



Non-CME Webinar Series
designed with the trainee in mind

first Tuesday of the month



Knee Joint Radiofrequency Ablation

Juan Mora MD



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CONTENTS:

1. Anatomy
2. Targets
3. Test blocks
4. Complications
5. Future

HOT TOPICS

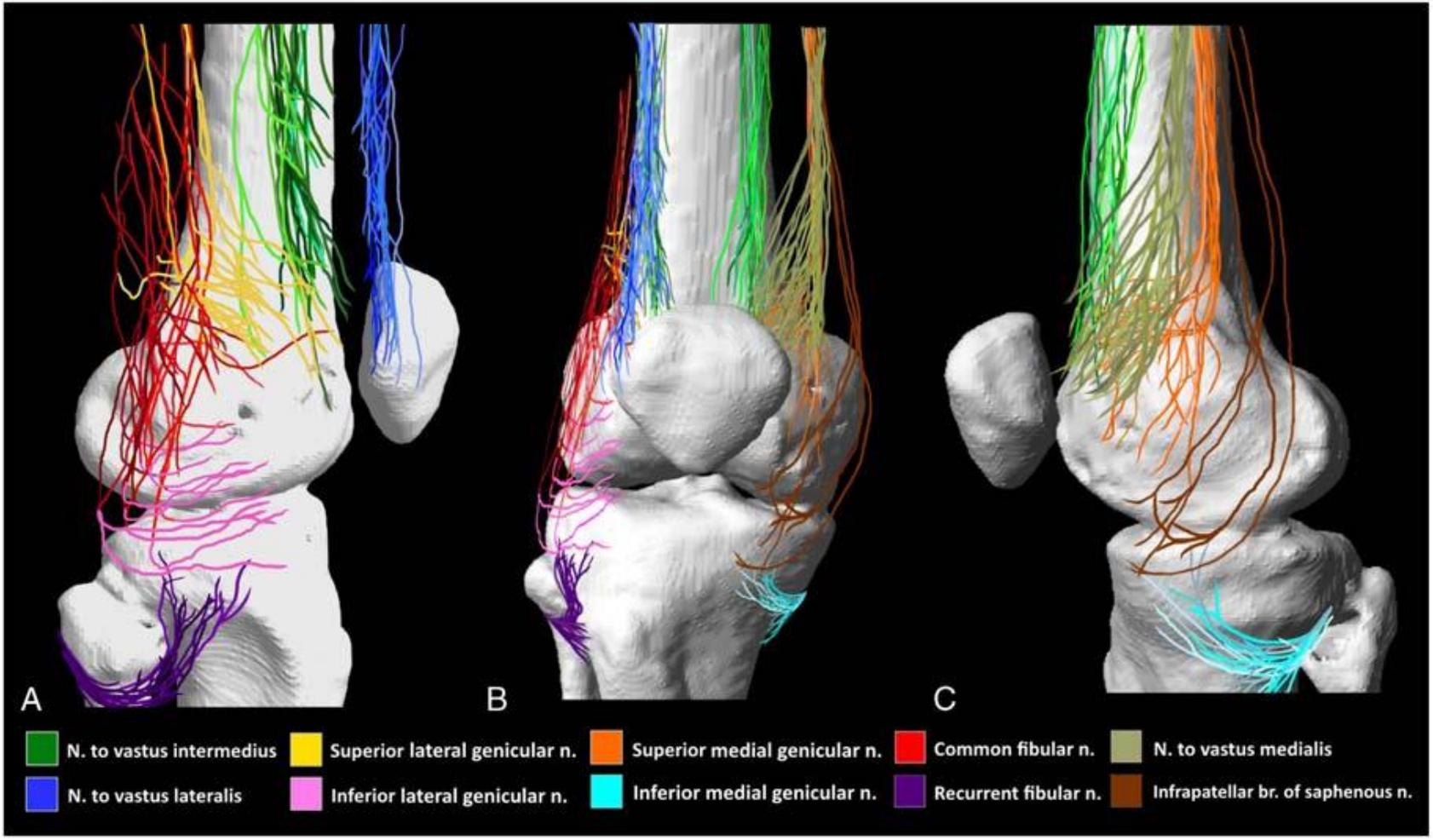
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Anterior



Tran J, Peng PWH, Lam K, Baig E, Agur AMR, Gofeld M. Anatomical Study of the Innervation of Anterior Knee Joint Capsule: Implication for Image-Guided Intervention. Reg Anesth Pain Med. 2018 May;43(4):407-414. doi: 10.1097/AAP.0000000000000778. PMID: 29557887.



