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Rectal Distension, Pelvic Floor Reflexes, and Difficulty During Intermittent Self-Catheterisation: A Patient-Investigator Hypothesis in the Context of Secondary Autonomic Dysfunction

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Abstract

Background

Difficulty passing an intermittent urinary catheter through the external urethral sphincter and bladder outlet is a common challenge among men who require self-catheterisation. Mechanical causes, including prostatic enlargement, urethral stricture, and bladder neck obstruction, are well recognised. The dynamic interactions among rectal filling, pelvic floor reflexes, autonomic regulation, and urinary outlet function are less well understood.

Objective

To examine a reproducible clinical observation in which successful intermittent catheter passage appears to depend on prior rectal evacuation, and to explore the anatomical and physiological mechanisms that may underlie this phenomenon.

Methods

A patient-investigator with established secondary autonomic dysfunction observed a consistent relationship between rectal contents and the ability to pass a coudé-tip catheter into the bladder. Repeated informal observations were considered in light of current understanding of pelvic anatomy, bladder–bowel interactions, autonomic physiology, and lower urinary tract function.

Results

Catheterisation was consistently difficult or impossible when faecal material remained in the rectum. By contrast, catheter passage was routinely successful when bowel evacuation had occurred approximately one hour beforehand. Existing literature indicates that rectal distension can influence bladder function through mechanical and neurophysiological mechanisms. Rectal filling may alter pelvic anatomy, increase urethral outlet resistance, activate continence reflexes, and affect pelvic floor muscle tone. These effects may be amplified in individuals with autonomic dysfunction.

Conclusion

This observation supports the hypothesis that rectal distension may contribute to transient functional urinary outlet obstruction through a combination of mechanical compression and heightened pelvic floor reflex activity. This interaction may be clinically significant in patients with secondary autonomic dysfunction. Further research is needed to determine whether bowel-management strategies can improve catheterisation success and reduce urinary retention in selected patients.

Keywords: Autonomic Dysfunction, Dysautonomia, Intermittent Catheterisation, Urinary Retention, Rectal Distension, Pelvic Floor Dysfunction, Bladder Outlet Obstruction, Bowel–Bladder Interaction.

1. Introduction

The lower urinary tract and distal gastrointestinal tract share close anatomical relationships, neural pathways, and autonomic regulatory mechanisms. Although clinicians frequently recognise that constipation can contribute to urinary symptoms, the mechanisms by which rectal filling influences urinary outlet function remain incompletely understood. Patients with dysautonomia often experience disturbances affecting multiple organ systems, including gastrointestinal motility, bladder function, sexual function, cardiovascular regulation, and thermoregulation. This pattern suggests dysfunction within integrated autonomic networks rather than isolated organ pathology [1–4]. This paper arises from a reproducible patient observation made during long-term intermittent self-catheterisation: rectal distension appeared to influence substantially the ability to pass a catheter through the external urethral sphincter and bladder outlet.

1.1. Clinical Observation

The author developed significant urinary dysfunction in the context of severe secondary autonomic dysfunction after a multifactorial clinical course that included prior chikungunya virus infection, cardiac perforation during left ventricular outflow tract ablation, emergency open-heart surgery, and prolonged autonomic instability.

Nightly intermittent self-catheterisation formed part of the ongoing bladder-management regimen.
A consistent pattern emerged:

- When stool remained within the rectum, passage of the catheter through the distal urinary outlet was frequently difficult or impossible.
- Repeated attempts often encountered resistance at the level perceived to be the external sphincter or bladder neck.
- When complete bowel evacuation occurred approximately one hour before catheterisation, catheter passage was usually straightforward.
  This pattern was observed repeatedly over an extended period.
- Although anecdotal, the observation's reproducibility suggests a physiological rather than random explanation.

1.2. Anatomical Considerations

Several structures occupy the confined space of the male pelvis.
From anterior to posterior, these structures include:

- The urinary bladder.
- The prostate gland.
- The prostatic urethra.
- The rectum.
- The anal canal and pelvic floor musculature.

The rectum lies immediately posterior to the prostate and bladder base and is separated from them by the rectovesical fascia and associated connective tissues [5]. As faecal material accumulates, the rectum expands anteriorly within the limited pelvic space. This expansion may affect neighbouring structures, including the prostate, bladder neck, and prostatic urethra. Consequently, even moderate rectal distension may alter the geometry of the catheter's passage.

1.3. Mechanical Effects of Rectal Distension

Several studies have shown that rectal distension influences lower urinary tract function [6–8].
Rectal filling may:

- Displace the bladder base.
- Alter bladder neck orientation.
- Compress the posterior aspect of the prostate.
- Increase resistance within the prostatic urethra.
- Reduce urinary flow rates.

These effects are particularly evident in men with prostatic enlargement or pre-existing bladder outlet obstruction [9].

The author's observations are consistent with a transient, mechanically induced increase in outlet resistance caused by rectal expansion.

However, mechanical factors alone may not fully explain the phenomenon.

