# Episode Book

EPISODE #6359

# When Eating Triggers Breathlessness Without Reflux

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## SYNOPSIS

Breathlessness after eating is frequently blamed on acid reflux or food allergies, but muscle mechanics often tell a different story. In abdominophrenic dyssynergia, the diaphragm paradoxically contracts downward while the abdominal wall relaxes, altering posture and breathing effort without large increases in gut gas. This episode examines clinical trials on acid suppression, the mechanics of post-cholecystectomy symptoms, and why an enlarged abdomen after meals can represent a coordination reflex rather than trapped air or inflamed bronchial tubes.

# TRANSCRIPT



### Corn

Reflux gets the headline whenever eating and asthma appear together. Daniel wants to know what happens when acid is not the main event. Since gallbladder removal, his digestive symptoms and breathing have become much more troublesome, with abdominophrenic dyssynergia in the mix. What stands out is that eating itself seems to matter more than the ingredients. Fasting brings relief. He wonders whether surgery amplified a diaphragm and digestive problem that was already there, and whether medicine has something better to offer than permanently negotiating the size of lunch.



### Herman

The hidden mechanism worth pursuing is muscle coordination. A meal changes abdominal volume, sensation, posture, and reflex activity. Your airways can remain the same width while breathing feels much harder. Asthma can coexist with that, which makes the experience difficult to untangle.



### Corn

His question also has a historical edge. People linked full stomachs and wheezing centuries before inhalers existed. Were they noticing the same thing, or putting several different problems under one name?



### Herman

Probably several problems. The useful move is to separate what has been measured from what sounds anatomically persuasive. Reflux gives us a good example of why those are different.



### Corn

Acid has had excellent publicity.



### Herman

Acid suppression has had a much less impressive record for asthma. A large esomeprazole trial did not improve asthma control even among participants with acid reflux. Across broader reviews, proton pump inhibitors have limited effectiveness for symptoms outside the oesophagus, including asthma. That leaves a substantial distance



### Herman (continued)

between finding reflux and establishing that reflux drives somebody's breathing trouble.



### Corn

Although a failed acid treatment does not prove the diaphragm did it. You can hear a door rattling, oil the hinges, and still have a loose handle.



### Herman

Yes. Acid suppression changes acidity more reliably than it stops material coming upward. Non-acid reflux remains possible. There can also be independent asthma, a breathing-pattern problem, or several contributors simultaneously. I get excited about the diaphragm, Corn, but I cannot promote it on the strength of another treatment failing.



### Corn

You had already straightened its little nameplate.



### Herman

It earned an interview. No appointment yet.



### Corn

The distinction I care about is between a trigger and the machinery responding to it. If several meals with unrelated ingredients produce the same abdominal expansion and breathlessness, removing ingredients indefinitely seems like a rather expensive way to study the wrong variable.



### Herman

Meal size, timing, and the sequence of symptoms become informative. Does visible distension arrive with breathlessness? Does the chest feel restricted before any burning or regurgitation? Those observations can help distinguish mechanisms, although timing alone cannot diagnose one.



### Corn

Nor does breathlessness automatically mean the asthma itself has intensified. That seems especially important when someone already owns the diagnosis and all the equipment.



### Herman

Asthma involves variable airflow limitation, usually with airway inflammation. Breathlessness describes an experience. That experience can arise from bronchial narrowing, altered respiratory muscle work, or a mismatch between breathing effort and the ventilation achieved. A person with asthma can experience any of those.



### Corn

A familiar label can become a very crowded cupboard.



### Herman

Post-cholecystectomy syndrome is another broad label. It means persistent or new symptoms after gallbladder removal, with multiple possible causes. APD names a more specific coordination pattern. Keeping those levels separate helps us avoid treating everything that followed surgery as one disorder with one explanation.



### Corn

The reflux explanation does at least have actual routes into the lungs. It is not just two organs sharing an unfortunate neighbourhood.



