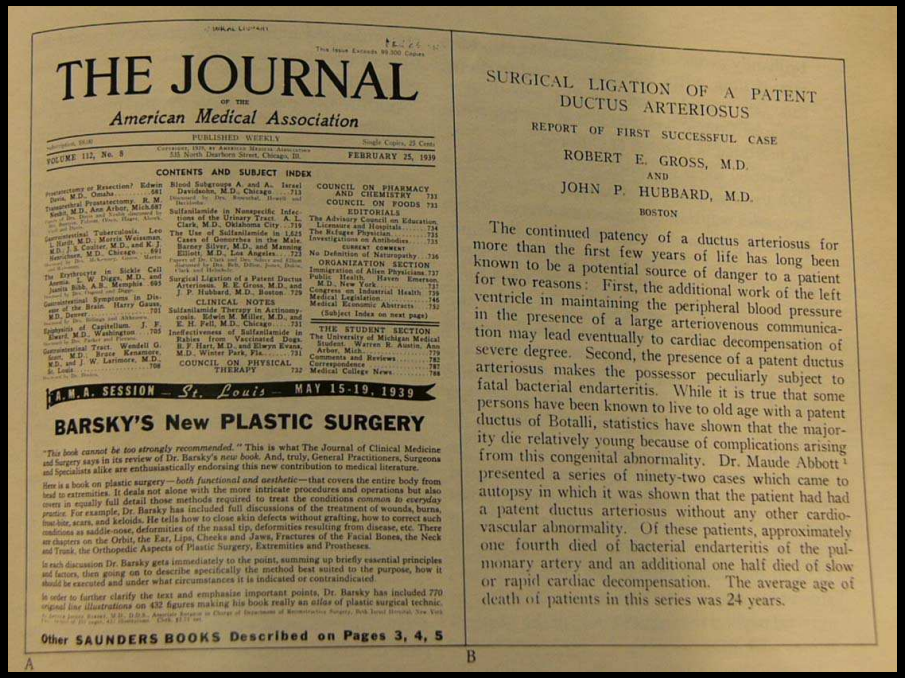
슬기로운 1년차 생활

소아심장편

서울대병원 흉부외과 조성규

Robert E. Gross

1938 1st PDA ligation, 7-year-old child



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OF THE
American Medical Association

PUBLISHED WEEKLY

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CONTENTS AND SUBJECT INDEX

A

SURGICAL LIGATION OF A PATENT DUCTUS ARTERIOSUS

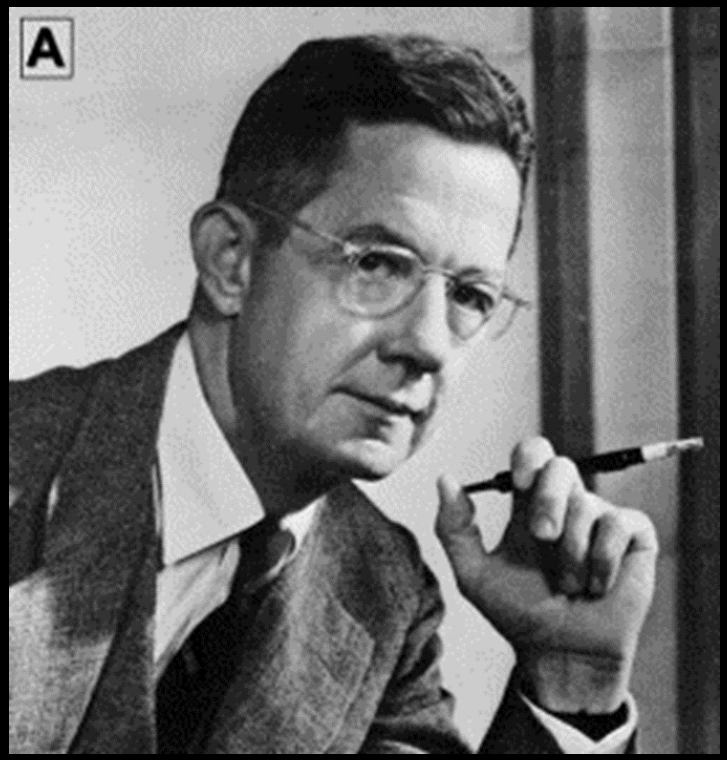
REPORT OF FIRST SUCCESSFUL CASE

ROBERT E. GROSS, M.D.
AND
JOHN P. HUBBARD, M.D.
BOSTON

The continued patency of a ductus arteriosus for more than the first few years of life has long been known to be a potential source of danger to a patient for two reasons: First, the additional work of the left ventricle in maintaining the peripheral blood pressure in the presence of a large arteriovenous communication may lead eventually to cardiac decompensation of severe degree. Second, the presence of a patent ductus arteriosus makes the possessor peculiarly subject to fatal bacterial endarteritis. While it is true that some persons have been known to live to old age with a patent ductus of Botalli, statistics have shown that the majority die relatively young because of complications arising from this congenital abnormality. Dr. Maude Abbott [1] presented a series of ninety-two cases which came to autopsy in which it was shown that the patient had had a patent ductus arteriosus without any other cardiovascular abnormality. Of these patients, approximately one fourth died of bacterial endarteritis of the pulmonary artery and an additional one half died of slow or rapid cardiac decompensation. The average age of death of patients in this series was 24 years.

