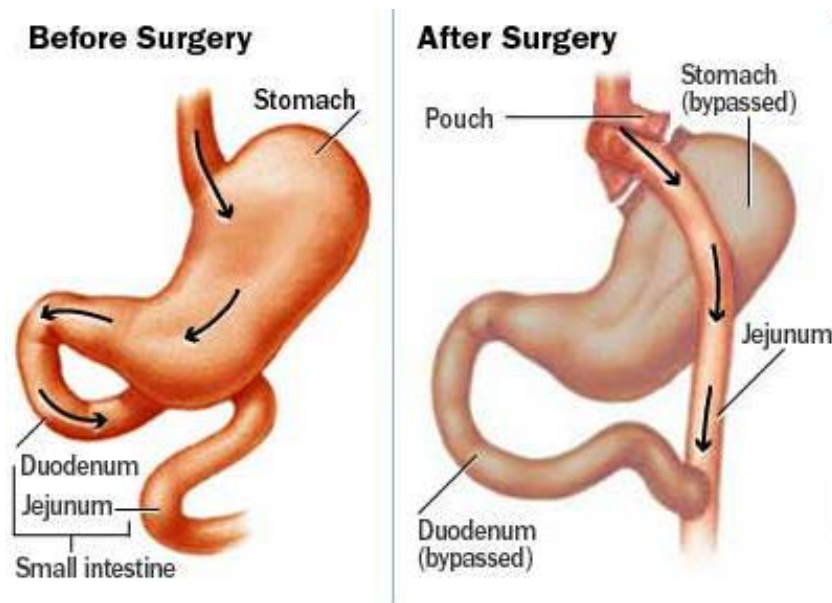


# ***Dumping syndrome***



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# Background:

The stomach is the storage site of ingested food.

The primary functions of the stomach are to act as a *reservoir*, to *initiate the digestive process*, and to *release its contents downstream into the duodenum in a controlled fashion*.

Gastric motility is regulated by the **enteric nervous** system, which is influenced by extrinsic innervation and by circulating hormones.

# What is Dumping syndrome?

Rapid gastric emptying of a large hyperosmolar load into the small intestine.

Results in a fluid shift into the lumen, with plasma volume contraction and acute intestinal distention.

# What causes Dumping syndrome?

1. **s/p Vagotomy**
2. **Gastroenteric anastomosis (Billroth I/II)**
3. **s/p Pyloroplasty**
4. **s/p Nissen fundoplication**



Billroth I



Billroth II

Release of GI hormones such as *VIP*, *Neurotensin* and *motilin*, may also play role in early dumping.

# Types of Dumping syndromes:

## Early:

15 – 30 minutes postprandial.

## Late:

90 min – 3 hours postprandial.

# Symptoms of Dumping syndrome:

## Early dumping:

- Crampy abdominal pain
- Nausea
- Diarrhea
- Tachycardia
- Palpitations
- Diaphoresis
- Light headedness
- Syncope (rare)
- Desire to lie down
- Flushing

## Late dumping:

- Perspiration<sup>1</sup>.
- Shakiness<sup>2</sup>.
- Difficulty to concentrate<sup>3</sup>.
- Decreased consciousness<sup>4</sup>.
- Hunger<sup>5</sup>.

# Diagnosis:

Diagnosed based on typical symptoms in patients who have undergone gastric surgery. Signs and symptoms can be elicited with the glucose challenge test.

May also be diagnosed via the ***Sigstad's diagnostic Index***. A diagnostic index greater than 7 is suggestive of dumping syndrome.

e.g. Shock +5, Syncope +4, Vomiting -4.. etc.

# Which meals make the symptoms worse?

1. Rich in carbohydrates.
2. High osmolarity.
3. Ingestion of large amounts of fluids with meal.



# Consequences of Dumping syndrome:

1. Malabsorption – due to decreased intestinal transient time and inadequate mixing of food with bile and pancreatic secretions.
2. Anemia – due to deficiency in folate, Vitamin B12 and iron.

# Frequency of dumping syndrome:

Up to 50% of post vagotomy patients develop dumping syndrome to some degree.

Symptoms may improve with time, but 1-5% have been reported to have severe disabling symptoms.

# Treatment of Dumping syndrome: (continued)

5. **Acrobace** – an  $\alpha$  glucosidase inhibitor, which delays digestion of carbohydrates (used mostly in late dumping syndrome).
6. **Octrotide** – a somatostatin analogue. Used in diet refractory cases.

# Treatment of Dumping syndrome:

## **1. Dietary modifications:**

- a. Small, multiple (six) meals.
- b. Avoid simple carbohydrates.
- c. Avoid drinking during meals.

## **2. Antidiarrheal agents.**

## **3. Anticholinergic agents.**

## **4. Guar and Pectin – increase viscosity of intraluminal contents.**

# Conclusions:

We should expect dumping syndrome in patients following vagotomy and billroth surgeries.

We may decrease the symptoms by avoiding large meals, rich in carbohydrates and high in osmolarity.