### Herman

There are two conventional routes. Material can reach the airway through aspiration or microaspiration and irritate it directly. Alternatively, reflux can stimulate sensory pathways in the oesophagus, with vagal reflexes contributing to airway constriction. In that second route, acid does not have to arrive inside the lung.



**Corn**

The oesophagus can complain by calling another department.



**Herman**

Lung disease can push in the other direction too. Altered respiratory mechanics and pressure changes can favour reflux. Someone struggling to breathe may generate conditions that promote upward movement from the stomach. Seeing reflux and asthma together therefore does not tell you which started the cycle.



**Corn**

That bidirectionality matters. If breathing trouble creates reflux, treating reflux might relieve burning without touching the original breathing trouble. The prescription worked on the symptom it was built for, while the hoped-for bonus never arrived.



**Herman**

There may also be a vulnerable subgroup where reflux treatment helps. The negative trial result argues against indiscriminately expecting acid suppression to improve asthma. It does not erase reflux-mediated airway symptoms.



**Corn**

Fine. Acid keeps its desk, loses the corner office.



**Herman**

Now picture the abdominal response to a load. Not a normal breath, specifically the accommodation response to increased abdominal contents. In healthy people, the diaphragm can relax and move upward while the front abdominal wall increases its tone. The contents are redistributed without a large forward protrusion.



**Corn**

I would have guessed the opposite. Relax the belly to make room.



**Herman**

Local relaxation sounds sensible, but the whole enclosure matters. In APD, the diaphragm contracts downward while the anterior abdominal wall relaxes. That combination shifts contents downward and forward. The abdomen can visibly enlarge without acquiring a large new volume of gas.



**Corn**

Wait.



**Corn**

The extra belly can mostly be a change of arrangement?



**Herman**

Yes. The shape changes because the muscular boundaries change. That is different from saying every distended abdomen has normal gas volume. Obstruction and other causes of genuine gas retention exist. Here we are discussing a measured pattern in people with functional distension.



**Corn**

I can see why people find that hard to believe. Their waistband changes, somebody says there is not much extra gas, and it sounds as though the waistband has become a witness of questionable character.



**Herman**

The waistband is reporting something real. The inference about gas can be wrong. In an early experiment, twenty people with bloating and fifteen healthy controls received a colonic gas load. The healthy group relaxed the diaphragm and increased anterior wall tone. The symptomatic group showed the reverse pattern and developed more distension.



### Corn

Same kind of challenge, different muscular response. That gets us beyond arguing about whether someone feels bloated enough.



### Herman

A later objective evaluation followed a hundred and thirty-nine patients. Almost everyone showed an increase in measured girth during distension. Imaging and muscle recordings corroborated the change rather than relying solely on how the patients described it.



### Corn

The more decisive observation is the gas measurement. In ninety-nine patients, gas volume stayed within about three hundred millilitres of baseline. That does not mean absolutely nothing changed inside, but it is a poor foundation for the claim that a dramatically larger belly must contain dramatically more gas.



### Herman

What would you change first if you were designing the assessment, Corn? The food list, or the way the episode gets recorded?



### Corn

The recording. Ingredients still matter, but I would want the order of events. Meal, pressure, visible expansion, breathing restriction, recovery. Otherwise every diary entry becomes a suspect ingredient without a crime scene. I would also separate feeling bloated from visibly becoming distended. They can overlap without being interchangeable.



### Herman

That distinction changes what the evidence can answer. A tape measure captures girth. Imaging captures configuration and contents. Muscle recording captures recruitment. None by itself tells you what the person's airways are doing.



**Corn**

There is the gap you were heading toward.



**Herman**

The diaphragm is our principal inspiratory muscle. If its position and tonic activity change, and the rib cage responds with increased activity, breathing can become uncomfortable or inefficient. APD offers a coherent mechanical explanation for meal-associated breathlessness. The important qualification is that the APD literature has largely measured the abdomen, not the breathing consequence.