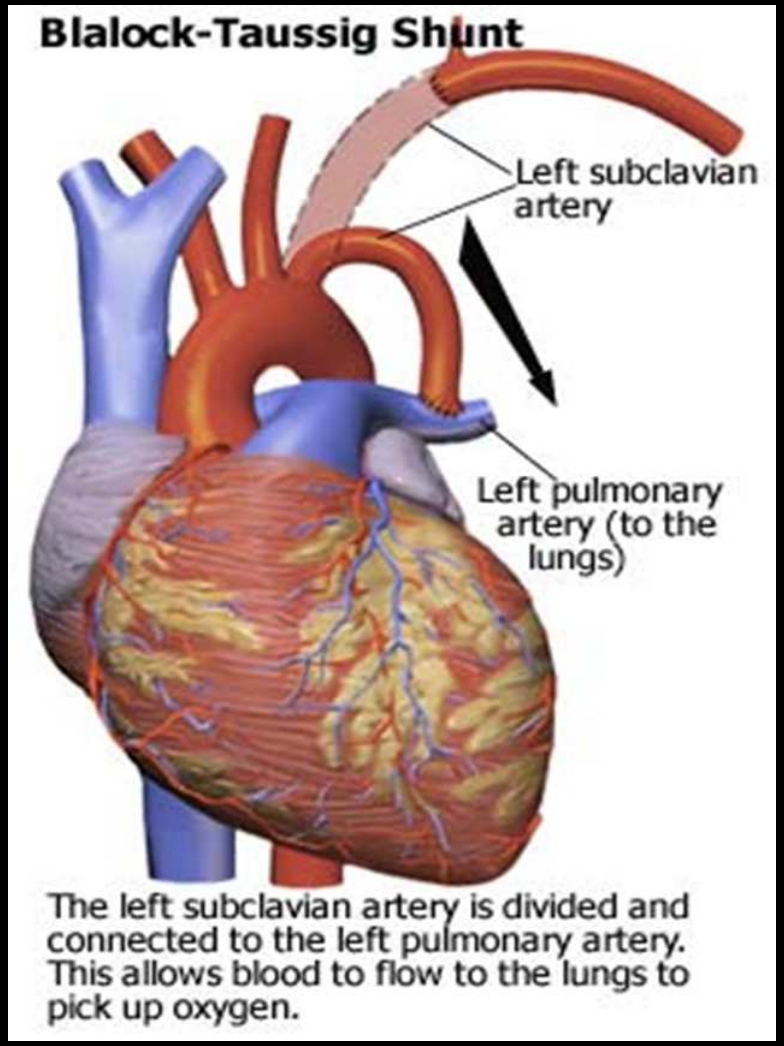
B

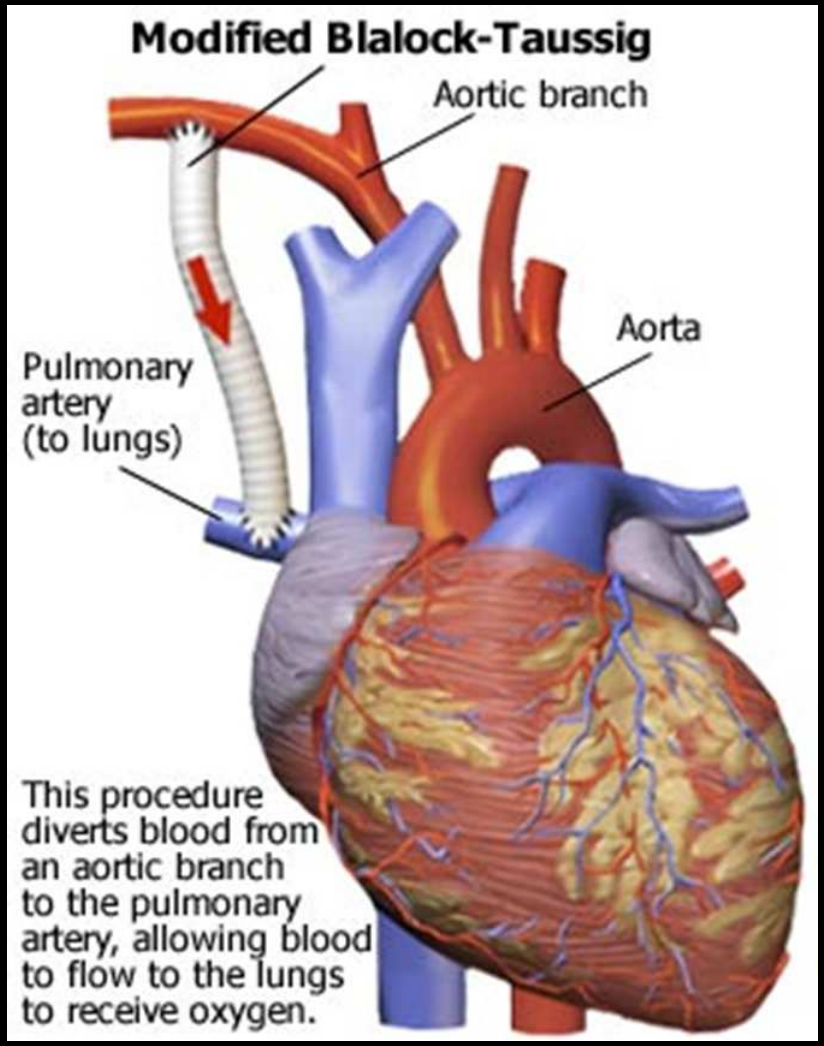
1944 1st B-T shunt



Alfred Blalock 1899 - 1964

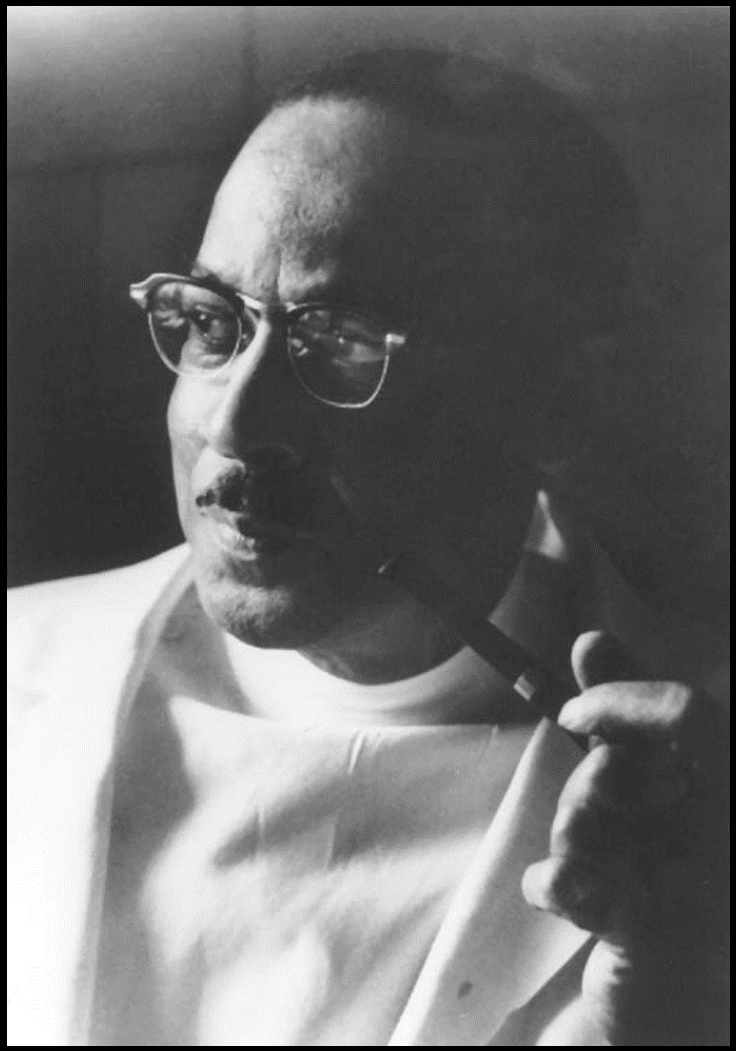
Helen Brooke Taussig 1898 – 1986


Blalock-Taussig Shunt
Left subclavian artery
Left pulmonary artery (to the lungs)
The left subclavian artery is divided and connected to the left pulmonary artery. This allows blood to flow to the lungs to pick up oxygen.


Modified Blalock-Taussig
Aortic branch
Aorta
Pulmonary artery (to lungs)
