

Pre planned Permanent Prostate Brachytherapy – One Learning Curve or Many?

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Introduction: Permanent Prostate Brachytherapy is generally regarded as a “high tech” procedure with an acknowledged “learning curve”. The procedure of permanent prostate brachytherapy is made up of a number of different parts. These are case selection, pre implant volume study, pre planning, seed strength verification and needle loading, implantation, post implant CT assessment, symptomatic care, and collaboration with multidisciplinary teams. My experience in starting up a program in 1999 and subsequently mentoring several groups has lead to the realisation that the length of time and difficulty to achieve a good consistent level of competency in each of these parts varies significantly and could be reduced with comprehensive training and support.

Length of learning curves: Shorter learning curves are seen in case selection, symptomatic care, and seed strength verification and needle loading. Intermediate length curves seen in pre planning, post implant dosimetric assessment and collaboration as a multidisciplinary team. The longest curves and the most difficult parts to learn are reliably getting an accurate volume study to plan on and performing a good quality implant itself.

Shortening the Learning Curves: For groups that are starting out in permanent brachytherapy it is common to undertake a pre-commissioning course or training and to arrange for mentoring at the time of their initial implants. It is important that through this and other pre commissioning training all parts of the procedure are covered, as good outcomes occur when all parts of the process are done well but a not so good outcome can occur when any one or more parts of the process is not well done.

The learning curves can be shortened by good pre commissioning training and mentoring in all parts of the procedure. Ongoing mentoring and support will further shorten the learning curves and reduce the time until the group can consistently get good outcomes from the implants and improve quality of the outcomes further.

Suggested Approach: In addition to the usual basic course all parts of the process should be seen at first hand. Mentoring and direct supervision should be arranged not only for the initial implants but also for the initial volume studies. Pre planning and post planning should be done in parallel with an experienced team which will provide the opportunity for the new group to learn quickly and have confidence in their planning. It will also provide reassurance that the pre plans used for the early implants are of a high quality and accurate post planning will provide specific feedback on how to improve on the early cases.

A prospective Quality Assurance program should be set up prior to the first implant with planned audits and reviews to help identify any systematic errors. It is very helpful to have ongoing expert advice and support available after the initial implants to discuss problems in individual patients or with systematic errors. An expert review of pre and post planning done to date should be performed for example after the first 20 and 50 patients, to confirm the quality of the implants.

This kind of approach is facilitated if there are mentors available locally and it also requires the financial support for the higher costs of the more comprehensive training and support. However, this can be readily justified as the cost for a patient of a poor implant will be either cancer progression, serious toxicity or both.

Conclusion: There are many parts to the procedure of prostate brachytherapy. The differences in difficulty and length of learning all of the parts means that there are many learning curves not just one. Initial training and mentoring needs to include all parts of the procedure and take into account the differences in the learning curves. Such a program and ongoing mentoring beyond the first few implants will shorten the learning curves and the time until a team is consistently getting good outcomes for patients treated with permanent prostate implants.