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Dietary advice for Short Bowel patients with a Jejuno-colic Anastomosis

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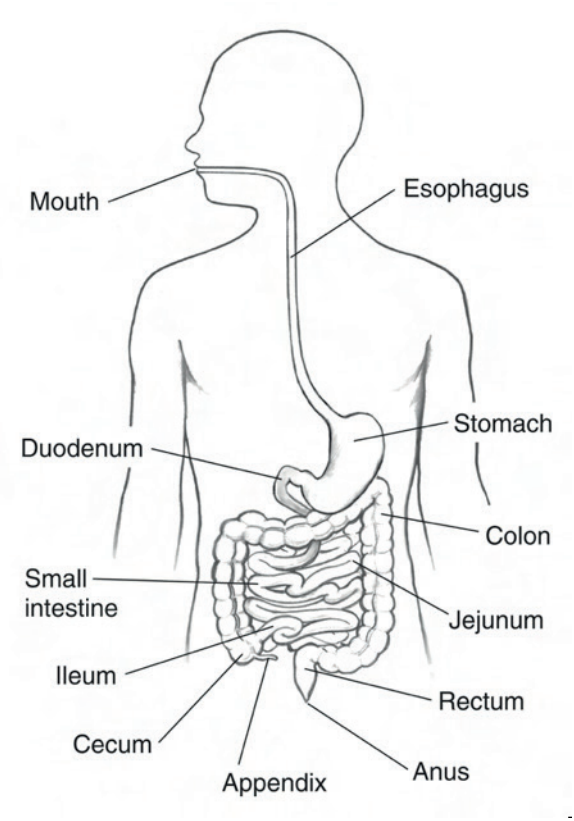
What is Short bowel?

Short bowel is a rare condition in which;

1. The small intestine is unable to digest and absorb the correct amounts of nutrients
2. The body does not reabsorb fluids, including digestive juices, produced by the intestines (the gut)

This can lead to problems such as malnutrition, weight loss, diarrhoea and dehydration.

To understand why this happens, it is helpful to know what happens in a person without short bowel.



The Digestive Process

Digestion is the process of the food you eat being broken down into small nutrients. These nutrients are then absorbed by the small intestine and go into the bloodstream to feed the body.

Mouth and stomach

Digestion begins in the mouth, which is why it is important that you chew your food thoroughly. When this food reaches the stomach it is churned into a liquid by acid produced in your stomach.

Small intestine

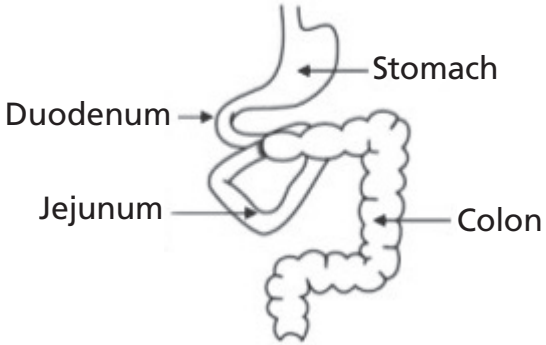
The small intestine is where most of the digestion of food and the absorption of nutrients into the body occurs. To aid digestion, about four litres of 'digestive juices' are made and released by the small intestine each day. Most digestion occurs in the first part of the small bowel called the duodenum. Once digested, most nutrients are absorbed in the second part of the intestine called the jejunum. In the third part of the small intestine, the ileum, most of the juices released to aid digestion are re-absorbed. Vitamin B12 is also absorbed in the ileum.

Colon (also known as large bowel)

The remaining fluid that has not been absorbed will pass into the large bowel, the colon, which reabsorbs water and sodium to form a stool.

What is a jejuno-colic anastomosis?

Jejuno-colic anastomosis happens when the ileum (the last part of the small bowel, which connects to the large bowel) is removed during surgery. The jejunum (the middle part of the small bowel) is joined to the large bowel instead.



When you have had a large part of your small bowel removed, the length left behind may not be enough for all the fluids and nutrients to be absorbed. This is often referred to as having a short bowel. This can lead to the individual experiencing weight loss or becoming dehydrated. However, the colon plays an important role by:

- Reabsorbing fluid and salt
- Slowing the movement of food through the bowel, allowing more time for nutrition to be absorbed
- Absorbing energy from the breakdown of starchy foods

This diet sheet aims to help you change the way you eat and drink to prevent dehydration, unintentional weight loss, kidney stones, and nutritional deficiencies.

