VASCULAR SURGERY

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Vascular tree can be divided into three main components

1-arteries;-. *:which drain blood toward the heart ,they carry deoxygenated blood except the pulmonary veins which carry bright blood from the lungs to left atrium. Venous side of low pressure and some times reach negative value e.g., neck vein .the veins consider as capacitate vessel*

2-viens;-. *they distribute the blood from the heart to all body components they carry oxygenated blood except the pulmonary artery*

3-micro-circulation;-. *small sized vessel's less than 0.1 mm diameter responsible for distribution and collection of blood including the vascular tree themselves*

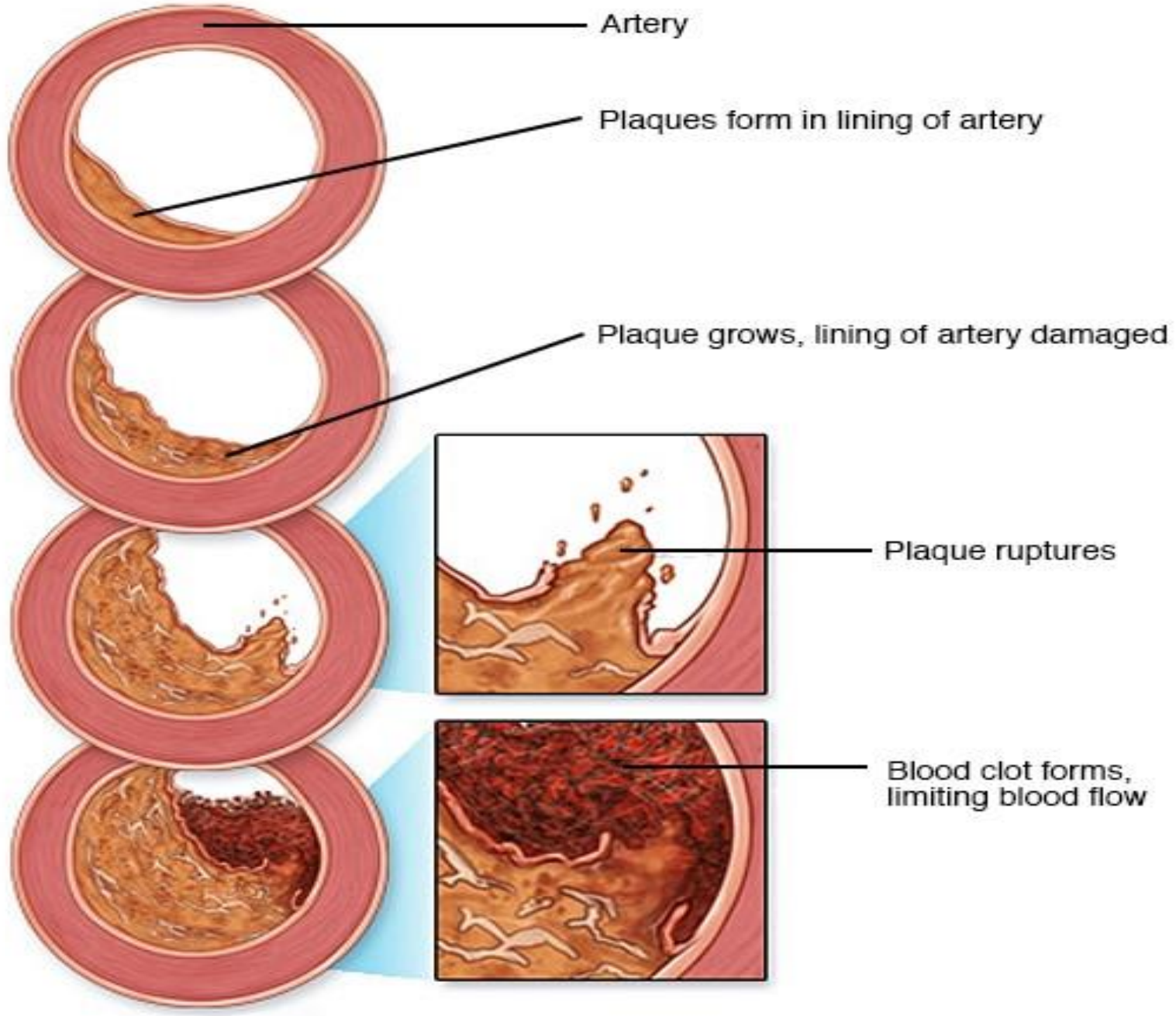
AUTOREGULATION

It is the ability of vascular bed to provide constant blood flow regardless perfusion pressure.

for skeletal muscles 20-40mm hg ,,50-60mmhg for the brain is the lower limits for auto regulation

***ATHEROGENESIS*:-**

IT IS THE FORMATIONOF ATHEROMATOUSPLAQUE LEADING TO THROMBUS AND VASCULAR INJURY



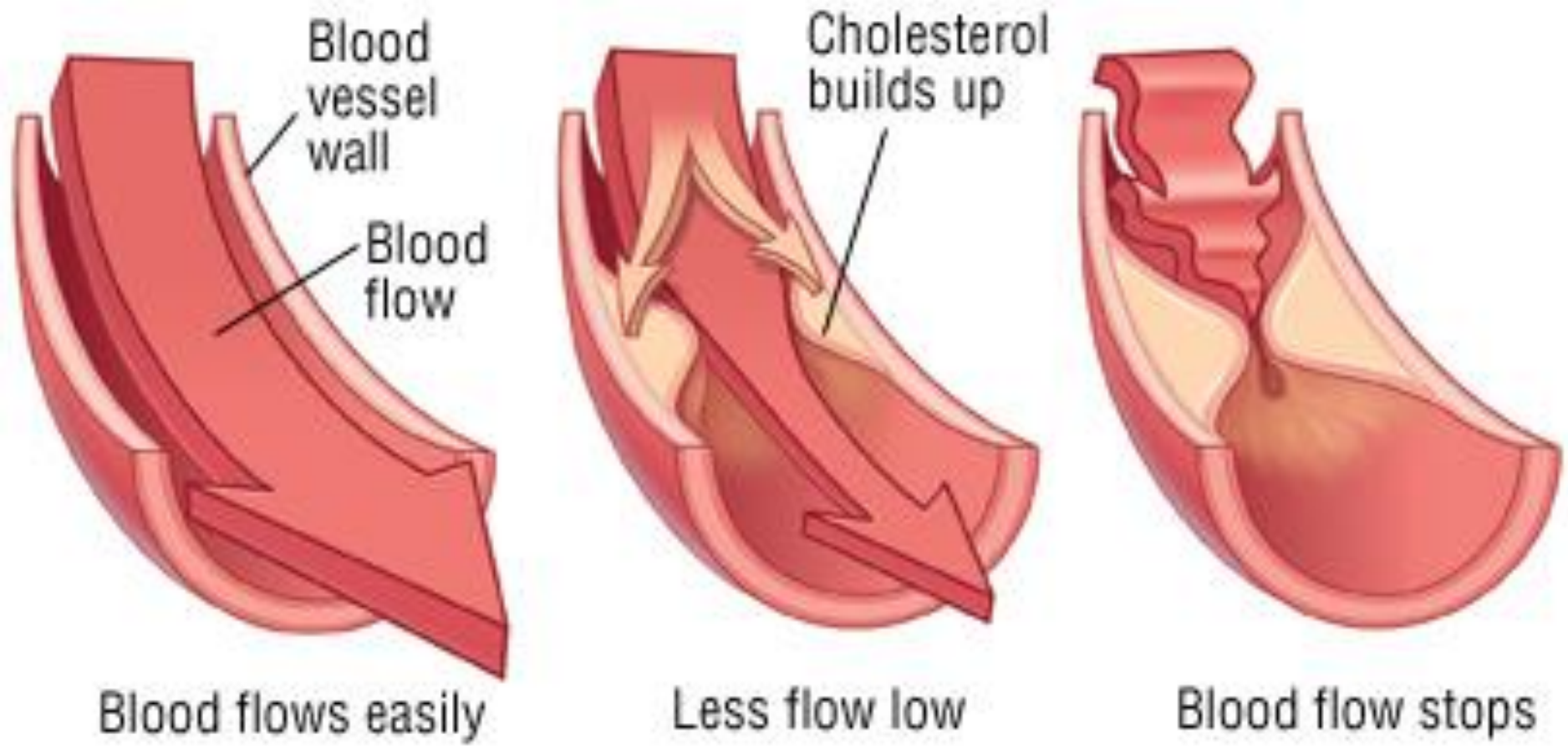
Three categories of vascular injuries can be recognized here:
a..type 1functional alteration of endothelial cells without morphological changes. that might occur due to flow disturbance lipid accumulated within macrophages and(FOAM CELLS)are the earliest sign of atherosclerosis.
b..type 2the foam cells may rupture and release their toxic products lead to proliferation and migration of smooth muscle cells causing fibro-intimal lesion lead to formation of (after atime) smooth plaque.
c..type 3 the smooth plaque will undergo disruption and fissuring reaching to the media this will increase the platelets adhesion and extensive proliferation of smooth muscle cells ,this is called mural thrombus which involve the whole wall of the vessel

