Methods:

Based on the complete change in clinical outcome information, we clustered the patients using K-means clustering with Euclidean distance function. Silhouette width provides information on how similar objects within each cluster are compared to other clusters. The number of clusters (k= 2) is picked based on silhouette width. We performed linear regression on all 10 radiographic metrics with patient characteristics and used the Storey correction to adjust for multiple testing. We also performed cross validation by removing each radiographic metric and clustering the patients based on the other radiographic metrics.   
  
Results:

Using K-means clustering to cluster the patients, there were 2 distinct groups of patients (15 low-intermediate risk patients) and (3 intermediate-high risk patients). The figure below represents the weighted change in patient’s radiographic metric with different risk groups of patients and the color represents the different clusters. The weight of each radiographic metric is determined by principal component analysis (PCA). Based on our cross validation results, we concluded each radiographic metric provides vital information for the K-means clustering above. :

Based on the complete change in clinical outcome information, we clustered the

Node with different risk groups of patients and the color represents the different clusters.