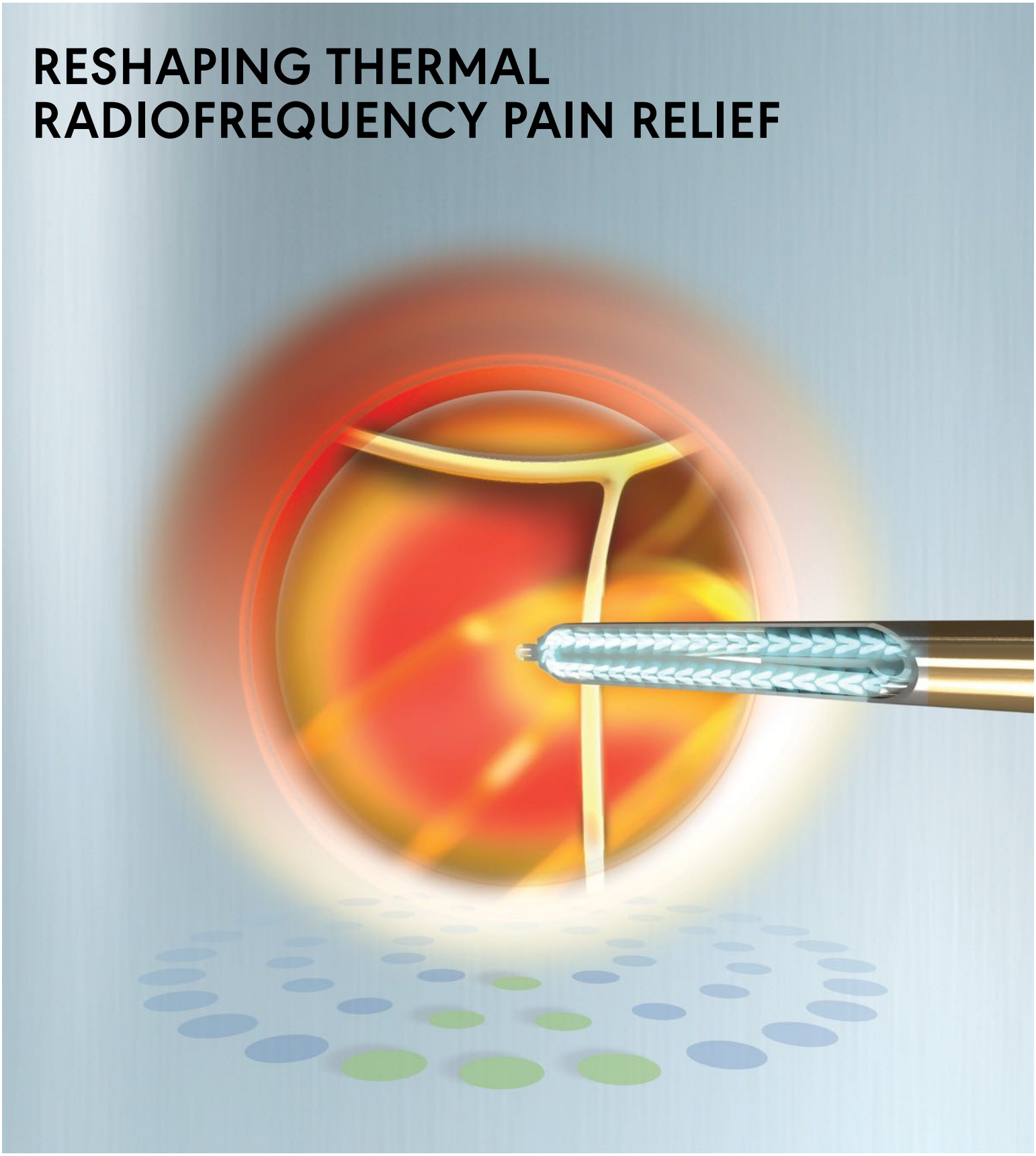
AVANOS

COOLIEF* COOLED
RADIOFREQUENCY TECHNOLOGY (RF)

COOLIEF
Cooled Radiofrequency Treatment

RESHAPING THERMAL RADIOFREQUENCY PAIN RELIEF



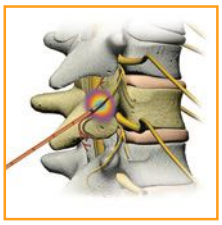
RESHAPING PAIN RELIEF: NO LONGER LIMITED BY PARALLEL PLACEMENT

CERVICAL PAIN

Delivers a larger volume lesion (oblate spheroid) that encompasses the lateral mass and addresses variable anatomy and nerve paths.