This procedure diverts blood from an aortic branch to the pulmonary artery, allowing blood to flow to the lungs to receive oxygen.

- Vivien T. Thomas
- 1910 – 1985

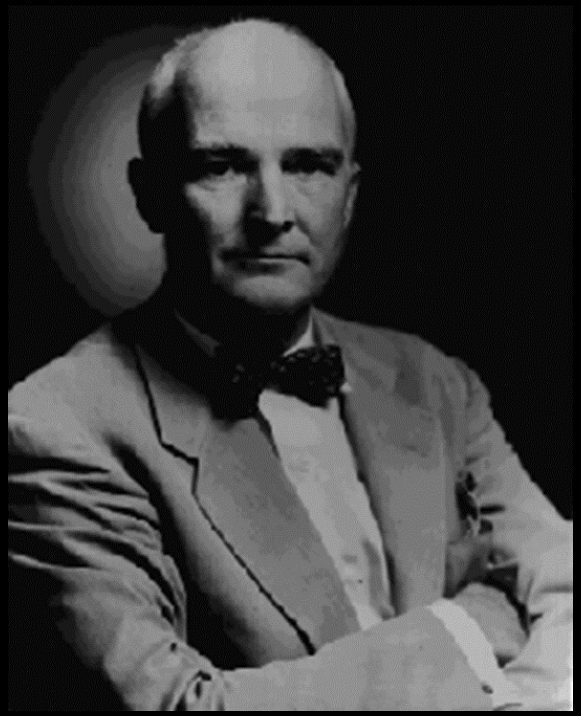
- Supervisor of
- Surgical Research Lab.
- JOHNS HOPKINS
- over 35 years

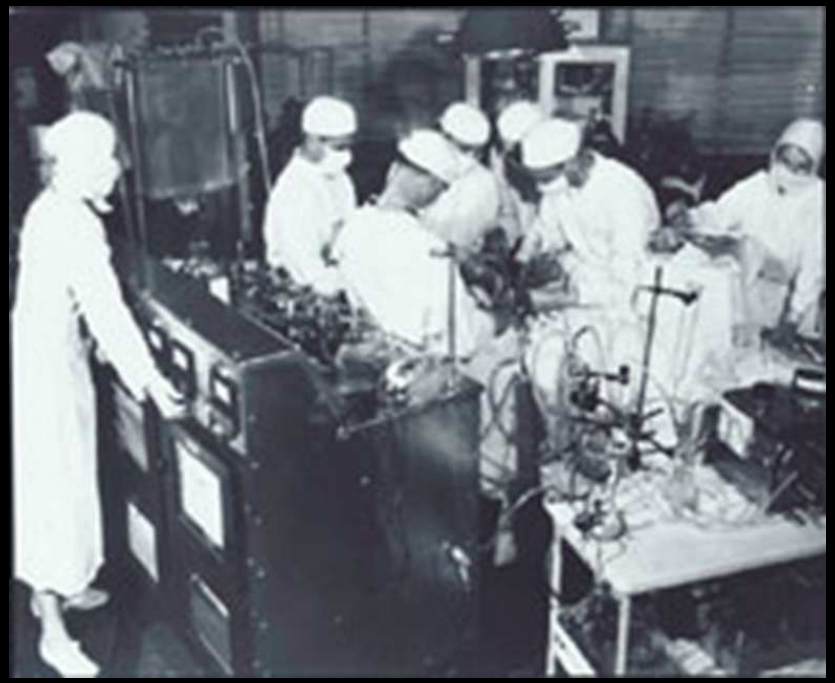



A breakthrough that changed
the face of medicine.
A unique partnership that broke
the rules.
Alan Rickman
Mos Def
SOMETHING THE LORD MADE
HBO FILMS
SUNDAY, MAY 30, 9PM HBO

