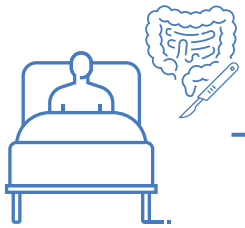
WHAT DOES THE LITERATURE SAY ABOUT USING PH TO DETECT ANASTOMOTIC LEAKS (AL)?

ACIDIC PELVIC DRAINAGE AS A PREDICTIVE FACTOR FOR ANASTOMOTIC LEAKAGE AFTER SURGERY FOR PATIENTS WITH RECTAL CANCER

Yang *et al.*, 2013

OVERVIEW OF THE STUDY

Early detection of AL remains a challenge. Clinical signs of AL (e.g. fever, pain, tympany) usually become evident after postoperative day (POD) 5. This study evaluated the utility of daily postoperative pelvic drainage pH measurements in identifying AL after anterior resection of rectal cancer. Markers like pH could be used to identify AL before a cascade of consequences for the patient and healthcare system ensue.



753 PATIENTS

Open/laparoscopic anterior resection with double stapling anastomosis for primary rectal cancer

DEVELOPED CLINICAL AL: N=57

Clinical AL was defined as the presence of leakage signs and confirmed by diagnostic workup. Patients with clinical AL required additional treatment.

NO AL: N=696

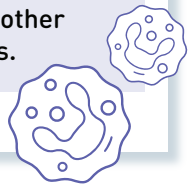
pH of pelvic drainage measured for all patients for up to 12 post-op days

FINDINGS

Diagnoses of AL using standard of care were made between the 6th-12th POD (POD8, on average).

An early and persistent decline of pH values of pelvic drainage after rectal surgery with anastomosis was a hallmark for predicting and diagnosing AL.

AL is associated with a highly inflammatory postoperative course, resulting in an acidic microenvironment due to a local increase in the concentration of lactic acid produced by glycolytic activity of leukocytes, increased levels of cytokines, and other inflammatory mediators.



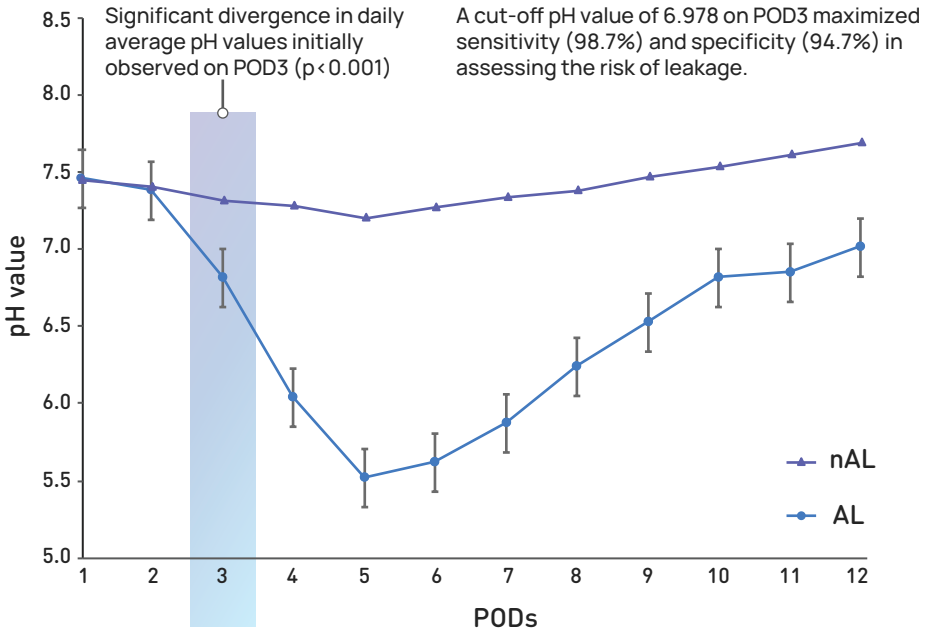


Figure 1. Evolution of pH values in the postoperative period in patients with and without AL

WHAT DOES THIS MEAN FOR SURGEONS?

Medical technologies, such as FluidAI's Stream™ Platform, that harness the power of biomarkers such as pH for detection of AL, have the potential to drastically improve patient and healthcare system outcomes.

This includes reducing the morbidity and mortality associated with AL, as well as economic burden (e.g. extended length of hospital stay, re-operation, readmission). Stream™ Platform is a portable system designed for use by medical practitioners to continuously measure the pH and electrical conductivity of drainage fluid from patients during postoperative recovery - a noninvasive technology with the capacity to provide early prediction of AL.

EARLIER LEAK DETECTION = GREATER PEACE OF MIND