Making a Hollow Ogive projectile:

A hollow point bullet or slug for air guns typically has a slightly tapered hole that is smaller than the diameter of the meplat (or flat tip) of the bullet. It is usually created by forming the cavity around the projecting tip of the ejection pin in a point forming die.

This procedure does not permit forming a larger cavity than the ejection pin itself. The minimum weight of bullets made this way is limited by the amount of lead volume surrounding the hollow point, in the ogive (nose curve) of the bullet. The shank (straight cylinder portion) of the bullet should be at least as long as the caliber itself for reasonable stability and alignment in the barrel. This amount of lead volume contributes to the weight and cannot be reduced without making the bullet shank too short.

A technique for producing a lighter bullet, in the same caliber and with the same ogive shape and shank length, is to form the nose with a large hollow cavity, with the walls around the cavity curved around it. This is accomplished by first swaging a cylinder of lead in a CSW-1 core swage die, using a large slightly tapered round-tipped "probe" on the end of one of the punches. This produces a cylinder with a large cavity. The base end of the "bullet" can also have a cup or dish base shape formed at the same time. Bleed holes in the straight-hole core swage die allow weight adjustment by extrusion of surplus lead.

Then the cylinder is placed into a point forming die, which has a cavity shaped like the bullet desired, with a smaller diameter ejection pin at the tip or nose of the cavity. The ejector pin is synchronized to seal the end of the cavity, and usually is made with a reduced tip to maintain a specific diameter of hollow point opening in the bullet tip.

When the hollow cylinder is pressed into the point forming die, the cylinder is curved by the die, allowing the large cavity to be retained. Up to a certain pressure or insertion depth, the cavity remains and the bullet created has a large hollow cross section with a smaller hollow point opening. If pushed past this point, the walls around the cavity will begin to collapse inward. To reduce or eliminate this effect, the walls around the cavity can be supported by putting a ductile material into the cavity, such as a Corbin "bullet ball", corn starch, silicone sealant, beeswax, or other firm but malleable supporting "payload".

When the ogive is formed with material in the cavity, more pressure can be used without collapsing the walls. The cavity can remain full sized, without being crushed, and the projectile can carry a "payload" to the target. This could be a marking material such as printer toner powder, which produces a puff of "smoke" when it strikes a target, and also marks targets to show hits.