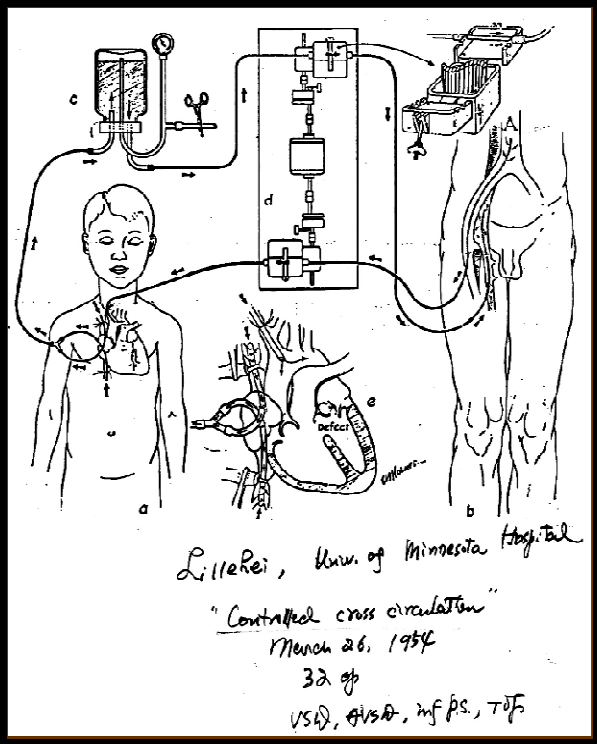

금세기 최고의 판타지
해리포터
와 죽음의 성물 2
Harry Potter
7월, 모든 것이 끝난다

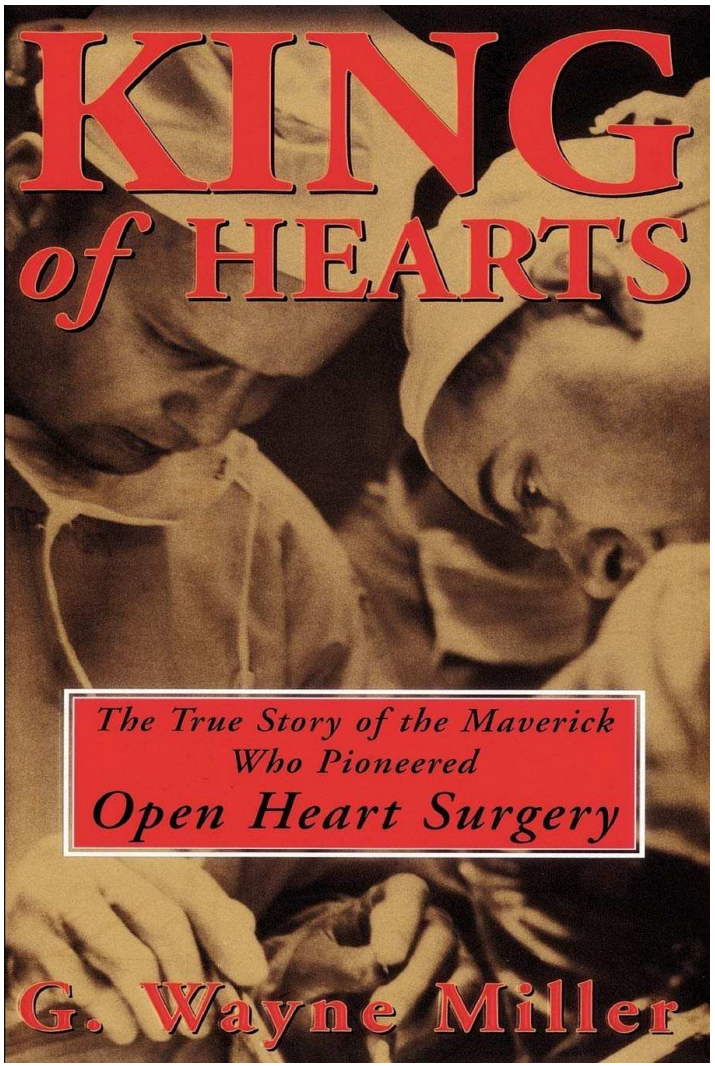
J. Gibbon, Heart-Lung Machine, 1953





C. Walton Lillehei, 1954




KING
of HEARTS
The True Story of the Maverick
Who Pioneered
Open Heart Surgery
G. Wayne Miller

아이는 어른의 축소판이 아니다.

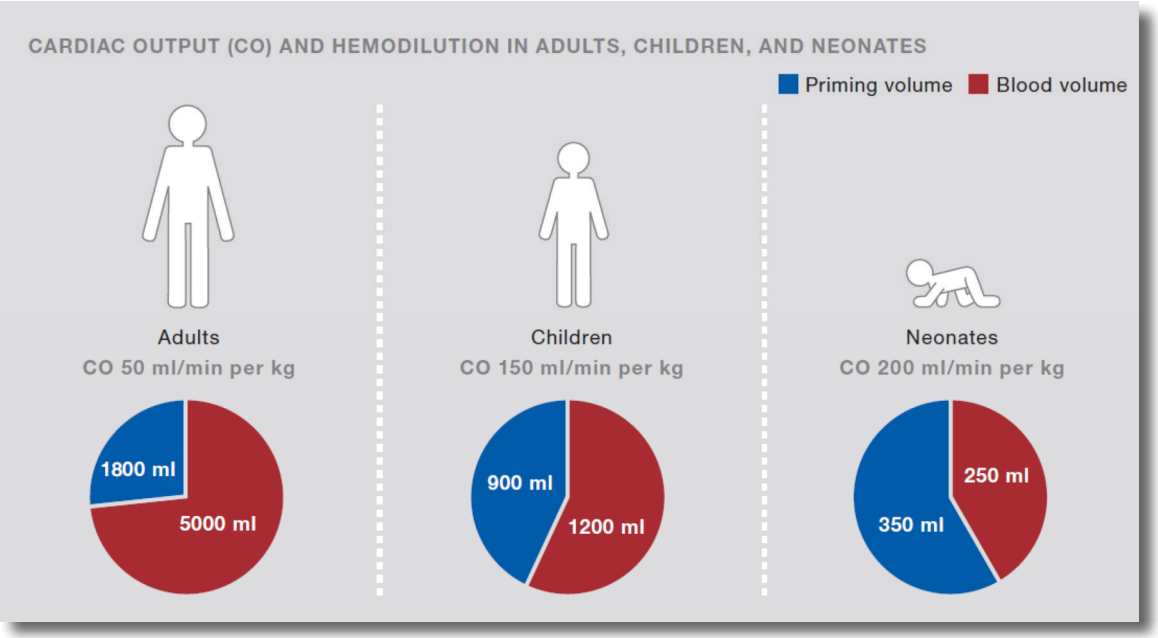
- Smaller circulating blood volume
- Higher oxygen consumption rate
- Immature organ system
- Altered thermoregulation
- Poor tolerance to micro emboli