**Corn**

Meaning the beautiful diagram has got ahead of the spirometer.



**Herman**

A little. More than a little if someone claims APD has been shown to cause asthma. It has not. Direct measurements of breathlessness and lung function during these APD episodes are the missing bridge. We know the coordination pattern exists. Its respiratory contribution needs to be measured rather than granted.



**Corn**

Still, no allergy is required for that proposed contribution. A diaphragm does not need an immune objection to lunch before it can move unhelpfully.



**Herman**

Correct. The response is described as somatic and behavioural, meaning an acquired or modifiable motor response. Behavioural does not mean deliberately performed. Much of breathing, posture, swallowing, and abdominal muscle recruitment happens outside conscious attention.



**Corn**

Nobody is secretly choosing an afternoon of restricted trousers.



**Herman**

Nor does retraining imply the person could have stopped it by trying harder. You can have a genuine coordination problem involving healthy muscle tissue. The issue is how the system recruits that tissue in response to sensation.



**Corn**

That also changes the meaning of eating as a trigger. A particular food could produce discomfort, and the discomfort could recruit the response. Once established, other meals might recruit it too. That is my guess, rather than proof that the stomach has become indiscriminate.



**Herman**

That fits the broader framework of visceral sensitivity and altered motor responses. It also explains why reducing fermentation might help one part of someone's symptoms without resolving the visible distension. Different contributors can sit in the same episode.



**Corn**

Where does removing the gallbladder enter that picture? My instinct is changed signalling and changed gut behaviour, rather than a surgeon physically knocking the diaphragm out of alignment.



**Herman**

That is the more plausible starting hypothesis. The liver continues producing bile after gallbladder removal, but storage and meal-related delivery change. Some people develop bile-related bowel symptoms. Altered motility, discomfort, or changed abdominal recruitment might then amplify an existing pattern. Those are candidate pathways, not an established chain from the operation to APD.



**Corn**

Daniel knows the symptoms worsened after surgery. The uncertainty is the connection between the steps, not whether his own before and after happened.



**Herman**

I have not seen a direct causal study linking cholecystectomy to APD or asthma. A pre-existing vulnerability becoming more troublesome after a digestive change makes biological sense. Surgery could also coincide with another contributor. We cannot choose between those explanations solely from the anatomical proximity.



**Corn**

Post-cholecystectomy syndrome sounds like something that should have a narrower definition by now.



**Herman**

It has been recognised since nineteen forty-seven. A recent review gives an upper estimate of forty-seven percent for persistent or new symptoms after surgery. That is a broad symptom category, not a forty-seven percent rate of surgical injury, and certainly not the prevalence of APD.



**Corn**

Seventy-nine years is a long time to leave a folder marked miscellaneous.



**Herman**

Its breadth reflects different conditions. Residual or recurrent biliary problems, bile-related bowel changes, reflux, other digestive disorders, and functional symptoms can all enter the discussion. Some symptoms also existed before the operation and remain afterward.



**Corn**

People who return complaining of symptoms are not representative of everyone who had the operation.



**Herman**

Biliary-type pain illustrates that. Older estimates put it around one to one and a half percent in unselected postoperative patients, versus fourteen percent in selected symptomatic groups. Those populations answer different questions.



**Corn**

Would you trust a treatment study that simply enrolled people under the syndrome label?



**Herman**

Only if it defined their symptoms and likely mechanisms carefully. Otherwise an effective treatment for bile acid diarrhoea could appear disappointing because many participants had a different problem. The same applies to APD retraining. Selection matters as much as enthusiasm.



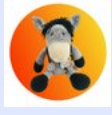
**Corn**

That last sentence must have cost you something.



**Herman**

Less than enrolling the wrong patients.



**Herman**

You are about to defend slow digestion as an experimental control, aren't you?



**Corn**

I was going to say that removing meals removes several variables simultaneously. My digestive timetable is not accepting peer review today.



