

# MRCP Assessment of the Efficacy of Pancreatic Rest in Patients with Acute Pancreatitis on Enteral Feeding

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## Introduction

Pancreatic rest is an important component in the management of acute pancreatitis. Controversy exists as to the optimal technique for bypassing the pancreas. Options include total parenteral nutrition and enteral feeding. For enteral feeding there is further disagreement as to where the tube needs to be sited. Some authors believe the tube should be sited well beyond the duodenal-jejunal flexure, others that duodenal or even gastric feeding is adequate. At the start of enteral feeding low volumes are instilled then the volume is increased in aliquots depending on patient tolerance. Too much feed stimulates the pancreas and results in pain. MRCP has been used to study the pancreatic response to Secretin and normal flow rates of 8 +/- 2.5 ml/min have been established. Theoretically MRCP could be used as a non-invasive method for assessing how the pancreas is responding to enteral feeding. The ideal would be a complete absence of output from the pancreas following feeding.

## Methods and Materials

Eight patients (4 female) median age 53 years (range 42 – 76) who were undergoing enteral feeding following pancreatitis were studied. Following a minimum of a 4 hour fast a bolus of enteral feed was injected into the feeding tube. The volume of feed injected equalled the tolerated hourly infusion, median 60mls (range 50 – 125mls). MRCP images were obtained using a standard single shot fast spin-echo sequence 15 – 30 minutes later. Changes in small bowel fluid content were measured at 2-minute intervals for a mean of 7 minutes (range 6 – 10). The mean signal intensity/voxel was measured in the region of interest together with the signal intensity of a voxel containing 100% water. The volume of the region of interest was recorded. The volume of water was calculated from the following equation:-

$$\text{Volume of water (mls)} = \frac{\text{Mean signal intensity /voxel}}{\text{Signal intensity(100\% water)}} \times \text{Volume of ROI}$$

Change in volume was plotted against time to provide a flow rate. The position of the tip of the feeding tube was assessed from concurrent plain abdominal Xrays or CT scans. Concurrent medications were recorded.

## Results

Six patients had acute pancreatitis and 2 had acute on chronic pancreatitis. The tip of the feeding tube was located in the jejunum in 6, in the fourth part of the duodenum in 1 and in the duodenal cap in 1. There was a weak or absent response to enteral feeding in 5/8 patients and a very modest response in the other 3. The median flow rate was 0.3ml/min (range 0.04 – 1.1). For the patient with the most proximally located tube the flow rate was 0.9. The highest flow rate of 1.1 occurred in the only patient on Octreotide, with an optimally placed feeding tube.

## Conclusion

MRCP can provide information about the efficacy of pancreatic rest. This will form the basis of a larger study looking at multiple tube positions to better define the optimal form of enteral feeding, it can also be used to study the efficacy of Octreotide and to monitor pancreatic rest in individual patients. This represents a new application for MRCP.