

# Duodenal Aspirates Shed Light on Small Intestinal Bacterial and Fungal Overgrowth (SIBO/SIFO) in Crohn's Disease Patients

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## Background

- Small intestinal bacterial overgrowth (SIBO) is a common cause of gas, bloating, abdominal pain, and bowel habit changes.
- SIBO is particularly prevalent in Crohn's Disease (CD) in which meta-analyses have demonstrated a 25.4% prevalence.
- SIBO is defined as a concentration of  $\geq 10^4$  colony-forming units (CFU)/mL in the small intestine as determined by duodenal aspirate culture.
- Most of the current literature regarding SIBO in CD patients is based on breath testing rather than duodenal aspirates, which are not widely available.
- Here we present data on aspirate testing in CD patients compared with age/sex controls.

## Methods

- The study was a retrospective chart review, obtaining information from the Mercy Medical Center electronic medical record on patients who underwent small intestine aspirates testing from 9/1/19-10/1/23.
- Inclusion criteria involved adult subjects aged 18 years or older who completed upper endoscopy with aspirate culture and carried a diagnosis of CD.
- Data collected included: age, gender, BMI, known risk factors for SIBO and small intestinal fungal overgrowth (SIFO), and gastrointestinal symptoms prior to testing and following treatment.
- Each selected CD patient was paired with an age matched control from the same database.

## Results

**Table 1: Overall Patients' Characteristics**

Variable	Control (n=31)	Crohn's Disease (n=31)	p-value
<b>Demographics</b>			
Age	48.48 ± 14.27	48.39 ± 14.34	0.979
BMI	25.80 ± 6.78	26.57 ± 6.75	0.654
<b>Risk Factors</b>			
Abdominal Surgery	17 (55%)	16 (52%)	0.799
Altered Anatomy	0 (0%)	9 (29%)	0.001
PPI Use	21 (68%)	19 (61%)	0.596
Immunocompromised	0 (0%)	16 (52%)	<0.001

**Table 2: Rates of SIBO/SIFO Among CD Patients**

Variable	Control (n=31)	Crohn's Disease (n=31)	p-value
<b>Culture Data</b>			
SIFO (+)	11 (35%)	17 (55%)	0.126
SIBO (+)	17 (55%)	24 (77%)	0.06

**Table 3: Symptom Improvement**

Variable	Control (n=31)	Crohn's Disease (n=31)	p-value
<b>Outcomes</b>			
Symptom Improvement	12 (67%)	11 (58%)	0.582

**Table 4: Rates of Concurrent SIFO among CD patients with SIBO**

Variable	Control (n=17)	Crohn's Disease (n=24)	p-value
<b>Culture Data</b>			
SIFO (+)	7 (41%)	17 (71%)	0.058

