipment, the total cost of LSG was £2374 (with a primary disposable optical port). Using semi-reusable ports, the cost was £1954. Disposable individual item purchasing costs of the procedure was £3674, however when a disposable procedure pack was used the cost was £2748. The single incision laparoscopic surgery (SILS) approach cost £3042.
Conclusion: Purchasing cheapest individual items and using re-usable equipment is not always more cost effective than procedure packs especially when instrument manufacturers offer a large discount for buying in quantity . Whichever technique and equipment is used for bariatric surgery, surgeons in the current economic climate should be aware of the costs implications of their operative strategies as highlighted in the Academy of Medical Royal College guidance (Protecting resources-promoting value).

P44

Does achieving a pre-operative weight loss target help predict success in bariatric surgery?

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Background: Many bariatric units including our own impose pre-operative weight loss targets (POWLT) upon their patients. This approach has been demonstrated to reduce complications following surgery but there is no good evidence linking POWLT to weight loss outcomes. We aim to assess if achieving our current standard of a 5Kg POWLT was associated with improved weight loss post operatively. We also aim to evaluate if switching to a 10% excess weight loss target could improve results.
Methods: We analysed 515 consecutive cases (137 LSG, 406 LRYGB) comparing patients who did or didn't achieve a 5 Kg POWLT. Percentage excess weight loss (%EWL) and success of surgery (Achieving >50%EWL) were analysed. The same comparison was made for patients using a POWLT of 10% of their excess weight at presentation.
Results: LRYGB- No difference in %EWL was observed for a 5Kg POWLT or 10% EWL target at two years post procedure. Achieving 10%EWL target was associated with increased success rate at two years ($P = 0.045$).
LSG–Successful achievement of either a 5Kg POWLT or 10%EWL target was associated with significantly increased %EWL and successfully surgery at two years post procedure. For both procedures weight loss immediately leading up to surgery appeared to be more important.
Conclusions: In our hands our current standard of 5Kg POWLT demonstrated little difference in post-operative results for gastric bypass patients. Pre-operative weight loss appears more important in predicting outcome for patients undergoing sleeve gastrectomy. If POWLT are to be used asking patients to lose a percentage of their presenting weight is a more robust way of setting a target.

P45

Surgical learning curve with laparoscopic Mini Gastric Bypass (LMGB)

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Background: Any new surgical procedure has its technical complexities leading to a learning curve. Laparoscopic bariatric surgery needs advanced skills. Roux-en-Y Gastric bypass (LRYGB) is the gold standard procedure worldwide. LMGB has been increasingly performed worldwide with over 6000 procedures reported. We analyzed the operative time and safety of this procedure in hands of surgeons in one unit, who were already performing LRYGB.
Method: A total of 116 LMGB were performed in our unit since Oct 2012. The first 3 procedures performed by an expert from outside, with different consultants assisting him, were excluded. Of the 113 procedures, operative time data was available for 100 cases from the hospital computerized records. Bleeding, leak rate, 30-day complication rates and mortality data was obtained from our prospective database. We compared our operating time with that of others in literature.
Results: Five different consultants performed 18, 27, 29, 17, 9 procedures respectively. The mean operative time (MOT) was 77.6, 102, 88.4, 102, 84 minutes(m) respectively. The MOT for all the procedures was 90.8 m. Rutledge et al in his series of 2410 pts had MOT of 37.5 m. Noun et al has MOT of 89 minutes(1000 patients). Lee et al has MOT 112.2 m (820 patients). Piazza et al (197 patients) had MOT of 120 m. Carbajo et al had MOT of 93 min for 209 patients. The post-operative leak rate, bleeding, 30-day reoperation and mortality rate in our cohort was 0%. The patient characteristics, co-morbidities and total body weight loss were comparable to literature. Several patients originally planned for LRYGM underwent LMGB in this series for technical ease.
Conclusion: Experienced bariatric surgeons can quickly master the LMGB which has similarities to the gold standard LRYBG. As the LMGB has one less anastomosis the learning curve will be shorter. A shorter operative time may be of interest to hospital management and theatre planning.

P46

To evaluate the effect of Bariatric Surgery on morbidly obese patients with Type 2 diabetes mellitus.

