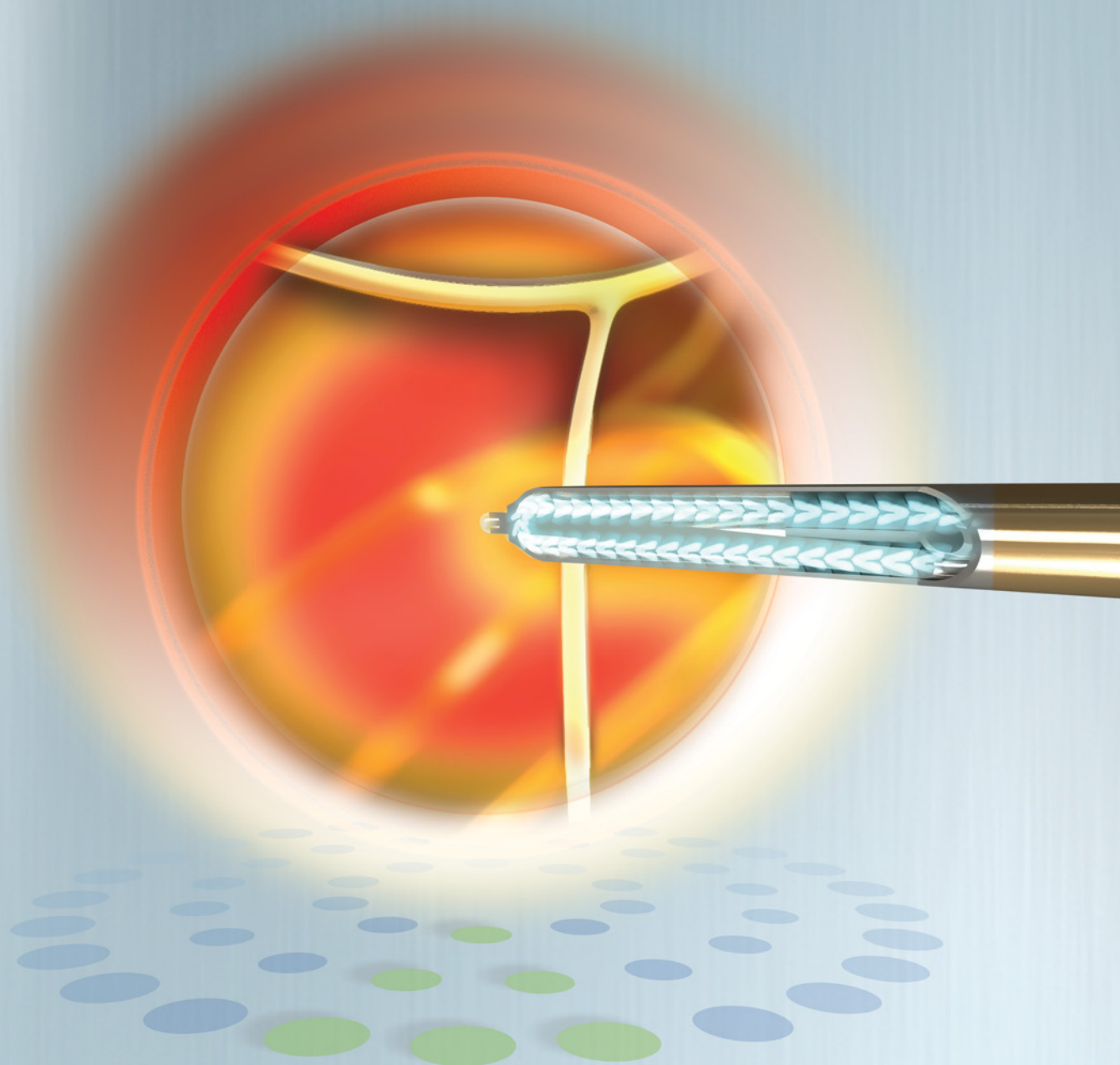


# AVANOS

COOLIEF\* COOLED  
RADIOFREQUENCY TECHNOLOGY (RF)

COOLIEF<sup>®</sup>  
Cooled Radiofrequency Treatment

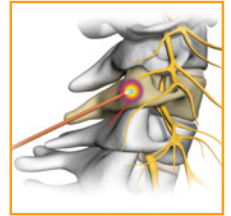
## RESHAPING THERMAL RADIOFREQUENCY PAIN RELIEF



