Terminal Ballistics as Viewed in a Morgue

Comments by Deadmeat2 (and a few others) found on the SW Forum
Archived on Mouseguns.com July 13, 2006
Original Post is Here

One of the benefits of working in a morgue is that I get to see what works and what doesn't. Ballistic gelatin is good as far as it goes, but there's nothing like seeing what a bullet actually does once it strikes bone, flesh, and organs. Suffice it to say, it doesn't always mimic ballistic gelatin.

The other is that I get to hear some great CCW stories. Here's one of them: A recently-married couple living in one of the less desirable sections of Atlanta decided that for safety purposes they should get a handgun and learn how to shoot it. They bought a Glock 27 in .40, CCW permits, and made regular trips to an indoor range.

One evening, having just come back from the range, they cleaned and loaded the Glock and had left it on the coffee table in the living room, intending to put it up later. Shortly thereafter they heard a knock at the door and, expecting company, opened it without looking through the peephole.

A crazed male entered the apartment brandishing a handgun yelling, "Give it up, give it up!" The husband said that it was obvious the individual was high on drugs and there was absolutely no question in his mind that both he and his wife were going to die. Knowing this, he decided that his only option was to go down fighting.

The BG forced them both down a narrow hallway into the living room, screaming all the while. The husband was in the lead, followed by his wife, and then the BG, whose view of the living room was being blocked by the husband and wife.

The husband reached down, grabbed the Glock, pushed his wife aside, and fired one shot at the BG, striking him dead center in the middle of the chest. Although knocked to the floor, the BG still made a feeble attempt to retrieve his own gun. At this point, the husband let him hold another one to the chest. That ended that little problem.

Upon talking to the still-shaken husband, the police said he could remember little of what all the BG had said. As he recalled it, "All I can remember is that his first words were 'Give it up!" and his last words just as he saw the Glock were "Oh, (fill in the blank)!"

I see an average of 8.2 autopsies per day/365 days per year, and I can tell you that when the chips are down, there's nothing that beats a 12-gauge. As for handguns, the name of the game is not only shot placement but how a properly-placed bullet acts once it gets there. I've seen folks killed by a bb to the eye and others survive after being hit by several well-placed rounds with a 9mm.

As for me, I'll take a slow-moving .45 to a gun fight any day. I absolutely despise a 9mm for defensive situations (yes, they will eventually kill but often not quickly enough to prevent the BG from doing you in first) and a .380 as well. These are probably the two calibers I see most often on the autopsy table.

But then, I've seen most everything. I've seen a guy killed by a .416 Rigby, as well as a suicide to the head with a .44 Mag that didn't penetrate the skull on the other side.

The long and short of it is that you just don't know how ANY bullet will react to tissue and bone until you open them up and take a look. I've seen hardball fragment and hollowpoints act just like hardball. That said, shoot what you're comfortable with and place your shots well whatever caliber you use.

The .357 is gloriously effective. It's just that semi-autos are much more common than they used to be, so we see far more 9mm and .380 rounds on the autopsy table than we do the .38 and .357. Particularly among the gangbangers, the 9mm and .380 are the weapons of choice. The .357 is a wonderfully effective round for self-defense from what I've seen, but it's rare that we get them in anymore.

Again, this is from experience that I've made my calls on what works and what doesn't. I have no use for mouse guns like the .32, although it's a lot better to have a mouse gun than nothing at all. Personally, I'll never carry anything smaller than a .40 and prefer the .45. Day in and day out, results from the autopsy table show me that the .45 is the gun to have in a gun fight, provided you can shoot it well. If not, it's better to have something you can shoot well, even if it's a mouse gun, than something you can't.

Yeah, tell me about it, Smitty. I spent most of my life in Knoxville, TN and absolutely loved it. But then, my job is working in the Medical Examiner's Office, and, as you said, this is a target-rich environment. Having a job in an Atlanta morgue is job security at its best.

KRL, I'll take slow and heavy to light and fast any day. What I want is a round that plows through bone and tissue and expends ALL of its energy in the body. That said, the 125-grain .357 is marvelously effective.

S/W-Lifer, You're correct in what you're thinking. Yes, the 9mm and .380 are the rounds I most often see on the autopsy table, but they're also the rounds that usually require multiple hits to make the kill. The standing joke in the morgue is to guess the caliber by looking at the x-rays. If multiple rounds show up on the x-rays more often than not it's a 9mm or .380 (or .32 or .25 or some mouse gun caliber). If only one round shows up, it could be an inordinately good hit with a .380 or 9mm, but more likely it's a .40 or .45.

