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**INTEGRATING HOUNSFIELD UNIT DENSITY AND CLINICAL INFLAMMATORY
MARKERS TO PREDICT PERCUTANEOUS DRAINAGE SUCCESS
IN POST-COLORECTAL SURGERY ABSCESES**

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Relevance. The technique of percutaneous drainage is applicable to intra-abdominal abscesses that can be a complication of surgery for colorectal conditions. In the past, the success of the technique was related to the size of the abscess. Recently, the relationship between pus density in Hounsfield units and its viscosity has been demonstrated. Higher values of Hounsfield units have been associated with failure of drainage. In addition, the values of Hounsfield units and CRP can be useful in predicting the success of drainage. The purpose of the study to be conducted is to highlight its multidisciplinary nature and will be done in Sri Lanka.

Aim: to evaluate whether the Hounsfield Unit density of intra-abdominal abscesses on CT scans, in association with serum C-reactive protein levels, can predict the outcome of percutaneous drainage in Sri Lankan patients who have intra-abdominal abscesses following colorectal surgery.

Materials and methods. The study design used 32 patients from Sri Lanka who suffered from intra-abdominal abscesses after undergoing surgery for colorectal conditions. The patients comprised 16 males and 16 females whose ages ranged from 38 to 81 years. The data collected ranged from clinical presentation, levels of C-reactive protein, surgical history, and CT scans. For Hounsfield unit values, a region of interest (ROI) was placed on the intra-abdominal abscess cavity on the axial slice of the CT scan. For drainage procedures, the data collected ranged from whether there was any blockage, upsizing, and duration of drainage. The statistical techniques used for analysis were correlation analysis, regression analysis, and a Student's t-test, as shown in articles on PubMed.

Results and their discussion. In 32 patients, 16 of whom were men and 16 women aged 38 to 81 years who had undergone colorectal surgery and developed intra-abdominal abscesses, and where data was collected to determine the relationship of HU values to catheter blockage, 25 patients underwent percutaneous drainage. The correlation coefficient for this research was 0.62 for men and 0.58 for women. Error values for this research were 0.14 for men and 0.15 for women, with reliability values of 4.43 for men and 3.87 for women. Using the regression method, a linear relationship was obtained between the two variables, with HU as the independent variable and CRP as the dependent variable. The two equations obtained were of the form $y = mx + c$, which were as follows: $CRP = 18.6x + 72.4$ for males, and $CRP = 15.3x + 81.7$ for females. The study also aimed to find the degree of clumping of the data points around the regression line by calculating the correlation coefficient R_{xy} , the error associated with the correlation, i.e., Mr_{xy} , and the reliability, i.e., tr . The results were as follows: The correlation coefficient R_{xy} was 0.49 for males and 0.56 for females. The errors were 0.16 for males and 0.13 for females. The reliability was 3.06 for males and 4.31 for females. The results were then compared with the Student's t-test criterion table at a 0.01 level of significance.

Conclusions. HU and CRP are powerful predictors of drainage outcomes in patients with intra-abdominal abscesses after colorectal surgery. The HU values were found to correlate with drainage outcomes for males, where the R_{xy} was 0.62 ± 0.14 ($p < 0.01$), and for females, where the R_{xy} was 0.58 ± 0.15 ($p < 0.01$). A predictive model was created to determine the effect of HU density and CRP on drainage success and the technical difficulty of the procedure in the Sri Lankan population.