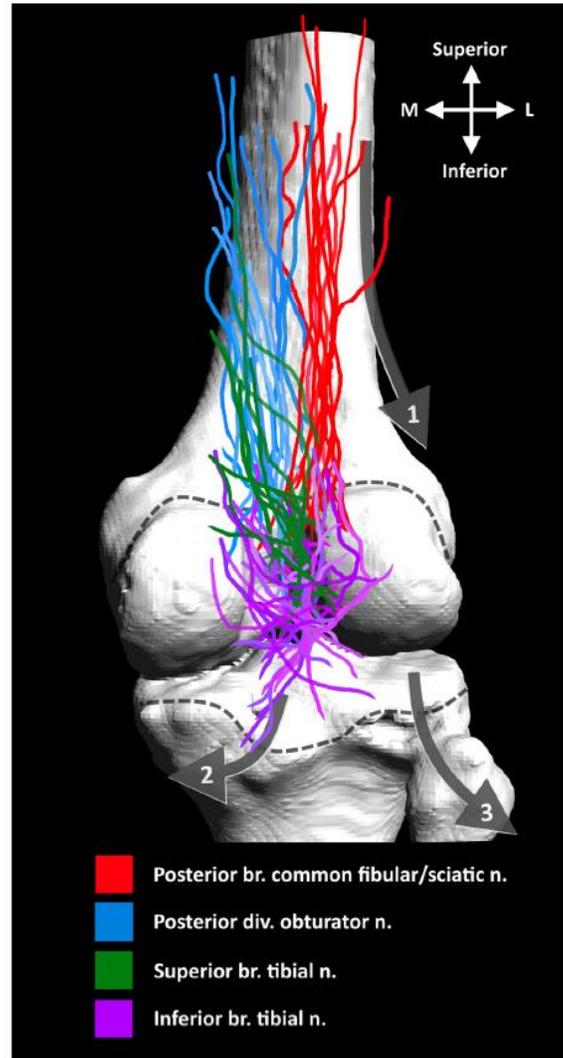
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Posterior



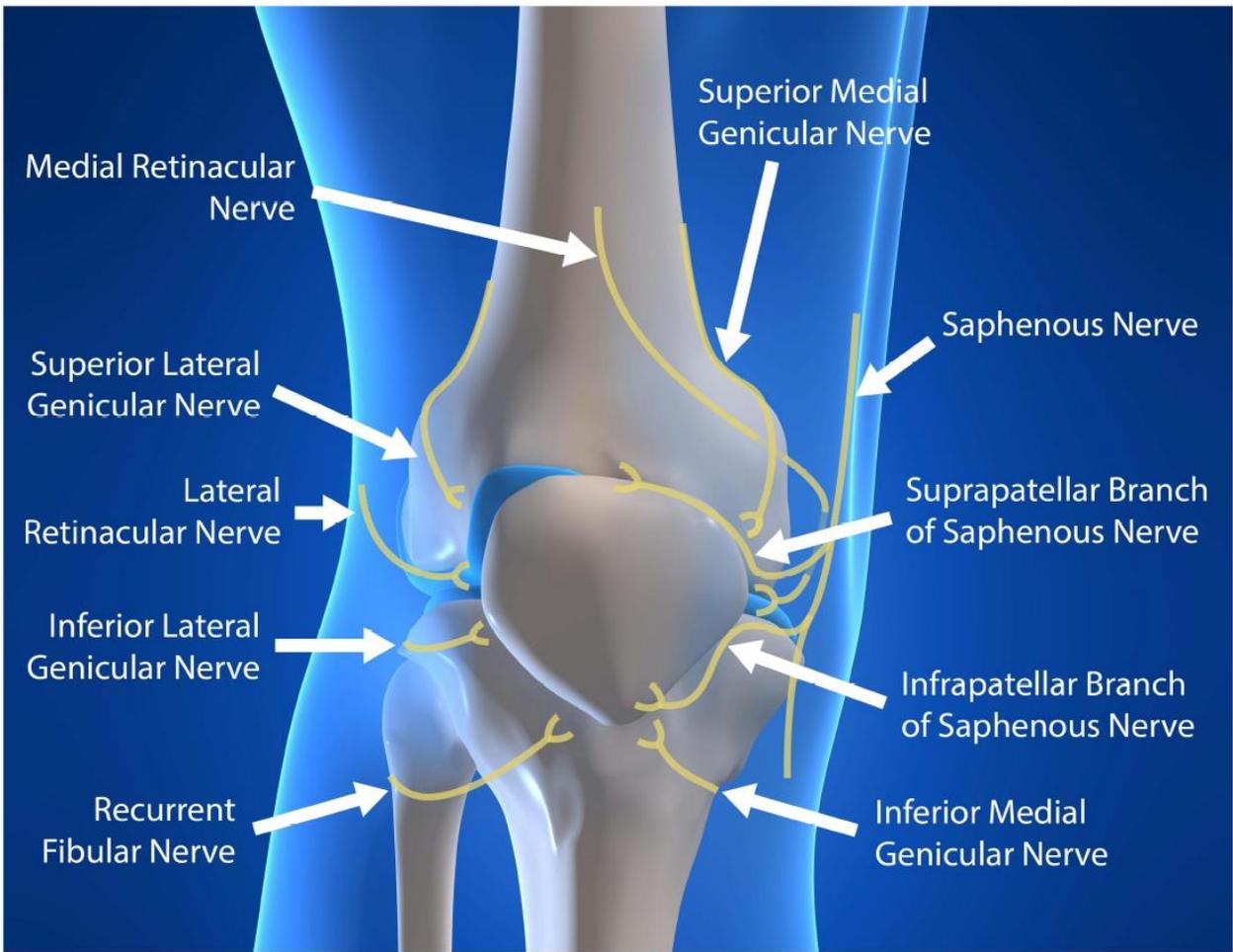
Tran J, Peng PWH, Gofeld M, Chan V, Agur AMR. Anatomical study of the innervation of posterior knee joint capsule: implication for image-guided intervention. *Reg Anesth Pain Med.* 2019 Feb;44(2):234-238. doi: 10.1136/rapm-2018-000015. PMID: 30700618.

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Hunter CW, Deer TR, Sayed D, Strand N. et al Consensus Guidelines on Interventional Therapies for Knee Pain (STEP Guidelines) from the American Society of Pain and Neuroscience. J Pain Res. 2022 Sep 8;15:2683-2745. doi: 10.2147/JPR.S370469. PMID: 36132996; PMCID: PMC9484571.



