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## Does Length Of Small Bowel Matter?

It appears that there are series of questions and concerns that are not completely resolved, and they resurface every so frequently. Length of the small bowel for the Common Channel and the Alimentary limb in the Duodenal Switch operation is one of those topics.

The Questions that I am asked:

- “How long is my common Channel?”
- “Another patient had the same length, but they are losing more (or less) as the case may be.”
- “I was told by another surgeon that they would give me a certain length of common channel, what do you think?”

The common problem is that there is no accurate and practical way to measure the length of the bowel. There is also two schools of thought, with very little objective research to support one or the other. There is no published data that I could find that answers this question head on. There are number of other articles, and presentations that touch on this topic.

The best reference that I think is worth looking over is an editorial by Dr. Hess. The link is included on the bottom of the page 2.

I would like to discuss this in an organized way.

The artistic work is done by yours truly!

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First a Brief over view of our GI track:

Our GI track starts at the mouth and ends in the rectum (figure 1). It is a long tube that has a very few side branches. These include the opening of the salivary glands in the mouth, the opening of the biliary

(from the liver) and the pancreatic (from the pancreas) plumbing to in the first part of the small bowel (duodenum) and the Appendix (at the junction of the small bowel and the large bowel).

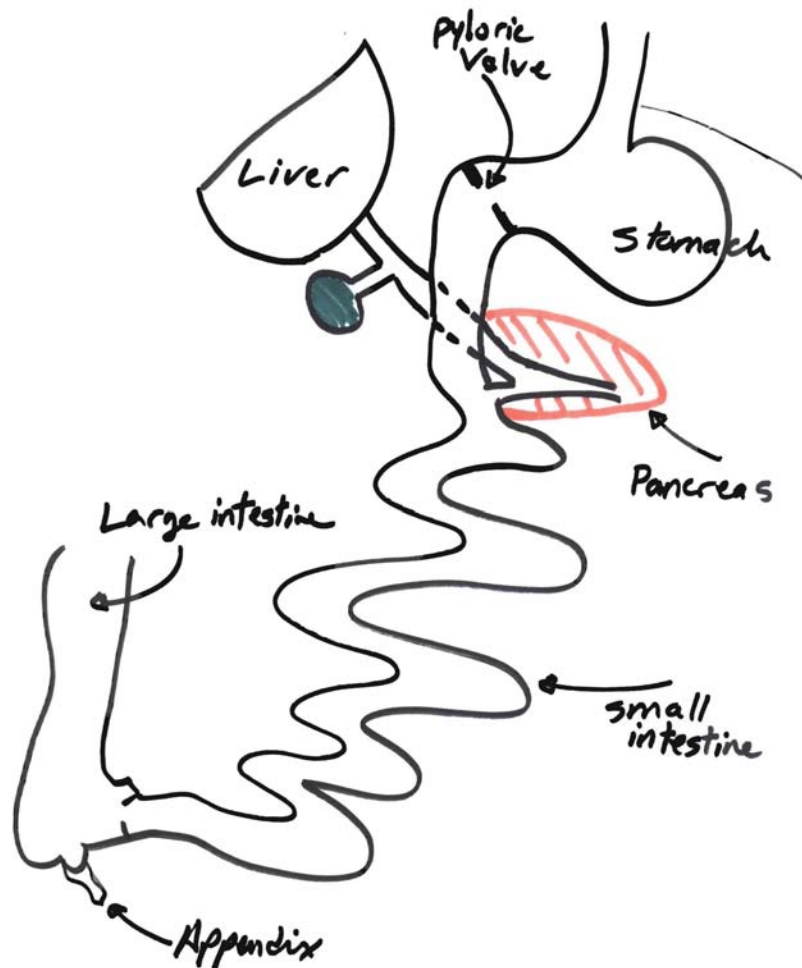


Figure 1

Related Links:

<http://www.springerlink.com/content/qn23527k0nkh682n/fulltext.pdf>

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The small bowel is the part that causes all this confusion. The small bowel is a long pliable, elastic tube that can be stretched (figure 2). Depending on how much force is applied to it, it can be of different lengths. A similar analogy is the phone cord to head set of a conventional phone. The spiral cord placed on a table will coil up to a certain length. If one then pulls on two ends it will measure longer. And if more pull is exerted, then it will measure even longer. This demonstrates that the absolute measured length of the small bowel, is directly related to the force with which it is pulled. What this means is that if two individuals measure the length of the headset cord, or the bowel, they will get two different lengths, both correct but not the same. The length is directly proportional to the pull force applied to both ends.

