ROLE OF RADIO-FREQUENCY ABLATION IN MANAGEMENT OF LUNG TUMORS

An Essay

Submitted for the Partial Fulfillment of
The Master Degree in ***Radio diagnosis***

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2012

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LIST OF ABBREVIATIONS

NSCLC : NON SMALL CELL LUNG CANCER
LMSB : LEFT MAIN STEM BRONCHUS
RMSB : RIGHT MAIN STEM BRONCHUS
CT : COMPUTED TOMOGRAPHY
FDA : FOOD & DRUG ADMINSTRATION
GGO : GROUND GLASS OPACIFICATION
HU : HOUSEFIELD UNIT
mA : MILLIAMBER
MHZ : MEGA HERTZ
KHZ : KILO HERTZ
MRI : MAGNETIC RESONANCE IMAGING
RF : RADIOFREQUENCY
RF A : RADIOFREQUENCY ABLATION
PA : POSTERO-ANTERIOR
CXR : CHEST X-RAY
AP : ANTERO-POSTERIOR
MM : MILLI METER
CM : CENTIMETER
IVC : INFERIOR VENA CAVA
SVC : SUPERIOR VENA CAVA
TB : TUBERCLOSIS
DNA : DEOXYRIBONUCLAEC ACID
BAC : BRONCHIOLOALVEOLAR CARCINOMA
SCC : SQUAMOUS CELL CARCINOMA
PET : POSITRON EMMISON TOMOGRAPHY
LCNEC : LARGE CELL NEUROENDOCRINE CARCINOMA
SCLC : SMALL CELL LUNG CARCINOMA
WHO : WORLD HEALTH ORGANIZATION
UICC : UNION INTERNATIONALE CONTRE LE CANCER
AJCC : AMERICAN JOINT COMMITTEE ON CANCER
RML :RIGHT MIDDLE LOBE
HCC : HEPATO CELLULAR CARCINOMA
MIN : MINUTE
W : WATT
FDG : FLURODEOXYGLUCOSE
DWI : DIFFUSION WEIGHTED IMAGING
GY : GRAY
CEA : CARCINOEMBRYONIC ANTIGEN
PT : PROTHROMBIN TIME
INR : INTERNATIONAL NORMALIZED RATIO
US : ULTRASONOGRAPHY

LUNG ANATOMY

1-Gross Lung Anatomy

Overview

The anatomy of the respiratory system can be divided into 2 major parts, airway anatomy and lung anatomy.

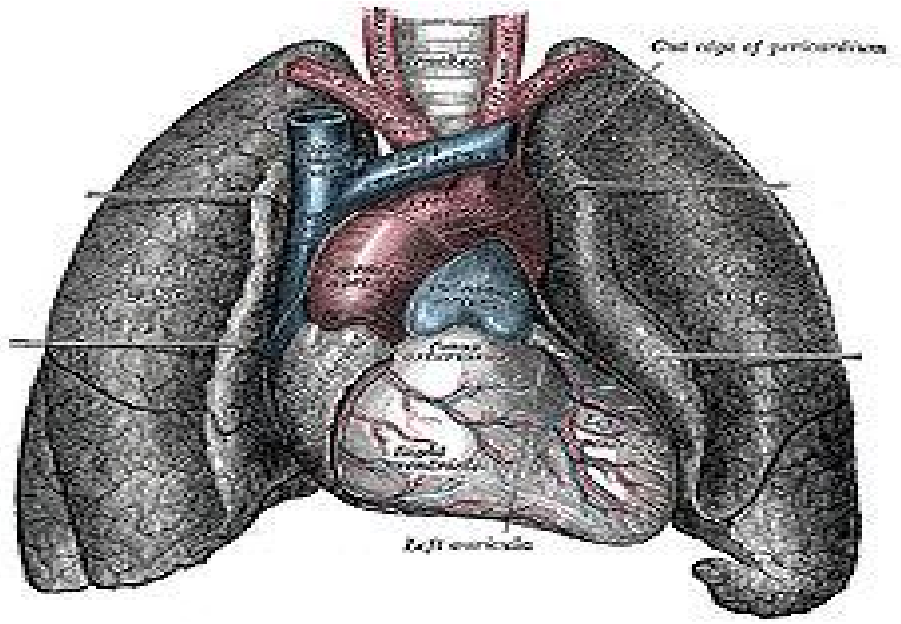

Fig.(2-1): *Anatomy of the lung* ***(Standring, 2005).***

ANATOMY OF THE TRACHEOBRONCHIAL TREE

Trachea

A single tube represents the entrance to the lung's airways between the entrance and periphery lies a meticulously designed system of branching airways that serve to conduct the inspired air into those peripheral channels that carry alveoli in their walls and can thus contribute to the exchange of gases between air and blood ***(Fishman's et al., 2008).***

The trachea extends from the larynx, which fixes it through the hyoid bone to the skull, down to its bifurcation in the mediastinum at the level of the fifth thoracic vertebra. Its length varies with movements of the head and respiration but averages about 10–12cm in the adult ***(Seaton et al., 2000).***

Anatomical relation:

Its extra-thoracic portion extends down to the sixth cartilage and is closely related to the thyroid gland laterally and its isthmus anteriorly. The recurrent laryngeal nerves also run laterally, beneath the thyroid, while the oesophagus is directly behind, separating it from the vertebrae ***(Seaton et al., 2000).***

As it enters the chest, the trachea is related anteriorly to the remains of the thymus, the left innominate vein, the right innominate artery and the left common carotid artery. To its right are the innominate vein, superior vena cava and azygos vein, while on its left

lies the aortic arch. The left recurrent laryngeal nerve runs up between the aortic arch and trachea and then in the ridge between the trachea and oesophagus ***(Seaton et al., 2000).***

The trachea is oval in cross-section, being slightly longer in transverse than in sagittal diameter. The tracheal cartilages are semicircular, the gap being in the posterior part where the circle is completed by a 'membranous' portion. The cartilages are connected to each other by fibrous tissue extending from their perichondrium ***(Seaton et al., 2000).***

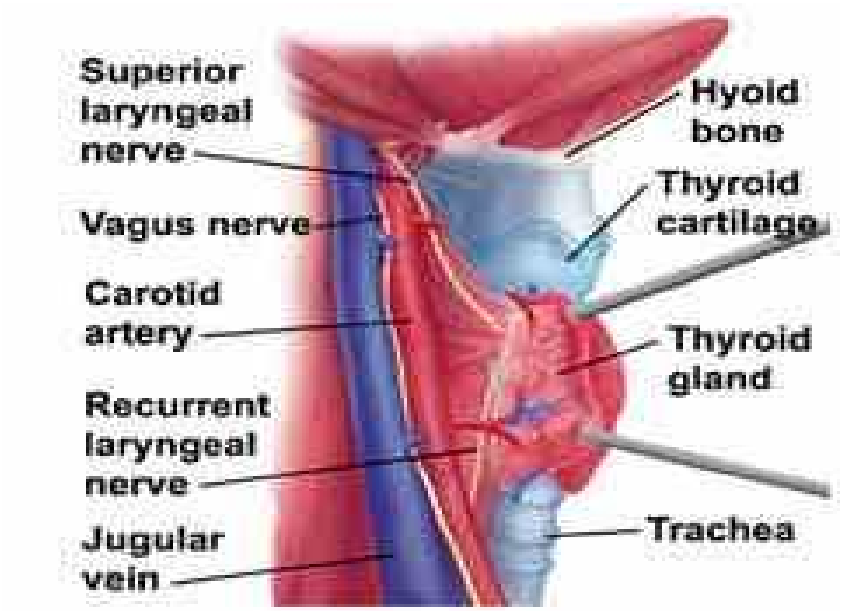

Fig.(2-2)*: *Anatomical relationship of the extra-thoracic trachea* ***(quoted from yoursurgery.com).

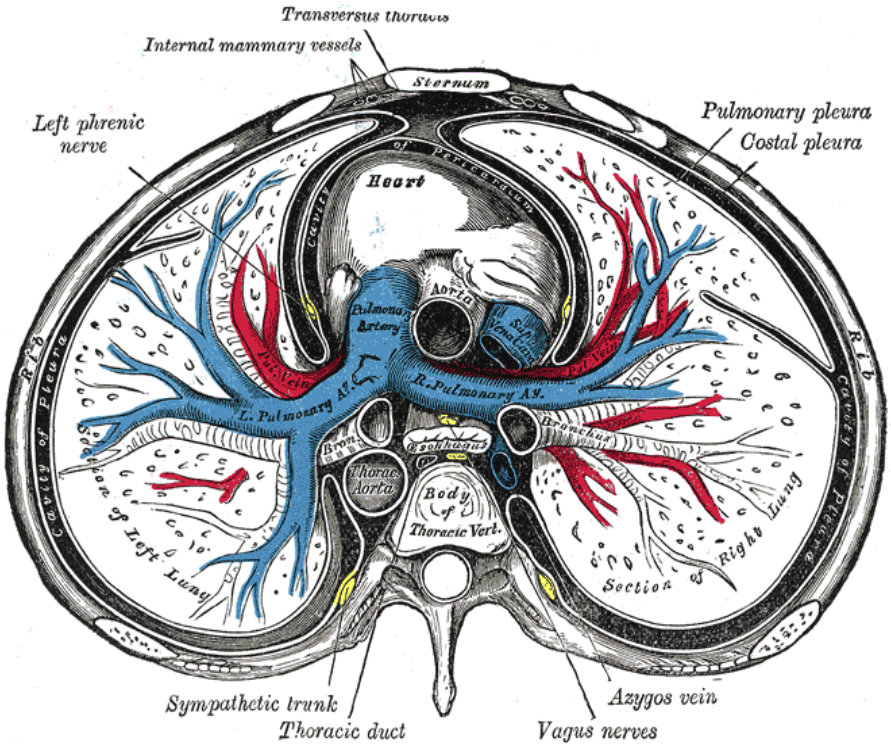

Fig.(2-3): *Anatomical relationship of the main bronchi* ***(quoted from Gray's Anatomy, education.yahoo.com)***

Bronchi and their divisions:-

The trachea divides into right and left main bronchi at the carina. The carina resides approximately at the level of the fifth thoracic vertebral body ***(Thompson, 2003).***