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Background: The aim of our study was to examine the impact of Gastric Bypass(GB) and Sleeve Gastrectomy(SG) on an obese cohort of diabetic patients.
Methods: Patients with pre-existing type 2 diabetes who underwent GB and SG were identified from the computerised database of all bariatric procedures performed by a single surgeon. Clinical and biochemical parameters were recorded and data was analysed using SPSS ver20
Results: Between 2008 and 2013, 267 patients underwent bariatric surgical intervention. Seventy-four (28%) had pre-existing diabetes. Forty six (62%) were male. The median age was 51(33–75)yrs. The median duration of diabetes was 36(1–240) months. . Pre-operatively, 14 (19%) patients were diet-controlled, 50 (68%) were on oral anti-hyperglycaemic agents and 10(14%) were insulin treated. At a median follow-up of 13 (1–56) months BMI had fallen from $48.6 \pm 7.0\ kg/m^2$ to $34.0 \pm 5.4\ kg/m^2$ ($p < 0.001$, t-test). Sixty-six percent (33) of patients on oral hypoglycaemics had come off their medications ($p < 0.001$, χ^2) , including 71% (22/31) on single medication and 58%(11/19) on dual or more medications. Seventy percent (7/10) of patients no longer required insulin ($p < 0.001$, χ^2). The mean HbA1c fell from 62.9 ± 18.2 to 45.3 ± 11.7($p < 0.01$, t-test).
Conclusion: Bariatric surgery results in a significant improvement in Type II diabetes in the majority of patients, which far surpasses any existing medical intervention.

P47

Gallstone morbidity following Bariatric surgery: Shedding the pounds, gaining the stones

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Background: Weight loss after bariatric surgery is known to increase the formation of gallstones leading to a spectrum of clinical presentations. The aim was to ascertain the incidence and clinical presentation of symptomatic gallstone disease in patients in whom routine pre-operative screening was not performed prior to bariatric surgery.
Methods: A retrospective review of patients undergoing bariatric surgery between January 2010 and February 2013 in a Level 4 bariatric centre.
Results: A total of 757 patients (22% male) underwent bariatric surgery comprising of gastric bypass (n = 514, 67.9%), gastric banding (n = 132, 17.4%) and sleeve gastrectomy (n = 111, 14.6%). Median follow-up 3.6 years (1.7-4.9 years). Thirty eight patients who underwent cholecystectomy prior to bariatric surgery (5.0%) and 2 patients who underwent open cholecystectomy at the time of gastric bypass were excluded.
Of the remaining 717 patients, preliminary results identified 15 patients (2.1%) who underwent laparoscopic cholecystectomy following bariatric surgery between 0.3-3.4 years (median 1.1 year). Ten patients underwent elective cholecystectomy for biliary colic. Five patients underwent emergency laparoscopic cholecystectomy for severe biliary colic (n = 3), gallstone pancreatitis (n = 1), ductal stone (n = 1). No patient required conversion to an open procedure. All patients undergoing cholecystectomy following bariatric surgery were female.
Conclusion: Preliminary results showed a lower than expected incidence of gallstone disease resulting in cholecystectomy at our centre which may be a result of patients undergoing cholecystectomy out of centre. Previous open gastric bypass surgery did not result in open conversion. There seems to be a gender predisposition towards developing symptomatic gallstone disease following bariatric surgery.

P48

Outcomes of a Pre-Surgical Bariatric Tier 3 Clinic

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Background: One county in our bariatric catchment area do not fund a Tier 3 bariatric service but were referring patients to our Tier 4 service. We therefore created an in-house Pre-Surgical Tier 3 service run by members of our Tier 4 team in order to meet commissioning requirements and prepare patients for surgery.
Methods: Analysis of our prospectively collected database to assess demography, impact and outcomes of our new Pre-Surgical service.
Results: 77 people have completed the programme since January 2014. 18 were male and 16 were type II diabetics. The mean age was 44 (range 20–71). Mean initial weight was 138.3 kg (97.6 kg–278.2 kg) and BMI was 49.2 (34.5 - 94). The mean change in weight over a six month period was −0.9 kg (+13.8 to −18.8 kg). 25 patients were referred for investigations that would have otherwise delayed treatment in Tier 4.
10 patients have now had bariatric surgery, 24 patients are on the waiting list, 8 patients have been referred for further investigation from Tier 4, 1 patient was referred back to Tier 3 due to poor engagement and 34 patients are awaiting a Tier 4 MDT clinic. Initially the service was lead by a consultant endocrinologist, supported by a clinical psychologist, a specialist dietitian and our two specialist bariatric nurses. As there was very limited funding for this service we have had to streamline it and it is now run by the specialist nurses following protocols devised when the service started. No change in outcomes has so far been identified since streamlining the Tier 3 team.
Conclusion: Our experience again demonstrates that Tier 3 intervention rarely produces good weight loss in the morbidly obese. However, for 32% of patients it offered the chance to undergo investigations that may have delayed progression from the Tier 4 MDT clinic, although 13% have so far still required further tests at that stage. Our new nurse-led clinic could be a good model for other units with similar commissioning issues to follow.

