

Nutritional intake in the first seven days after pancreatoduodenectomy: a service evaluation

Emily Button, Rhianydd Jones, Rachael Mullan & Laura McGeeney

Department of Nutrition & Dietetics, Cambridge University Hospitals

Introduction

Following pancreatoduodenectomy, Enhanced Recovery After Surgery (ERAS) guidelines advise removing the nasogastric (NG) tube and encouraging an early normal diet to tolerance without restrictions ⁽¹⁾. ESPEN surgical guidelines state that oral feeding is the preferred route of nutrition for surgical patients but oral diet should be adjusted according to gastrointestinal function and individual tolerance. In patients who are anticipated to be unable to take oral nutrition for five days or longer perioperatively (or less than 50% of recommended energy requirements for seven days) nutritional therapy should be initiated ⁽²⁾. A well-implemented ERAS protocol with good adherence is associated with a reduction in medical complications and length of hospital stay ^(1, 2, 3).

Decisions on progression of nutritional intake after a pancreatoduodenectomy are not standardised at our pancreatic resection centre, and progression can seem slow and variable between patients. The aim of this service evaluation was to review current practice and determine if there was a need for a standardised post operative nutritional pathway.

Methods

A retrospective service evaluation was carried out by reviewing electronic medical records for 33 adults who had a pancreatoduodenectomy at one pancreatic resection centre during 2023. Data was collected for the first seven days after pancreatoduodenectomy on NG output, oral intake stage (nil by mouth, sips, clear fluids, free fluids, solid diet), date of NG removal and commencement of any artificial nutrition support. Solid diet was defined as any diet allowed beyond free fluids. It was also recorded if artificial nutrition was commenced during the admission after the seven days. Data was analysed using Microsoft Excel and stratified for those who did and did not receive artificial nutrition.

Results

Information was collected on 33 adults who had a pancreatoduodenectomy at our centre in 2023 (age 27-83; 19 male, 14 female).

Analysis of nutritional intake in the first seven days post surgery

Figure 1 shows the progression of oral nutritional intake in the first 7 days post pancreatoduodenectomy. Table 1 summarises the use of NG tubes for drainage and the route of nutritional intake by post-operative day (POD) 7. Nineteen patients (58%) still had NG tubes in situ and 18 patients (55%) had not progressed beyond free fluids onto any form of solid diet by POD 7.

POD 7	Number of patients
NG tube in situ	19 patients (58%)
Not progressed onto solid diet	18 patients (55%)
Commenced on artificial nutrition (parenteral or enteral nutrition)	15 patients (46%)
Not progressed onto solid diet & had no alternative route of nutrition	3 patients (9%)

Table 1 Summary of use of NG tubes and route of nutritional intake by POD 7

Fifteen patients (46%) commenced on artificial nutrition in the first seven days (parenteral or enteral nutrition). However, three patients (9%) had not progressed onto solid diet and had no alternative route of nutrition at POD 7.

