Bariatric Surgery Overview

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24% of adults in NI are obese
Over half the UK population could be obese by 2050
The Prospective Collaborations Study showed that morbid obesity reduced life expectancy by 8-10 years
The NHS costs attributable to overweight and obesity are projected to double to £10 billion per year by 2050.
The wider costs to society and business are estimated to reach £49.9 billion per year
161 surgeons from 137 hospitals recorded 32073 operations, 18,283 in the financial years ending 2011, 2012 and 2013.

In hospital mortality rate after primary surgery was 0.07% overall.

Average post op stay was 2.7 days.

Average starting BMI was 48.8kg/m2.

53.9% of men and 41.4% of women had a high level of co-existing disease.

One year post op patients lost 58.4% of their excess weight.

Two years post op 65.1% of patients with Type 2 diabetes returned to a state of no indication of diabetes.
**Criteria (NICE, 2014)**

- BMI > 40kg/m² or BMI 35-40 with significant disease improved if weight lost
- All appropriate non-surgical measures have been tried and failed to achieve or maintain adequate, clinically beneficial weight loss
- Person has been receiving or will receive intensive management in a tier 3 service
- Fit for anaesthesia and surgery
- Commits to the need for long term follow-up
- 1st line option if BMI > 50
- Consider an assessment for bariatric surgery for people with BMI 30-34.9 who have had recent onset Type 2 diabetes
Vertical Banded Gastroplasty

Sleeve Gastrectomy

Gastric band
Roux-en-Y Gastric Bypass

Bilio-pancreatic Diversion

Sleeve gastrectomy with duodenal Switch
Intragastic Balloon
%EWL Excess Weight Loss

- **EBW** = start weight – weight at BMI 25
  - Eg: Patient 1.65m, 150kg, BMI 55kg/m²
  - Weight at BMI 25 = 68kg
  - EBW = 150kg – 68kg = 82kg

- If patient loses 50kg
  - %EWL = \( \frac{50}{82} \times 100 = 61\% \)
Pre surgery

- Pre operative assessment of diet
- Healthy eating, weight loss dietary advice and meal plan
- Activity
- Drug therapy
- Education on post operative diet (changes, expectations, commitment)
- Behaviour change
Pre op liver reduction diet

- Low fat, carbohydrate and high protein
- ↓ glycogen stores and water
- Shrink liver size; easy access to stomach
- Short term immediately prior to surgery
B: small bowl of cereal (3tbsp) or
   1 x toast with scraping of low fat spread
L: 1 x bread / 2 x crispbreads
   small portion lean meat / fish (100g/4oz) or
   cheese (60g/2oz) or 2 eggs (not fried) or Tofu (4oz)
   green salad (no dressing) or tomatoes
D: 1 x small potato or 2tbsp pasta / rice
   small portion lean meat / fish (100g/4oz) or
   cheese (60g/2oz) or 2 eggs (not fried) or Tofu (4oz)
   vegetables (free except root vegetables)
Daily: 1/3 pint milk
   2 portions of fruit
   free water, tea, coffee, low calorie squash or fizzy drinks
   1 low fat, low sugar yogurt or fromage frais
Gastric band
Dietary advice (band)

- Early post op dietary advice aims to avoid any undue feelings of fullness or vomiting at a time when the band is settling into position and a membrane forming around the band.

- Band not inflated or small amount of fluid only at placement (little weight loss)

- 6-8 weeks 1st fill, and will take several fills to achieve steady weight loss
Dietary advice (band)

General guidelines:
- Progress up to normal texture, balanced diet
- Side plate portion sizes
- Chew food carefully and eat slowly.
- Stop eating when feel full
- Separate food and fluids
- Meals should be based around solid foods
- Aim 2 Litres of fluid/day
- Avoid adding a lot of sauce/gravy to meals
Dietary considerations (band)

- Caution foods
  - Dependant on individual and type of band
  - Eg. Bread (especially white, non toasted), dry meats, stringy vegetables, skins on fruit, overcooked rice/pasta, nuts and dried fruit

- Foods unrestricted by band
  - Pass down very easily, therefore little/no weight loss if consumed regularly
  - Eg. Crisps, chocolate, alcohol, ice cream
Dietary considerations (band)

- **Drinks:** all low calorie encouraged
- **Snacks:** *only if required*, healthy and nutritious advised

- **Constipation:**
  - Review diet
  - Check adequate fluid
  - Non-bulking agent

- **Vomiting:**
  - Potential effect of dislodging band and long term limiting weight loss if caused by overeating.
  - Eating too quickly, not chewed properly, correct consistency, overate, eating and drinking together
Band fills