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Targets



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Fig. 2. Fluoroscopic image of anteroposterior and lateral views of the left knee joint. RF electrode tips were placed on periosteal areas connecting the shaft of the femur to bilateral epicondyles and the shaft of the tibia to the medial epicondyle. Superior medial, superior lateral and inferior medial genicular nerves run down these areas.



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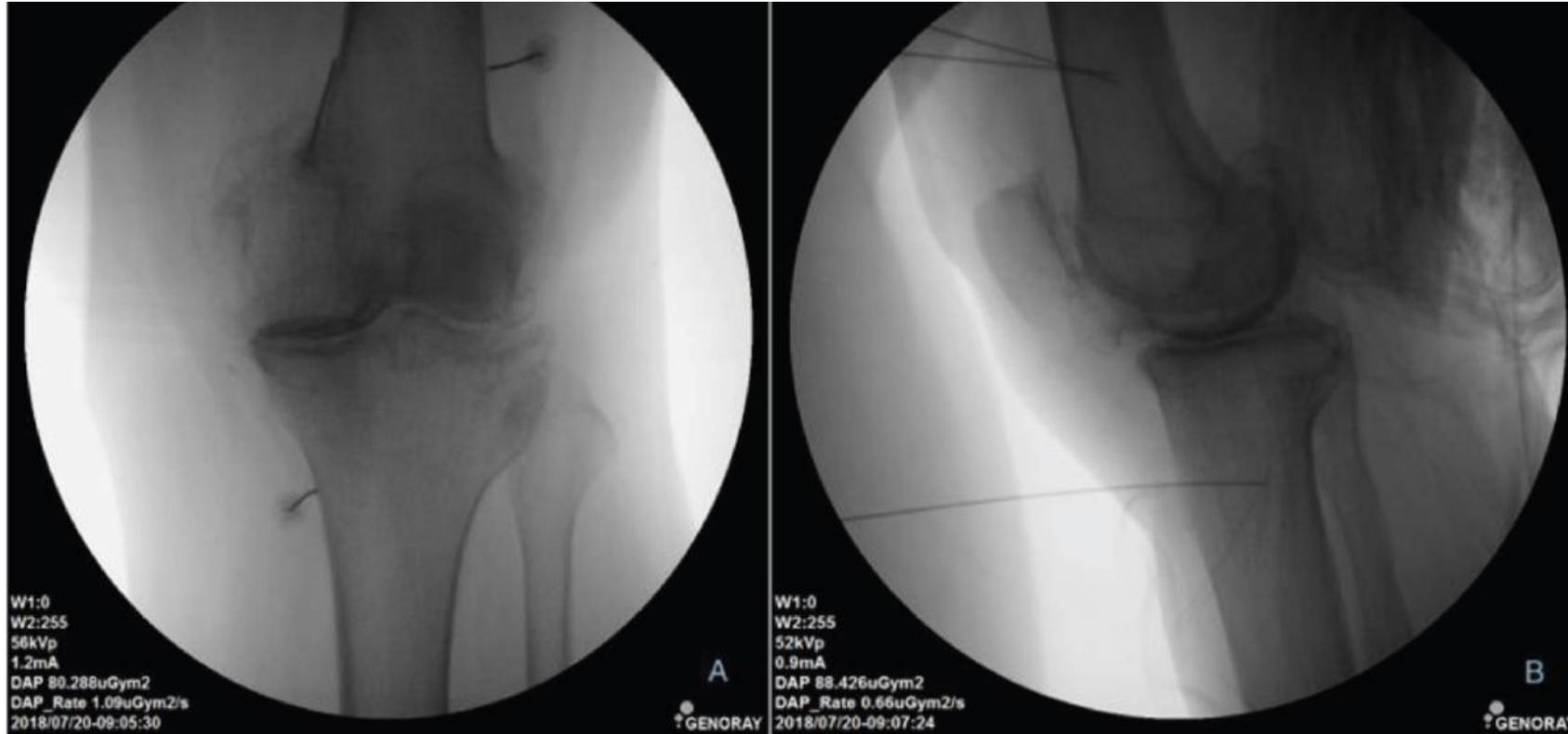


Figure 2. A: Anterior/posterior and B: lateral fluoroscopic images of the final electrode positions during conventional RF ablation of the genicular nerves.



