

**Analysis and discussion on the results:** *Isaiah Kellogg-PhD*

First and foremost, the Magtech SCHP doesn't appear to work well at all. Only 1 out of 4 of the factory bullets expanded - and that's in water! Water tends to induce a bit more expansion than ballistic gelatin does. But even with water, the Magtech factory SCHP only manages to expand 25% of the time. Not very good odds.

The purpose of HyperCav was to increase the reliability of expansion of a hollowpoint bullet. In this case, we see that very well. The HyperCav modification about doubled the probability of expansion.

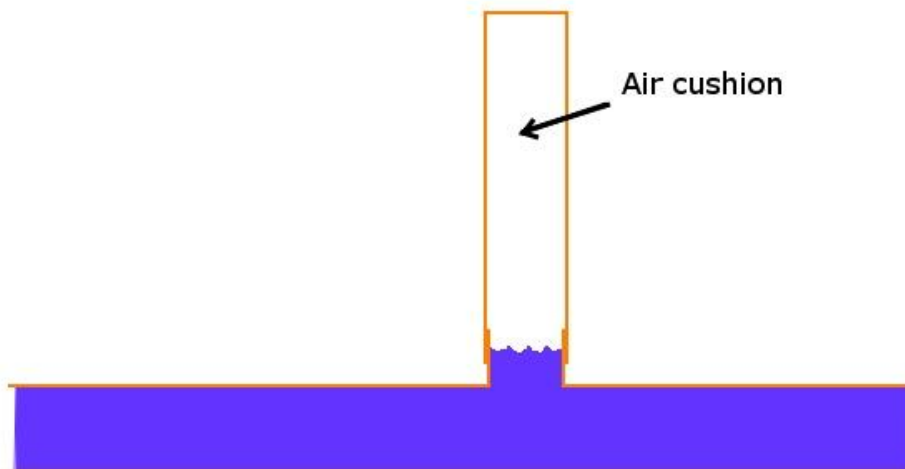
That wasn't particularly unexpected. What *was* unexpected, is that the impact of the HyperCav bullets was significantly more violent than the factory bullets - even when they didn't expand! Why is that?

Go into your bathroom, and turn on the cold water, full blast. Then, with one quick motion, slam the valve closed all the way. You might hear a bang and then your pipes rattling. That's called "water hammer."

Water is an incompressible fluid, which means that the volume of water can't change (well, there are minor volume changes with temperature, but squeezing water can't compress it). When you turn on your faucet, all the water in the pipe is moving. When you shut off the faucet, the water suddenly stops. All that kinetic energy has to go somewhere - it turns into pressure.

In fluid dynamics, pressure and kinetic energy are interchangeable. A rocket turns pressure into kinetic energy by using a nozzle. An object flying through a fluid causes kinetic energy to turn into pressure where the fluid hits the front of the object, that pressure is known as drag.

So in your water pipes, suddenly turning all that kinetic energy into pressure isn't a good thing. The fix for that is to install a small vertical section of capped pipe near the faucet. This vertical pipe, maybe six inches long, is full of air. When the faucet is suddenly turned off, the sudden pressure increase is cushioned by compressing that air. Let's see a diagram:



Where else have we seen an air cushion?

That's right, in the cavity of a typical hollowpoint bullet. Remove that air cushion and what happens when something suddenly increases the pressure of the water?