**Herman**

Fair. Fasting changes abdominal loading, reflux opportunities, and the meal-linked sensory stimulus. We should keep all of those in view.



**Corn**

Before we leave the mechanics, Lars joins us as honorary chair of the Nordic Institute for Load-Bearing Viscera, and author of The Breathable Sideboard. Lars, as our guest expert, what would you actually recommend for someone whose breathing is driven by the mechanics of eating?

L

**Lars**

Thank you. Before I answer, I should be honest about my expertise. I design furniture. But I have listened very carefully, and I believe the problem is that you have too many parts.



**Herman**

Could we keep the anatomy intact and focus on coordination?

L

**Lars**

The diaphragm, the gallbladder, the airway, the meal. Four parts. Remove one and the structure becomes stable. I call this piece the Vilsund. It is a low stool with no seat.



**Herman**

For the person whose symptoms worsened after surgery, could you distinguish an observation from a proposed explanation?

L

### Lars

You ask about the gallbladder removal worsening things. Yes. When you remove a part, the remaining parts must learn a new balance. This is true of shelving and also of the body. The Vilsund has no instruction manual, which is the point.



### Herman

Could your recommendation accommodate the continuing requirement to eat?

L

### Lars

Fasting. Smaller meals. These are attempts to remove the meal itself. Very good instinct. But they leave the eating. My solution removes the eating entirely. The Vilsund holds nothing, so nothing can be held wrongly.



### Herman

Perhaps we should narrow this to something testable over a normal meal?

L

### Lars

I am afraid I cannot stay for the historical section. I have another booking, a small table with three legs, and it will not assemble itself. Thank you for having me. The Vilsund is available in birch.



### Corn

Daniel's fasting experience is especially useful precisely because a meal changes several variables. Relief tells us the fed state matters to his symptoms. It does not select acid, abdominal coordination, or airway physiology as the sole explanation.



### Herman

Would that observation persuade you to abandon the food-intolerance hunt?



### Corn

It would persuade me to stop making it the only hunt. If taking out a particular ingredient helps consistently, keep that information. If virtually any meal causes the same sequence, investigate the sequence. Otherwise you eventually produce a diet containing water and suspicion.



### Herman

There is not a dedicated body of fasting and asthma-control evidence here that settles the mechanism. Daniel's relief still gives us a concrete observation to explain. A measured study would need to distinguish improved breathing comfort from improved airflow and reduced airway inflammation.



### Corn

The old physicians did not have those distinctions available. They could see somebody eat, lie down, and wheeze.



### Herman

Maimonides wrote about that association in the twelfth century. His Treatise on Asthma strongly warned against overeating and linked eating, lying down, and wheezing. That is recognisable clinical observation across a very long stretch of time.



### Corn

Recognisable, but not a medieval diagnosis of APD.



### Herman

No. Reflux, abdominal loading, and several forms of respiratory illness could have contributed. Historical asthma also did not map neatly onto today's diagnostic categories. The value is that meal-associated breathing trouble was visible long before modern disputes about acid.



**Corn**

It also explains the durability of smaller-meal advice. You can observe that something helps without knowing which component of the meal response you changed.



**Herman**

Nineteenth-century reflex theories went further. They proposed that stimuli outside the lungs, including a full stomach or certain foods, could act through nerves to provoke lung contraction. That framework sometimes gathered too many things under one explanation, but the idea of communication between digestive sensory pathways and airways was not absurd.



**Corn**

Then the twentieth century supplied the wonderfully awkward acid reversal.



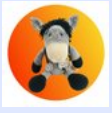
**Herman**

R. G. W. Bray described a series of a hundred children with asthma, with low free gastric acid reported in three quarters. He claimed that giving dilute hydrochloric acid before meals had a beneficial effect on their asthmatic tendency.



**Corn**

Medicine has now tried both positions on the acid dial.