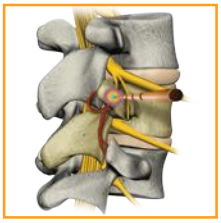
THORACIC FACET PAIN

Standardizes the approach of targeting the medial branch nerves, particularly at T5-T8, to provide more consistent results of capturing the variable nerve course.



LUMBAR PAIN

Enables a perpendicular approach and provides a larger lesion to increase the likelihood that the medial branch nerve is encompassed in one pass.

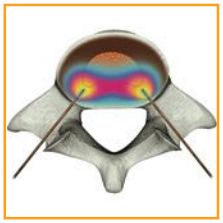


SACROILIAC JOINT PAIN

Creates a larger, distal lesion to ablate the variable target neural structures between the posterior sacral foramina and the SI joint.

DISCOGENIC PAIN

Provides a reproducible, larger lesion via a bipolar approach across the posterior part of the annulus for intervertebral disc biacuplasty.



HIP JOINT PAIN

Targets and treats sensory branches of the obturator and femoral nerves innervating the hip joint.

KNEE PAIN

Overcomes nerve path variability when targeting the sensory branches of the genicular region.

COOLIEF*

Cooled Radiofrequency Treatment

RESHAPING PAIN RELIEF: THERMAL RADIOFREQUENCY IS NOT CREATED EQUALLY

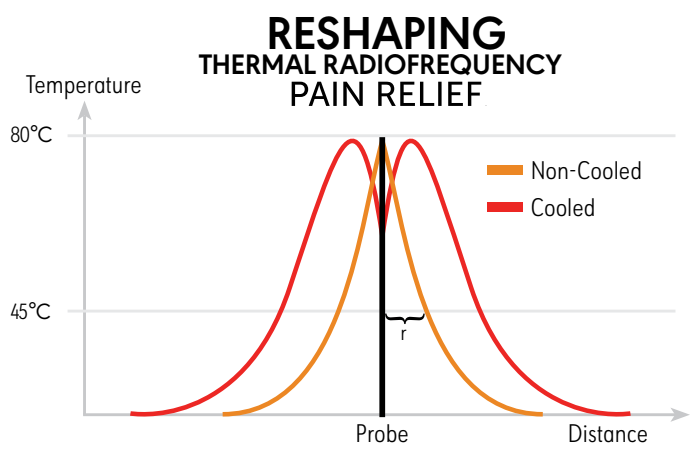
Standard RF is often unable to overcome variable nerve paths when ablating hard-to-reach target nerves in the spine, knee and hip.

THE LIMITATIONS OF STANDARD RF:

- **Lesion requires parallel placement of probe** for maximum ablation
- Compensating for nerve variabilities **usually requires multiple lesions**
- Lesion's limited size, elliptical shape and lack of distal projection can **reduce ability to ablate target nerves**

THE DIFFERENCE IS: WATER-COOLED RADIOFREQUENCY

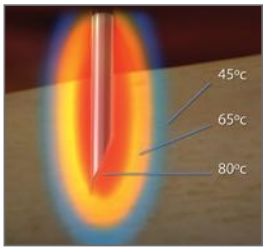
COOLIEF* Cooled Radiofrequency is the only currently known minimally-invasive, thermal radiofrequency pain management system using water-cooled technology to safely deactivate pain-causing sensory nerves.