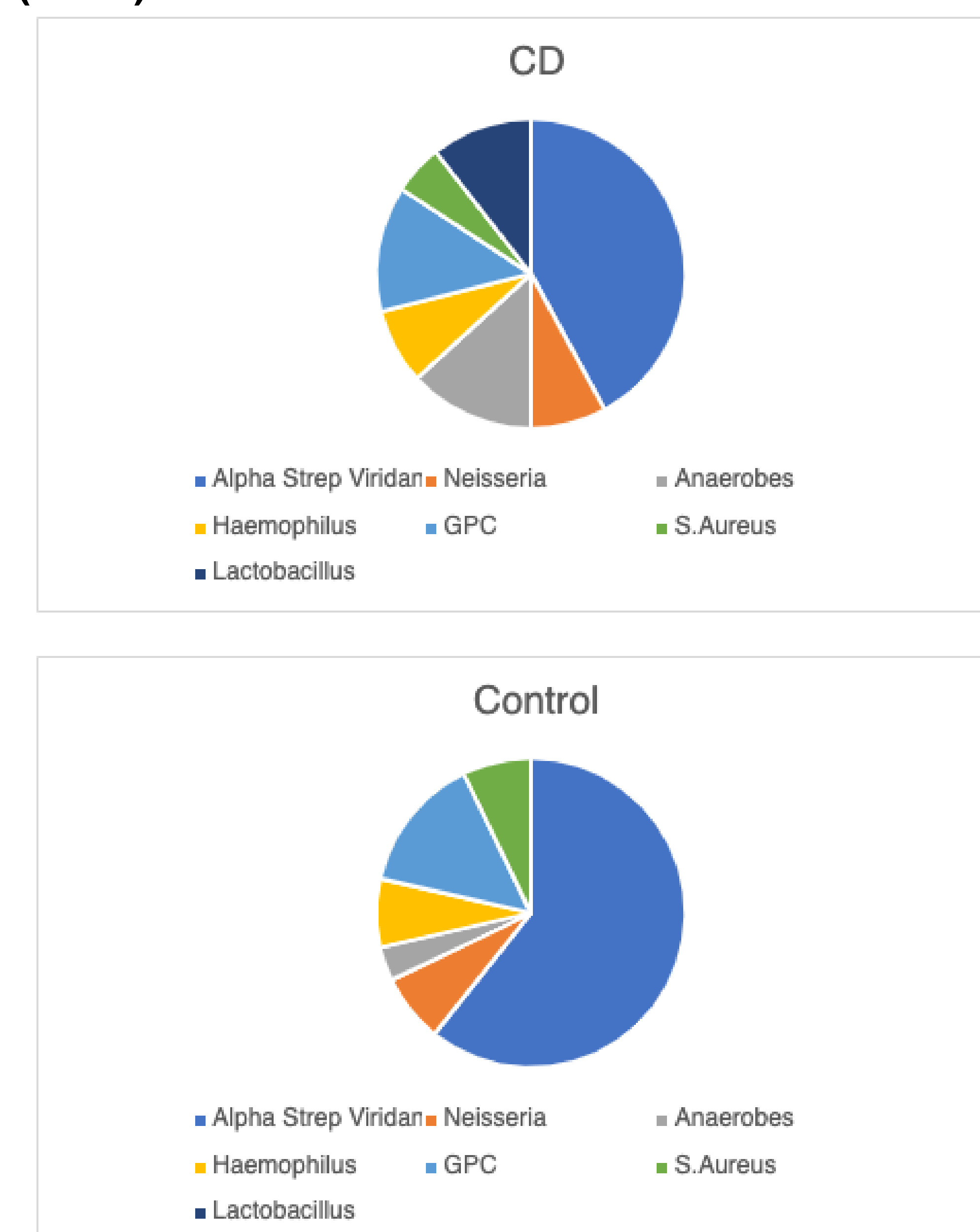
**Table 5: Patients' Characteristics in patients with SIBO (CD vs Controls)**

Variable	Control (n=17)	Crohn's Disease (n=24)	p-value
<b>Symptoms</b>			
Bloating	16 (94%)	19 (79%)	0.182
Distension	13 (76%)	8 (33%)	0.006
Abdominal Pain	11 (65%)	17 (71%)	0.678
Nausea	8 (47%)	12 (50%)	0.853
Vomiting	4 (24%)	4 (17%)	0.585
Constipation	11 (65%)	5 (21%)	0.005
Diarrhea	4 (24%)	12 (50%)	0.087
<b>Risk Factors</b>			
Abdominal Surgery	11 (65%)	13 (54%)	0.5
PPI Use	11 (65%)	18 (75%)	0.475
Probiotics	7 (41%)	8 (33%)	0.607
Immunocompromised	0 (0%)	13 (54%)	<.001
Altered Anatomy	0 (0%)	8 (33%)	0.008
Steroids	0 (0%)	21 (70%)	N/A
Biologic	0 (0%)	15 (50%)	N/A

**Table 6: Frequency of Dominant Organism (SIBO)**

Bacteria	CD	Control
Alpha/Strep Viridans	16	17
Neisseria	3	2
Anaerobes	5	1
E.coli	0	1
Haemophilus	3	2
CoNS	0	2
GPC	5	4
S.aureus	2	2
Diphtheroids	0	2
Prevotella	0	0
GNB	1	0
GNR	0	0
Lactobacillus	4	0
GPB	0	0

**Figure 1: Frequency of Dominant Organism (SIBO)**



## Results

- CD patients had (+) SIBO in 77% (n=24/31) of aspirates compared to 55% (n=17/31) in control group.
- CD patients had (+) SIFO in 55% (n=17/31) of aspirates compared to 35% (n=11/31) in control group.
- Furthermore, 71% (n= 17/24, P =.058) of CD patients with (+) SIBO aspirates had (+) SIFO aspirates and 100% (n=17/17, P=.007) of CD patients with (+) SIFO aspirates had (+) SIBO aspirates.
- Overall, both CD and control cohorts improved with antimicrobial therapy at similar rates (58% vs 67%).

## Conclusion

- Most notably, the current study shows 71% rate of SIFO diagnosis in CD patients with (+) SIBO.
- Additionally, 100% of CD patients with (+) SIFO aspirates had (+) SIBO aspirates.
- Aspirate data also showed higher rates of anaerobes and lactobacillus species in CD patients.
- These results suggest that CD patients may benefit from an antibiotic regimen targeting anaerobic growth or empiric anti-fungal therapy for treatment of suspected overgrowth related symptoms.**

## Contact Information

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