**Herman**

That old uncontrolled experience cannot establish efficacy. It gives us no secure way to separate treatment effects from fluctuating symptoms, patient selection, or diagnostic differences. The historical lesson is about how readily a gut observation becomes a universal explanation.



**Corn**

You are remarkably stern with an elegant mechanism when it belongs to a dead physician.



**Herman**

I am trying to extend the courtesy to my own favourites.



**Corn**

Keep going. It suits you.



**Herman**

Biofeedback gives us something much stronger than either historical speculation or generic advice. It measures the movement pattern, shows the person a signal they ordinarily cannot see, and trains a different response.



**Corn**

I am interested in that because telling someone to relax their stomach could conceivably encourage exactly the wrong part of this pattern. The front wall is already relaxing.



**Herman**

A generic instruction to breathe into the belly is not automatically equivalent to APD treatment. Targeted biofeedback addresses coordinated movement of the thorax and abdomen. The goal is the demonstrated pattern and its correction, rather than performing a reassuring-looking breath.



**Corn**

A larger belly movement is not necessarily a higher score.



**Herman**

The randomised trial in Gastroenterology enrolled forty-two people with meal-triggered visible distension. Inductance belts monitored movement around the chest and abdomen, and participants could see the signal. They learned to modify the pattern produced by the provoking meal.



**Corn**

That is an important design choice. You train against the thing that actually brings it on, rather than awarding someone perfect breathing while nothing is happening.



**Herman**

Training involved three sessions over four weeks, with exercises at home. The comparison group received a placebo capsule. After training, the biofeedback group showed large changes in muscle recruitment and associated girth.



**Corn**

A capsule cannot hide the fact that the other group is receiving training. I would not treat that as a perfectly blinded contest.



**Herman**

Neither would I. The objective muscle changes make it more persuasive than symptom reports alone, but the trial remains small and the attention given to the groups differs. It is evidence of a trainable abdominal pattern, not a final answer about every symptom associated with it.



**Corn**

What changed in the muscles is the part I would keep.



**Herman**

Intercostal activity fell by roughly eighty-two percent, while anterior abdominal wall activity rose by about ninety-seven percent. Those are changes in recorded activity under the trial conditions. They do not mean breathing improved by eighty-two percent.



**Corn**

Percentages should come with the noun permanently attached.



**Herman**

Earlier work in forty-five patients also demonstrated the abdominothoracic pattern and correction with biofeedback. The rationale resembles other retraining approaches for disordered coordination, including rumination and functional outlet problems. The common feature is access to a signal that makes an otherwise elusive response learnable.



**Corn**

That is much more satisfying than smaller meals as a lifelong instruction. Smaller meals may reduce the challenge. Training potentially changes how the body responds to the challenge.



**Herman**

Potentially, yes. The strongest claim is correction of distension and its muscular pattern. Whether that also reduces breathlessness, improves spirometry, or changes asthma treatment requirements remains unanswered.



**Corn**

I would want those outcomes separated even if they all improved. Feeling less restricted after lunch would matter without a change in airway inflammation. It would just mean a different contributor had been relieved.



### Herman

Breathing-pattern work on the respiratory side reinforces that distinction. A recent case report described dysfunctional breathing mimicking an asthma exacerbation in a woman who also had asthma. It included acute hypoxaemia, so dismissing altered breathing patterns as merely uncomfortable would be wrong too.



### Corn

One case cannot tell us how common that is.



### Herman

It cannot. Nor does it establish an APD connection. A recent randomised trial also tested Buteyko breathing against outcomes including fatigue, exercise capacity, and asthma control. That is adjacent work, not proof that a respiratory retraining technique corrects meal-triggered abdominal dyssynergia.



### Corn

Different training targets, overlapping anatomy. The diaphragm is allowed to appear in more than one paper without all the papers becoming the same treatment.

N

### Neville

Neville Muddledorf, leading authority on lunch-related respiratory coordination. Well, acting authority. I am still the intern. I read the first half of the brief on the bus, then tried to make the symptom diary easier to fill in. Herman, I have put asthma and breathlessness in the same box. Was that the bit we were not doing?