Yes, the .380 and 9mm will do the job, but usually multiple hits are required as opposed to single hits with a .40 or .45.

Instead of individual replies to each of these questions, let me see if I can narrow some observations down into one long one. Forgive me if some of these have been in other posts, but they bear repeating.

First, ballistic gelatin, being all that's available for most bullet testing, is good as far as it goes but it's often far different from what we see in the morgue. A far more realistic scenario would be to dress up ballistic gelatin with a heavy coat of denim to mimic blue jeans, embed some bones obtained from a butcher shop, and throw in a few objects of varying densities to mimic organs. Try it again, and I think you'll see that this impressive wound cavity that's so often seen in ballistic gelatin goes down the tubes. The human body isn't just composed of one density as ballistic gelatin is, and the bullet does various things to various parts of the body as it passes through.

And that's why I think observations from a morgue are so important. Day in and day out, I get to see what works and what doesn't. More than that, I get to see what the same caliber does with various bullets weights and designs and how it reacts to different parts of the body. The best of all are when the gangbangers use the mix and match technique and shoot a variety of bullets in the same magazine and these bullets wind up in the same victim shot from the same gun. Hardball and hollowpoints in the same body from the same gun give a great comparison on the effectiveness of each.

So let me give a few thoughts here. First, as you've pretty well guessed by now, I'm a big fan of the .40 and .45 for personal defense, and for the same reasons. They're both big, slow-moving bullets. Of the two, I think big is more important. As I've said before, I want something that will plow through bone and keep going, not skip off of it. I can't tell you how many times I've seen a .380 or 9mm strike bone on a well-placed shot and skip off in a non-vital direction, leaving the BG free to return fire. With the .40 and .45, this seldom happens. Bone is in the body for basically two reasons--to give support as with the legs and spinal column and to protect major organs, such as the ribs protecting the heart or the skull protecting the brain. Skip a bullet off a support bone, such as the leg, and the BG will keep shooting. Break it, like you generally do with a .40 or .45, and the BG is going to hit the pavement and your chances of survival increase dramatically. It's the same with a shot to the chest. Skip a 9mm off the sternum (breastbone) and the fight continues; plow through the sternum with a .45 and, trust me, the fight is over. I'm just convinced that all things being equal, bigger is better when it comes to bullet size.

I also like bullets to expend all their energy in the body, not only for the protection of nearby civilians, but because I think it imparts more damage. I'm a bit less certain of this one, however, than I am about bullet size. Whether a bullet remains in the body is often as much a result of WHERE in the body it hit as what it was hit with. If hit solely in tissue, more often than not the bullet exits the body, regardless of what caliber it was; bone, on the other hand, can slow the bullet dramatically and leave it lodged in the body. As I said before, I once saw a .44 Magnum enter the skull point blank between the eyes and flatten and not exit on the inside of the skull on the back of the head. Amazing!

As for the .357 being a well-documented man-stopper, I'm guessing that you guys are right in assuming that it's mainly a function of velocity, but if someone wants to disagree I'll have no issue with it because it's a caliber we almost NEVER see anymore. When I was a cop in Atlanta it was the caliber of choice for law enforcement. Unfortunately, I only rarely got to see autopsies back then so I can't speak from vast experience. With the increasing use of semi-autos, the prevalence of revolver rounds such as the .38 and .357 has dropped dramatically, and although we still see the .38 with some frequency, we almost never get to see the .357 at autopsy. Still, in its most lethal form, it's a 125-grain bullet, the same as a 9mm in many cases, and the 9mm has a horrible reputation as a reliable man-stopper. Again, I'm only guessing that it's a function of the higher velocity of the .357. The .41 Magnum, for all its hype about being the next great law enforcement caliber, never came into widespread use and I can't remember ever digging one out at autopsy, so I'll leave this one alone. And almost without exception, the bullet weight I see most often with the .44 is the commercially-available 240 grains so I can't speak to anything besides that.

Remember, folks, that what I see on the autopsy table is most often BGs shooting BGs (sniff, sniff. Forgive me, my eyes are welling up with tears and I might have to continue this thread later. Ok, better now, so I'll continue) or, worse, BGs shooting good guys. In either case, BGs usually aren't students of ballistics, they aren't NRA members, they don't read Guns and Ammo, and they don't sit down at the Dillon 550 at night cranking out some new handload they've read about. They buy commercially-available ammo and, occasionally, add some personal touches they've read about in the latest issue of Gangbanger Magazine, such as filling the cavity of the hollowpoint with mercury (Yes, I've seen it. Worked just like hardball.)or deeply scoring the nose of the bullet (worked just like frangible except that it came apart on the outside of the other BGs clothing, which is why we had this one on the autopsy table (sniff). That said, if we want to evaluate various bullet weights and designs that aren't available commercially, we're once again left with ballistic gelatin, and the more I see on the autopsy table, the less confidence I have in the results.

