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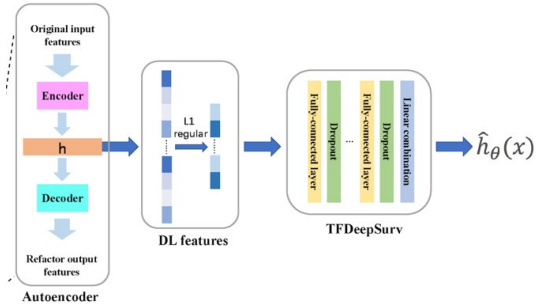
Deep learning-based radiomics allows for a more accurate assessment of sarcopenia as a prognostic factor in hepatocellular carcinoma

Key words: Deep learning, Radiomics, HCC, Sarcopenia, Prognosis

Research Summary

This study aimed to use a deep learning-based radiomic model (TFDeepSurv) to assess muscle and determine the prognosis of patients with hepatocellular carcinoma (HCC).

- **Hepatocellular carcinoma**
- **Prognosis prediction for liver section/liver transplantation**
- **Sarcopenia assessment**
- **Deep learning-based radiomics**

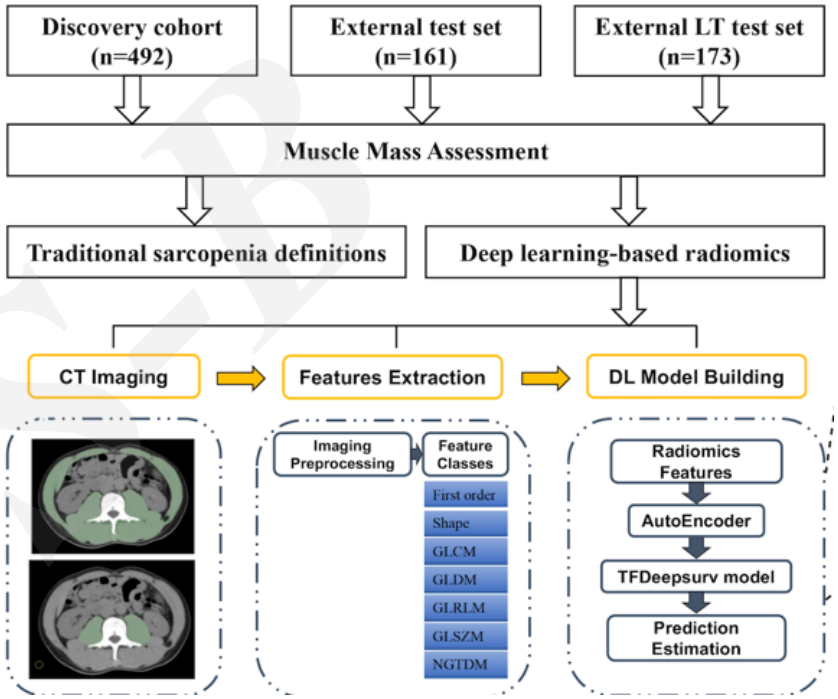


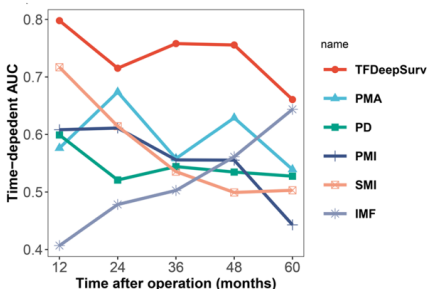
Innovation points

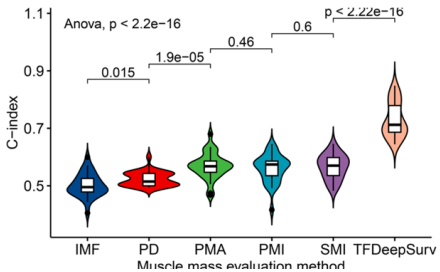
- **Background** Various tools to definite sarcopenia in clinical trials are not easily applicable for every institution in daily practice.

- **Methodology** we developed a DLRM system for accessing skeletal muscles and predicting the survival of patients with HCC who have undergone liver resection and transplantation.

- **Emphasis** Deep learning-based radiomics can serve as a visual prognostic tool that can assess muscles and help clinicians identify patients with a high mortality risk and plan their treatment.







Innovation points

A series of comprehensive figures were generated to summarize that the deep learning-based radiomics of muscle mass can predict the prognosis of HCC patients better than the traditional definitions of sarcopenia.

Figure 1｜ The overview of the research process.

Figure 2｜ The role of traditional sarcopenia definitions in the prognosis of OS in patients with HCC who have undergone liver resection.

Figure 3｜ The ability of radiomics features to discriminate between different sarcopenia definitions.

Figure 4｜ Development of the TFDeepSurv and Kaplan–Meier survival curves of training and test sets.

Figure 5｜Comparison of the predictive performance of TFDeepSurv vs various sarcopenia definitions.