### Herman

They need separate boxes. Asthma is the airway condition; breathlessness is an experience with several possible causes, including altered breathing mechanics. You can record both, but one does not prove a change in the other.

N

### Neville

Oh, that is much better, actually. My school placement form only had a box saying discomfort, which felt a bit small for the whole chest. I made a practice diary with meal time, visible distension, and breathing difficulty. Then I added a column for what happened first. I have not tested it on anyone. The only completed entry is mine, from eating a sandwich while trying to draw the columns.



### Corn

Keep the order column. It stops the ingredient list swallowing the whole investigation.

N

### Neville

Uncle Hilbert would approve of the separate boxes. He keeps everything labelled and dated, with boxes inside boxes. He is on my father's side, which explains the quills, I think. Anyway, I was going to write that a better diary could prove the diaphragm caused it, but that is probably too much for a sheet of paper.



### Herman

It could reveal a consistent sequence and help decide what to measure. Proving the mechanism needs the measurements we discussed, including airflow if the claim concerns asthma.

N

### Neville

Right. Clues, then measurements. I can change the heading. I had called it The Definitive Lunch Investigation, but there is room for another word before definitive...



### Corn

The diary could also keep improvement from being flattened into a single yes or no. Less distension, less effort breathing, and fewer airway symptoms might move together, or they might not.



### Herman

That would make a clinical study much more informative. Measure abdominal motion and girth alongside a breathlessness score and lung function before and after a provoking meal. Then repeat after the targeted training. If abdominal coordination improves while airflow stays unchanged, but breathing comfort improves, we have learned something useful.



### Corn

If airflow changes too, the next task is to establish why. We should resist declaring a vagal mechanism just because the result needs a bridge.



### Herman

Reflux and breathing pattern would need consideration. There could also be different subgroups. Some participants might have predominantly mechanical discomfort, others established asthma with an additional abdominal burden.



### Corn

You could recruit postoperative patients without assuming the operation created the pattern. Record what symptoms existed before, what changed afterward, and whether the measured response differs from people who have APD without surgery.



### Herman

That would directly address Daniel's suspicion rather than borrowing certainty from the name post-cholecystectomy syndrome. I would also care about what happens away from the training room. A corrected trace during a supervised meal is encouraging. Sustained improvement during ordinary eating is the practical test.



### Corn

Including meals where nobody has placed a belt around you and asked you to concentrate on your abdomen. Lunch already has enough administration.



### Herman

Access matters too. Specialist biofeedback is more demanding than handing out a leaflet. If simpler training could preserve the same measured correction, it might reach more people. Simpler has to mean easier to deliver, though, not vaguely similar instructions with the measurement removed.



### Corn

There is one adjacent detail worth rescuing before we finish. Postoperative pain has often been blamed on the sphincter of Oddi, but invasive investigation has consequences.



### Herman

In people with atypical pain and no evidence of biliary obstruction, ERCP is specifically discouraged in the review we discussed. A broad syndrome label is not enough reason to pursue an invasive biliary procedure.



### Corn

The study I would most like to see now is the ordinary-meal test with abdominal motion and breathing measured together. Daniel's experience deserves that level of explanation, rather than an automatic return to either food avoidance or acid.



### Herman

Thanks to Hilbert Flumingtop for producing the show, and to Neville for covering the desk.



### Corn

If you want more of this, try episode three ninety-three, The Bloating Glitch; episode twenty-four ninety-one, How Your Stomach Relaxes to Eat (And When It Breaks); and episode five ninety-seven, Retraining the Gut-Brain Circuit After Surgery. This has been My Weird Prompts, the human-AI collaboration podcast. No question too obscure, no rabbit hole too deep.



**Herman**

If you enjoyed this episode, please leave a review and subscribe.



**Corn**

See you tomorrow.



**Herman**

Until then.

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