

## Chapter four

### Results

The main objective of this study was to characterize the liver in MR images using texture. The result of this study portrayed in figures and tables. The figures illustrate the sequences of liver delineations then extraction of the liver followed by classification of the liver using Euclidian distance and linear discriminate analysis.

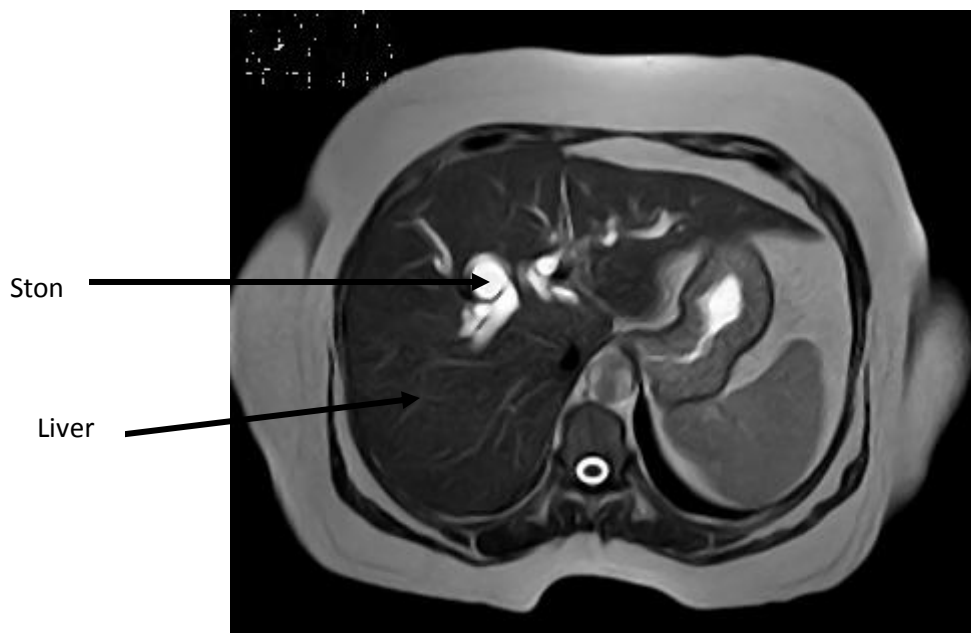


Figure 4-1 an original MR image

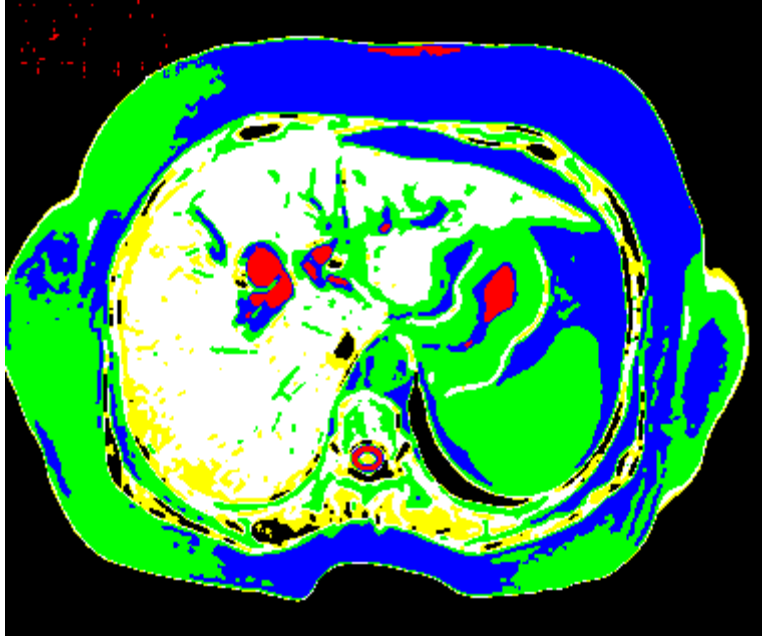


Figure 4-2 classification map using pixel intensity classification and Euclidian distance



Figure 4-3 an original image delineated by a red line using region label for the classification map shown in figure 4-2

