Activity 1 - Blood vessel structure

In order to understand how haemostasis is initiated, it is necessary to understand the structure of a blood vessel. A typical blood vessel is a tube made up of endothelial cells. These cells form a physical barrier that prevents blood from leaking into the tissues.

Beneath the endothelial cell layer is a basement membrane that is composed of collagen. Collagen is an important protein that is able to trigger haemostasis by interacting with blood proteins and blood cells. However, until injury occurs, the collagen is screened from blood by the endothelial cell layer. Therefore, haemostasis only occurs if endothelial cells are damaged, allowing blood to come into contact with the underlying collagen.

Endothelial cells also actively suppress haemostasis by releasing bioactive molecules such as nitric oxide and prostacyclin into the blood (see platelets below). Damage to endothelial cells stops production of these inhibitors, preventing the inhibition of platelet activation and allowing haemostasis to occur. Beneath the collagen is a layer of smooth muscle cells that surround the vessel. Upon injury, these cells contract reducing the diameter of the vessel and reducing blood flow. This process is known as vasoconstriction.

Explore this further at these two websites:

http://chemo.net/newpage91.htm