- Consider inflation
  - Inadequate weight loss < 1lb/week
  - Rapid onset of satiety
  - Increased volume at meals
  - Hunger between meals
  - Maintaining normal texture

- No adjustment
  - Adequate weight loss 1-2lb/week
  - Eating reasonably
  - No sickness

- Consider deflation/removing
  - Vomiting, heartburn, reflux
  - Difficulty coping
Roux-en-Y Gastric Bypass
Dietary advice (gastric bypass)

- All units differ on progression
- Within 24hrs sips of water
- Liquid diet for 1-2 weeks
  - Nutritious fluids, not fizzy, 2-2.5 litres
- Medication chewable/dissolvable
- Progress to small amounts of normal textured food 8-10 weeks post surgery
  - Everyone individual
Dietary advice (gastric bypass)

- Advise on blended/puree balanced meals
- 4-6 small meals/day each will only contain 1-2 tbsp at first
- Chew food well and stop when feeling full
- Sip at drinks between meals, and try to separate food and fluids.
- Avoid drinking 10 mins before and 30 mins after a meal
- High protein to encourage wound healing
  - Milk based proteins usually better tolerated at this stage
- Serve food on a side plate
- Give practical ideas eg. Liquidise in bulk and freeze in ice cube holders
Dietary advice (gastric bypass)

- Advise progression of textures up to normal based on healthy eating principles.

- Encourage focus on optimising diet and not primarily on achieving a goal weight at expense of nutritional status.

- Maximum of 30 minutes for meals.

- No fizzy drinks.

- Side plate portion: 3 meals, if smaller 4-6 meals.

- Caution foods:
  - Eg. Overcooked rice/pasta, pips, seeds, dry meat, non toasted white bread.
Dietary considerations (gastric bypass)

- Adequate hydration
- Vomiting
  - ?why, assess diet, usually find problem
- Constipation
  - Fibre, fluid, non-bulking agent eg. Senna, Benefiber
  - medical help if becomes a problem
- Diarrhoea
  - Can be a side effect of dumping
  - Can be caused by foods high in fat
- Hair loss
  - Rate of weight loss too fast / inadequate diet
- Compliance with vitamins and minerals
- Exercise
# BOMSS guidelines 2014 - Post op blood tests following gastric band.

<table>
<thead>
<tr>
<th>Blood Test</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>U&amp;E, LFT, FBC</td>
<td>Monitor annually and more frequently if any concerns regarding nutritional intake</td>
</tr>
<tr>
<td>HbA1c and/or FBG in patients with preoperative diabetes</td>
<td>Monitor as appropriate</td>
</tr>
<tr>
<td>Lipid profile</td>
<td>Monitor in those with dyslipidaemia</td>
</tr>
<tr>
<td>Serum 25 hydroxy Vitamin D</td>
<td>Routine monitoring is usually not required unless patient has symptomatic Vitamin D deficiency</td>
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## BOMSS Guidelines 2014 – Post op blood tests following sleeve gastrectomy/gastric bypass

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<tr>
<td>U&amp;Ep, LFT, FBC, ferritin, folate, calcium, Vitamin D, PTH</td>
<td>3, 6 and 12 months in the first year. Annually</td>
</tr>
<tr>
<td>Thiamine</td>
<td>Not routine but be aware that patients with prolonged vomiting can develop acute thiamine deficiency, which requires urgent treatment</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>6 and 12 months in the first year. Annually</td>
</tr>
<tr>
<td></td>
<td>No need to monitor if patient has intramuscular Vitamin B12 injections.</td>
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### BOMSS Guidelines 2014 – Post op blood tests following sleeve gastrectomy/gastric bypass

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<th>Vitamin</th>
<th>Gastric bypass details</th>
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| **Zinc, copper** | Annually for gastric bypass  
Monitor zinc if unexplained anaemia, hair loss or changes in taste acuity.  
Monitor copper if unexplained anaemia or poor wound healing. Note that zinc levels affect copper levels and vice versa. |
| **Vitamin A** | Gastric bypass - measure if concerns regarding steattorrhoea or symptoms of Vitamin A deficiency. May need to monitor more frequently in pregnancy. |
| **Vitamin E, K** | Measure Vitamin E if unexplained anaemia, neuropathy. Gastric bypass - Consider measuring INR if excessive bruising/ coagulopathy as may indicate Vitamin K deficiency. |
| **Selenium** | Gastric bypass – Monitor if unexplained fatigue, anaemia, metabolic bone disease, chronic diarrhoea or heart failure. |
BOMSS Guidelines 2014 – Vitamin and mineral supplements following gastric band