## RESHAPING PAIN RELIEF: NO LONGER LIMITED BY PARALLEL PLACEMENT

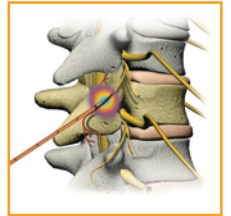
### CERVICAL PAIN

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



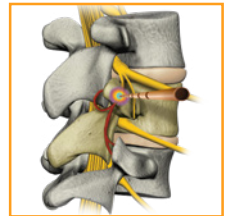
### THORACIC FACET PAIN

**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.



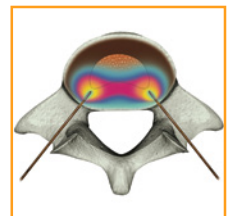
### SACROILIAC JOINT PAIN

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



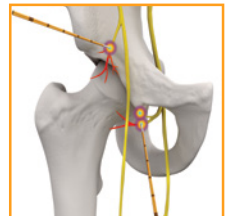
### DISCOGENIC PAIN

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



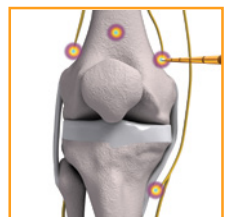
### HIP JOINT PAIN

**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.



## 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.

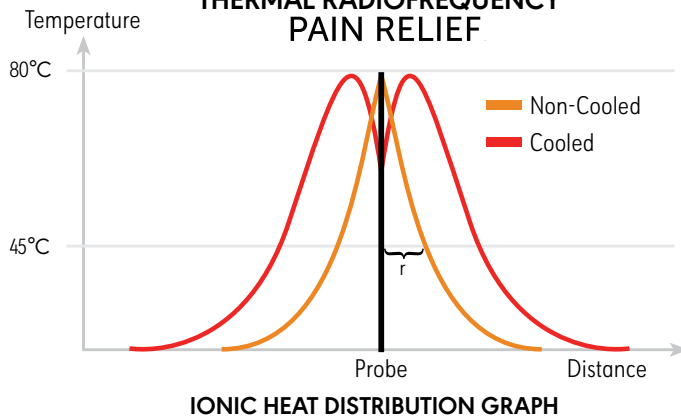
### THE LIMITATIONS OF STANDARD RF:

- 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

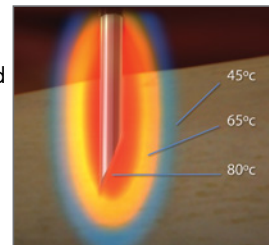
COOLiEF<sup>\*</sup> Cooled Radiofrequency is the only currently known minimally-invasive, thermal radiofrequency pain management system using water-cooled technology to safely deactivate pain-causing sensory nerves.