Longer-term dietary changes to consider

When part of the small bowel is removed, your body may not absorb all the nutrients you intake. Therefore, you may need to eat more food than you expect in order to help ensure your body's nutritional needs are being met.

It is recommended that your long-term diet is:

- Moderate in fat
- Low in oxalate
- Moderate in calcium
- High in carbohydrate
- High in protein

Fat

Fat is a good source of energy and calories. However, you may have difficulty absorbing fat because the ileum, which is important for fat absorption, has been removed.

You may need to reduce your fat intake if you experience:

- Loose or runny stools
- Stools which are pale in colour
- Oily stools
- Stools that float on the surface of the toilet and are difficult to flush away

If you are concerned about your stools, please speak to your Dietitian. You may need medications to help with your symptoms.

How to reduce your fat intake

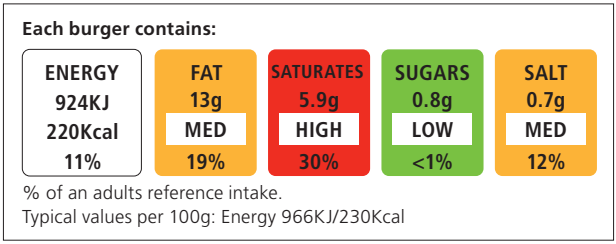
- Below are some ways you can reduce your fat intake.
- Use a low-fat spread instead of butter or margarine, and spread it thinly
- Use semi-skimmed milk rather than whole milk
- Choose half-fat hard cheese instead of full-fat varieties. If you decide to eat full-fat cheese, have a smaller portion
- Choose low-fat cottage cheese or low-fat soft cheese instead of regular varieties
- Choose low-fat yoghurt, salad cream, mayonnaise and dressings
- Limit takeaways, chocolate, pastries and cream
- Limit crisps, cakes and biscuits, or choose lower fat options such as jaffa cakes or baked/ popped crisps

- Buy lean cuts of meat and trim off any visible fat
- If you choose to fry food, use small amounts of cooking oil or use a spray cooking oil. Instead of frying food, try microwaving, oven cooking, steaming, poaching, boiling, grilling, or air frying

Food labelling (content per 100 grams [g])

You can use food labels to help guide your choices. Foods low in fat will have a green label, and foods high in fat will have a red label. See below for an example.

High fat: Over 17.5g
Medium fat: Between 3g and 17.5g
Low fat: 3g and below



Oxalate

Kidney stones are more common when your body cannot absorb fat properly. Normally, calcium binds to oxalate in the intestine and is then passed out of the body in the stool. In Short Bowel Syndrome with an intact colon, fat from the food you eat is not absorbed and binds to calcium, leaving the oxalate behind in the colon. The oxalate is then absorbed by the colon and travels to the kidney, where it can form stones. When your body absorbs more oxalate, you have a higher risk of developing kidney stones.

Below are some tips to reduce your risk of developing kidney stones. You can:

- Limit the amount of fat in your diet (discussed above). Medium-Chain Triglycerides (MCT's) are a specific type of fat that is absorbed much higher up in the digestive system and can be used

to supplement your intake of fat if you are losing weight, whilst keeping your risk of developing kidney stones low. Please ask you Intestinal Failure Dietitian about this
- Avoid foods high in oxalate (see appendix 1)
- Increase your citric acid intake i.e. lemon and lime juice added to tea, or as a marinade to fish
- Limit the vitamin C content of your diet (avoid over the counter supplements, unless advised by your medical team)
- Eat enough calcium -try to include regular portions of dairy in your diet

For further information, we have a separate diet sheet that we can provide you with. Please consult your Intestinal Failure Dietitian for more information.

Carbohydrates

Carbohydrates, or starchy foods, are a good source of energy. Your colon makes energy by breaking down carbohydrates, so these foods may help you gain or maintain your weight.

Below are some tips for how to increase your carbohydrate intake:
- Include starchy food (such as bread, sourdough, potatoes, rice, noodles, pasta, or cereal) at each meal
- Between meals, snack on starchy foods (such as sandwiches, breakfast cereals, crackers, toast or crumpets)
- To add extra calories, you could try adding a thick spread of jam, marmalade, honey or syrup to bread/toast, or add to milk puddings or porridge (you should discuss this with your team if you have diabetes)

Protein

Eating foods high in protein will help you recover from surgery. It will also help to maintain your weight. You should include a portion of protein at each mealtime, but you may need to cook foods without adding too much extra fat.