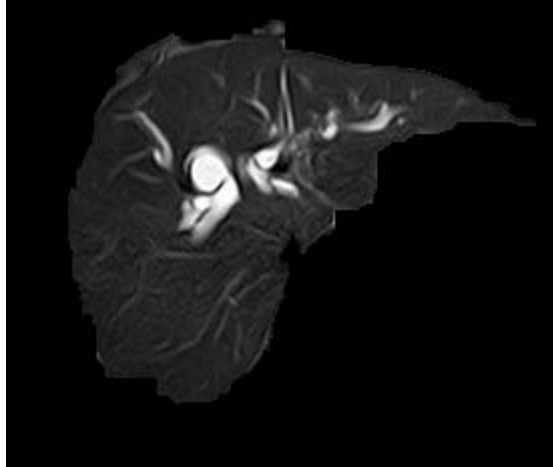


Figure 4-4 segmented liver using mask image generated by the region label and the delineated function

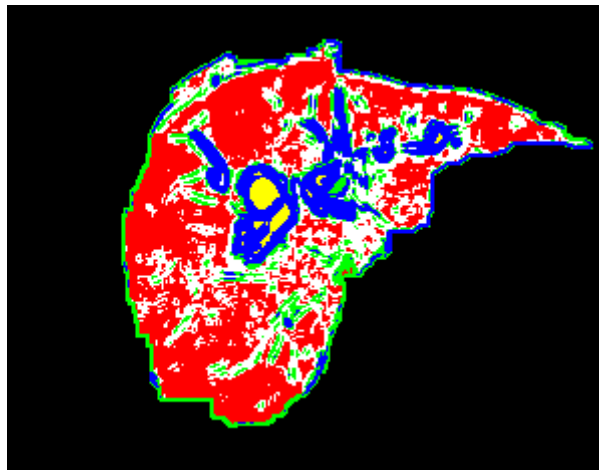


Figure 4-5 Classified segmented liver using five textural features where the red color represent liver tissue, blue ligament, green vessel, yellow stone and white hepatic and portal vein

