

Medicine

Edition 8.5

Marrow

Volume - 2

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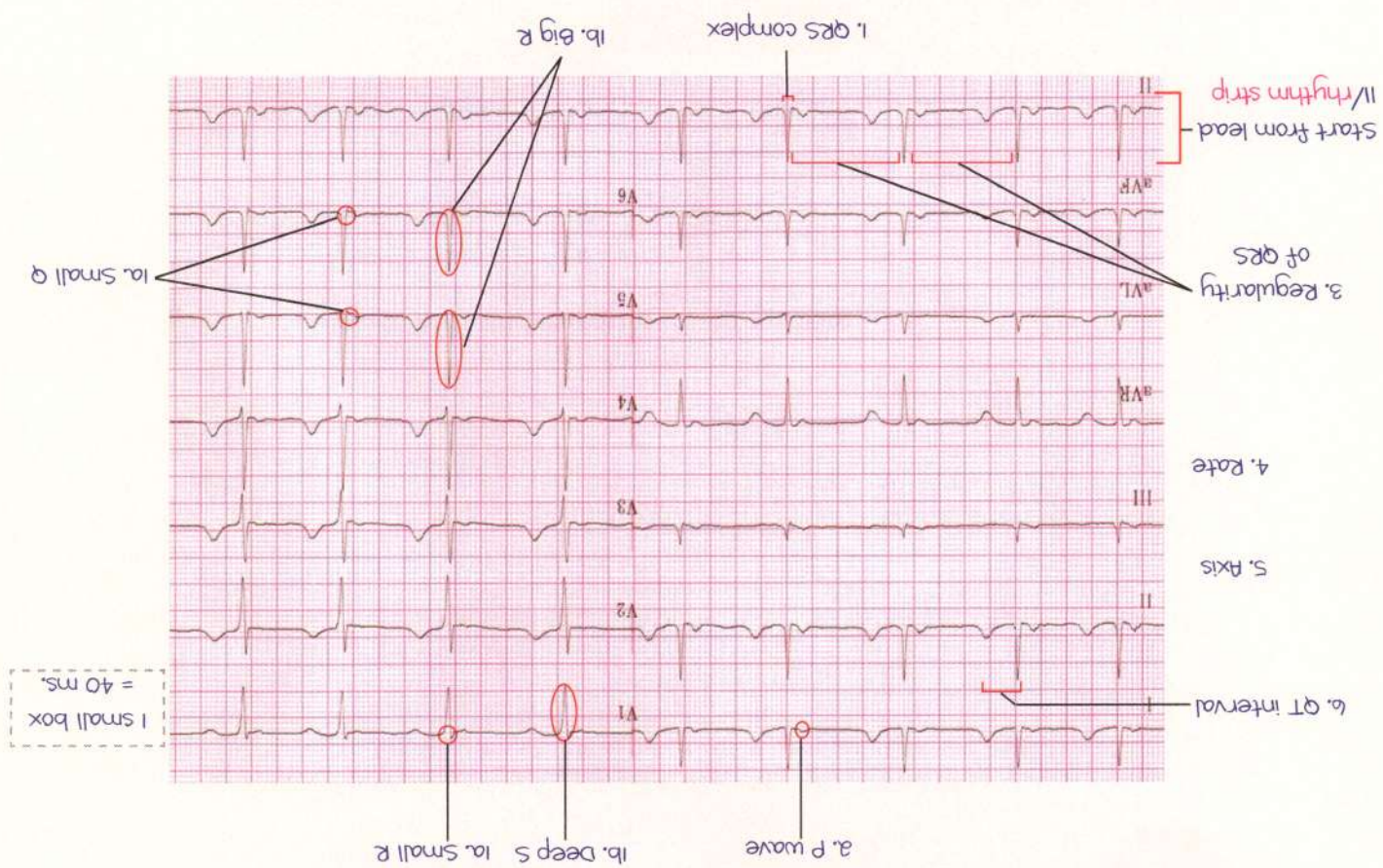
INTRODUCTION TO ECG

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ECG Interpretation :

Chronology of reading ECG :



QRS Complex

00:07:52

• Maximum deflection in ECG.

