

The Importance of X-Ray Scaling

Why is X-ray calibration a vital topic? It is possible to do most orthopaedic procedures without pre-operative planning. However, templating prevents perplexities and can assist in avoiding intraoperative complications. Customary acetate templates provided by manufacturers have a fixed magnification and will only allow adequate implant sizing if the X-ray image magnification is equivalent. It is well known that X-rays used for planning differ in magnification (110%-130%). This gradation of variation exists in part because of the variety of techniques used by radiographers but is also due to patient positioning and size. Even with a strict imaging protocol, the magnification of the X-ray image will vary. A slim patient lying on an X-ray cassette is only a few centimetres above the plate, giving little distance for the X-rays to diverge. In a more significant patient, the length may be twice as far from the plate, allowing the divergent beam to spread more before it hits the plate.

As radiology becomes 'filmless', current planning methods with acetate sheets are becoming redundant. For that reason, a surgical planning software that uses digital templates is today, a "must-have" tool. One of the significant advantages of digital templating is the possibility to correct any magnification with mechanisms for scaling the image.

We at LRE recommend the utilisation of 25mm spherical X-ray marker so the surgical planning software may properly calibrate the X-ray and allow for accurate implant sizing. We suggest the 25mm spherical X-ray marker should be positioned level with the medial epicondyle for the AP view, and at the tip of the olecranon process for the lateral view. Positioning it can be held on the end of a 'positioning arm' with most X-ray departments have or taped to the skin.

The following companies provide pre-operative digital templating to support LRE system Ltd.

- OrthoView
- TraumaCad
- Sectra