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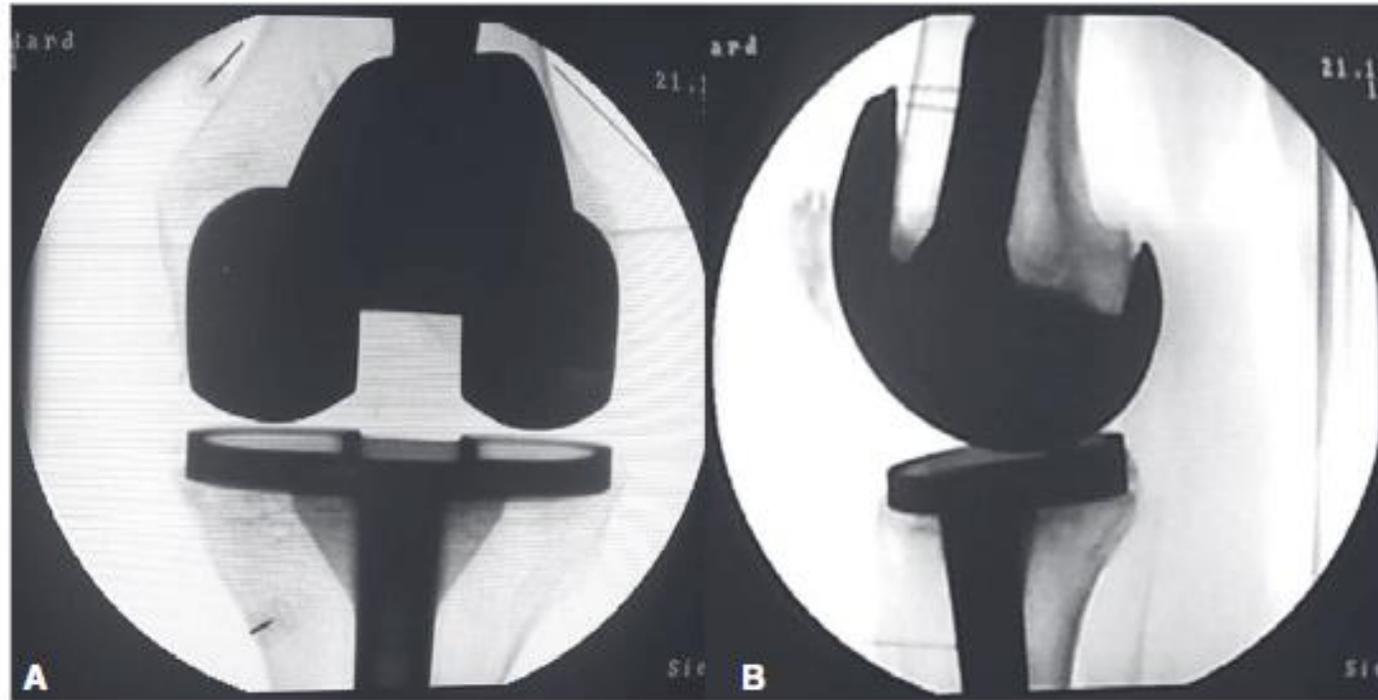


Figure 2. Location of the infiltration points by fluoroscopy using anteroposterior (A) and lateral (B) imaging.

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Fig. 2. Fluoroscopic image of anteroposterior view of the knee joint. RF cannulas were bilaterally placed into the cavity of the knee joint.



Fig. 3. The lateral fluoroscopic view of the knee joint with 2 radiofrequency electrodes in joint space.



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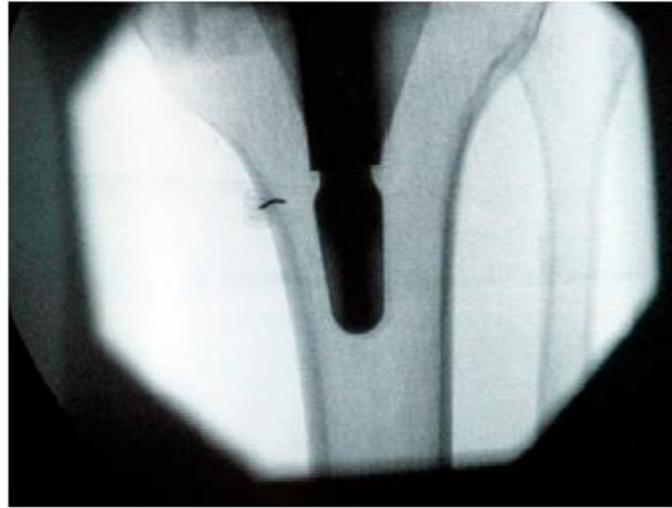
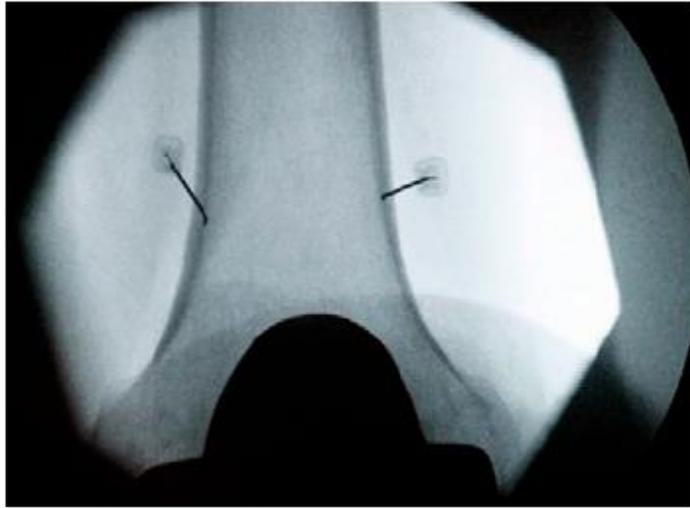