Sources of protein include:

- Meat and poultry (such as beef, pork, ham, chicken or turkey)
- Fish
- Eggs
- Milk, dairy products and milky puddings (such as yogurts, custard and rice pudding)

Vegetarian sources of protein include soya, tofu, and seitan.

If you follow a vegan diet, please discuss this with your Intestinal Failure Dietitian.

Hydration

You should aim to be well hydrated. Please remember that you may need to drink more fluids in the warm weather or if you are exercising.

The guide below can help you see how hydrated you are. If your urine matches 1 to 3, you are well hydrated. If your urine matches 4 to 8, you may need to drink more.

Vitamins and minerals

B12 injections

After your ileum is removed, you will need vitamin B12 injections every three months for the rest of your life to prevent deficiencies. Please discuss this with you Intestinal Failure Consultant or Intestinal Failure Dietitian.

Supplements

It is important that you talk to your healthcare team before taking any vitamin and mineral supplements. This is because high doses of some vitamins are not recommended. For example, vitamin C is converted to oxalate when it is taken at very high doses. However, if you are prescribed any supplement (such as a balanced multivitamin and mineral supplement or fat-soluble vitamins), you should keep taking these unless your Intestinal Failure Team advises you otherwise.

Contact details:

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Queen Elizabeth Hospital Birmingham
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Appendix 1: High Oxalate Foods

Food group	High in oxalates	Suitable alternatives
Beverages	Chocolate beverages, including powdered and syrup based chocolate milkshake, cocoa powder and hot chocolate. Cups of tea including berry flavoured herbal tea, are also high in oxalates	Water, squash, milky weak tea or coffee, Bovril, skimmed or semi skimmed milk, fruit juices (apple, pineapple, grape, grapefruit, cranberry, lemon/lime juice)
Breads and Cereals	Amaranth, buckwheat, All-bran and other high-fibre cereals, kamut, quinoa, spelt, stone-ground flour, wheat bran, wheat germ, whole wheat flour and bread, rice bran, soy flour, muesli	White flour or baked products, e.g. bread, pasta, spaghetti, macaroni, crumpets, English muffins, white rice, plain couscous, noodles, Rice Krispies/ puffed rice cornflakes/ frosted flakes, Special K, Sugar Puffs, Cheerios
Vegetables*	Beetroot, carrots and carrot juice, canned tomato and tomato sauce, dark leafy greens (e.g. spinach, Swiss chard, kale), aubergine, sugar snap peas/mangetouts, green peppers, okra, parsnips, pumpkin, turnip, watercress, white potatoes, sweet potatoes, yams, potato-based crisps, cassava *Soaking and cooking certain vegetables in a large pot of boiling water can reduce their oxalate content	Asparagus, avocado, cauliflower, cucumber, lettuce, peas, peppers, onions *Soaking and cooking certain vegetables in a large pot of boiling water can reduce their oxalate content

Fruits	Figs, kiwi, orange, tangerine, grapefruit, raspberries, strawberries, currants, rhubarb, avocado, star fruit, dried fruit (dates, prunes, cranberries, blueberries, currants), canned pineapple	Apples, banana, fresh apricots, cherries, grapefruit, grapes, lemon, melon, nectarines, papaya, passion fruit, peaches, pear, pineapple, strawberries
Legumes, Seeds, Nuts	Baked beans, legumes (e.g. kidney beans, black beans, cannelloni beans), lentils*, peanuts/peanut butter (and other nuts/nut butters), pumpkin seeds, sunflower seeds. Tahini, tofu, pine nuts. *Soaking lentils before cooking can reduce their oxalate content	*Soaking lentils before cooking can reduce their oxalate content
Desserts	Cakes and desserts including dried fruit or chocolate, for example, chocolate chip cookies, fruitcake or brownies Limit fudge and chocolate sauce	Tapioca, Blancmange, Puddings made with skimmed milk, frozen yoghurt, jelly
Other	Soy products such as cheese, yogurt and soy-protein (vegetarian burgers, hot dogs and deli meats) and tofu products, soy protein isolate, miso, miso soup, stuffing, chili, pizza, lasagne, olives	Jams, marmalade honey, syrup, treacle low fat dressings and sauces – try herbs, spices, vinegar, lemon juice

If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email **patientexperience@uhb.nhs.uk**.

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