



I think that this screenshot from Grand Theft Auto V that renders blood wounds on bullet impact with character models is interesting. Although you can't see it in the image, when you shoot a character, their model renders a small blood wound at the site of impact at first, but then slowly grows around the area as if the person was actually bleeding and staining his clothes. There is also the way that the outer pixels that has reached the edge are more transparent and lighter in color than those directly on top of the impact area. The pixels also react to lighting and give off a wet, glistening effect that is much shinier than the rest of the body/clothing surrounding it. It does not update the geometry itself, but the effect alters the textures by changing the colors of the pixels gradually.

I believe the effect was made by acquiring the position of the bullet hit on the model space and creating randomly sized circle or splat pattern around this position. Then, you might be able to extend the splat effect by gradually changing the red and alpha channel of the pixels in the affected area. While this is happening, you could set the inner pixels closer to the bullet wound to be darker red and set the alpha channel to be more opaque. For the pixels that are further away from the center, we can change the color of the pixels to be a lighter red and set the alpha channel to be more transparent. This would make it so that the pixels in that center of impact would be darker and denser than pixels on the rim. The glistening effect could be achieved using something like the Phong shader with a higher shininess value than the rest of the model.

I found this interesting blog that talks about how to render wounds on a body and how it wouldn't work in some circumstances, such as how to handle multiple bullet wounds in the same location: <https://www.tomlooman.com/rendering-wounds-on-characters/>