IONIC HEAT DISTRIBUTION GRAPH

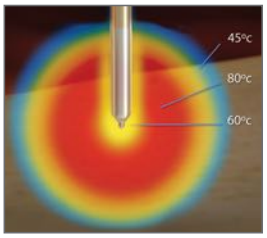
STANDARD RF LESION

Ionic heat is concentrated at the probe and tissue interface, forming *elliptical-shaped* lesions immediately adjacent to the active tip.



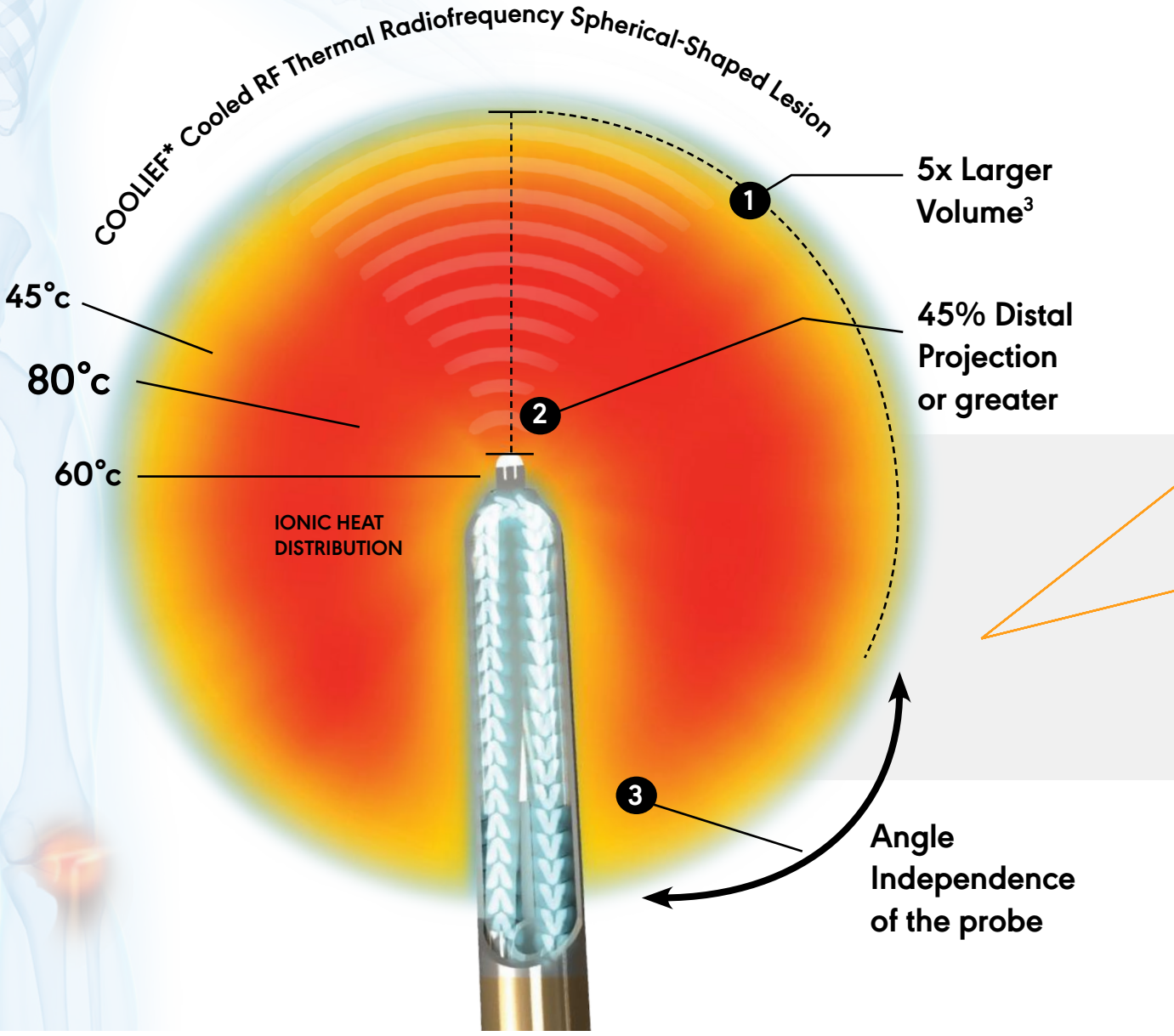
COOLED RF LESION

Ionic heat is distributed further from the probe's active tip, creating large volume, *spherical-shaped* lesions.