P49

Safety of daycase intra-gastric balloon insertion in a bariatric service: single centre 4 year experience

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Background: Intra-gastric balloon insertion involves endoscopic placement of a deflated balloon. It is subsequently inflated in order to aid in weight loss by decreasing gastric volume. It is often used to further reduce weight prior to a definitive bariatric procedure.
Methods: Data on all patients who underwent intra-gastric balloon insertion as a daycase procedure over a 4 year period between June 2009 and June 2013 in a single centre, was retrospectively collected. 75 patients were identified.
Results: Of the 75 patients; male: female ratio was 41:34, age range 66–22; mean 44.7: ST dev 11.2. Pre balloon BMI: range 39.8-87.1; mean 60.1: St dev 10.1
Minor complications (n = 4): 3 patients had hospital admission due to early post balloon insertion nausea and vomiting, and 1 patient had hospital admission due to abdominal pain which resolved with conservative management.
Major complications (n = 4) which required removal of the balloon: 2 due to intractable nausea and vomiting, 1 due to significant aggravation of gastro-oesophageal reflux (GORD) symptoms, 1 due to nausea and vomiting plus exacerbation of existing ulcerative colitis
Serious complications(n = 3): 2 patients had a deep vein thrombosis, one with subsequent pulmonary embolism, and 1 patient had vomiting induced Mallory-Weis tear and gastric perforation requiring emergency intervention
There was no mortality in the reviewed group. There were no reported balloon ruptures during the 6month period.
Conclusion: Overall complication rate was 14.6%. Following this data it has become our practice to give all patients DVT prophylaxis with low molecular weight heparin due to the reported 2.7% DVT rate. Intra-gastric balloon is a useful tool to aid weight loss prior to consideration of a definitive bariatric procedure, however it is not without risk.

P50

What is Revisional Bariatric Surgery?

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Background: The NBSR registry report records 1104 (6%) "revisional" bariatric operations. In local discussions it became clear the definition of revisional surgery varied widely. Other large bariatric registries report revisional surgery in over 13% of cases. Despite ongoing international debate there is no clear consensus definition except failure of weight-loss. Clarity on this issue is needed to ensure appropriate data collection to guide future practice.
Methods: An online survey was sent to the BOMSS surgical membership to clarify the current understanding of what constitutes Revisional bariatric surgery. The questions were based around current published funding guidelines for CCG's and NHS England. These define Revisional surgery as any operation >90 days post-operatively.
Results: 35 replies were received with in the first 2 weeks. 62.8% disagreed with the proposition that any re-operation >90 days was revisional surgery. Conversely 54.3% felt that operations <90 days were emergencies independent of indication. The majority (>90%) carried out re-operations on gastric band for complications but <50% felt this was revisional. Greater that 90% considered re-operations after RYGBP for bleeding or anastomotic leak were emergency procedures. Only 62% considered reversal for excessive weightloss revisional. For gastric sleeves nearly 100% felt re-sleeving and treatment for reflux to revisional, but only around 50% for treatment of sleeve stenosis. Re-operations for failure of weight-loss were almost universally felt to be revisional surgery.
Conclusion: There remain a wide range of definitions of Revisional bariatric surgery throughout the UK. The 90 day cutoff would appear too arbitrary. Surgery for failure of weightloss is clearly felt but the respondents to be revisional surgery. Re-operation for complications of surgery is generaly not felt to be revisional surgery. The definition of both "revisional" and "emergency complication" surgery requires consensus to ensure accurate data collection and guide future practice.

P51

The effect of Bariatric surgery on hypertension

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Background: The aim of this study is to evaluate the effect of bariatric surgery on requirements for anti-hypertensive medications and blood pressure in a consecutive series of patients.
Methods: A retrospective case note and database review of patients presenting for bariatric surgery with medication-dependent hypertension between January 2010 and December 2013.
Results: Sixty-seven hypertensive patients were identified. Forty four (66%) were females. The average age was 51.8 (SD 9.1) years. At a mean follow up of 12.3 (2.2) months the mean weight reduction was 42.4(2.1) kg. BMI reduction was 15.2(2.3) kg/m^2. Thirty-nine patients (58%) were normotensive and off all antihypertensive medications. Systolic blood pressure (SBP) was significantly reduced from 148.2(15.8) mmHg preoperatively to 135.8 (16.3) mmHg postoperatively (p = 0.0015, t-test). Diastolic blood pressure (DBP) was significantly reduced from 84.4(9.2) mmHg to 79.5(8.2) mmHg (p = 0.0149,