ATHEROSCLEROSIS

1. NORMAL ARTERY
2. ENDOTHELIAL DISFUNCTION
3. FATTY STREAK FORMATION
4. STABLE (FIBROUS) PLAQUE FORMATION
5. UNSTABLE PLAQUE FORMATION

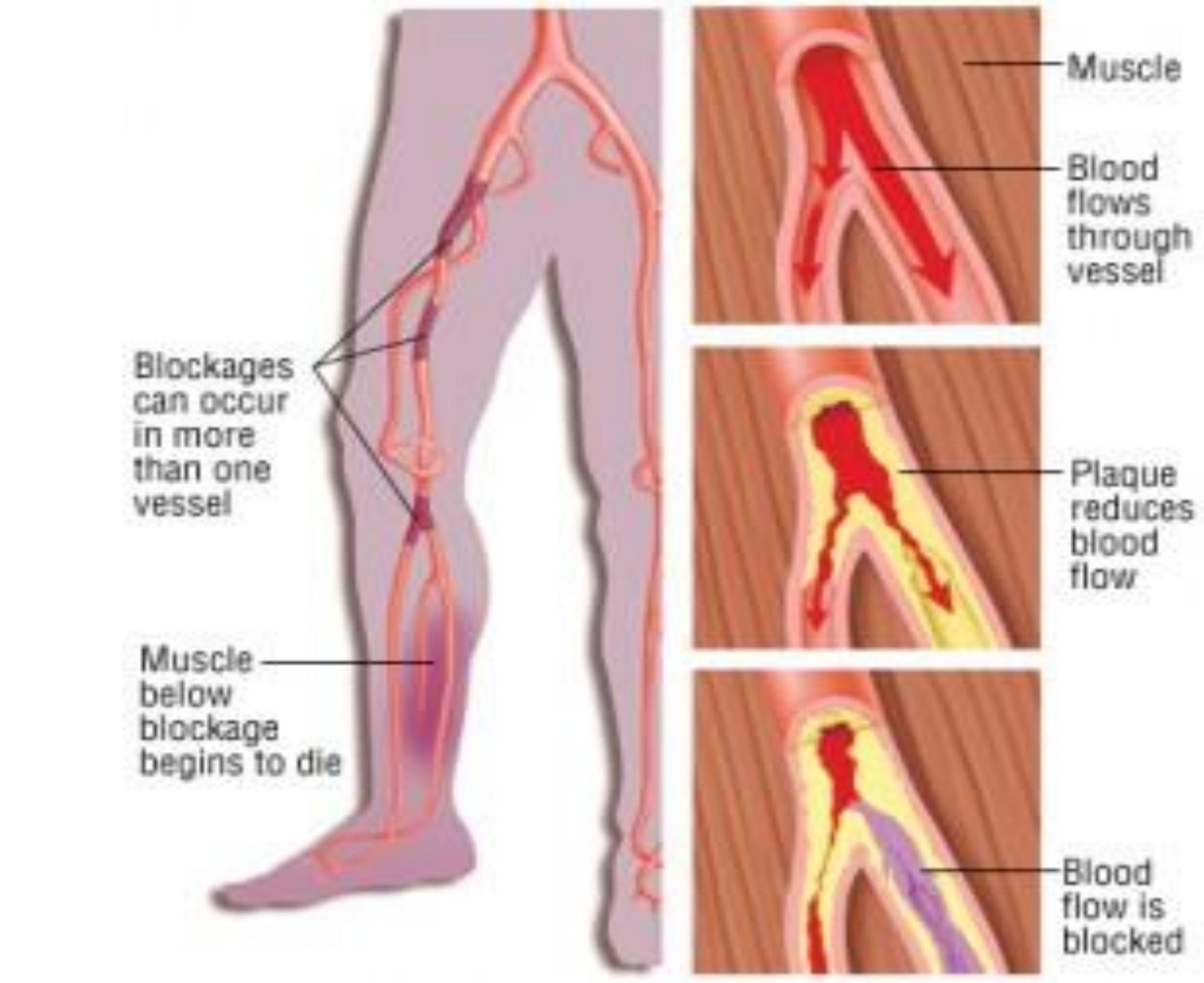
CRITICAL STENOSIS

Is defined as the degree of stenosis sufficient to produce significant drop in the pressure . more ((than 75%of the original lumen))


Blood vessel wall
Blood flow
Cholesterol builds up
Blood flows easily
Less flow low
Blood flow stops