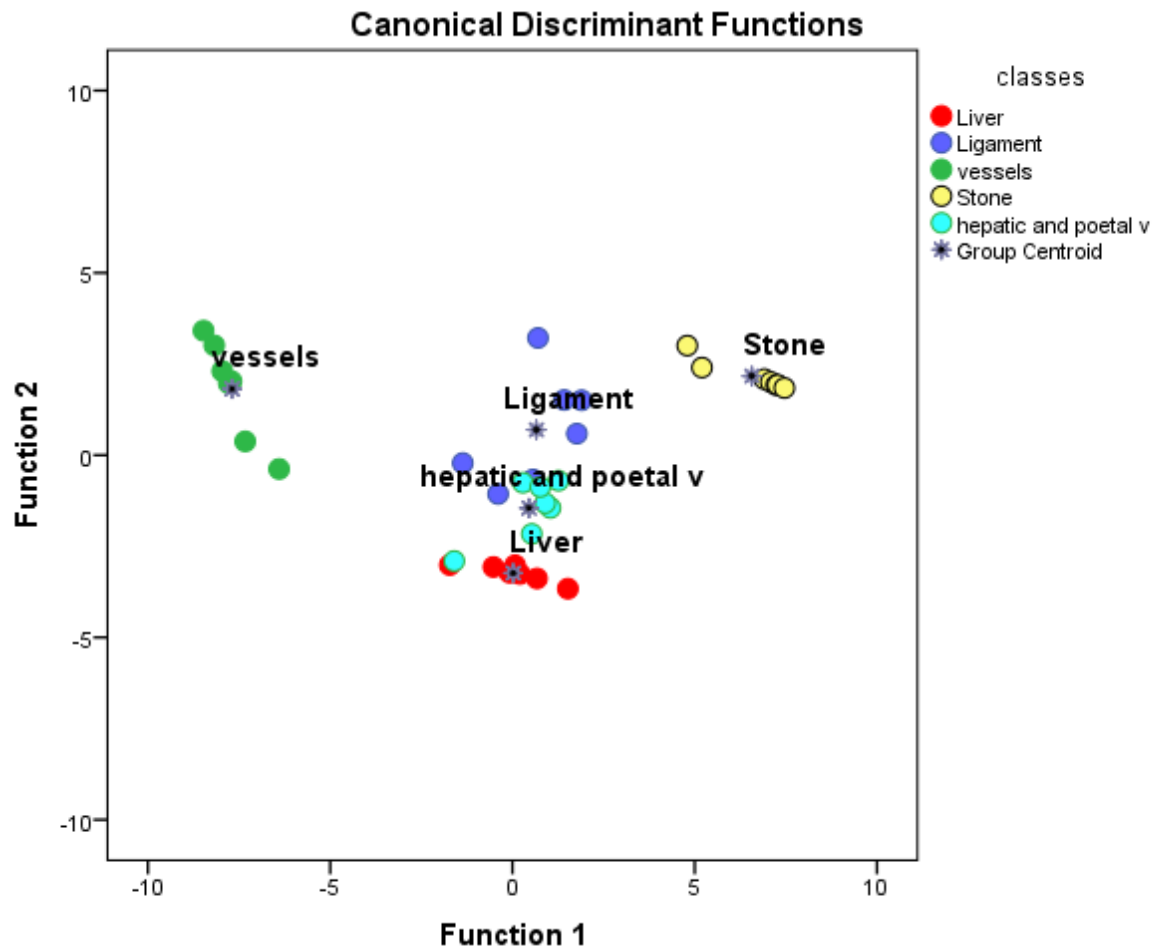


Figure 4-6 scatter plot show the classification result of the liver structure feature using linear discriminante analysis

Table 4-1 a confusion matrix show the classification accuracy of liver structure

Classes		Predicted Group Membership					Total
		Liver	Ligament	vessels	Stone	hepatic and portal vein	
Original (%)	Liver	100.0	0.0	0.0	0.0	0.0	100.0
	Ligament	0.0	85.7	0.0	0.0	14.3	100.0
	vessels	0.0	0.0	100.0	0.0	0.0	100.0
	Stone	0.0	0.0	0.0	100.0	0.0	100.0
	hepatic and portal vein	14.3	0.0	0.0	0.0	85.7	100.0
94.3% of original grouped cases correctly classified.							