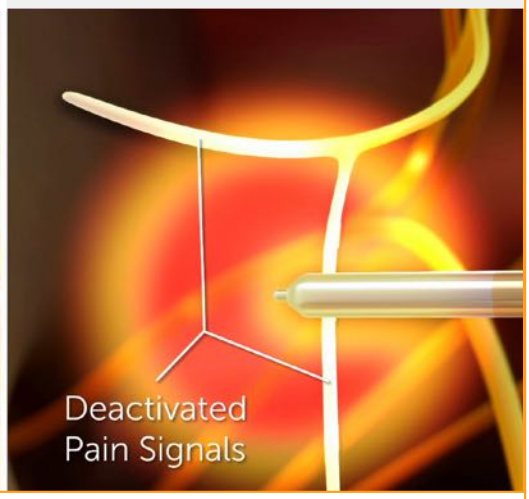
WATER-COOLED PROBE

- By delivering RF energy through water-cooled electrodes, greater RF energy can be safely transmitted to nervous tissue.
- The moving fluid acts as a heat sink, removing heat away from where the tip and tissue interface.
- With non-cooled RF, lesion size and shape are limited by the heat generated in tissue adjacent to the electrode.



COOLED RF LESIONS: OPTIMIZES RF ABLATION

View the animation video of COOLIEF* Technology: **www.avanospainmanagement.com**

Standard RF	Cooled RF
	
✗ **Smaller** Volume ✗ **Minimal** Distal Projection ✗ **No** Angle Independence	✔ **Larger** Volume ✔ **Greater** Distal Projection ✔ **Enables** Angle Independence

Cooled RF Advantages Over Standard RF

Delivering thermal RF energy through **water-cooled electrodes** enables more RF energy to be delivered to targeted nerves, creating spherical-shaped lesions:

1. **5x larger volume**[3]
2. **Distally projects 45% or greater**
3. **Enables angle independence of the probe**

COOLIEF
Cooled Radiofrequency Treatment

Better Patient outcomes:

- ✔ Up to 24 months of pain relief[1]
- ✔ Improved physical functionality[4]
- ✔ Reduced drug utilization[2]

Ask about our COOLIEF* Cooled RF Generator

- The only generator system supporting both Standard RF and Cooled RF procedures
- Provides application modalities for treating the spine, hip and knee
- Upgradeable for future technologies

To help patients learn about COOLIEF* Cooled RF, ask your Avanos representative to provide the following patient education tools:

Patient website: www.mycoolief.com
Patient brochures
FAQ sheet
In-office anatomy posters
Patient testimonial videos

Avanos Medical is a medical technology company focused on preventing infection, eliminating pain and speeding recovery. Solutions for chronic pain include COOLIEF* Cooled RF, a continuous thermal radiofrequency treatment that uses water-cooled technology to safely deactivate pain-causing sensory nerves, providing up to 24 months of relief, improved function and reduced drug utilization. For more information, visit www.avanospainmanagement.com

1. Ho KY, et al. Cooled radiofrequency denervation for treatment of sacroiliac joint pain: two-year results from 20 cases. Journal of Pain Research. 3 July 2013.6;505-11
2. Stelzer W, MD, Use of Radiofrequency Lateral Branch Neurotomy for the Treatment of Sacroiliac Joint-Mediated Low Back Pain: A Large Care Series. Pain Medicine, 2013 Jan (1) 29-35.
3. When compared to a Stryker 20ga standard RF lesion based upon testing conducted by Avanos Medical, Inc. and compared to Stryker's published information.
4. Kapural L, et al. Radiofrequency Intradiscal Biacuplasty for Treatment of Discogenic Lower Back Pain: A 12-Month Follow-Up. Pain Medicine. 2015; 16:425-31.

For more information for clinicians and product code ordering information, please visit: avanospainmanagement.com
Call 1-844-4AVANOS (1-844-428-2667)in the United States and Canada.

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