Fig. 4-B

Fig. 5

Fig. 6-B

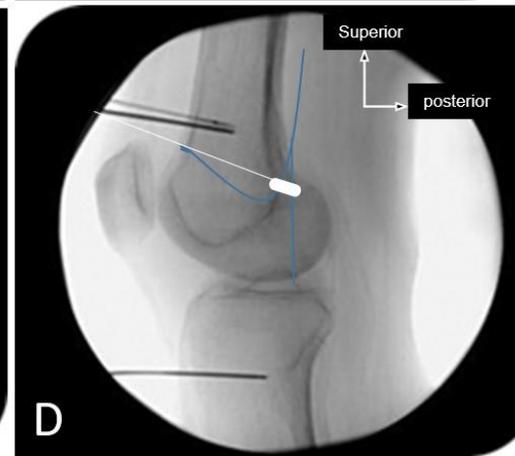
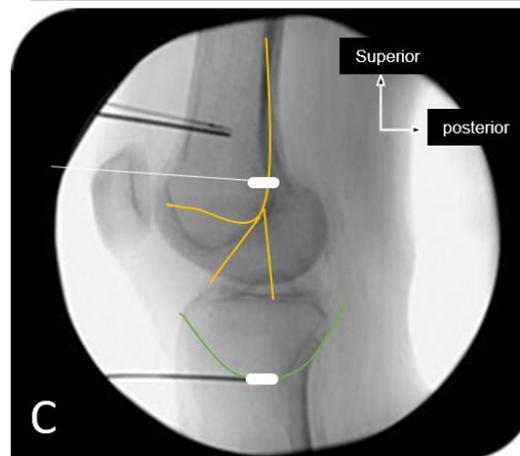
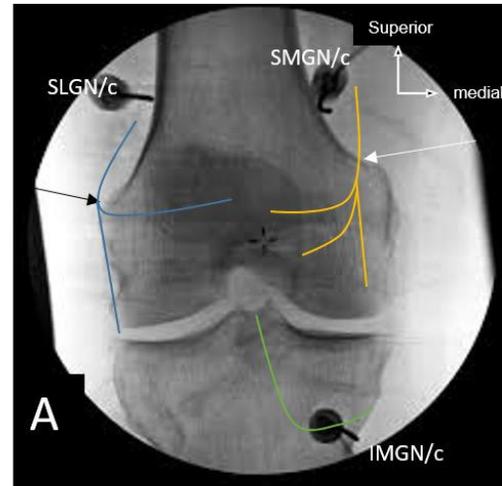
Kidd VD, Strum SR, Strum DS, Shah J. Genicular Nerve Radiofrequency Ablation for Painful Knee Arthritis: The Why and the How. JBJS Essent Surg Tech. 2019 Mar 13;9(1):e10. doi: 10.2106/JBJS.ST.18.00016. PMID: 31333900; PMCID: PMC6635137.



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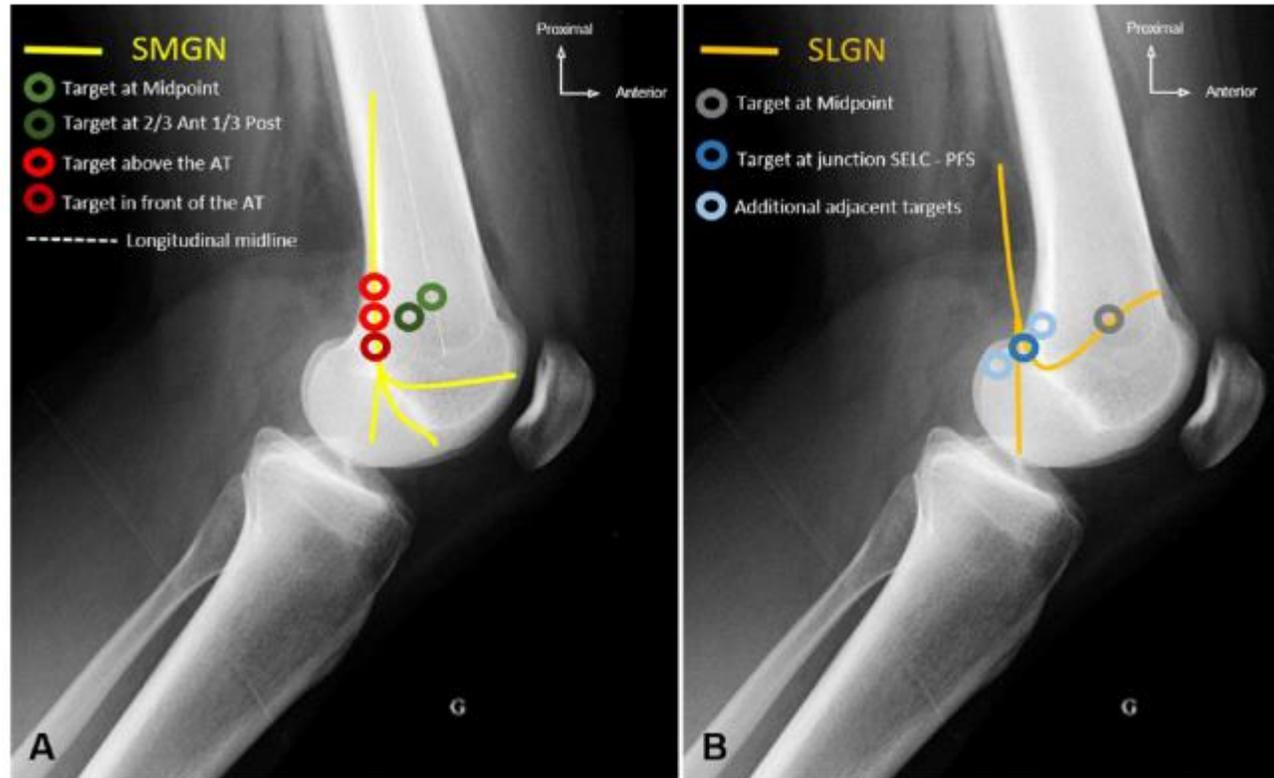
Fonkoue L, Behets CW, Steyaert A, Kouassi JK, Detrembleur C, De Waroux BLP, Cornu O. Accuracy of fluoroscopic-guided genicular nerve blockade: a need for revisiting anatomical landmarks. Reg Anesth Pain Med. 2019 Aug 26;rapm-2019-100451. doi: 10.1136/rapm-2019-100451. Epub ahead of print. PMID: 31451628.



