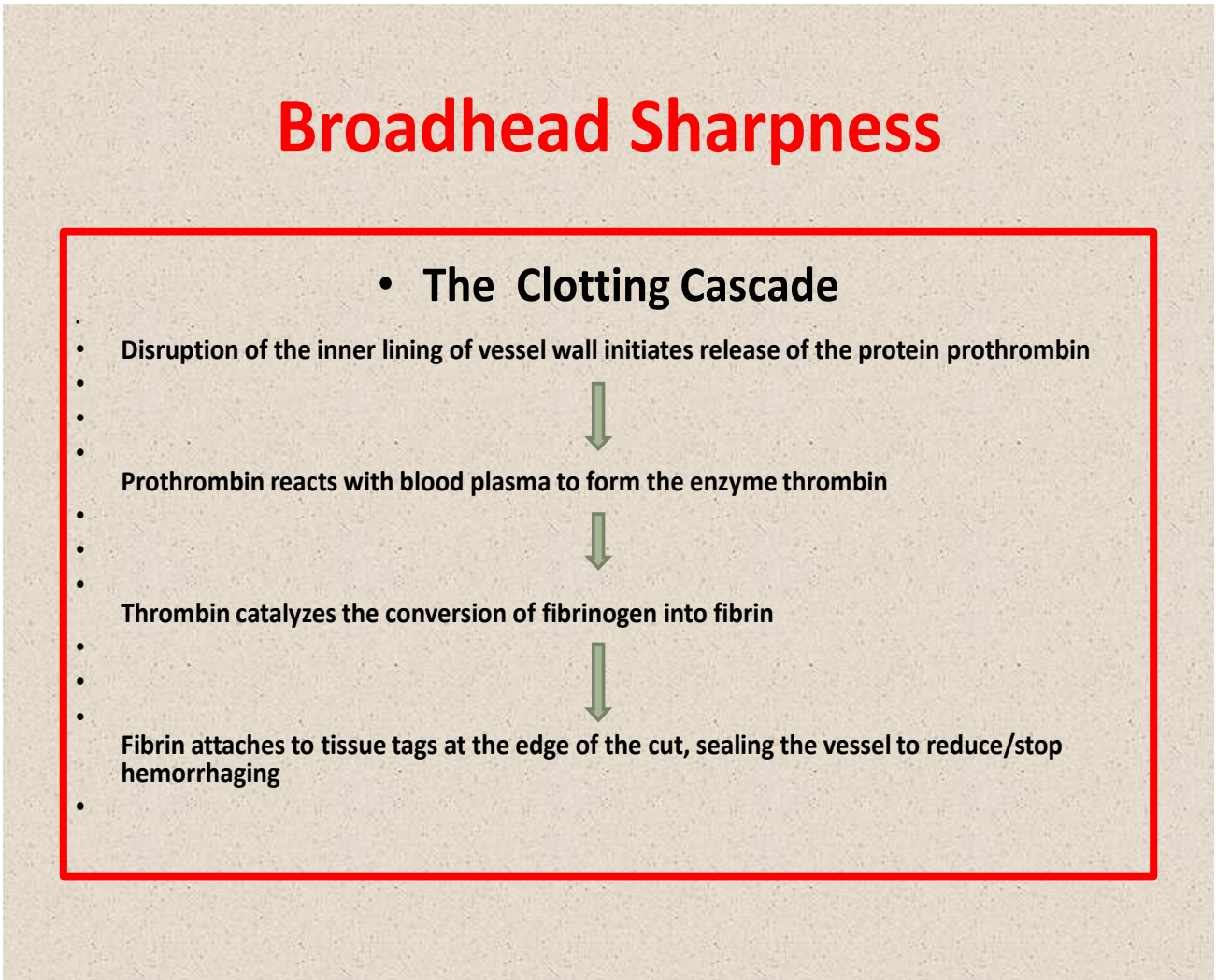
# Broadhead Sharpness and the Clotting Cascade
## By Dr. Ed Ashby




The clotting cascade is the physiologic process the body uses to seal off a bleeding blood vessel. When a blood vessel is cut the damaged cells ***lining the inner wall of the blood vessel*** release a protein called prothrombin. Prothrombin reacts with the blood plasma to form thrombin. Thrombin acts as a catalyst to convert fibrinogen into fibrin. **The fibrin attaches to the ragged tissue tags at the cut edge of the blood vessel to form a clot, sealing off the vessel.**

What's important to recognize is that the type of edge finish on your broadhead has an effect on the clotting cascade. When you use the ***thinnest, smoothest, sharpest*** edge finish fewer

of the cells lining the blood vessel's inner wall are damaged. This means less porthrombin is released. At the other end of the cascade this means less fibrin is produced; but there's more. **That *thinnest, smoothest, sharpest* edge also results in fewer tissue tags at the cut end of the blood vessel. That means there are now fewer tissue tags for the reduced amount of fibrin to attach to.** The net result is a cut that bleeds both more freely and for a longer period of time, and that's exactly what we want.

It is noteworthy that single-bevel broadheads have a thinner edge than double-bevel broadheads. A single-bevel broadhead sharpened at a 25 degree angle, the standard sharpening angle on virtually every single-bevel broadhead available, has a total edge angle of 25 degrees. Most all double-bevel broadhead are sharpened at a 25 degree angle on each side of the edge, resulting in a total edge angle of 50 degrees.

At equal levels of edge smoothness and sharpness the significantly thinner edge of the single-bevel broadhead results in less damage to the cells lining the walls of the blood vessels and fewer tissue tags, resulting in freer and longer lasting hemorrhaging from each vessel severed. When compared to a double-bevel broadhead of matching profile, sharpness and edge finish there is a consistently observable increase in the level of bleeding into the soft tissues from a single-bevel broadhead wound.

It is also important to recognize that the higher an edge bevel's Mechanical Advantage (MA) the greater the amount or *work* (as defined in physics) that can be accomplished with a given amount of applied force. A 25 degree single-bevel edge has twice the MA of a double-bevel edge sharpened at 25 degrees on each edge. This means that when the cutting edges are equally sharp and smooth, and with an equal amount of applied force between the cutting edge and a vessel wall, the single-bevel broadhead slices twice as deeply as the double-beveled broadhead.