Large Radiofrequency Heat Lesions

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Automatic Calibrated Ex Vivo Lesion Size Measurement

Lesion Size Increases with Tip Length, Gauge, Temperature, and Time

Rounded Brick-Shaped Bipolar Lesions at Large Tip Spacings

Muscle produces a similar thermal RF profile, but bovine liver color indicates lower neurolytic temperatures (45-50°C) and full lesion size.¹

Bipolar RF in 3D

Bio-heat Finite Element Modeling.⁵

Figure 1 Multiple lesions averaged per configuration.

Figure 2 Average and standard deviation of standard monopolar lesion size ex vivo. Size may differ in actual clinical use.²

Figure 3 Muscle produces a similar thermal RF profile, but bovine liver color indicates lower neurolytic temperatures (45-50°C) and full lesion size.¹
Sequential Bipolar RF Can Produce a Consistent Strip Lesion. Sequential Standard or Cooled Monopolar RF May Produce Lesion Gaps.

Figure 6 Comparison of sequential monopolar and bipolar heat lesioning with tips perpendicular to an idealized bony surface, such as the dorsal sacrum. Based on Figure 5 settings and results.

Palisade Bipolar RF for Sacroiliac Joint (SIJ) Denervation

Five or Six Cannulae
20ga / 10mm tips
~10mm Spacing

Four Cannulae
16ga / 10mm tips
~15mm Spacing

Figure 7 Palisade bipolar lesioning of the sacral lateral branch nerves for sacroiliac joint (SIJ) pain. (Top) As demonstrated clinically in Cosman and Gonzalez (2011), five or six 20ga/10mm tip cannulae spaced by 10-12mm are lowered to the dorsal sacral surface between the lateral aspect of the sacral foramina and the ipsilateral SIJ. A sequence of four or five bipolar lesions at 90°C/3min are generated between adjacent cannulae to lesion the space through which target nerves travel at irregular locations.1 (Bottom) Four 16ga/10mm tip cannulae spaced by approximately 15mm theoretically produce a similar lesion zone.