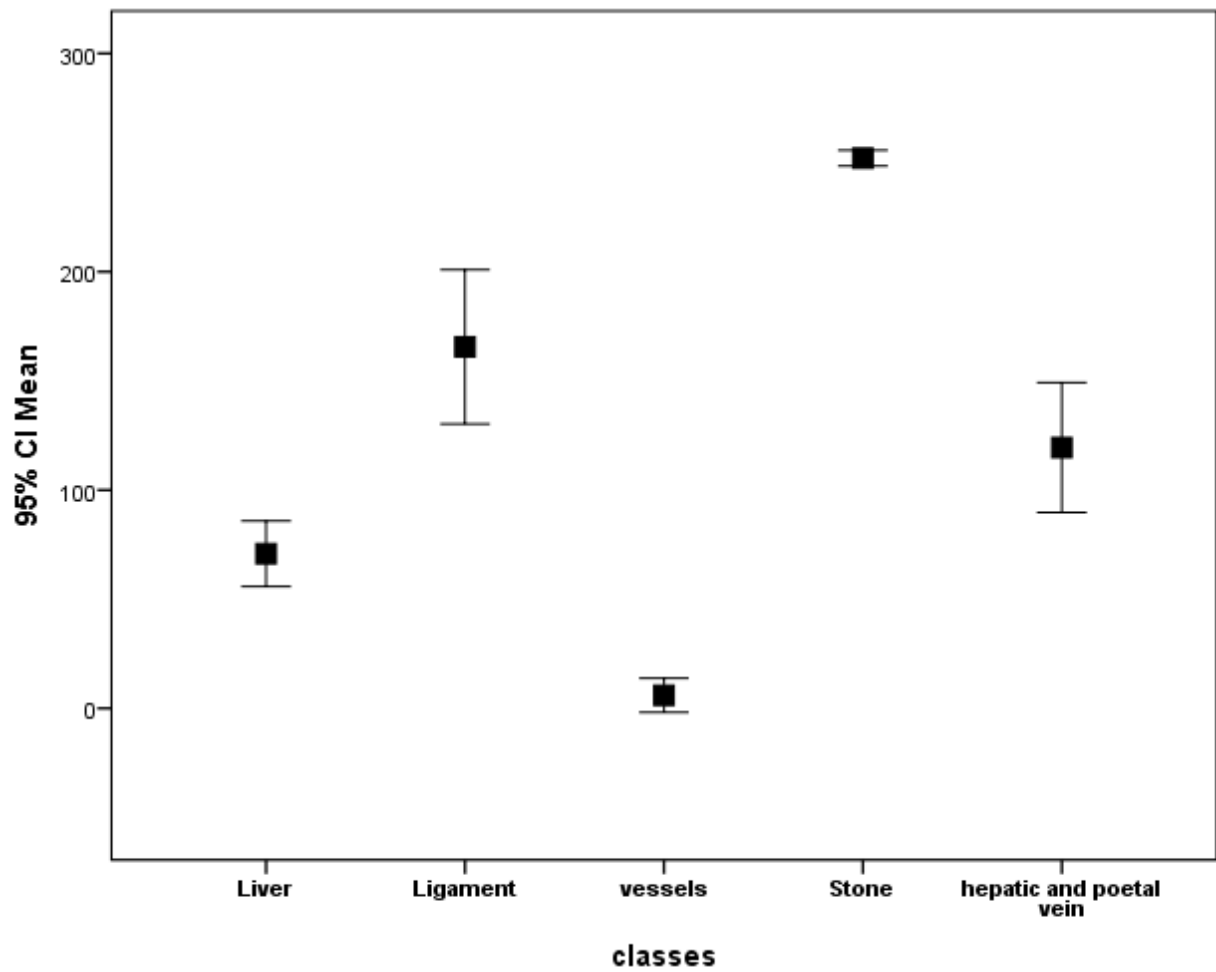


Figure 4-7 error bar plot of the textural feature mean show the mean values of this feature in liver, ligament, vessels, stone and hepatic and portal vein.

