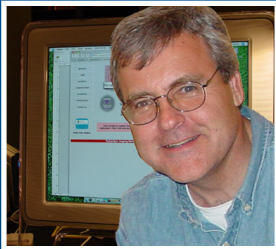


Richardson Imaging Services

The xray problem solvers



It's Worth a Shot!



I don't know about you, but does it seem like people are getting bigger? I've received more calls lately asking about techniques for getting through big people. Even with Rare Earth, 400 speed screens, and High Frequency x-ray machines, large shots can be a major technique problem. What complicates the problem is the limitations that most private practice x-ray facilities are faced.

One problem may have to do with our incoming line. Seldom is the line sufficient to sustain a high mA, high kVp shot. From the outside pole transformer, to the load on our circuit breaker box, to the wiring provided to the disconnect box, high current, high voltage shots almost always results in some voltage collapse. The shorter the exposure time, the worse this can be. The exposures may appear to be non-reproducible.

Even with a perfect incoming line and disconnect wiring, there are other obstacles to consider. Most of our private practice x-ray equipment will have a 300mA, 125kVp rating, which is adequate for large exposures. But there is a problem here. At high kVp and high mA, the time needed to produce sufficient mAs for large shots will usually exceed the tube ratings. Since ratings are exponential, the combination mA and high kVp allows very short exposure time. Some of the newer X-Ray Generators have the x-ray tube ratings programmed into them and will automatically lock out over exposures. Most of the standard frequency generators do not have this programmed feature. The problem is still the same. We risk damaging the x-ray tube when the factors are high.

*What's the answer? The way I look at it is; "**less is more!**". Here's what I mean. If line voltage collapse and x-ray tube protection are the biggest obstacles to the large shot, then we can cut the mA (current) in half and overcome both of these problems. The down side will be extending the time needed to achieve the same mAs. On the big shot, motion can be a serious problem, so be sensitive to movement. The benefits, however, will outweigh the extended time. The incoming line will be more effective under half the draw, and more reproducible. The current draw on the x-ray tube will be exponentially less, and result in greater tube life and tube protection.*

Here's the idea. You're doing an AP Lumbar on a patient measuring 45 cm. The kVp needed to penetrate is, say, 115 kVp ($2 \times \text{cm} + 25 = \text{kVp}$). The mAs needed is 90, based on your film/screen speed. The thought might be to set up a 300mA shot at 3/10ths of a second. Instead, go for 150mA at 6/10ths of a second. The mAs are the same, and we have cut the current draw (mA) in half and made the high voltage (kVp) more effective and safer on our system. Now that you've got the idea, try it and see if it helps!

Glenn Richardson, RIS President

Don't forget K.C.E. with Cheryl Weiss on March 20th. Check this site for details!