Finally, just a couple of answers to questions: First, Houston is mostly right in assuming that multiple rounds seen from the 9mm and .380 are from the higher magazine capacity and controllability of the two calibers. Again, however, much of it is due to the fact that these two calibers just aren't getting the job

done before the other BG returns fire and sends our BG to gangbanger heaven. Yes, the shots were eventually lethal, but many times not immediately so. And, yes, they CAN BE an effective weapon IF placed in a lethal area and IF the bullet gets the job done once it gets there instead of skipping off in a non-lethal direction. My advice, however, is to get a larger caliber such as a .40 or .45, practice until you're comfortable with it, and use it as your carry gun, not the 9mm or .380. Practice will greatly reduce the first IF mentioned above, and a larger caliber will greatly reduce the other.

Please forgive the long-winded reply, but I guess it was still shorter than responding individually to each of you. As always, take what you can use, and if your opinion differs, well, that's what opinions are all about, isn't it? My guess is that this will generate other questions, such as which bullet I like and other questions about caliber, etc. If so, let me know and I'll try to get to them as soon as I can.

Jeez, this thing has taken on a life of its own and I'm wondering where to take it. Do you guys think we should continue the bullet end of things on the Ammunition forum? It seems like it might be a bit more appropriate there since this thing kind of morphed out of a CCW story.

Also, as has been mentioned, I've got a bit of a unique perspective here having been a cop and now working in a morgue, so I've seen it from both sides. I've also got some pretty strong opinions on practice (having done plenty of it as a cop) and what happens with a lack of it (poorly placed shots in police shootings). Should I air them here (or not at all, if you aren't interested) or move them to another forum. It just seems to me like the topic has changed enough that another forum might me more appropriate. Suggestions?

Ok, we'll keep it here, I guess. I suppose the next logical topic should be bullets - hollowpoints vs hardball vs other types. First, let me address a couple of quick questions that have come up. Regarding the questions that Bill h brings up regarding the .38 Special, it's a great question and one that's hard to answer. Had I been in this profession more during the transition from revolvers to semi-autos I would probably be better able to answer it. As it is now, about the only time we see the .38 (or any revolver round, for that matter) at autopsy is with a suicide. Often it's an elderly individual who has had a .38 in the nightstand for many years and only decides to use it to end their life. Almost without exception, the BGs are toting semi-autos with the 9mm, .380, and occasionally the .40 or .45. And, yes, I think the "spray and pray" mentality (gee, is that a misnomer) may well be responsible for the high number of poorly placed shots we see. It's kind of hard to hold the old Glock over the head and sideways, Gangsta style, and direct a shot with any kind of accuracy. Fortunately, the gangbangers don't know this or, if they do, do it anyway because it looks so cool. It makes sense that the limited number of rounds in a revolver might make one a bit more careful with a sight picture but I'm afraid that this is just speculation on my part. I cut my teeth with a single shot .22 where I had to make every shot count and that has carried over to any handgun I shoot today, be it revolver or automatic. I have a hard time understanding the "spray and pray" approach.

Hollowpoints are really hard to get a handle on. From my experience, the limiting factor on the effectiveness of a hollowpoint is that the cavity can and often does get packed full of something besides tissue prior to entering the body, and this can inhibit expansion. Sheet rock is about the worst although heavy clothing can be a problem also. Once you cram the cavity full of anything but tissue, you've essentially got hardball. But then that's not necessarily bad either. With full expansion of a hollowpoint you've got to worry about the jacket separating from the core as well as weight retention. It's largely weight retention that allows the bullet to continue to blast through bone and reach those deep vital organs that will end the fight in a hurry, and hardball is well known for maintaining its weight at autopsy. Once a hollowpoint does what it's supposed to, it begins to lose weight, albeit in varying amounts depending on the construction of the bullet and what it hits along the way. Some retain weight well and others lose it

rapidly as can be seen in the lead "snowstorm" often seen during x-ray. Some hollowpoints expand so rapidly and lose weight so quickly that they haul up short of reaching the vital organs.