• D/t **synchrous ventricular depolarisation.**

Duration :

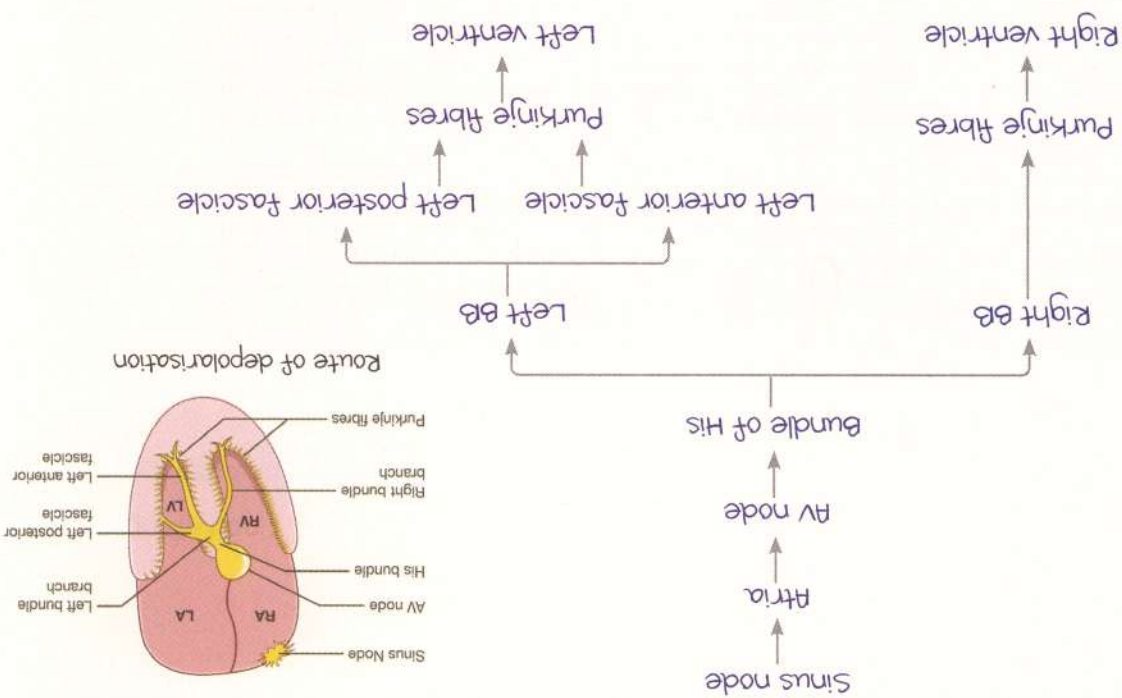
• Normal/narrow QRS : a-a.5 small boxes (100ms/0.5s).

• wide QRS : > 0.1a s.

• very wide QRS : > 0.16 s.

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Route of depolarisation :



Note :

Depolarisation : Endocardium → Epicardium.

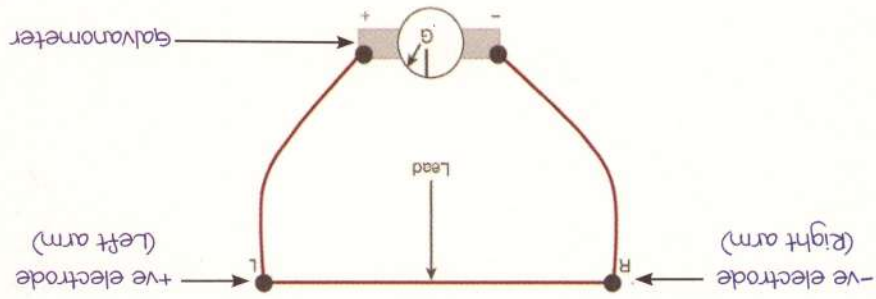
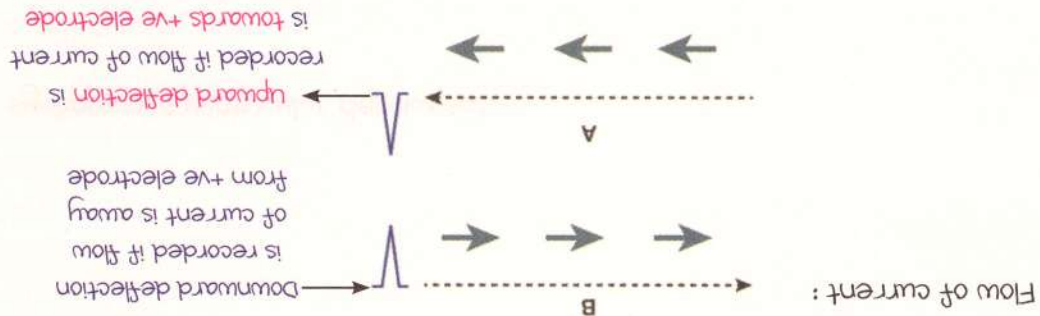
Ventricular depolarisation :

1. Septal depolarisation : Vector 1.

a. Free wall depolarisation : Vector a.