t-test). The reduction in SBP ($r = 0.637$, $p < 0.02$, pearson) and DBP($r = 0.651$, $p < 0.01$) correlated with the degree of weight loss. The individual utilization of antihypertensive medication was reduced from 2.1 to 0.7 per day (CI −1.1 to −1.63, $p < 0.001$, t-test).
Conclusion: Bariatric surgery results in resolution of hypertension in the majority of patients who are antihypertensive-dependant pre-operatively. The effect is related to the degree of weight loss.

P52

Diabetic outcomes within a new bariatric unit

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Background: Our unit was commissioned to undertake bariatric surgery in October 2011. NICE now recommend bariatric surgery as a treatment option for patients with Type II diabetes and a body mass index over 30 Kg/m^2. This study presents the early diabetic outcomes of a new NHS bariatric unit
Method: All patients with type II diabetes who underwent surgery between October 2011 and September 2013 were identified from a prospective database. Age, sex, weight at operation, BMI, operation, pre-operative Hbα1c, latest Hbα1c and diabetic therapy were recorded. American Diabetic Association criteria for remission were used.
Results: 198 patients had bariatric surgery during the study period, 33%(n = 66) had Type II diabetes. Complete data was available for 57 patients. Median age was 50(25–69) years and 74%(n = 42) were female. Median weight before surgery was 125(91–208) Kg and median BMI was 44(35–60) Kg/m^2. 56%(n = 32) had a gastric bypass, 44%(n = 25) had a sleeve gastrectomy. Median pre-operative Hbα1c was 50(36–104) mmol/l and median Hbα1c 12+ months after surgery was 39(32–93) mmol/l. 63%(n = 36) are in complete remission. Of the other patients 19%(n = 11) are improving, 9%(n = 5) have similar control and 9%(n = 5) have worse control.
Conclusion: Our results demonstrate that most patients are in remission or have improved control consistent with internationally accepted standards. We note that about 20% have similar or worse control, which emphasises the requirement long-term follow-up after bariatric surgery.

P53

Patient progression to bariatric surgery following introduction of mandatory weight management programme

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Background: Since 2013 it has been a national requirement for patients referred for bariatric surgery to complete a Weight Management Programme (WMP). This was implemented in our local centre on 2010. Patients are more likely to have a successful outcome from bariatric surgery if they complete a structured (WMP). An audit completed before 2010 showed 24% of patients referred to the bariatric service progressed to have surgery.
Aim: Complete a retrospective re-audit to assess the impact of the completion of a WMP on the number of patients who progress to have bariatric surgery
Methods: The sample (n = 168) comprised of patients referred to a bariatric seminar between October 2011 and March 2012. Male to female ratio was 48:120. Patients attended the seminar (n = 141). Data was analysed to determine progression to bariatric surgery and reasons for failure to do so.
Results: Patients proceeding to surgical intervention (n = 50):
roux-en-y gastric bypass (n = 33), sleeve gastrectomy (n = 11), gastric band (n = 5), loop gastric bypass (n = 1)
Still in service at time of completion of review: (n = 8)
Reasons for discharge from service: (n = 77):
patient did not make post seminar appointment: (n = 40), DNA post seminar appointment: (n = 13), medically unfit for surgery: (n = 2), unresolved psychological issues: (n = 8)
failure motivational trial to achieve target weight: (n = 13)
Death of patient prior to surgical intervention while in service: (n = 1)
Conclusion: This re-audit demonstrated an increase in the number of patients progressing from the point of seminar referral to bariatric surgery from 24% to 30%.

P54

The National Bariatric Register (NBSR) and beyond

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Background: The submission of data onto the NBSR is mandatory. Our unit also has to submit bariatric outcome data monthly to our local commissioners but not all data requested is available on the NBSR and so we currently submit data into two data sets. This is time consuming and inefficient. We looked at adapting the NBSR to cover all our needs with respect to complying with national standards and our local commissioners.
Methods: A business case was written and approved by our trusts IT department in November 2013. We worked with Dendrite and our IT department to add not only the fields required by our commissioners but those deemed by our multidisciplinary team as important data sets with the potential for future research. We also included current co-morbidity and surgical procedure coding. We set up a follow up outpatient letter template populated by our new local NBSR data base.
Results: Our local database went live in September 2014. Each patient operated on has their data inputted straight after surgery and in the outpatients at follow up. This data is available to both Dendrite for analysis and ourselves to submit to the commissioners. Utilisation of the operation note facility provided accurate procedural coding and appropriate co-morbidity uplifting. Outpatient letters are printed immediately.
Conclusion: The NBSR is an important tool that can also be configured to meet local needs as well as national standards. We used it to give accurate coding information to our coding department and to increase the efficiency of written communication and hope in the future to reap the benefits of additional data recorded for research purposes.