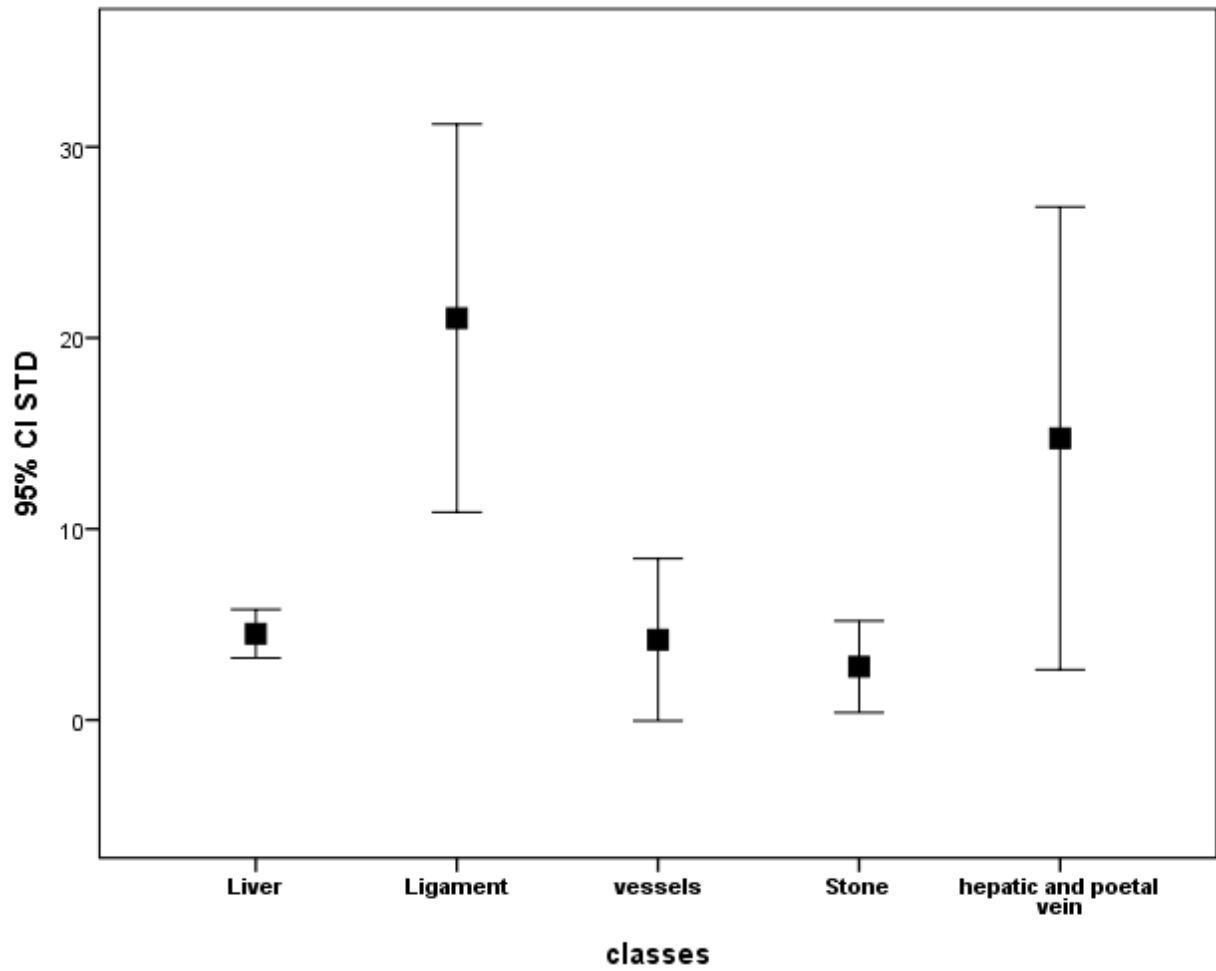


Figure 4-8 error bar plot of the textural feature standard deviation show the mean values of this feature in liver, ligament, vessels, stone and hepatic and portal vein.

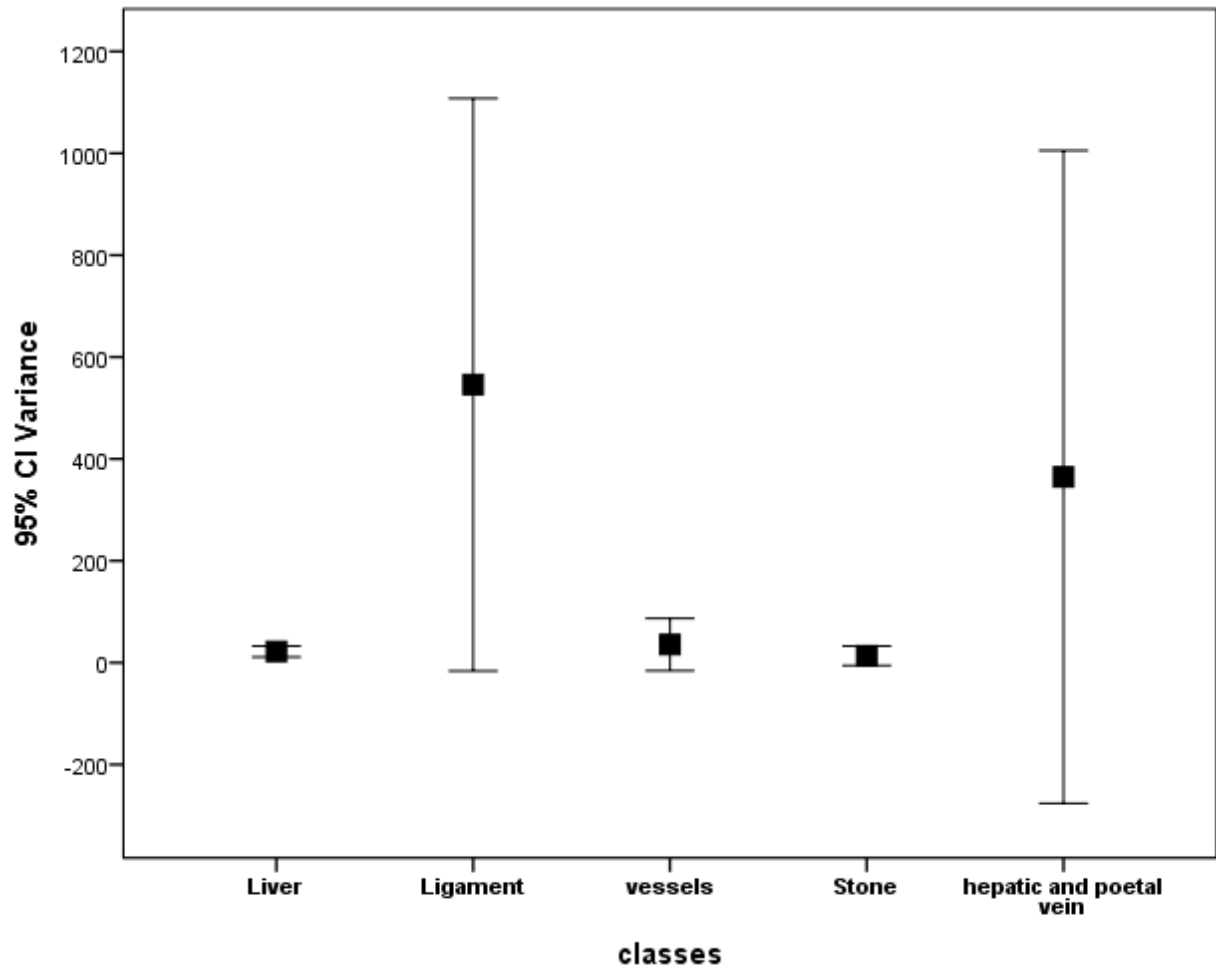


Figure 4-9 error bar plot of the textural feature variance show the mean values of this feature in liver, ligament, vessels, stone and hepatic and portal vein.

