

Top Tips for Managing a High Output Stoma or Fistula

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A high output stoma (HOS) or fistula is when the output causes the patient to become water, sodium and magnesium depleted. This tends to occur when the output is more than 2 L/24 hours though this varies according to the amount of food/drink taken orally (if 4 litres/kg is consumed a 2 litre output may not be a problem but if only 0.5 litres/kg is consumed dehydration will follow). This occurs in 4-13% of small bowel stomas. It rarely occurs if there is more than half of the colon in continuity with the small intestine.

Key steps

1. Exclude causes other than short bowel (obstruction)
2. Rehydrate and stop thirst
3. Restrict oral hypotonic fluid
4. Sip a glucose/saline solution +/- magnesium
5. Take Loperamide (high dose) before food/drink
6. Take Omeprazole (especially if a net 'secretory' output)
7. Consider subcutaneous before parenteral fluids
8. Monitor random urinary sodium concentration and serum magnesium.

Explanations

- A.** While a short bowel (less than 200 cm jejunum remaining) is the most common reason for a HOS, other easily treatable causes should be sought. Intermittent or partial obstruction is common. A history of sudden onset colicky abdominal pain, borborygmi, swelling/visible peristalsis and temporary stopping of the stoma are suggestive. The HOS tends to occur as the obstruction resolves. A stenosis at or near to the stoma is common and may be detected by visual inspection or inserting a finger into the stoma. A low fibre diet may help, but often a surgical resection is needed. Other causes include opiate or steroid withdrawal or the giving of prokinetic drugs (e.g. metoclopramide). In the perioperative period, abdominal sepsis (with low albumin and ileus) may occur. Other causes include small bowel diverticula, coeliac disease or *Clostridium difficile* infection.
- B.** Rehydrating and stopping thirst may be done acutely by giving intravenous saline while taking little or no oral intake. The sodium concentration of small bowel stomal/fistula fluid is always (whatever the oral intake) about 100 mmol/l (range 80-140). Hypotonic fluid (e.g. water) causes a net

efflux of sodium into the bowel lumen and this is lost through the stoma. Patients must restrict oral hypotonic fluid (e.g. to 0.5-1.0 L/24 hrs). They must not be told to "drink as much as possible". In addition they should not take hypertonic fluid (e.g. elemental diet) as this will cause a net flow of fluid into the bowel lumen (together with sodium) so water and sodium depletion is exacerbated. The ideal fluid consumed is iso-osmolar to plasma (osmolality about 300 mOsm/kg) and has a sodium concentration of 100-140 mmol/l.

- C.** An oral rehydration solution is sipped (e.g. St Mark's modified WHO cholera solution or double strength Dioralyte®), usually 1 L/24 hours. The glucose is absorbed with sodium. Oral magnesium supplementation may be needed but correcting sodium depletion alone may be adequate.
- D.** Loperamide up to 16 mg four times per day, half an hour before food, may reduce transit and increase absorption. Care is needed with higher doses due to possible cardiac arrhythmias. The addition of codeine phosphate 30-60 mg four times per day, may further help and reduce output. If the stomal output increases with anti-diarrhoeal drugs consider a partial obstruction.
- E.** Omeprazole 40 mg daily will reduce output in net secretors (those whose output is greater than their oral intake). Due to causing hypomagnesaemia, osteoporosis and possibly cardiac arrhythmias they should not be given routinely and certainly stopped if no effect. The dose of omeprazole can be titrated upwards so that the stomal pH exceeds 5. Octreotide is rarely used (50 µg twice a day) due to a painful injection, causing gallstones and worry about its effect in inhibiting bowel growth hormones. It is equivalent to omeprazole in the amount to which it reduces the volume of stomal output.
- F.** If a patient still becomes dehydrated on maximal therapy subcutaneous saline (with magnesium) may be considered before intravenous saline supplementation.

Suggested reading

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- Baker ML, Williams RN, Nightingale JM. Causes and management of a high output stoma. *Colorectal Diseases* 2011; 13: 191-7.