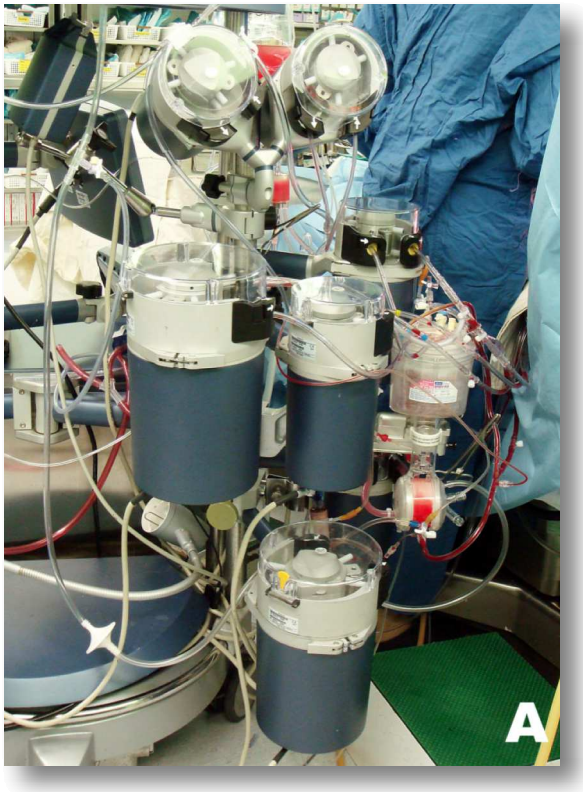
- Pulmonary hypertension
- RV failure

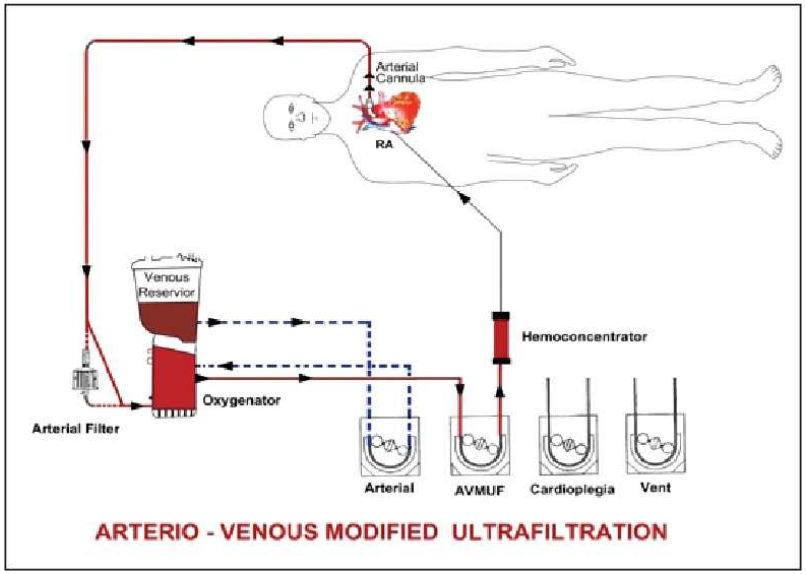
- Anatomic variations

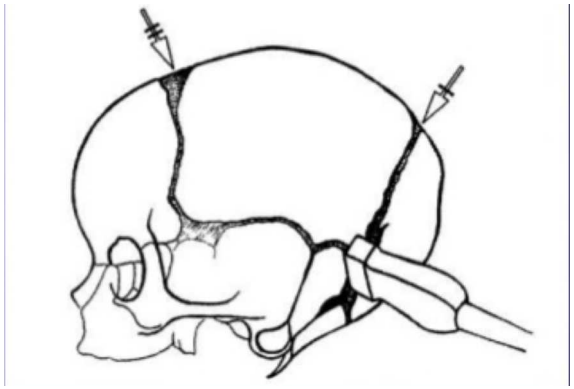
Cardiopulmonary Bypass in neonates

- Blood conservation
- Monitoring
- Perfusion technique



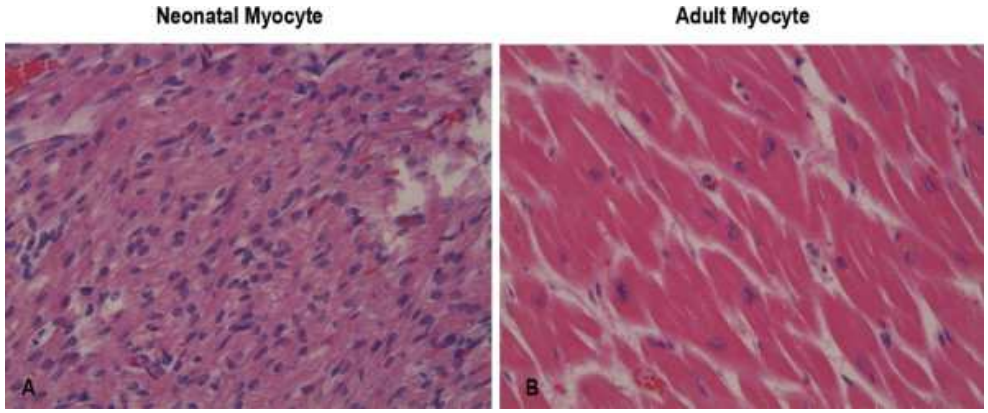

A


Arterial Cannula
RA
Venous Reservior
Hemoconcentrator
Oxygenator
Arterial Filter
Arterial
AVMUF
Cardioplegia
Vent
ARTERIO - VENOUS MODIFIED ULTRAFILTRATION



Neonatal heart

- Immature myocardium
- Increased ability to tolerate periods of anoxia due to increased glycogen storage
- Decreased ventricular compliance
  – less preload reserve
- Higher sensitivity to intracellular calcium due to an underdeveloped sarcoplasmic reticulum
  – reduced ability to store calcium



Semin Thorac Cardiovasc Surg Pediatr Card Surg Ann 16:21-31,2013

Congenital Heart Disease

- Acyanotic CHD
  - VSD
  - ASD
  - PDA
  - Aortic stenosis
  - CoA
- Cyanotic CHD
  - TOF
  - TGA
  - TAPVR
  - Truncus arteriosus
  - Tricuspid atresia