COLLATERAL CIRCULATION

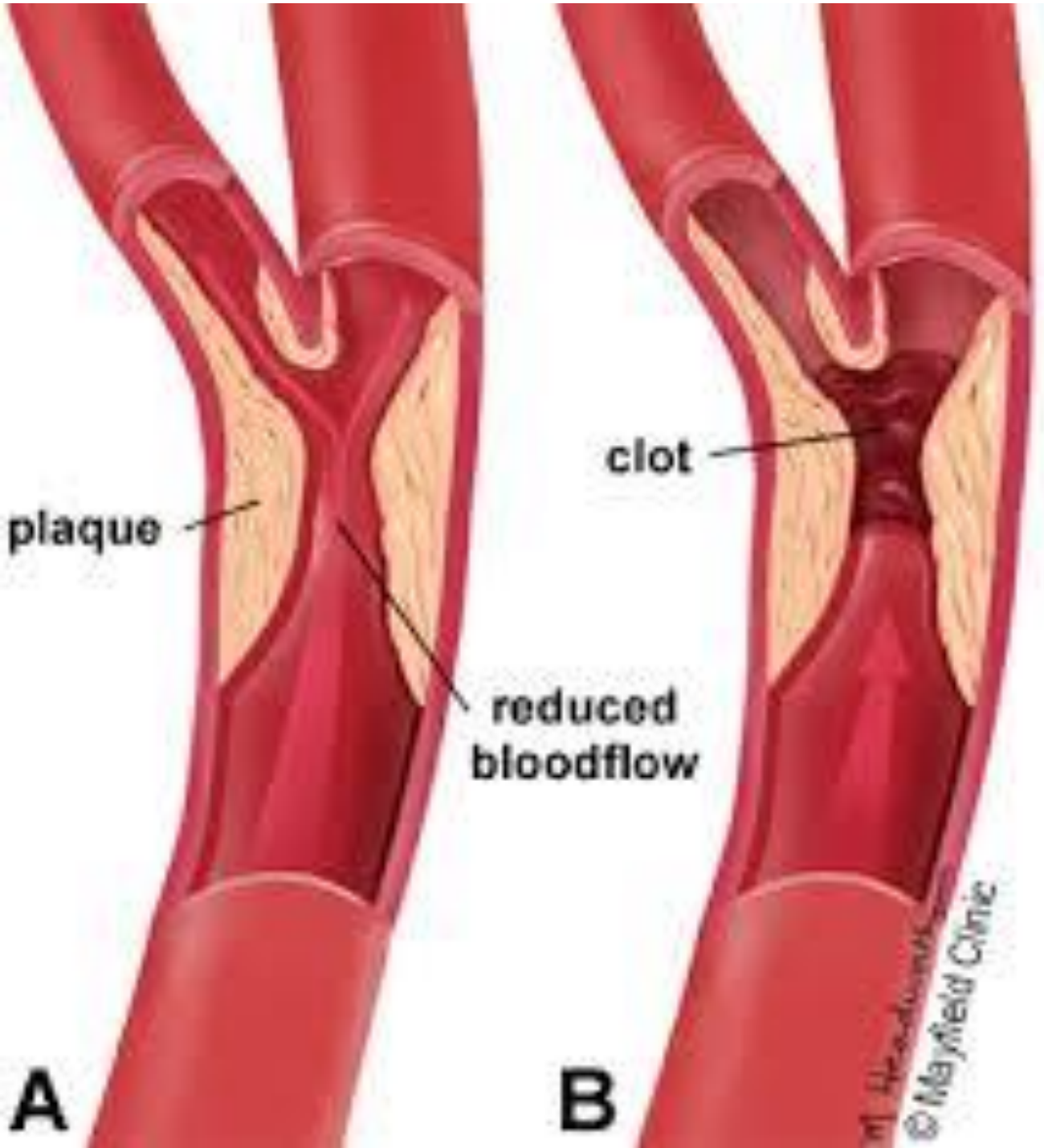
group of pre-existing pathways that enlarges as stenosis develops in the main arterial supply. Collateral pathway may provide flow distal to the occlusion which is sufficient to preserve the viability BUT it is never efficient as patent artery, because the collateral resistant always exceeds the major artery


Blockages can occur in more than one vessel
Muscle below blockage begins to die
Muscle
Blood flows through vessel
Plaque reduces blood flow
Blood flow is blocked

