

present during intra-uterine life, and hence, to compensate for this diminished amount of blood, a new layer of connective tissue developed in the lumen, in order to make the tube narrower.

Although it has been found that there is a gradual development of intimal tissues with progressive age, no association can be demonstrated between the loss of placental circulation and the tissue hyperplasia. Nor can we support Thoma's findings that this new tissue in the intima is confined alone along the path of the fetal circulation. Moreover, the hyperplasia which occurs in the intima often involves elements other than connective tissue. Furthermore, the principle of compensation between the fluid of the body and the fixed tissues is usually balanced by other means. Under ordinary conditions the diminished amount of blood in the vascular system is readily compensated by the absorption of fluid from the surrounding tissues. How frequently during life must there be a temporary disproportion of the fluid blood to the arteries! Severe hemorrhages following trauma, hemorrhages occurring in typhoid and dysentery, and loss of blood occurring in cases of hemophilia all lead to this disproportion of blood content to the vascular system, and yet in these cases the disproportion is but temporary and the proportion can be easily reestablished by the absorption of fluid. Moreover, in none of these diseases do we see a process of compensatory hyperplasia such as is described by Thoma.

This general principle of compensatory hyperplasia, which Thoma claimed for the connective tissue growth in the intima of the aorta of children, was also adapted by him for the explanation of the intimal thickening occurring in later life. Thoma discusses the subject in a general way only, and he avoids minute histological descriptions.

In 1886 Thoma carried out a series of experiments to demonstrate compensatory hyperplasia. He filled the fresh aorta in the cadaver, or aortæ recently taken from the cadaver, with melted paraffin under a pressure about equal to the blood pressure in the aorta. These injected preparations were kept at this internal pressure until the paraffin had thoroughly hardened. The aorta was then split open and the paraffin core removed. On examining these wax models Thoma claimed that the surface was uniformly smooth,