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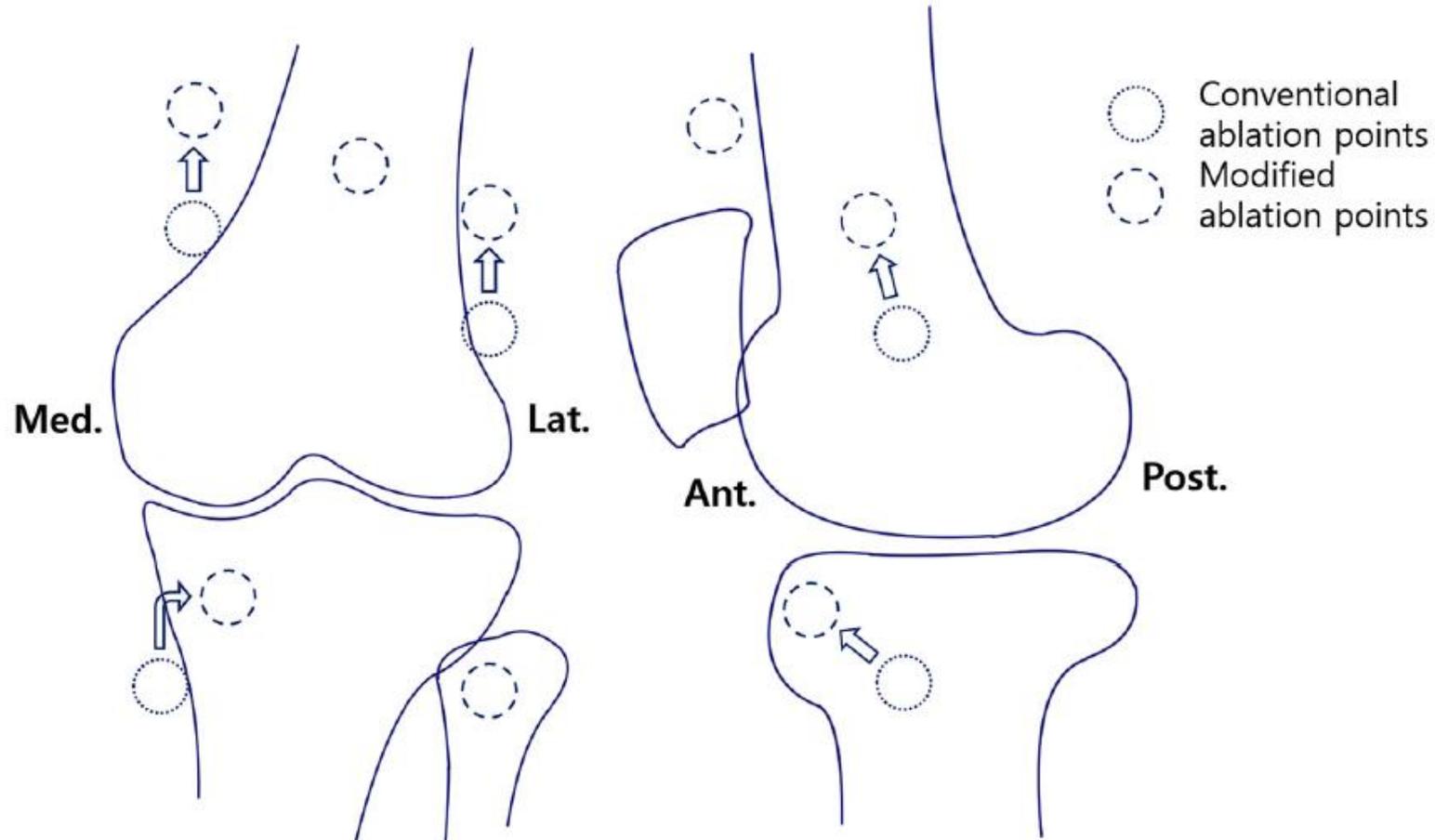
Fonkoue L, Behets CW, Steyaert A, Kouassi JK, Detrembleur C, De Waroux BL, Cornu O. Current versus revised anatomical targets for genicular nerve blockade and radiofrequency ablation: evidence from a cadaveric model. *Reg Anesth Pain Med.* 2020 Aug;45(8):603-609. doi: 10.1136/rapm-2020-101370. Epub 2020 Jun 18. PMID: 32561652.