3. Posterobasal LV depolarisation : Vector 3.

QRS complex = Vector (1 + a + 3).

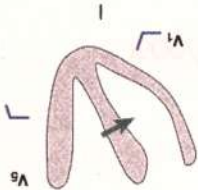


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Vectors :

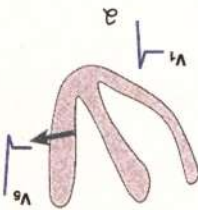
I. Vector I :

- Interventricular (IV) septum.
- LBB shorter than RBB : Left side of IV septum activated first.
- Direction : **Right side, anteriorly & inferiorly.**
- Right sided leads : Positive deflection.
- Left sided : Negative.
- most predominant, right lead.



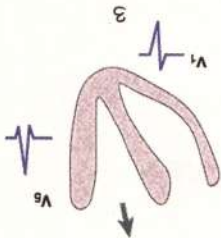
a. Vector a :

- Free wall depolarization.
- Direction : Rt → Lt + Endocardium → Epicardium.



3. Vector 3 :

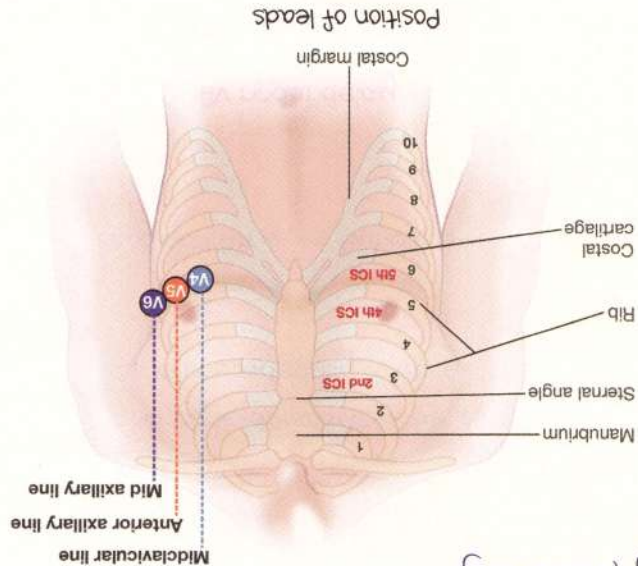
- Last part (posterobasal portion) to be depolarized.
- Direction : Superiorly & Posteriorly.
- No deflection.

**wide QRS :**

Causes :

I. Ventricular activation via alternate pathway :

- > 0.16 s.
- myocardial cell-to-cell conduction.
- Ventricular generated rhythm :
- Idioventricular : 15-40 bpm.
- Accelerated idioventricular : 40-100 bpm.
- Ventricular tachycardia : >100 bpm.



a. Normal pathway with block :

- 0.1s - 0.16s.

- Right bundle branch block (RBBB)/Left BBB (LBBB).

Rate :

• 1500/no. of small boxes b/w a QRS complexes.

• Sinus rate : 60-100 bpm.

• Atrial/junctional rate : 40-60 bpm.

• Ventricular rate : 15-40 bpm.

P Wave & PR Segment

00:40:48

P wave :

• 1st wave of ECG.

• D/t atrial depolarization by SA node.

- Rt atrial depolarization : Ascending limb.

- Lt atrial depolarization : Descending limb.

• a.s/a.s rule :

- Height & width of P wave = a.s mm.

morphology :

• Smooth, rounded.

• Normal only when SA node depolarizes atria.

• Normal : Every QRS is preceded by P wave.

PR Segment :

• Time taken by impulse : Atria → Bundle of His.

Parts :

• Atria → AV node.

• Intra AV nodal : Normal AV nodal delay.

• AV node → Upper part of Bundle of His.

electrically inert : No deflection.

PR interval :

• P wave + PR segment.

• 0.1s - 0.2 sec (3-5 small boxes).

• > 0.2s : Prolonged PR interval.

Abnormal PR intervals :

• Prolonged : Defect/block on regular pathway.

• Shortened : Aberrant pathway b/w atria & ventricle (Bundle of Kent).

