Chapter 4
The Jugular and Peripheral Veins
Examine the Jugular Vein
Physical Examination of the Heart and Circulation

Physical appearance
Arterial pulse
Jugular venous pulse
Precordial percussion and palpation
Auscultation

Chest and abdomen

Coexisting noncardiac diseases
Examination of the Jugular Vein Is Never in Vein
Internal and external jugular veins are sources of anatomic, hemodynamic and electrophysiologic information within the chambers of the heart--the right atrium and right ventricle.
Sir James Mackenzie

Born 1853 Scone Scotland

Simultaneous records of the arterial and jugular venous pulse
In 1902, Sir James Mackenzie established the jugular venous pulse as an important part of the cardiovascular physical examination.

“We come now to the study of a subject which gives far more information of what is actually going on within the chambers of the heart. In the venous pulse we have often the direct means of observing the effects of the systole and diastole of the right auricle, and of the systole and diastole of the right ventricle.”
Mackenzie’s Polygraph
1910
James Mackenzie
The Study of the Pulse, Arterial, Venous and Hepatic and of the Movements of the Heart
Edinburgh, Young & Pentland
1902
Information from the Jugular Venous Pulse

1) Waveform and pressure
2) Anatomic and physiologic inferences
3) Arrhythmias and conduction defects.
External Jugular Vein
The trunk should be elevated above the horizontal to an angle that coincides with the maximum excursions of the A and V waves of the internal jugular vein.
Centimeters Above the Sternal Angle
Internal Jugular Right/Atrial Connection
Internal Jugular/Right Atrial Connection
Normal JVP & Carotid Mackenzie
RIGHT ATRIUM TRICUSPID INSUF.
Transmission to Distended Leg Veins
Cannon Waves

Junctional Beat
Giant A Wave
Mackenzie
Tricuspid Stenosis
"I had been endeavoring to discriminate between the different forms of irregular heart action, and it occurred to me to employ the jugular pulse as an aid. By this means I was able to separate the great majority of irregularities into definite groups, according to the mechanism of their production, as revealed by simultaneous records of the jugular and radial pulses."

James Mackenzie
ARRHYTHMIAS THAT CAN BE RECOGNIZED IN THE JUGULAR VENOUS PULSE

1) Sinus bradycardia
2) Sinus arrhythmia
3) Ectopic or premature beats (atrial, junctional, ventricular)
4) Ectopic tachycardias or ectopic rhythms (atrial, junctional, ventricular)
5) Loss of coordinated atrial activity (atrial fibrillation)
Ventricular Tachycardia

Atrial Flutter
2/1 Heart Block
Complete Heart Block
RT. ATRIAL ALTERNANES
Abdomino-Jugular Reflux
Normal Response

onset of compression

mmHg

1 sec
Abnormal Response

onset of compression
Kaussmaul’s Sign
Jugular Venous Pressure Rises With Inspiration
Chronic Constrictive Pericarditis

High Nonpulsatile A and V Crests Punctuated by Rapid X and Y Descents
The changes in the volume of the liver offer a most instructive indication of the condition of the circulation.

James Mackenzie
Chapter XXI
Pulsation of the Liver
Examination of the Liver
Paul Hamilton Wood
Director
Institute of Cardiology
London

1956
Paul Wood
Portrait by his daughter, Juliet

Ahmanson/UCLA Adult Congenital Heart Disease Center
DISEASES OF THE HEART AND CIRCULATION

by

PAUL WOOD, O.B.E.
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Director, Institute of Cardiology, London
Physician, National Heart Hospital
Physician in charge of the Cardiac Department, Brompton Hospital

Chapter II. PHYSICAL SIGNS
Chapter VIII. CONGENITAL HEART DISEASE
To the memory of
PAUL HAMILTON WOOD
from whom I learned
the physical examination
of the heart and
circulation.

London
1954-55
To Paul Wood From Whom I Learned
Congenital Heart Disease

The Clinical Recognition of Congenital Heart Disease
Wellcome Foundation Audiovisual Tape: *The Jugular Venous Pulse.*

Commentary written and spoken by Paul Wood 1957.
Paul Wood Audio Visual Tape
Ritual Examination of the Liver
1900 to 1600 BCE