Peripheral arterial disease

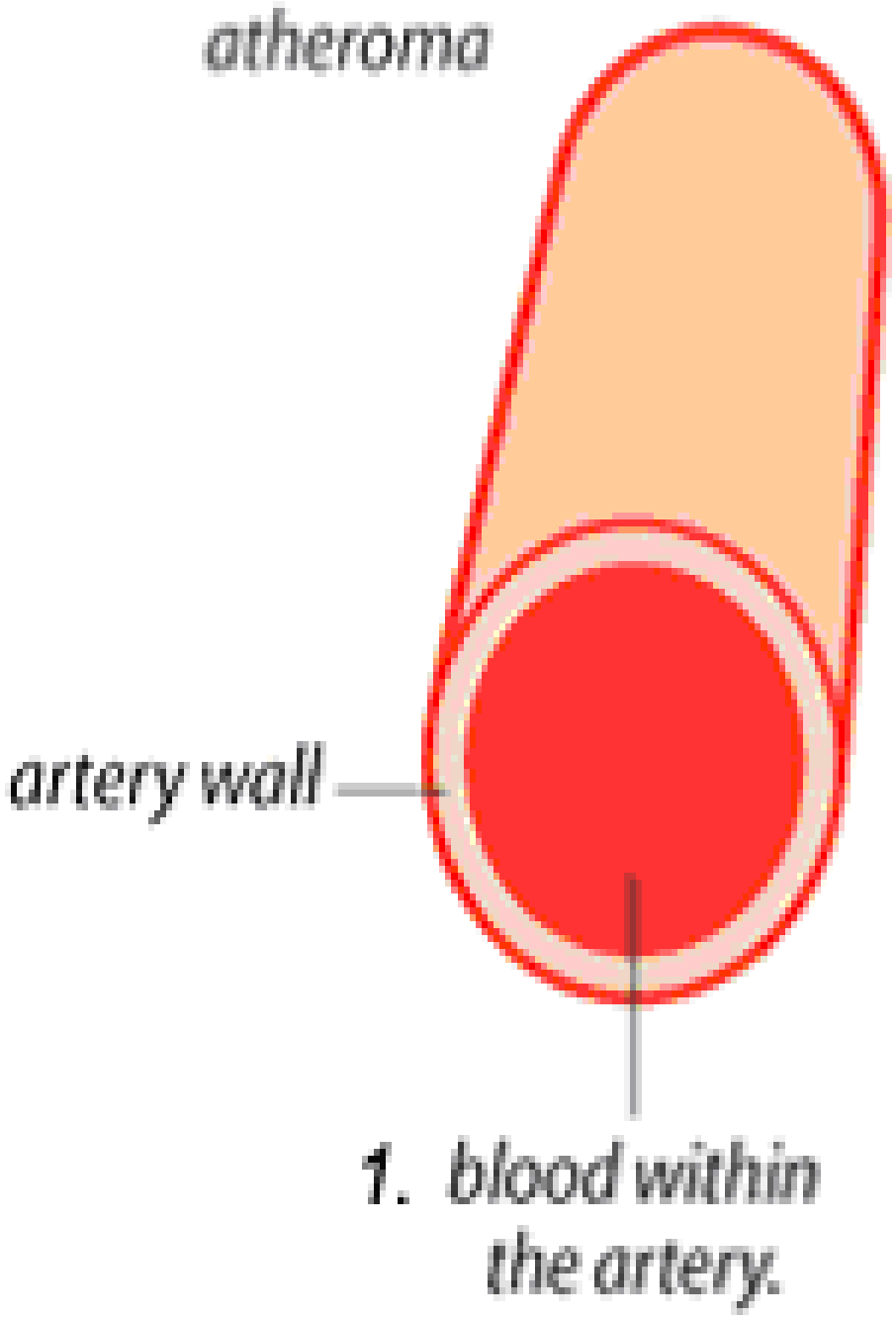
Causes:

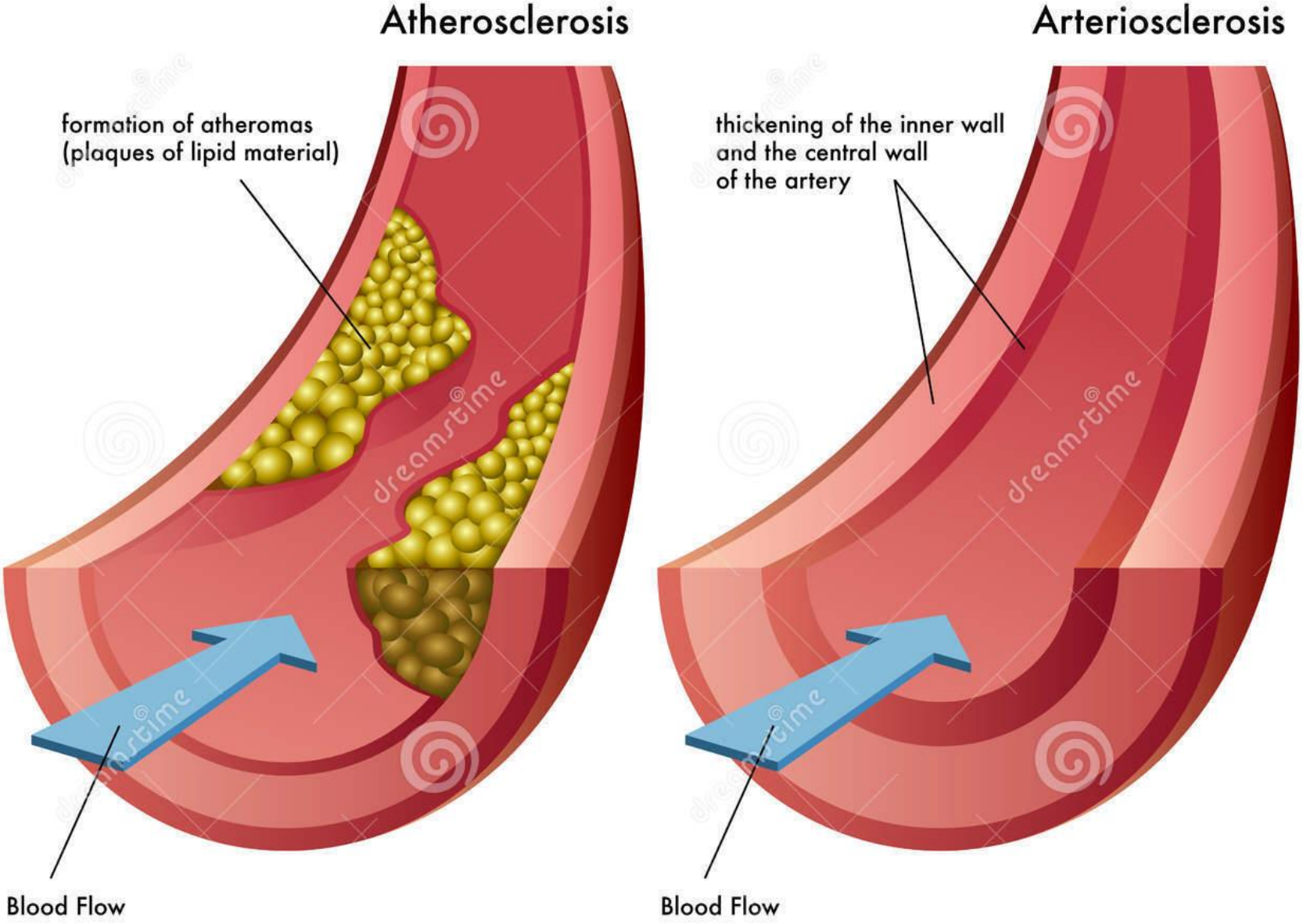
1. *Atherosclerosis.*
2. *Embolic phenomena.*
3. *Traumatic injuries to the vessels.*


plaque
reduced
bloodflow
A
clot
B
© Mayfield Clinic

RISK FACTORS;

1.smoking
2.D.M
3.hypertension
4.hyperlipidaemia


atheroma
artery wall
1. blood within the artery.



CLINICAL PRESENTATIONS::

- *1-claudication:-pain in major muscles distal to the stenosis during walking .the 10 years prognosis is good only 10%progress to sever ischemia and may ended by limb loss.*

2-Ischemic rest pain :-

when sever compromise to blood supply occur during even rest i.e. the blood not sufficient to keep the limb viable at rest.

3-Ulceration &Gangrene;

this most sever condition in which circulation is not enough to maintain tissue viability leading to tissue death and dry gangrene which can complicated by infection causing wet gangrene

Evaluation of patient:-

1; history.
2; physical examination.
3;Non invasive tests Doppler us , duplex .
4; arteriography.
5;Magnatic resonant angiography.

Treatment

1-Medical treatment•

2-Interventional treatment•

3-Surgical treatment•

1;end arterectomy mean removal of the atheromotous material with the intema and part of the media.

2;resection of the stenosed part and end to end anastomosis.

3; resection and interposition graft from the same patient ,we used commonly saphenous vein grafts.

4;use of synthetic grafts like Gortex , dacron.

5;AMPUTATION of gangrenous limb