Various techniques have been developed to localize radioactive sources in brachytherapy implants. The most common methods include orthogonal film method, ster[1]eo-shift film method, and recently direct localization from a series of contiguous CT transverse images. The major advantage of the CT method is that it provides the seed locations relative to anatomic structures. However, it is often the case that accurate identification and localization of the sources become very difficult because of partial source effects and artifacts on CT images. A new algorithm is developed to take advantage of a pair of orthogonal scout views in combination with a stack of transverse cuts. In the new algorithm, a common reference point is used to correlate CT transverse images and two Scout CT scans (AP and Lateral). The radioactive sources are localized on CT transverse images, and at the same time, the sources are displayed automatically and simultaneously on the two CT scout scans. In this way, the individual sources can be clearly distinguished and ambiguities arising from partial source effects are resolved. Because of the finite slice thickness of transverse cuts, the longitudinal co-ordinates are more accurately obtained from the scout views. By changing the longitudinal coordinates of localized seeds so that they can match the position of the seeds on scout views, the seeds can be localized more precisely. The algorithm has been tested on clinical cases and has proved to be a time-saving and accurate method.

[1] Combined Use Of Transverse And Scout Computed Tomography Scans To Localize Radioactive Sources in Interstitial Brachytherapy Implants