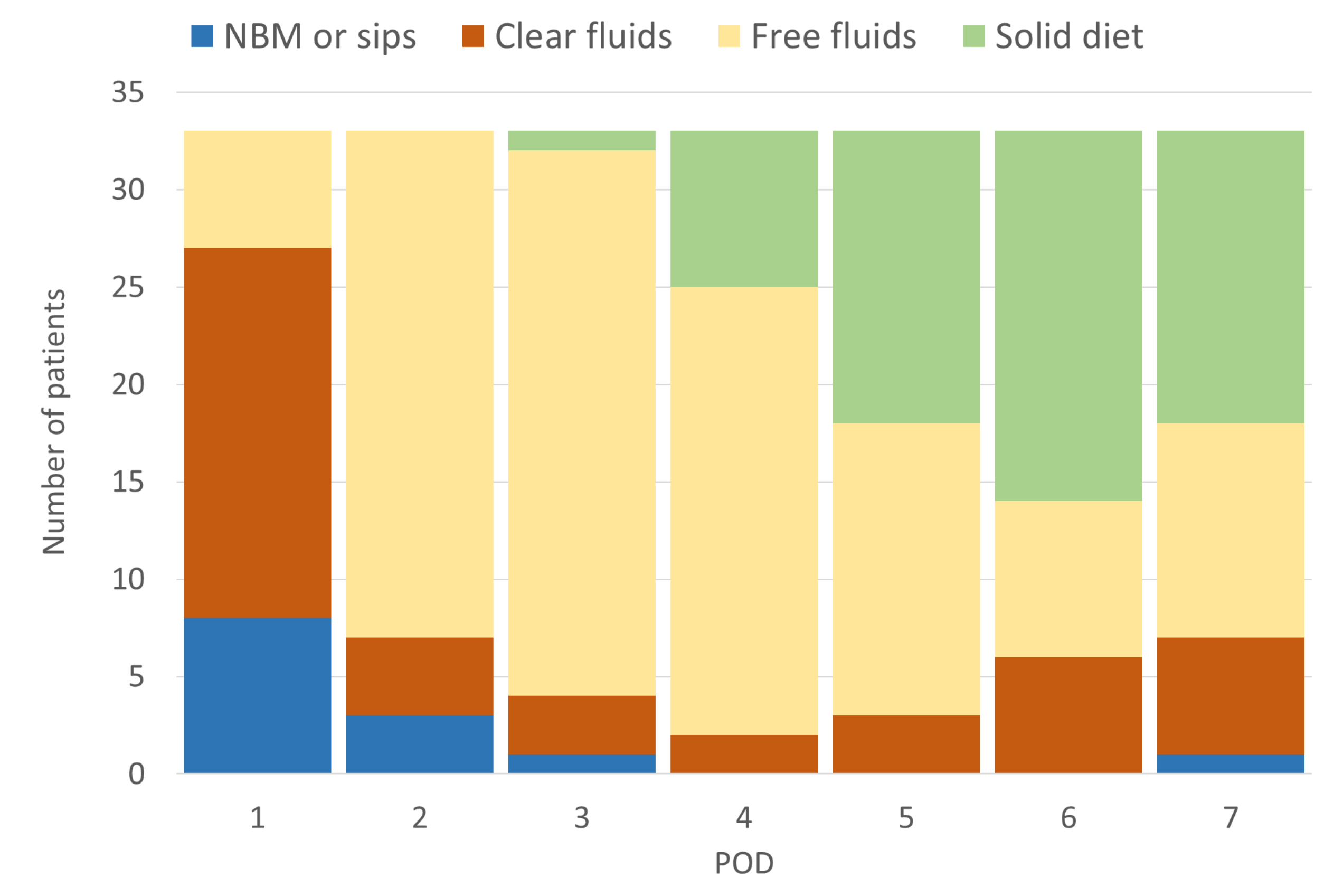


Figure 1 Graph showing oral nutritional intake allowed each day over the first seven days post surgery

Analysis of patients who received artificial nutrition during admission

Figure 2 shows the days when artificial nutrition was commenced post pancreatoduodenectomy. Twenty-three (70%) patients required artificial nutrition over the whole admission. PN was commenced in 19 (58%) patients and the date this was commenced varied from POD 1 to POD 10. Sixteen (48%) patients received NJ feeding and this was commenced between POD 4 and POD 23; 12 of whom had been on PN previously.