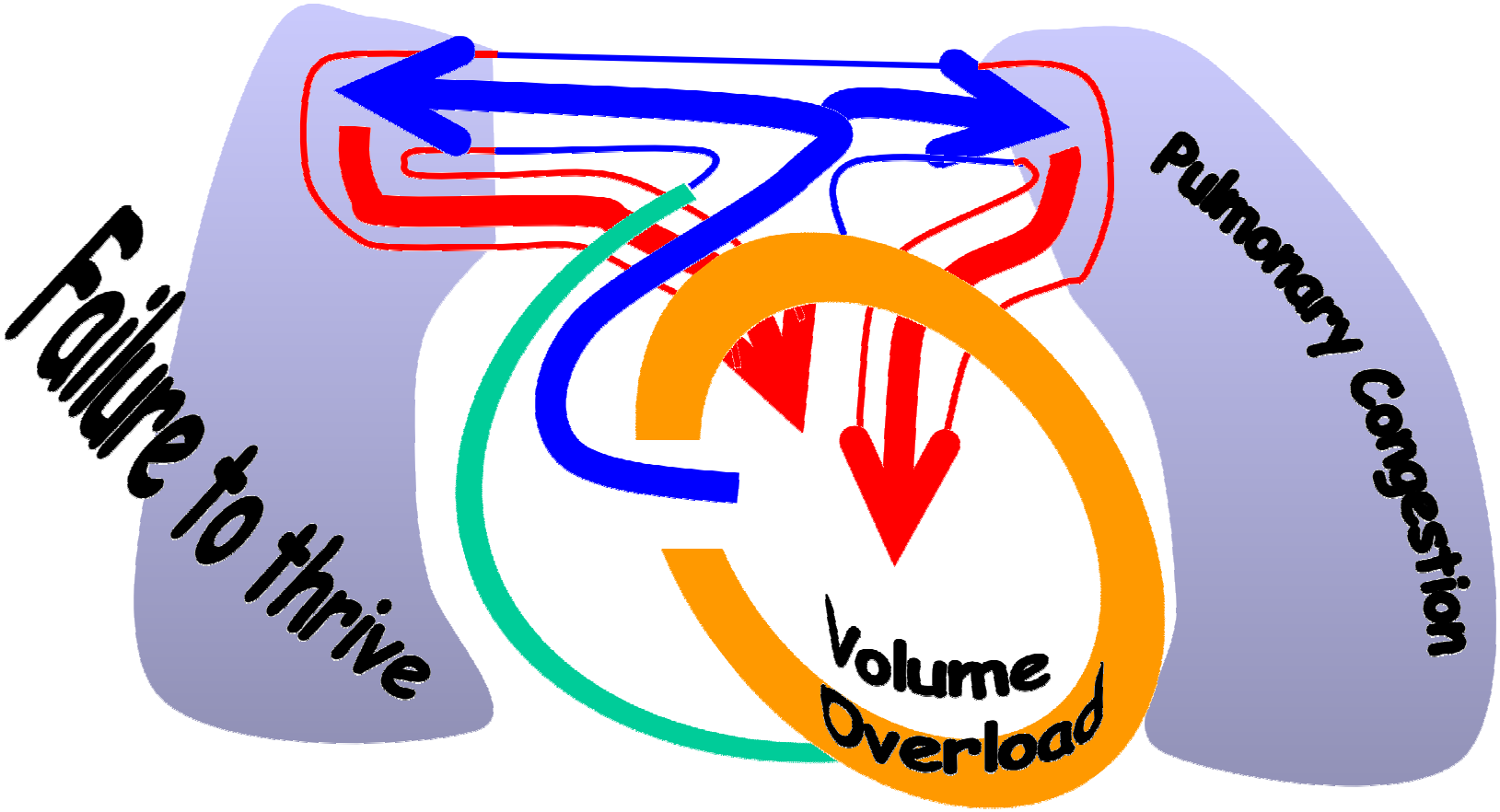
Congenital Heart Disease

- Acyanotic CHD
  - Simple and single lesion
  - Left to right shunt
  - Obstructive lesion

  - Asymptomatic
  - Signs of **heart failure**
  - Poor feeding
  - Failure to thrive
  - Tachypnea
  - Chest wall retraction

- Cyanotic CHD
  - Multiple and complex lesion
  - Low oxygen saturation
  - Right to Left shunt
  - Common mixing
  - Parallel ciculation
  - Deoxygenated blood in systemic circulation

  - **Cyanosis**


Failure to thrive
Pulmonary Congestion
Volume Overload

Congenital Heart Disease

- Shunt lesion
  - ASD, VSD, AVSD, PDA, Truncus arteriosus
- Right ventricular outflow obstruction
  - TOF, PA with VSD, PA with IVS
- Left ventricular outflow obstruction
  - Aortic, subaortic, supravalvar aortic stenosis, Interruption of aortic arch, Coarcta aorta
- Malformation of AV or VA connection
  - TGA, corrected TGA, DORV
- Singe ventricle
  - Tricuspid atresia, HLHS, DILV ...

서는 데가 바뀌면
풍경도 달라지는 거야.

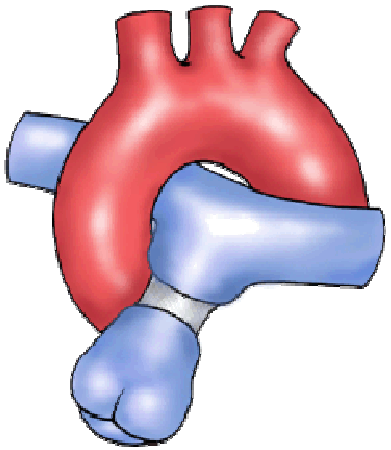
CHD treatment?

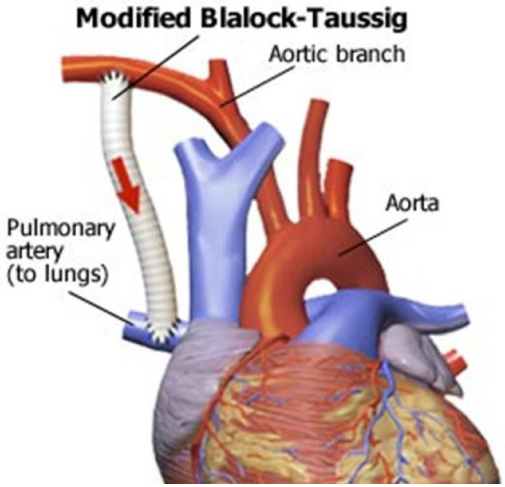
- Shunt lesion - Shunt lesion closure
- RVOTO - RV outflow obstruction relief
- LVOTO - LV outflow obstruction relief
- Malformation of AV or VA connection
  - Correction of AV or AV connection
- Singe ventricle – Fontan circulation

CHD treatment?

