

Purpose: To illustrate the use of patch field arrangements to treat geometrically complex tumors with proton beams. **Method and Materials:** One very important property of a high-energy proton beam is the ease with which it can be stopped at a desired depth in a medium and the sharp distal dose fall-off near the end of range. This leads to the creation of straightforward beam arrangements to treat very complex tumor shapes. One variation of these beam arrangements is the patch field arrangement. These patch field arrangements are a powerful tool in proton therapy planning. A geometrically complex tumor, e.g., one wrapped around a critical structure, can be treated by a patch field arrangement in which one beam, called a shoot-through beam, irradiates a part of the tumor. Patching another beam from a different direction and distally stopping this beam on the lateral edge of the shoot-through beam irradiates the tumor not treated by the shoot-through beam. We will show how proton patch fields can be used to treat complex clinical cases. **Results:** We present two plans showing the use of proton patch fields to treat two clinical cases. These cases demonstrate the simplicity of the patch field beam arrangements and the ease with which critical structures can be conformally spared and tumors can be fully irradiated. In addition, these beam arrangements are quite simple to set up clinically. **Conclusion:** In any clinical practice, one is frequently faced with difficult cases in which tumors, because of their proximity to critical structures, can neither be fully resected nor can they be safely treated with conventional radiation. Proton irradiation, because of its superior dosimetric characteristics, offers treatment options for such cases.