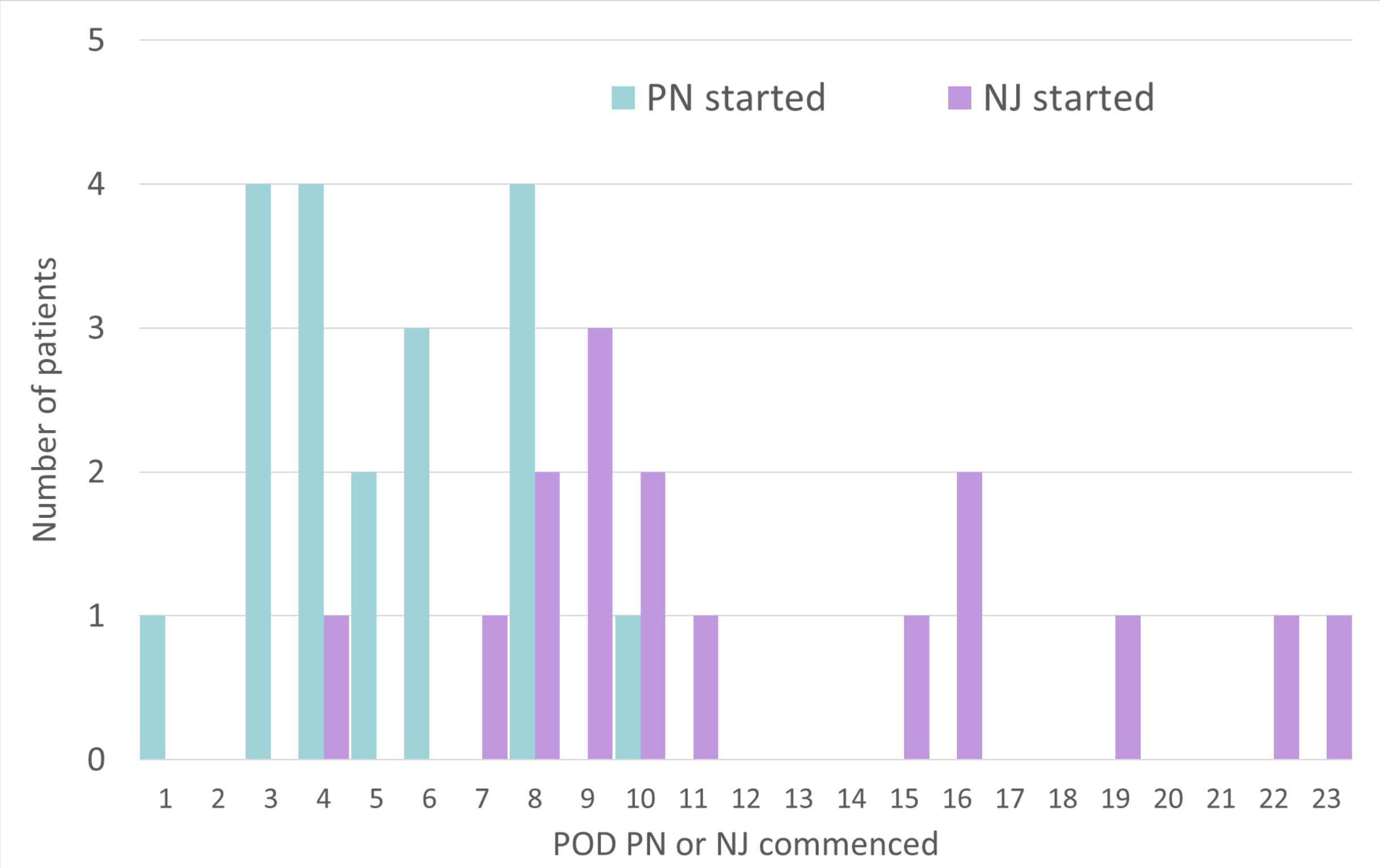


Figure 2 Graph showing when artificial nutrition was commenced post surgery (n=23)

Analysis of patients who did not receive artificial nutrition during admission

Ten patients (30%) did not require artificial nutrition throughout their admission. Figure 3 shows that in this subset of patients, NG tubes were removed between POD 4 to 7 and progressed onto solid diet between POD 4 to 6. In three patients, there was no output from the NG tube for between two to three days before the tube was removed and patients were allowed to progress beyond free fluids.