P55

Bariatric surgery–Is there a learning curve for an experienced laparoscopic oesophagogastric surgeon?

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Background: Laparoscopic bariatric surgery is recognised as being technically challenging with a significant surgical learning curve. We aimed to assess if this learning curve applied for an established consultant surgeon whose existing practice included laparoscopic oesophago-gastric resectional surgery. We also aimed to establish if any learning curve extended to the non technical aspects of patient management including patient selection and operation choice.
Methods: Patients were identified from a prospectively compiled database and details cross-checked with electronic patient and operative records. Patients undergoing synchronous surgery for other conditions were excluded. Patients were divided into four equal consecutive cohorts to compare procedure selection. Primary bypass patients were divided into 4 consecutive cohorts for analysis, sleeve patients were compared as 2 consecutive cohorts due to smaller numbers.
Results: 245 laparoscopic bariatric procedures were recorded of which 9 were revisional (Primary bypass n = 152, Bypass after previous surgery n = 9, Sleeve gastrectomy n = 82, Abandoned n = 2). No 30 day mortality was recorded, return to theatre rate was 1.2%. The proportion of procedures which were sleeves was highest in the first cohort (ratio sleeve:bypass = 1.03 vs 0.54, 0.56 and 0.21 for subsequent cohorts) For bypass patients weight and BMI were similar across the

cohorts but median operative time was greater for the first cohort (143 vs 126 mins) length of hospital stay was also greater (4 vs 3 days). Both cohorts of sleeve gastrectomy patients were similar in terms of weight and BMI but again median operative time was greater in the first cohort (80 vs 69 mins) as was length of stay (4 vs 3 days).

Conclusions: There appears to be a short learning curve for bariatric surgery for an experienced laparoscopic surgeon. This is evidenced by a decrease in operative time beyond the first 30–40 cases. Progression along this learning curve also resulted in an increased rate of bypass surgery and a shorter length of hospital stay. Complication rates in our series were comparable to those of experienced bariatric surgeons.

P56

Preventing neurological complications postoperatively in severely B12 deficient patients with normal serum B12 levels.

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Background: Vitamin B12 (B12) deficiency is one of the most common deficiencies following Roux-en-Ygastric bypass (RYGB) and sleeve gastrectomy (SG) predisposing patients to irreversible neurological complications if left untreated. Serum total B12 levels are routinely measured in bariatric patients postoperatively, however it may not indicate B12 status reliably. Holotranscobalamin (HTC)-biologically active fraction of total B12 depicting B12 storage in the body and Methymalonic acid (MMA)-a functional marker of B12 deficiency helps in early detection of B12 deficiency and optimization of patients prior to bariatric surgeries and in postoperatively phase to prevent neurological complications.

Methods: Retrospective analysis of B12 status profiles (B12, HTC, MMA) of bariatric surgery patients from May- Oct 2014 (six months) was done to identify patients who would have missed a diagnosis and management of B12 deficiency, if just a total B12 level was done instead of the B12 status profile.

Results: In a period of 6 months, 36 bariatric patients with a normal serum B12 levels (normal 200-1000 ng/L) were found to have low HTC levels (normal < 35pmol/L) confirming B12 storage depletion. Out of these 36 patients, 22 (65%) had elevated MMA levels (normal < 0.29umol/L) suggestive of functional B12 deficiency at cellular level and increased risk of neurological complications and were appropriately managed.

Conclusion:

- Serum B12 level can be normal in functionally B12 deficient and symptomatic patients.
- HTC and MMA are more sensitive and specific markers of B12 status and should be done in patients at high risk of B12 deficiency.
- Reliance on serum B12 level alone can lead to undiagnosed B12 deficiency for long periods which can lead to irreversible neurological complications.
- As Folate supplementation in a B12 deficient patient can lead to severe neurological complications e.g. sub acute combined degeneration of spinal cord, assessing B12 storage and excluding functional deficiency by assessing HTC and MMA respectively, prior to folate supplementation is recommended in high risk patients.