Furthermore; the length of the small

bowel is determinant of the absorptive capacity (amongst other factors). The longer the small bowel the more absorption, and the shorter the small bowel, the less absorption. There is a general-trauma surgical problem known as short gut syndrome, where the length of the bowel is so short that it cannot support maintenance of the electrolytes and minerals, in

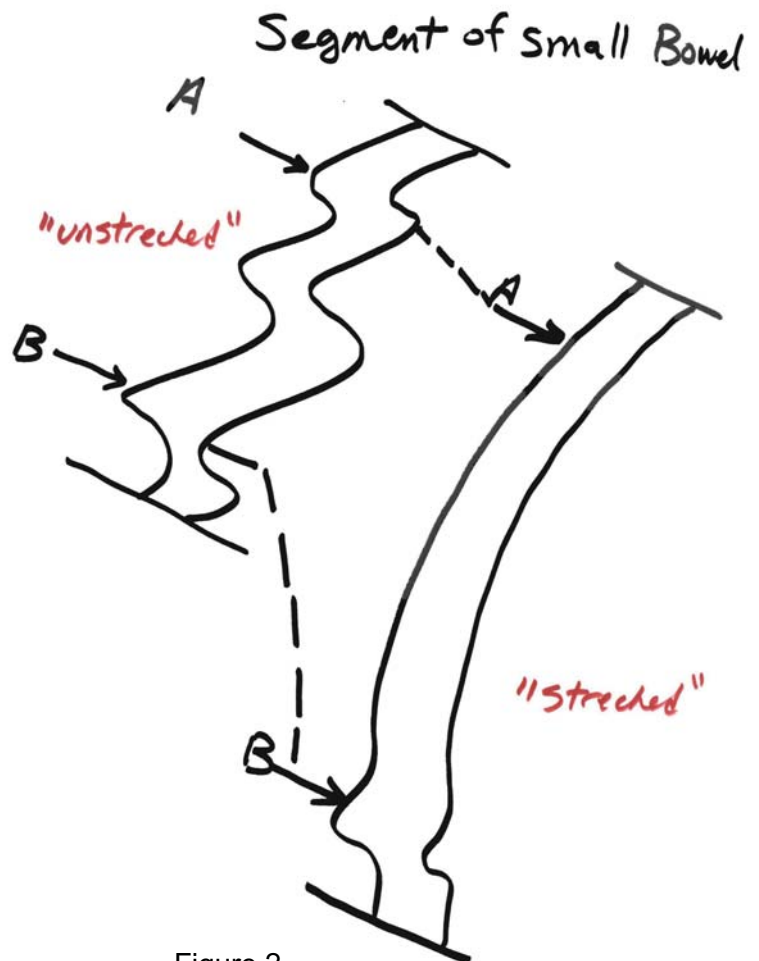


Figure 2

# Does Length Of Small Bowel Matter?

additions to the required absorption of the calories. Short gut syndrome is a very difficult surgical problem to solve.

Getting back to our discussion however, we can now appreciate how two surgeons can measure the same amount of small bowel (the same absorptive capacity) but end up with different lengths of small bowel. Same amount of bowel, same absorptive capacity, different lengths.

This is why comparing lengths of small bowel is probably not the most accurate way to. Two patients, both with 75 cm common channels may have very different absorptive capacity, unless the bowel was measured by the same surgeon, and

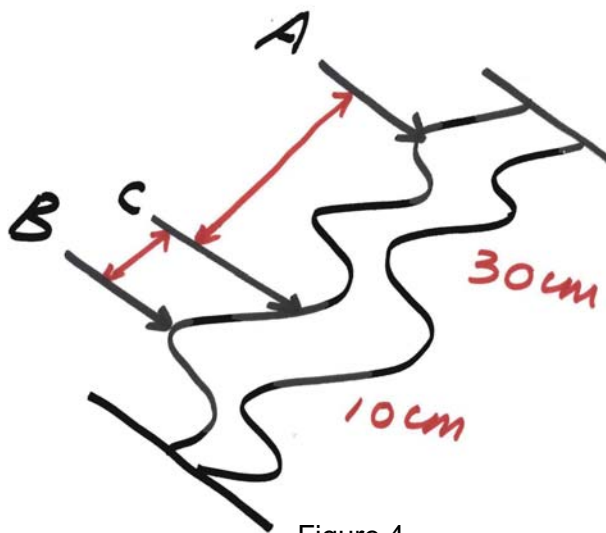


Figure 4

both patients had the same amount of total bowel length.