1.4. Neurophysiological and Reflex Mechanisms

The bladder and bowel share neural pathways that arise primarily from the sacral spinal segments S2–S4 [10].
These pathways involve:

- Pelvic parasympathetic nerves.
- Pudendal somatic nerves.
- Sympathetic hypogastric pathways.
- Central autonomic regulatory networks.

Continence depends on coordinated interactions among the bladder, rectum, pelvic floor, and sphincter mechanisms.

Rectal filling activates continence reflexes that help prevent simultaneous loss of faecal and urinary control [11,12].
Studies indicate that rectal distension can:

- Increase pelvic floor muscle activity.
- Increase external sphincter tone.
- Modify detrusor activity.
- Influence bladder sensation.
- Alter urinary flow dynamics [13-15].

The physiological purpose of these reflexes is to preserve continence.

However, exaggerated activation may produce functional obstruction.

2. Potential Amplification by Secondary Autonomic Dysfunction

The author's broader clinical history is characterised by multisystem autonomic dysfunction affecting:

- Cardiovascular regulation.
- Gastrointestinal motility.
- Thermoregulation.
- Sexual function.
- Bladder control.

This multisystem involvement suggests dysfunction within integrated autonomic regulatory networks rather than isolated organ disease.

Autonomic dysfunction has been associated with impaired pelvic floor coordination, dysfunctional voiding, and detrusor–sphincter dyssynergia [16,17].

In this setting, rectal distension may trigger an exaggerated protective continence response.
A plausible sequence is:

- Rectal filling occurs.
- Pelvic floor activity increases.
- External urethral sphincter tone increases.
- Bladder neck relaxation becomes impaired.
- Catheter passage becomes difficult.

Following bowel evacuation:

- Rectal volume decreases.
- Reflex activation subsides.
- Pelvic floor tone decreases.
- Urethral resistance falls.
- Catheterisation becomes successful.

This hypothesis closely matches the observed clinical pattern.

3. Relationship to the Emerging Concept of Network Dysfunction

Recent research into dysautonomia increasingly supports a model of network dysfunction rather than isolated organ failure [18–20].
Within this framework:

- Gastroparesis may reflect autonomic dysregulation rather than primary gastric disease.
- Functional gallbladder failure may reflect impaired autonomic coordination.
- Reversible pancreatic insufficiency may represent neuroenteric dysfunction.
- Urinary retention may arise from impaired autonomic integration.

The present observation may represent another manifestation of this broader network disorder.

Rather than treating bowel and bladder dysfunction as separate conditions, the evidence suggests that they may be interconnected consequences of dysregulated autonomic control.

4. Clinical Implications

If this hypothesis is confirmed, several practical implications may follow.
Patients experiencing difficult intermittent catheterisation may benefit from assessment of:

- Rectal loading.
- Constipation.
- Pelvic floor dysfunction.
- Autonomic nervous system impairment.

Similarly, bowel evacuation before catheterisation may improve success rates in selected patients.
Such an approach could potentially reduce:

- Failed catheterisation attempts.
- Urethral trauma.
- False passage formation.
- Urinary retention episodes.
- Emergency presentations.

5. Limitations

This report is based on a single-patient observational experience and therefore cannot establish causation.

No formal urodynamic testing, anorectal manometry, or imaging was performed during the observed episodes.

The proposed mechanisms remain hypothetical and require formal investigation.

Nevertheless, the consistency and biological plausibility of the observations justify further investigation.

6. Conclusion

A reproducible association was observed between rectal evacuation and successful intermittent self-catheterisation in a patient with secondary autonomic dysfunction.

Current anatomical and physiological evidence suggests that rectal distension may affect urinary outlet function through both mechanical and neurophysiological pathways.

These findings support the hypothesis that bowel filling may provoke transient functional urinary outlet obstruction, particularly in individuals with autonomic dysregulation.

The observation also reinforces the broader concept that manifestations of dysautonomia may reflect disturbances within integrated autonomic networks rather than isolated organ pathology.

Future studies examining bowel–bladder interactions in autonomic disorders are warranted.

Declarations

Consent for Publication: The author consents to publication.

Conflict of Interest: None declared.

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Central Hypothesis: "Reduced repair reserve under autonomic constraint" is proposed as a hypothesis-generating conceptual model, not as an established diagnostic entity.

Ethics and Consent: This perspective is an autobiographical reflection written by the person whose experience is described. It involves no research participants, intervention, or systematically collected research dataset. The author consents to publication of the personal clinical material included here.

Data Availability: No research dataset was generated or analysed for this perspective. Clinical details are presented selectively in narrative form; source medical records are not publicly available.

Generative AI and Assistive Communication Disclosure

ChatGPT (OpenAI) was used as an assistive communication and manuscript-preparation tool to support organisation, sentence construction, spelling, transcription, and the conversion of the author's notes, clinical observations, timelines, and narrative accounts into academic prose. This use was intended to mitigate substantial dyslexia-related barriers to writing and sequencing, as well as cognitive fatigue. The author supplied and reviewed the substantive content, clinical facts, interpretations, citations, arguments, and conclusions; retained full editorial control; and accepts responsibility for the manuscript. The tool did not generate research data, determine findings, or qualify for authorship.

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