### RESHAPING THERMAL RADIOFREQUENCY PAIN RELIEF



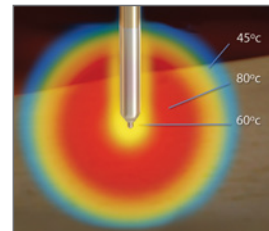
#### STANDARD RF LESION

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

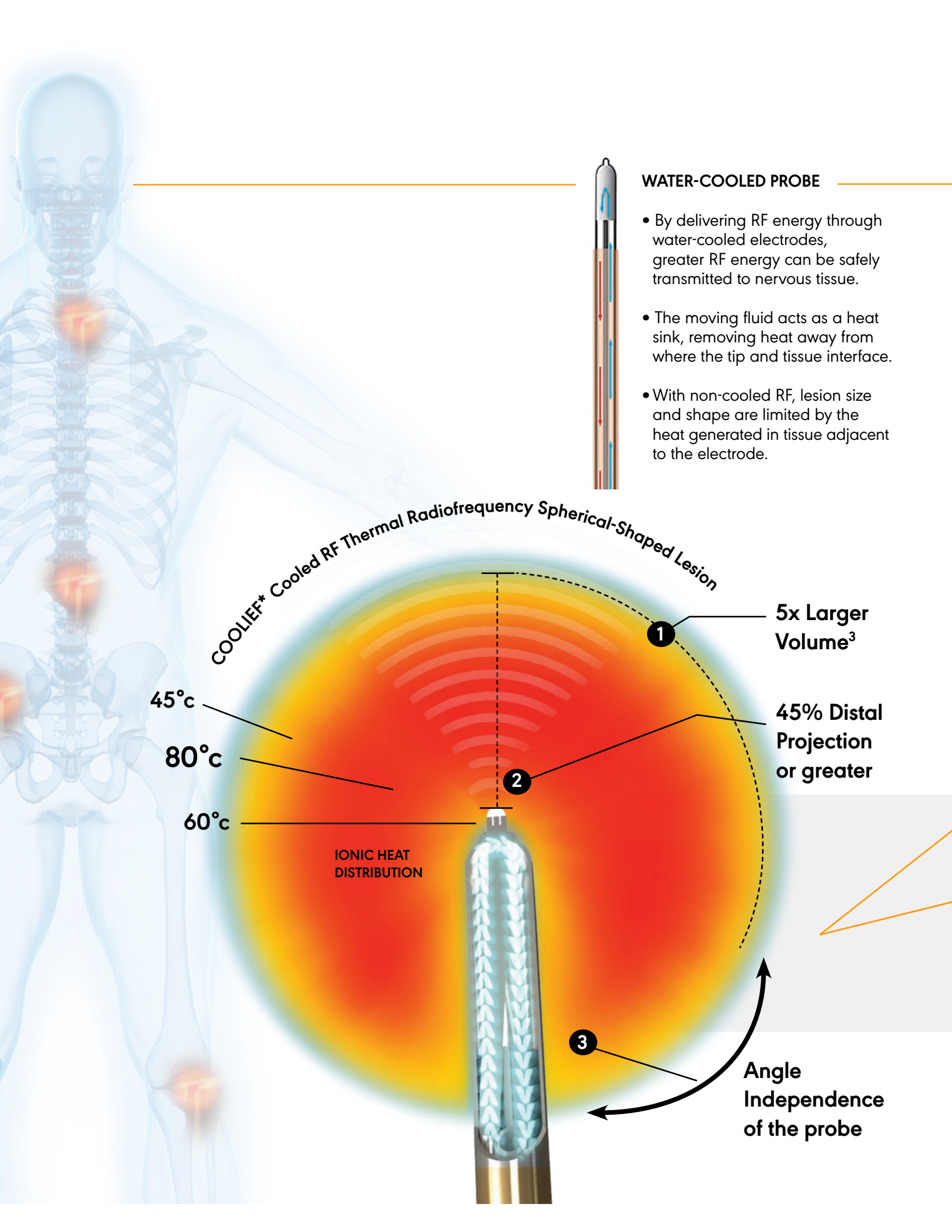


#### COOLED RF LESION

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.

COOLIEF\* Cooled RF Thermal Radiofrequency Spherical-Shaped Lesion

45°C

80°C

60°C

IONIC HEAT  
DISTRIBUTION

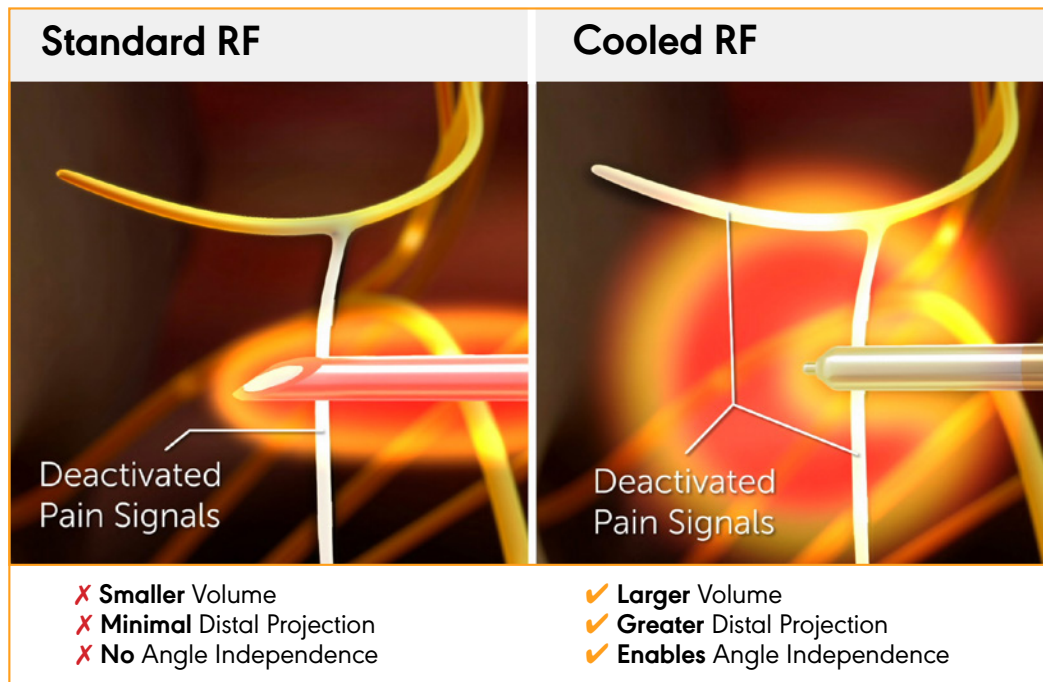
5x Larger  
Volume<sup>3</sup>

45% Distal  
Projection  
or greater

Angle  
Independence  
of the probe

## COOLED RF LESIONS: OPTIMIZES RF ABLATION

View the animation video  
of COOLIEF\* Technology:  
[www.avanospainmanagement.com](http://www.avanospainmanagement.com)



### 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<sup>3</sup>**
- 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<sup>1</sup>
- ✓ Improved physical functionality<sup>4</sup>
- ✓ Reduced drug utilization<sup>2</sup>



## 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](http://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](http://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](http://avanospainmanagement.com)  
Call 1-844-4AVANOS (1-844-428-2667) in the United States and Canada.

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