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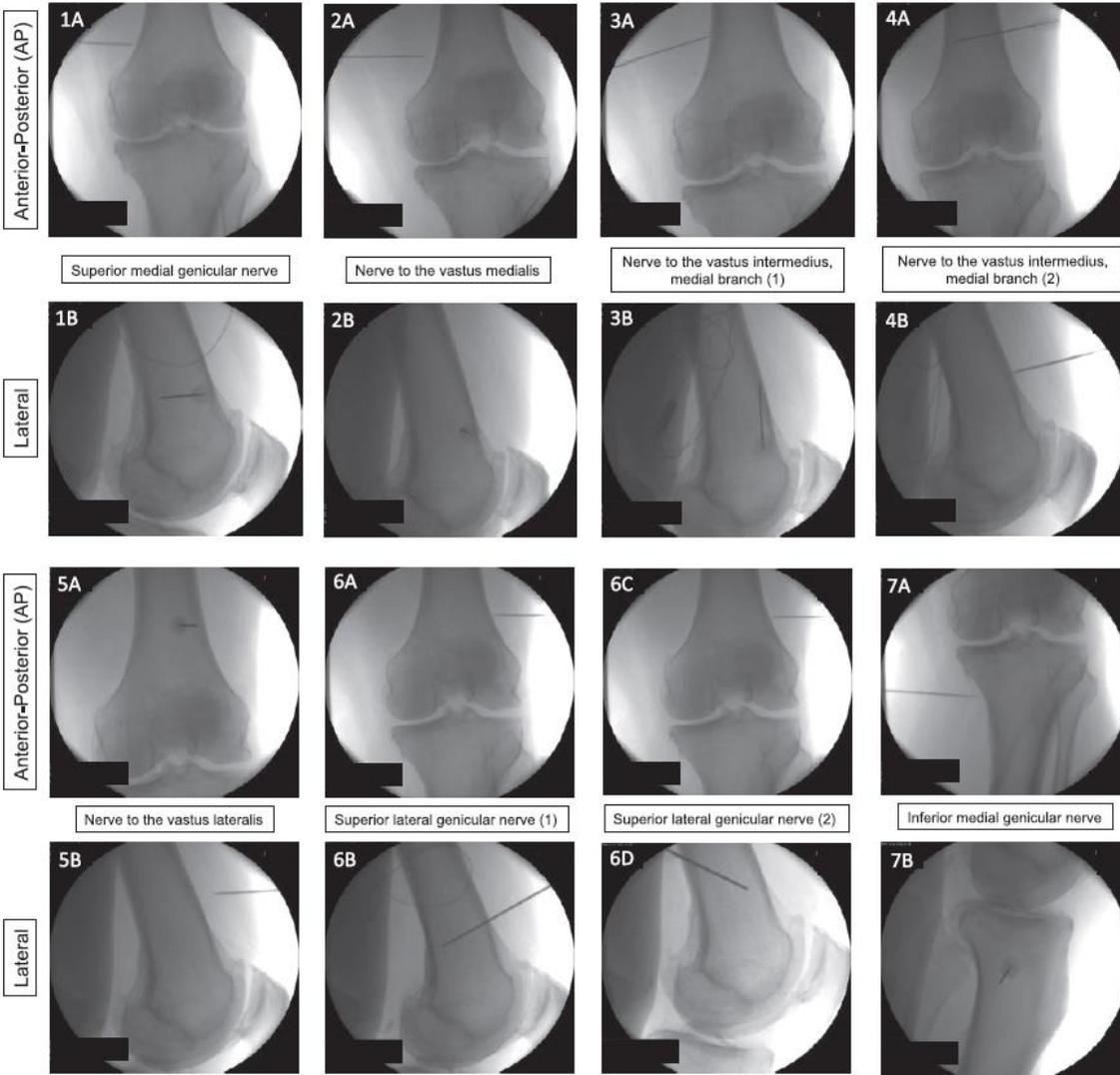
Park MR, Kim D, Rhyu IJ, Yu JH, Hong J, Yoon S, Lee D, Koh JC. An anatomical neurovascular study for procedures targeting peri-articular nerves in patients with anterior knee pain. *Knee*. 2020 Oct;27(5):1577-1584. doi: 10.1016/j.knee.2020.08.006. Epub 2020 Sep 2. PMID: 33010776.

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Koshi E, Cheney CW, Sperry BP, Conger A, McCormick ZL. Genicular Nerve Radiofrequency Ablation for Chronic Knee Pain Using a Three-Tined Electrode: A Technical Description and Case Series. Pain Med. 2020 Dec 25;21(12):3344-3349. doi: 10.1093/pm/pnaa204. PMID: 32984887.



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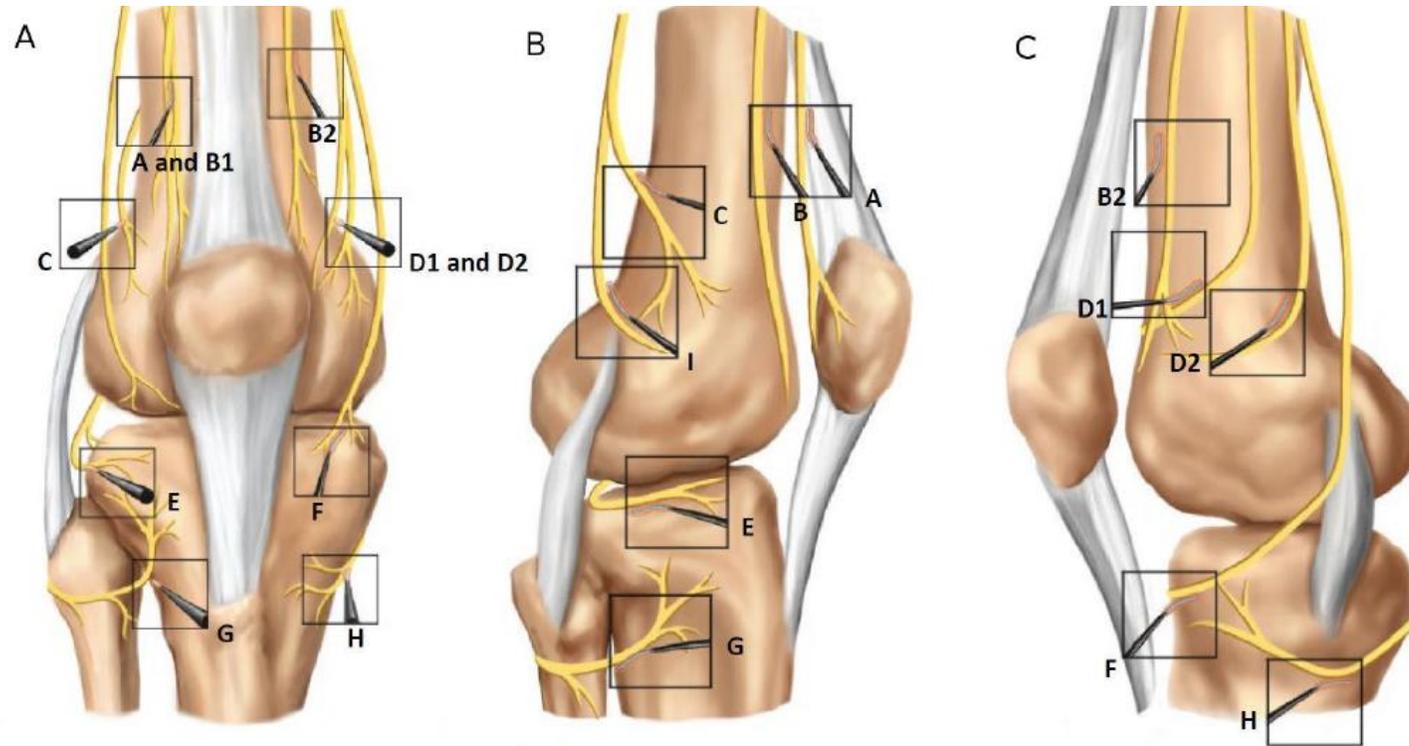


