National Institute for Health and Care Excellence

IP1914 Radiofrequency denervation for osteoarthritic knee pain

IPAC date: 13th April 2023

Com. no.	Consultee name and organisation	Sec. no.	Comments	Response Please respond to all comments
1	Consultee 1 AVANOS Medical	Lay description	In this procedure, an introducer or canula and RF probe are used to apply radiofrequency energy which creates ionic heating to damage the nerves (denervation) in the knee causing pain.	Thank you for your comment. The lay description has been changed and is available in 'information for the public'.
2	Consultee 1 AVANOS Medical	3.5	...this procedure uses x-ray or fluoro screening to identify anatomical landmarks while ultrasound is used to identify targeted nerves	Thank you for your comment. Section 3.5 of the draft guidance has been removed for the final guidance.
3	Consultee 1 AVANOS Medical		[It is great that NICE recognizes three forms of RFA for knee OA. However, it might be helpful to clinicians who may be deciding which form to use to understand the differences. Below is some sample language you may wish to adopt.] Both standard and cooled radiofrequency are forms of continuous thermal radiofrequency. Continuous radiofrequency uses high-frequency alternating current to create coagulative necrosis in targeted tissue. Nerve tissue begins to degrade at temperatures greater than 42˚ C while Wallerian degeneration occurs with probe temperatures between 60˚ and 80˚ C. The difference between standard and cooled radiofrequency lies in the selection of the probe. "Cooled" RFA probes circulate water to help carry heat away from the electrode-tissue interface to reduce charring allowing	Thank you for your comment. The procedure description aims to be succinct and general enough in order to cover for the different devices and techniques used. In the final guidance, section 3.6 has been added *"**There are several modalities of radiofrequency denervation and different modalities might have different efficacy and safety profiles.**"* All the papers identified by the consultee did not meet the inclusion criteria.

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			more energy to be delivered to surrounding tissues creating a larger area (lesion) for ionic heating to occur. Pulsed radiofrequency offers clinicians a less destructive alternative to continuous radiofrequency through use of radiofrequency current in short (20 ms), high-voltage bursts with the “silent” phase allowing for heat elimination keeping the target tissue below 42˚ C. Therefore, it appears that any thermal damage from pulsed RFA is minimal and is unique in that it may provide pain relief without causing significant damage to nervous tissue through a temperature-independent pathway of a rapidly changing electrical field. Ball, R., The science of conventional and water-cooled monopolar lumbar radiofrequency rhizotomy; an electrical engineering point of view. Pain Physician 2014; 17: E175-211. Podhajsky RJ, Sekiguchi Y, Kikuchi S, et al. The histologic effects of pulsed and continuous radiofrequency lesions at 42 degrees C to rat dorsal root ganglion and sciatic nerve. Spine 2005;30:1008–1013. [PubMed: 15864151] Heavner JE, Boswell MV, Racz GB. A comparison of pulsed radiofrequency and continuous radiofrequency on thermocoagulation of egg white in vitro. Pain Physician 2006;9:135–137. [PubMed: 16703974] Cedeno DL, Vallejo A, Kelley CA, Tilley DM, Kumar N. Comparisons of lesion volumes and shapes produced by a radiofrequency ˜ system with a cooled, a protruding, or a monopolar probe. Pain Physician 8, E915–E922 (2017). Byrd D, Mackey S. Pulsed radiofrequency for chronic pain. Curr Pain Headache Rep. 2008. January ; 12(1):37-41	