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<tr>
<th>Vitamins and minerals recommended</th>
<th>Forceval or OTC complete multivitamin and mineral, one daily</th>
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<tr>
<td>Multivitamin and mineral supplement</td>
<td>Additional folic acid (5mg) preconception for the first 12 weeks of pregnancy. Safe to continue with Forceval as Vitamin A is in beta carotene form or consider pregnancy multivitamin and mineral</td>
</tr>
<tr>
<td>Preconception and pregnancy</td>
<td></td>
</tr>
<tr>
<td>Thiamine</td>
<td>Additional thiamine 200-300mg daily, Vitamin B co strong 1-2 tablets 3 times/day if prolonged vomiting and urgent referral to bariatric centre</td>
</tr>
<tr>
<td>Vitamin D, iron</td>
<td>Continue with maintenance doses if required</td>
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</table>
### Vitamin and minerals recommended

- Multivitamin and mineral supplement should include: Iron, Selenium, 2mg copper (min)  
  Zinc (ratio of 8-15mg zinc for each 1 mg copper)  
  - Preconception and pregnancy

- The following meet these requirements (Aug 14):  
  - Forceval x1/day (soluble and capsule)  
  - OTC complete multivitamin and mineral 2/day eg. Sanatogen A-Z complete, Superdrug A-Z multivitamins and minerals, Tesco multivitamin and minerals  
  - As for band

| Iron       | 45-60mg daily  
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<td>100mg daily for menstruating women</td>
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- 200mg ferrous sulphate, 210mg ferrous fumarate or 300mg ferrous gluconate daily  
- 200mg ferrous sulphate or 210mg ferrous fumarate twice daily

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<tr>
<th>Folic acid</th>
<th>- Encourage consumption of folate rich foods</th>
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<td>- If deficient, check compliance with multivitamin and mineral supplement. If compliant, check for Vitamin B12 deficiency before recommending additional folic acid supplements. Additional folic acid if deficient and recheck levels after 4 months.</td>
</tr>
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<td></td>
<td>- As for band</td>
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### BOMSS Guidelines 2014 – Vitamin and mineral supplements following gastric bypass and sleeve gastrectomy

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<tr>
<th>Vitamin B12</th>
<th>Intramuscular injections of 1mg Vitamin B12 three monthly. Sleeve gastrectomy patients may need less frequent injections</th>
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| Calcium and Vitamin D | Ensure good intake of calcium and Vitamin D rich foods  
Continue with maintenance doses of calcium and Vitamin D as identified preoperatively |
| Fat soluble Vitamins A, E and K | Sufficient contained within vitamin and mineral supplement  
Additional fat soluble vitamins may be needed if patient has steatorrhoea |
| Zinc and copper | Sufficient contained within multivitamin and mineral supplement  
If additional zinc is needed, ratio of 8 to 15mg zinc per 1 mg copper must be maintained |
**BOMSS Guidelines 2014 – Vitamin and mineral supplements following gastric bypass and sleeve gastrectomy**

| Selenium                      | Sufficient contained within multivitamin and mineral supplement  
|                               | If required, additional selenium may be provided by 2-3 Brazil nuts a day or over the counter preparations including Selenium ACE, Holland and Barrett Selenium, Boots Selenium with Vitamins A,C and E |
| Thiamine                      | Sufficient contained within multivitamin and mineral supplement  
|                               | As for band |

**Assumes:**

1. Patients have received a comprehensive preoperative assessment and any nutritional deficiencies have been treated
2. Patients have biochemical monitoring as stated in the guidelines and have deficiencies investigated and corrected
3. Patients are taking the minimum supplements required
Dietetic Monitoring

- **Type of surgery and when?**
- **Weight**
  - Current weight, BMI, total weight loss, rate of weight loss
- **Diet history**
  - Fluid intake, textures, food choices, assess quality, meal frequency, volume, intolerant foods
- **Factors that may affect nutritional status**
  - Vomiting, dumping syndrome, nausea, bowels
- **Micronutrient status**
  - Clinical symptoms, check diet, monitor biochemistry, advise appropriate dietary modification +/- supplementation, check compliance and doses
Dietetic Considerations

- What surgery has the patient had and when?
- What are the potential nutritional/dietary implications?
- Individualise the diet to the patient and their potential nutritional needs.
- Advise appropriate nutritional supplementation.
- Monitor!