Figure 2 Innervation of the anterior knee joint with target nerves. (A) Anterior view, (B) lateral view, (C) medial view. (A) Nerve to vastus lateralis, B1. Lateral branch of nerve to vastus intermedius, B2 medial branch nerve to vastus intermedius, C. Superior lateral genicular nerve, D1. Nerve to vastus medialis, D2. Superior medial genicular nerve, E. Inferior lateral genicular nerve, F. Infrapatellar branch of saphenous, G. Recurrent fibular nerve, H. Inferior medial genicular nerve, I. Terminal articular branch of the common fibular nerve.

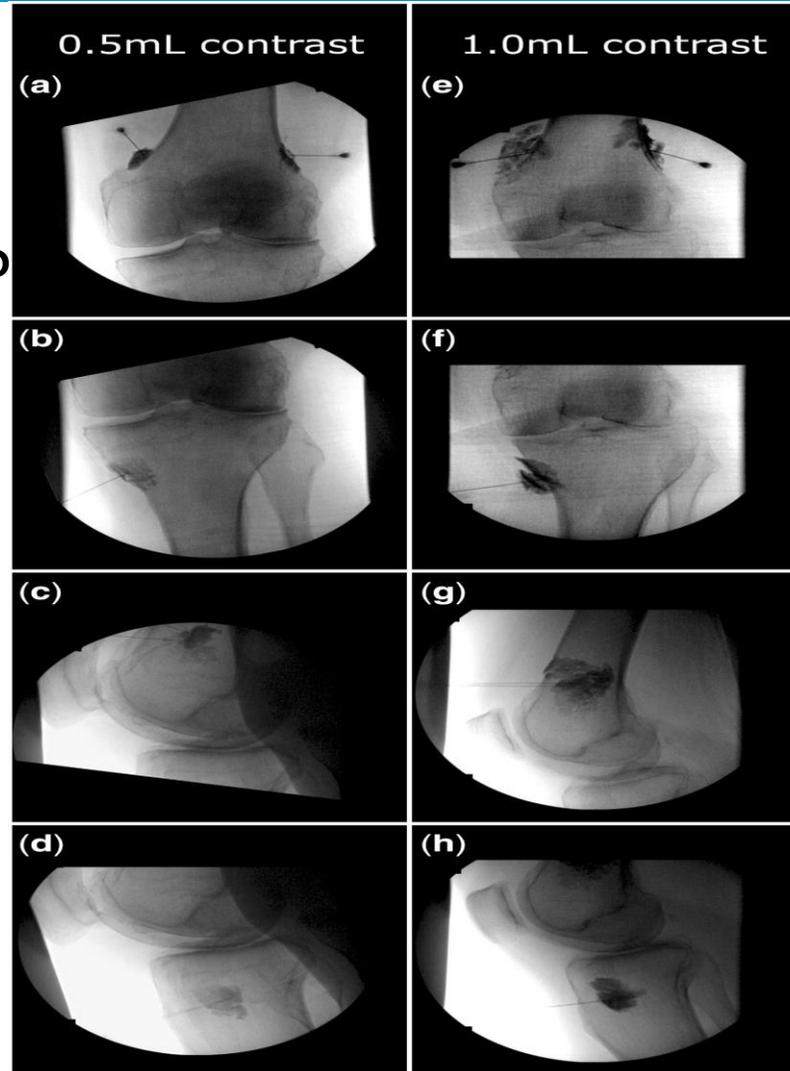


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To test or not to test?





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Increase chances of success

1. More lesions >3
2. Needle/lesion size
3. Patient selection (no psych condition, no opioids, lower baseline score).
 - Obesity?



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COMPLICATIONS:

- Hemarthrosis
- Peri-articular hematoma
- Septic arthritis
- Skin burn



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Conclusions

1. Knee joint RFL is a safe and effective procedure with low incidence of adverse effects and superior to IA injections of steroids or HA.
2. Test blocks may not be necessary.
3. The more nerves/lesions the merrier?
4. Patient selection is crucial.
5. Provider would need to know possible complications to avoid them.



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Thank you!