HISTOLOGICAL TECHNIQUES

LIVER CANCER

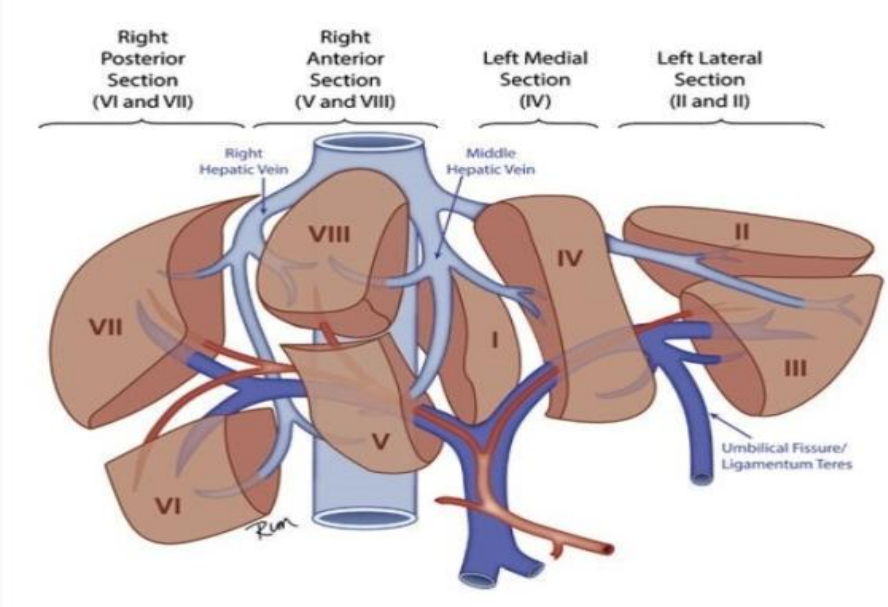
INTRODUCTION

Histological techniques deal with the preparation of tissue for microscopic examination. These techniques include fixation, tissue processing, sectioning, staining and mounting.. Histological techniques reveal normal tissue structure, tissue abnormalities and cancerous conditions.

Liver cancer happens when hepatocytes develop mutations in their DNA. DNA mutations cause cells begin to grow out of control and eventually form tumor. Liver cancer may be caused by chronic hepatitis infections with HBV or HCV. Cancer spreads to liver is more common than it begins in hepatocytes. Cancer that begins in other area of body--such as colon, lung or breast--and then spreads to liver is called metastatic cancer. The most common type of liver cancer is hepatocellular carcinoma, while intrahepatic cholangiocarcinoma and hepatoblastoma are much less common.

In Malaysia, liver cancer is one of the 10 most frequent cancers diagnosed. Liver cancer cases rise from 65% in 2007~2011, to 74% in 2012~2016. Survival rate for this disease is only 12.8%. 70~80% of cases are due to late diagnosis. HBV is the common cause but it can actually prevented by taking vaccine and maintaining a healthy lifestyle. We should all be alert from the risk of getting liver cancer.

ORGAN AND SITE SELECTION



PRETEXT I	One section involved; three adjoining sections are tumor free.
PRETEXT II	Two sections involved; two adjoining sections are tumor free. OR One sections involved; two adjoining sections are tumor free.
PRETEXT III	Three sections involved; one section is tumor free. OR Two sections involved; two non-adjoining sections are tumor free.
PRETEXT IV	All four sections involved

Safety precaution:

1. Duration of fixation depends on the size of sample and the fixative used.
2. Prolonged fixation will cause tissue harden and shrinkage.
3. Delayed fixation will cause autolysis.
4. Make sure the specimen is completely covered with fixative. A volume ratio of tissue to fixative of 1:10 to 1:20 is necessary.
5. Fixative with pH 6~8 can prevent changes of ultrastructure of specimen.
6. Keep specimen in low temperature at -2~5 ^{o}C for retarded fixation and reduce autolysis.

Troubleshooting:

Soft mushy tissue	Adequate time for fixation.
Formation of acid formalin pigment	Use Neutral Buffered Formalin (NBF).
Incomplete fixation	Longer fixation.
Obtain better penetration	Cut tissue sample thinner.
Enhance fixation	Agitate specimen in fixative.

10. Make sure paraffin is liquid in the paraffin reservoir.
11. Make sure work surface and the stainless steel molds are warm.
12. Make sure the cold plate is cold.
13. Remove cassettes from the tissue processor. Transfer cassettes to the warm compartment of the embedding station.
14. Transfer one cassette onto the hot plate.
15. Remove the cassette lid. Observe carefully if there is any tissue parts left on the lid before discard.
16. Select a preheated mold of appropriate size. (The specimen must not come into contact with the edge of mold.)
17. Transfer the mold onto the hot plate.
18. Pour melted paraffin wax from paraffin dispenser.
19. Transfer the mold carefully onto the cold plate.
20. When a thin film of semi-solid wax has formed on the base of mold, introduce the tissue by using forceps. Press the tissue down gently into the wax.
21. Orientate the tissue in the correct plane by using forceps.
22. Center the tissue in the mold ensuring paraffin entirely surrounds the edge of tissue.
23. Put the cassette on the top of the mold.
24. Top up the mold with paraffin wax. Make sure there are no air bubbles.
25. Transfer the mold and cassette onto the cold plate or to the refrigerator. Allow paraffin wax to be hardened.
26. Remove the tissue block.
27. Store the tissue blocks at room temperature until sectioning.

Automated tissue processing

1. Transfer fixed tissue into a labeled plastic cassette.
2. Place it in a stainless steel carrier. Hook the carrier onto the arm of automated tissue processor.
3. Lower the carrier into the first bar of 70% alcohol.
4. Set up the timer.