

# Stiff luck: Peri-operative medication management in Parkinson's Disease

Mia Skerda • BBiomedSc. MPharm  
Clinical pharmacist • John Hunter Hospital, Newcastle

## Objective

To report a challenging case of Parkinson's disease management in a patient with a gastric outlet obstruction secondary to gastric volvulus.

## Background

Gastrointestinal symptoms are common in Parkinson's disease (PD) and may give rise to life threatening conditions such as sigmoid volvulus<sup>1</sup>.

Parkinsonism is an extrapyramidal syndrome caused by loss of nerve cells in the pigmented substantia nigra pars compacta and the locus coeruleus in the midbrain<sup>1</sup>.

Symptoms include;

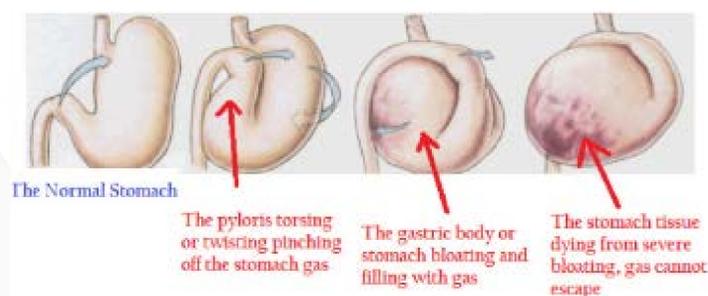
- General rigidity
- Disturbance of posture, gait and tremor
- Gastrointestinal symptoms (swallowing disorder, gastroparesis, constipation, bowel dysmotility and anorectal dysfunction)

Constipation is one of the most common gastrointestinal features in PD patients with occurrence rates of up to 50% observed<sup>2</sup>. Conditions associated with constipation in PD patients include; megacolon and sigmoid volvulus<sup>2</sup>.

Volvulus is the rotation of a hollow viscus either on its mesentery or upwards against its own body<sup>3</sup>. Several reports have suggested sequential dilatation of the proximal sigmoid as the triggering factor for the development of the gastric volvulus<sup>3</sup>.

Gastric volvulus is an abnormal rotation of the stomach around one of its axes; by more than 180 degrees (figure 1). It is a rare clinical entity that is difficult to diagnose and is associated with high mortality (30-50%)<sup>3</sup>.

**Figure 1:** Pathophysiology of gastric volvulus



Borchart's triad of severe epigastric pain, retching and inability to pass a nasogastric tube is present in 70% of cases and is considered to be diagnostic for acute gastric volvulus with complications including; gastric ischemia, gangrene, perforation, pancreatic necrosis, omental avulsion and splenic rupture<sup>3</sup>. Notably as gastric volvulus is a rare condition, prompt diagnosis followed by immediate surgery is key in reducing the high morbidity & mortality<sup>3</sup>.

## Clinical Features

A 78-year-old male was transferred from a rural hospital for further management of gastric volvulus & gastric outlet obstruction.

His only past medical condition was Parkinson's disease and his medication history is summarised in table 1.

**Table 1:** Medication history

Medication Name and Strength	Dose and Frequency
Sinemet CR 200/50mg [Levodopa 200mg/ Carbidopa 50mg]	One tablet orally at nocte (20:00)
Madopar 125mg [Levodopa 100 mg/ Benserazide (HCl) 25 mg]	One and a half tablets (=187.5mg) orally every six hours (08:00, 12:00, 15:00, 18:00)
Amantadine 100mg	One tablet orally in the morning (08:00)
Pramipexole ER 3.75mg	One tablet orally at nocte (20:00)

During his time at the rural hospital the patient was charted medications that could be dispersed and administered via nasogastric tube including; Madopar rapid 187.5mg QID, Kinson 100/25mg BD and pramipexole IR 1.25mg TDS, with dosing recommendations per Don't Rush to Crush Handbook.

Theoretically medication administration appeared plausible however it was most likely that medication absorption would be compromised secondary to the gastric volvulus.

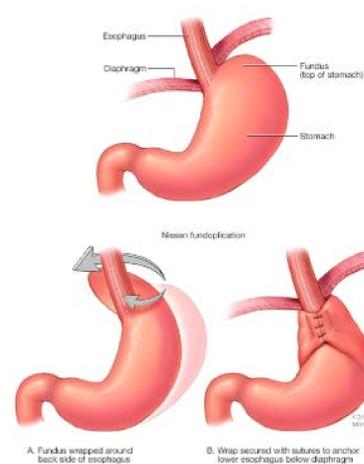
## Interventions, Case Progress and Outcomes

The patient reported increased level of stiffness compared to usual and at the time of review the pharmacist queried why medications were being administered via nasogastric tube (on suction) when the patient had a gastric outlet obstruction.

It was determined that his medication absorption may be compromised and Neurology was consulted. Neurology recommended rotigotine (neupro) 6mg/24 hours patch, in place of usual dopaminergics, until able to maintain oral intake. Notably, the patch was tolerated well, as evidenced by less rigidity.

The patient had a gastroscopy (required anaesthetics, thus the rotigotine patch was continued to reduce risk of parkinsonian crisis) and underwent laparoscopic hiatus hernia repair & anterior 180 degree fundoplication (figure 2).

**Figure 2:** Explanation of 180 degree fundoplication



He recovered well post operatively and two days post operatively he was able to tolerate oral medications, resulting in cessation of rotigotine patch and resumption of all regular pre-admission Parkinson's medications. He was then transferred back to the rural hospital for ongoing care and physiotherapy.

## Discussion

The incidence of sigmoid volvulus in the general population is 1.7/100,000/year<sup>4</sup>. Notably, although the specific incidence in Parkinson's disease is not known, evidence suggests that the incidence is noticeably more than in the general population at 100/100,000/year<sup>4</sup>. Further research into aetiology and exact incidence of sigmoid volvulus in Parkinson's disease is still required<sup>4,5</sup>.

Currently there is limited evidence observed around perioperative management of antiparkinsonian medications with multiple challenges having been identified in medication management for patients with Parkinson's disease in the perioperative setting including; disruption of medication schedules, "nil by mouth" (NBM) status, reduced mobility, medication interactions or side effects of commonly prescribed medications i.e. anti-emetics<sup>6,7</sup>. Moreover, patients with Parkinson's disease are more prone to immobility and developing dysphagia, respiratory dysfunction, urinary retention, and psychiatric symptoms, resulting in higher rates of pneumonia, urinary tract infections, deconditioning, and falls compared with patients without Parkinson's disease, as well as prolonged hospital stays and a greater need for post-hospitalization rehabilitation<sup>6,7</sup>.

Numerous steps can be taken to reduce these complications including; minimizing NBM duration, using alternative routes of drug administration when unable to give medications orally (i.e. patches), avoiding drug interactions and medications that can worsen Parkinsonism (i.e. metoclopramide), assessing swallowing ability frequently and ensuring adequate physical therapy<sup>6</sup>.

## Conclusion

This case highlights the important role of the perioperative pharmacist to aid medication management and improve perioperative patient quality of life.

## References

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