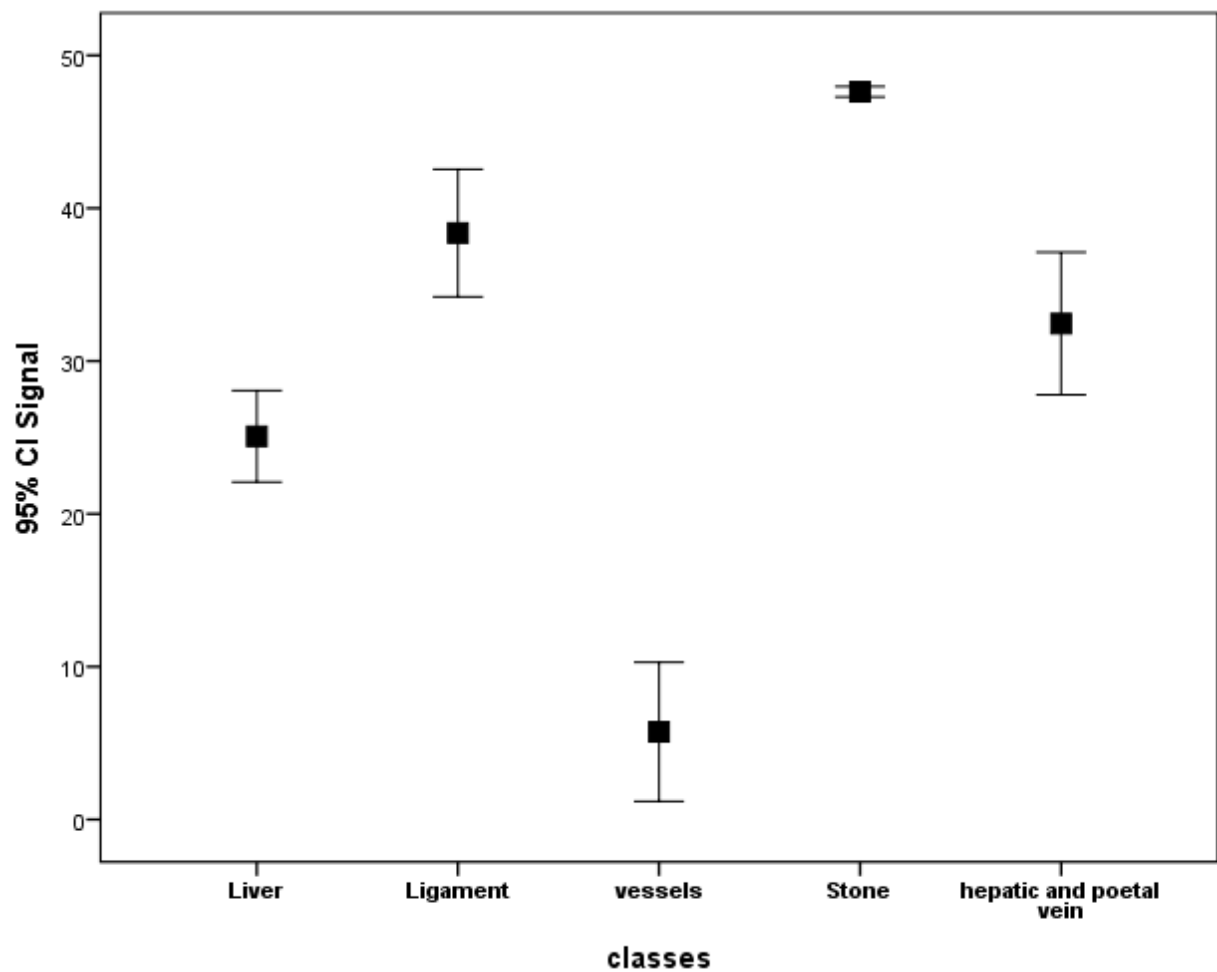


Figure 4-10 error bar plot of the textural feature mean show the signal values of this feature in liver, ligament, vessels, stone and hepatic and portal vein.