I'm talking mainly about the .40 and .45 here, but a few words about the 9mm and .380 are in order. Since the weight of the bullet is a major factor in reaching the vital organs, why penalize yourself with 125 grains of 9mm when you can have 230 grains of .45? In other words, why start out light and have the bullet only get lighter as it passes through the body when you can start out heavy to begin with. Again, I know of the well-deserved reputation of the .357 Magnum with the 125-grain bullet, but I think this is probably more a function of velocity overcoming the limitations of a smaller bullet weight. But I have limited experience with the .357 so I may admittedly be off base here.

Also, and I may be going out on a limb here, I'm not altogether certain that hardball is necessarily a bad choice for the reasons given above. Look, folks, you don't have to blow the heart into a million pieces; you've just got to hit it, and you don't have to make the liver look like it just spent 10 minutes in a Cuisinart. Again, you've just got to hit it. All things being equal, yes, I'd rather have a properly expanded hollowpoint reach the same location as a hardball round since, for the most part, the hollowpoint will infict more damage than hardball. But things aren't always equal. Unlike some hollowpoints, hardball generally has no problems feeding (as always, this is more a matter of knowing your gun and what it feeds reliably) and almost without exception it just plows along its merry way busting up whatever it comes into contact with. Hollowpoints, even the best of them, can do really strange things such as shedding the jacket, losing an inordinate amount of weight, or expanding so rapidly that they don't reach the vitals. I've seen it time and time again and many times I don't have an explanation for it. It's just empirical observation and something to think about.

I've only seen one example of Federal's Expanding Full Metal Jacket so I'm not qualified to speak with any authority on it except to say that the expansion was MOST impressive and it was a 1-shot kill. I've read other forums in which some in law enforcement made disparaging remarks about it, and one example is nothing I would want to hang my hat on, but I was impressed nevertheless. IF the EFMJ works as advertised, it would go a long way toward remedying the problems inherent with hollowpoints.

I'm sure there are some other questions here that have gone unanswered or more that will be generated. As always, this is just personal experience from seeing thousands of autopsies every year and may or may not conform to what you've read elsewhere. And if these posts are taking up too much of the forum, let me know.

Ok, let me give a few thoughts on shot placement. First, as j2k22 suggests, there's no shot that will end the fight faster than a head shot. The brain is the center of the neurological system, and a shot there will end things immediately. The problem is that the head is very mobile and can be darting from side to side while the thorax stays still. A shot to the spine is also a very good choice, but the spine is probably no more than two inches wide and can be very hard to hit.

When all is said and done, go for the chest - unless it's a child molester or rapist, however, in which case I plan to give him a .45 caliber vasectomy first so in the event I don't kill him with subsequent shots, at least he'll no longer be able to commit assault with a friendly weapon. The body remains relatively stable, while the legs, arms, and head can be moving from side to side. Trust me, when the BG is sending bullets in your direction and the adrenaline is pumping, it does very strange things to a sight picture, so you'll want to go for the biggest thing there is. On top of that, there are loads of really nice things to hit in the chest, any one of which will end the fight. There are plenty of arteries and large veins, bones that will prevent or inhibit the accurate firing of the weapon (e.g., shoulder blade, collarbone), or paralyze him (spine), and organs such as the lungs and heart that will shut down the BG if hit. And if you hit too low,

you've also got a good chance of poking a hole in the liver, spleen, stomach, and other organs which, although they may not cause immediate death, may severely incapacitate the BG.

Remember, your goal in a gunfight is to incapacitate the BG to the point that his ability to fight ceases or he breaks off the engagement voluntarily. If you kill him, fine; if not, you want to wound him to the extent that he can no longer return fire effectively and you'll live to see another day. Depending on how fast you or someone else chooses to call 911, he may not (sniff). Sometimes simply breaking a leg of the BG will end the fight; sometimes not. Sometimes, simply the muzzle flash from a citizen the BG thought was unarmed will cause him to reconsider. As for me, I'm going for the chest.

And, yes, I followed Elmer Keith for years as well as Skeeter Skelton and others (I practically worshipped Jack O'Conner) and, yes, I think he's right on big, slow-moving bullets. As for Gold Dot, it's what I carry in my carry gun (.45, naturally), although if I can see some more examples of the Federal EFMJ I might switch to that. Many of our LE personnel are carrying Gold Dot as well as others carrying Federal HS. Of the two, I've come to like Gold Dot better. I don't know why but I've seen some really funky stuff with HS. When it works, it works great; when it doesn't it's pretty lame. In fact, some folks in my neck of the woods refer to it as Hydra Sucks, but I think that's taking it a bit far.

I hope this has answered some of the questions. If any others pop up that are generated by this post, let me know.