# Creation of an Accurate Artificial Neural Network Prediction Model of Radiologist Reported CT Features for Colorectal Anastomotic Leaks

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#### Abstract

**Objective:** As colorectal anastomotic leaks (AL) often present with non-specific clinical features, Computed Tomography (CT) scans are commonly used to aid in diagnosis. Aim was to define radiologist reported features in CT scans following colorectal resection as diagnostic factors for clinical AL detection.

Methods: Consecutive patients identifed with a clinically confrmed post-operative AL. Control group (matched AL.

**Results:** 18 patients with confirmed AL, 36 matched control patients. No significant difference in the sensitivity/ specificity between the radiologists in accuracy of leak detection, with overall correct diagnosis of clinical AL 81.4%. Radiological Leak, abnormal bowel wall appearance and ileus were significant predictors (*P*<0.05) within regression model. The prediction model produced an overall sensitivity 85.2%, specificity 80.2% and ROC curve area of 87.3%.

**Conclusion:** Individual radiologist reported CT features have been used to create a risk prediction model that improves diagnostic accuracy of AL over general radiological impression alone.

Keywords: promption of the second states and the second se

#### Introduction

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#### **Results**

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