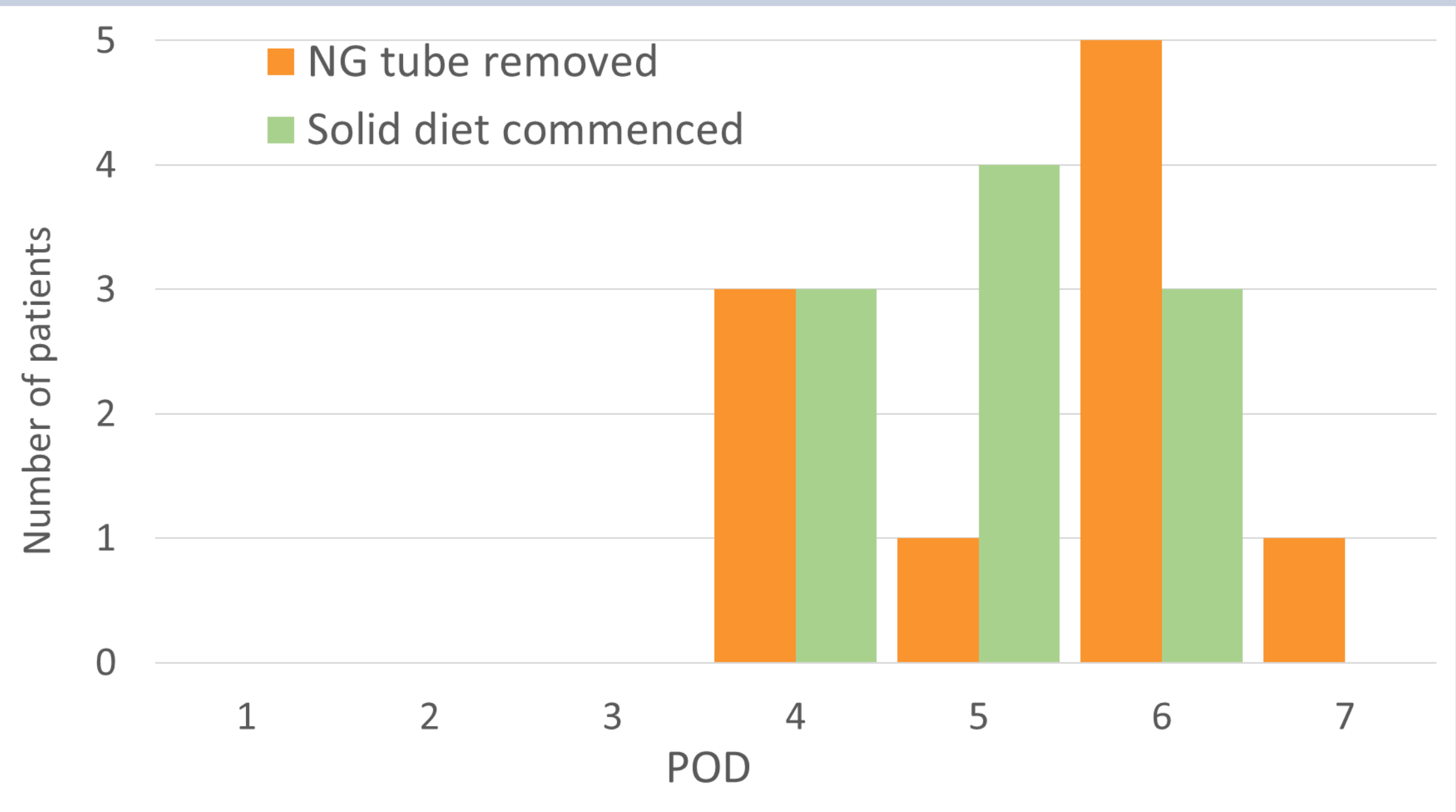


Figure 3 Graph showing day of NG tube removal and commencement of solid diet post surgery in the subset of patients who did not require artificial nutrition (n=10)

Conclusions

This service evaluation showed a significant proportion of patients were unable to progress onto solid diet and required artificial nutrition post pancreatoduodenectomy. The timeframes for commencing artificial nutrition were varied and sometimes delayed. The removal of NG tubes and progression of oral diet in those without the need for artificial nutrition was slower than recommendations; likely resulting in nutritional deficit.

This work indicates there would be benefit in a local standardised post operative nutritional pathway and setting timeframes and parameters such as NG output volume, for when to initiate artificial nutrition. An ERAS protocol is now being considered.

References

1. Melloul *et al.* 2020 Guidelines for perioperative care for pancreatoduodenectomy: Enhanced Recovery After Surgery (ERAS) Recommendations 2019. *World Journal of Surgery*; 44: 2056-2084
2. Weimann *et al.* 2025 ESPEN guideline on clinical nutrition in surgery – Update 2025. *Clinical Nutrition*; 53: 222-261
3. Ji *et al.* 2018 Impact of enhanced recovery after surgery programs on pancreatic surgery: a meta-analysis. *World Journal of Gastroenterology*; 24: 1666–1678