- Heart failure, Pulmonary overflow ?
  - Shunt lesion closure
  - Pulmonary artery banding

- Cyanosis, Small pulmonary artery ?
  - total correction
  - B-T shunt



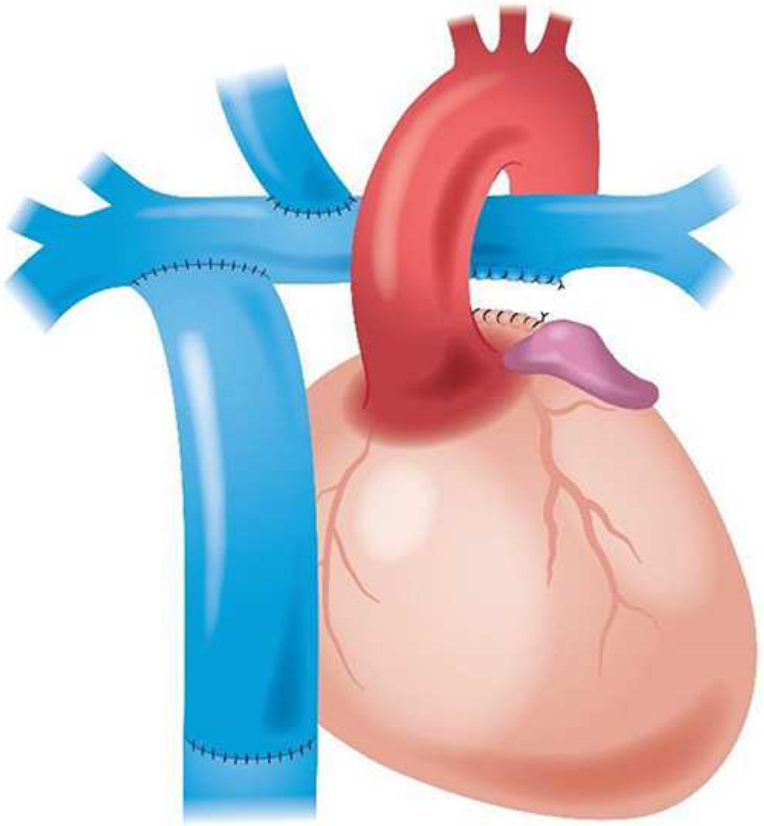


CHD treatment?

- Stage op. vs One stage total correction
  - CoA with VSD, TOF, PA with VSD

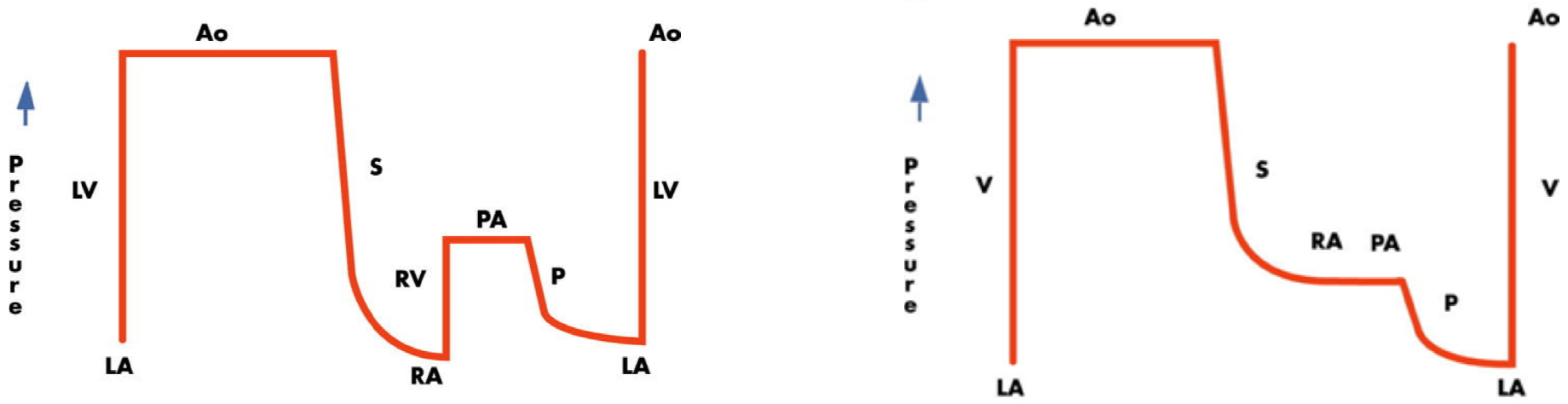
- Bi-ventricle repair vs Single ventricle repair
  - PA IVS, Ebstein anomaly, unbalanced AVSD