We should next consider a possible alternative. Consider the drawing on figure 3 and 4. The distance between C and B is 25% (quarter) of the total length between A and B. This represents a segment of bowel that was measured and marked

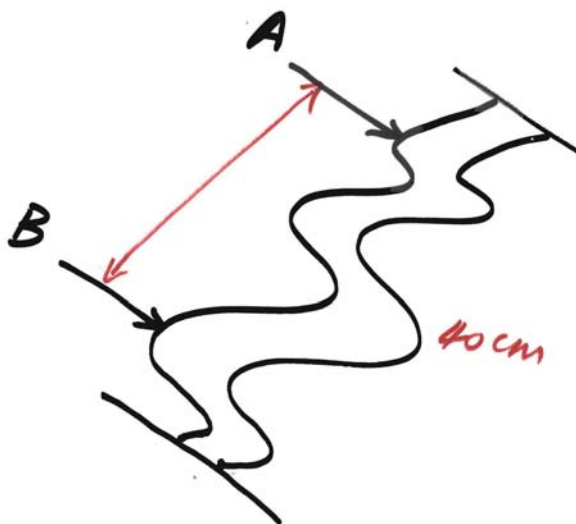


Figure 3

Now let's take the same amount of bowel and apply a little more pull force to the ends while measuring it. We will have a total length of 80 cm, between A and B (figure 5). The distance between A and C will be 60 cm and the distance between C and B will be 40 cm (figure 6). The absolute lengths then are double of the first case. Same amount of bowel, same absorptive capacity yet double the length. Does this mean

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Lets now however look at this from another perspective. In both cases the distance between C and B was only 25% of the total length.

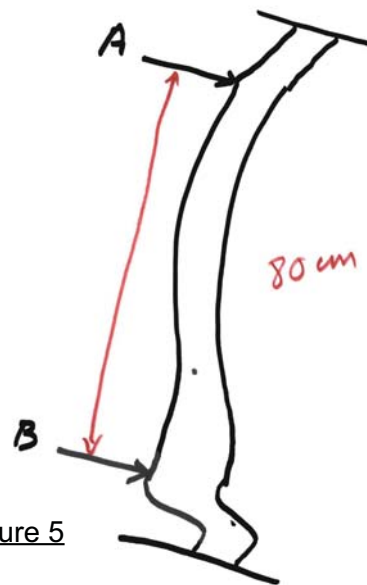


Figure 5

that the second patient with distance between C and B at 20 cm will absorb twice as much as the first patient? The answer is no, since it was the same amount of bowel that was measured with different technique.

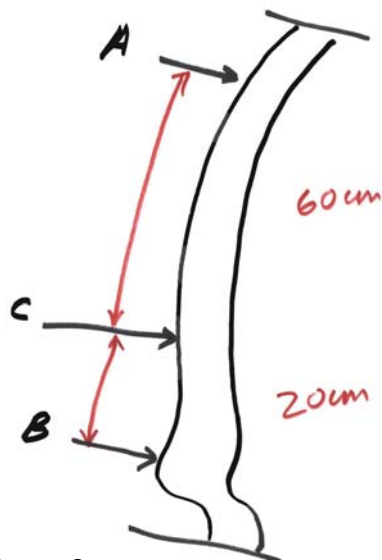


Figure 6

Distances	Figures 3 & 4	Figures 5 & 6
Total length A-B	40 cm	80 cm
A-C	30 cm	60 cm
% of total	25%	25%

The table above shows why lengths of bowel discussed in-terms of percentage of total may be a more standardized than the absolute numbers.

In this example both patient will have same absorptive capacity (25%) yet will have much longer absolute lengths.

In our practice, we measure the total length and the common channel and the alimentary lengths are based on the patient BMI, co-morbidities, age, sex, and activity level.

Please remember that this is only my opinion, different surgeons do it differently.