Singe ventricle – Fontan circulation



Francis Fontan 1929 - 2018

Singe ventricle – Fontan circulation



Heart 2005 Jun; 91(6): 839-946

Singe ventricle – Fontan circulation

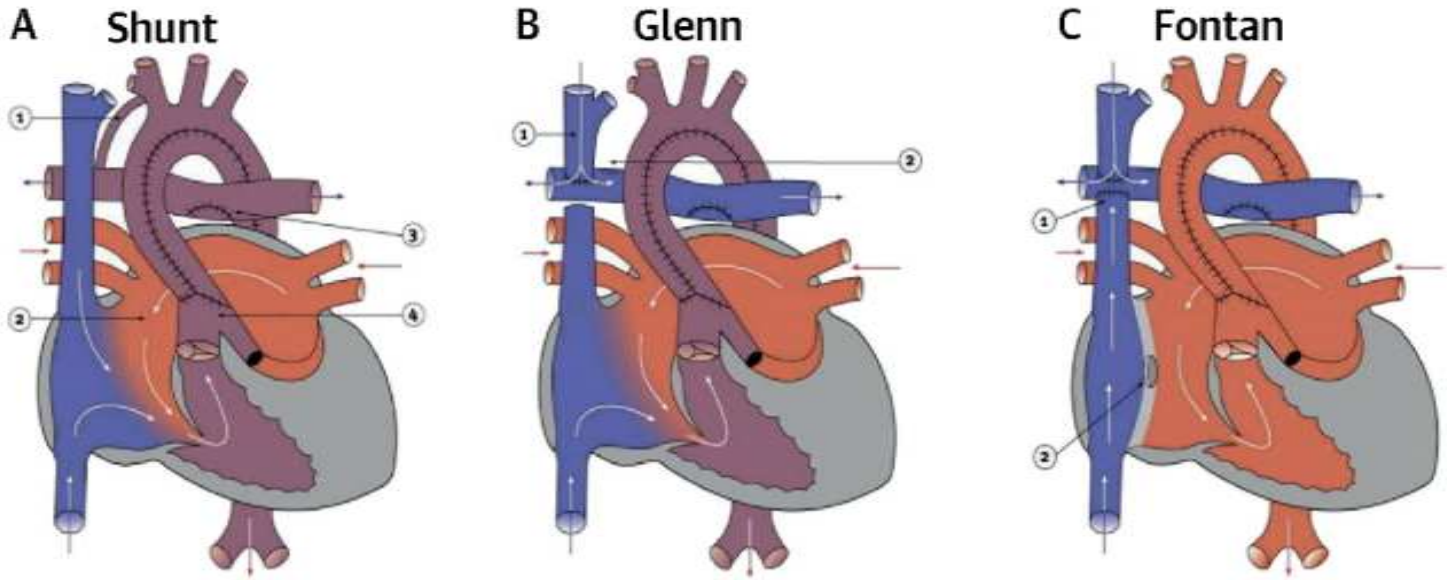
- Univentricle - LV type or RV type

- Systemic venous return is connected to the pulmonary circuit in the absence of an interposed ventricle

- Pulmonary vascular obstructive disease
- Size of the pulmonary arteries

- Heart failure ?
  - Pulmonary artery banding : Prevention of PVOD
- Cyanosis? (small pulmonary arteries)
  - B-T shunt : Growth of the pulmonary arteries

Single ventricle after staged op.

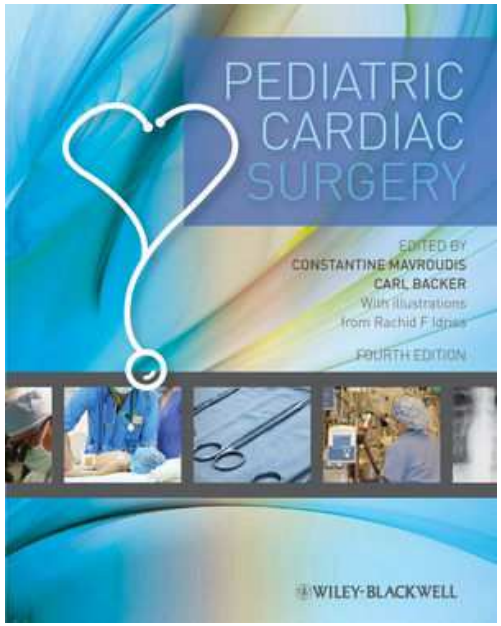


Farahmand, Masoudhttps://tigerprints.clemson.edu/all_dissertations/2571)

소아심장?

- 선천성심장외과
  - Premature
  - Neonate
  - Infant
  - Children
  - Adolescent
  - Adult congenital Heart disease.

공부 많이 하자!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CARDIAC
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CARL BACKER
With illustrations
from Rachid F. Idriss
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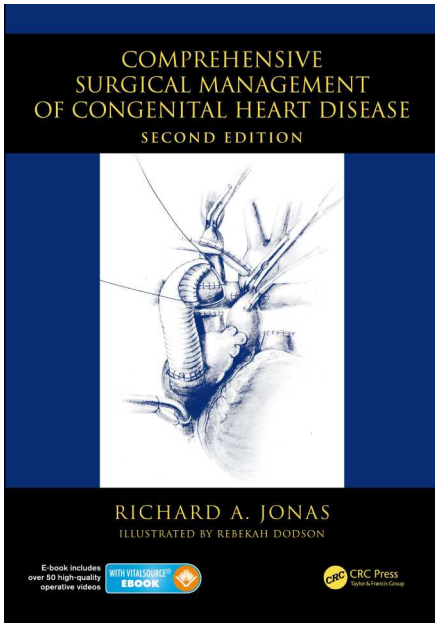
WILEY-BLACKWELL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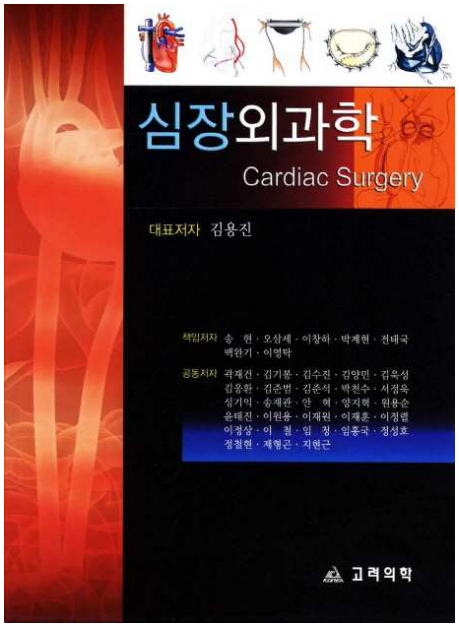
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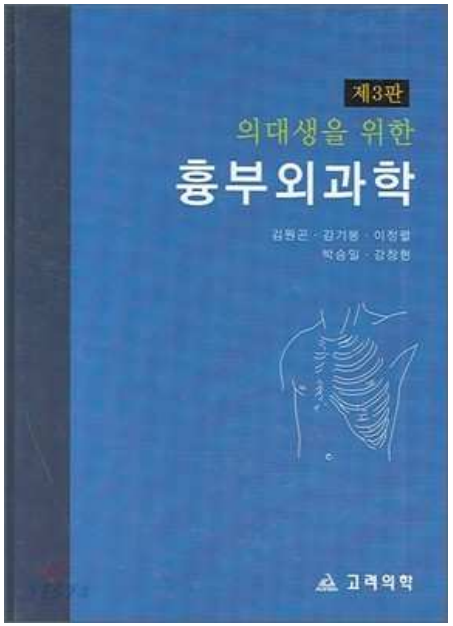
Cardiac Surgery
대표저자 김용진
고려의학


제3판
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흉부외과학
고려의학

지혜롭게 환자와 보호자 응대하기

csk1022@hanmail.net