

Cryoneurolysis After Total Knee Arthroplasty in Patients with Hemophilia

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Introduction

- Patients with hemophilia often present for total knee arthroplasty (TKA) due to recurrent joint hematoma and subsequent joint deterioration.
- Acute pain management (APM) is challenging due to coagulopathy and preexisting chronic pain in up to 84% of this population.² Patients often experience prolonged post-surgical pain (PPSP) but continuous PNBs are discouraged due to risk of hematoma formation.
- Ultrasound-guided percutaneous cryoneurolysis (USGPC) hasn't been described in these patients for TKA

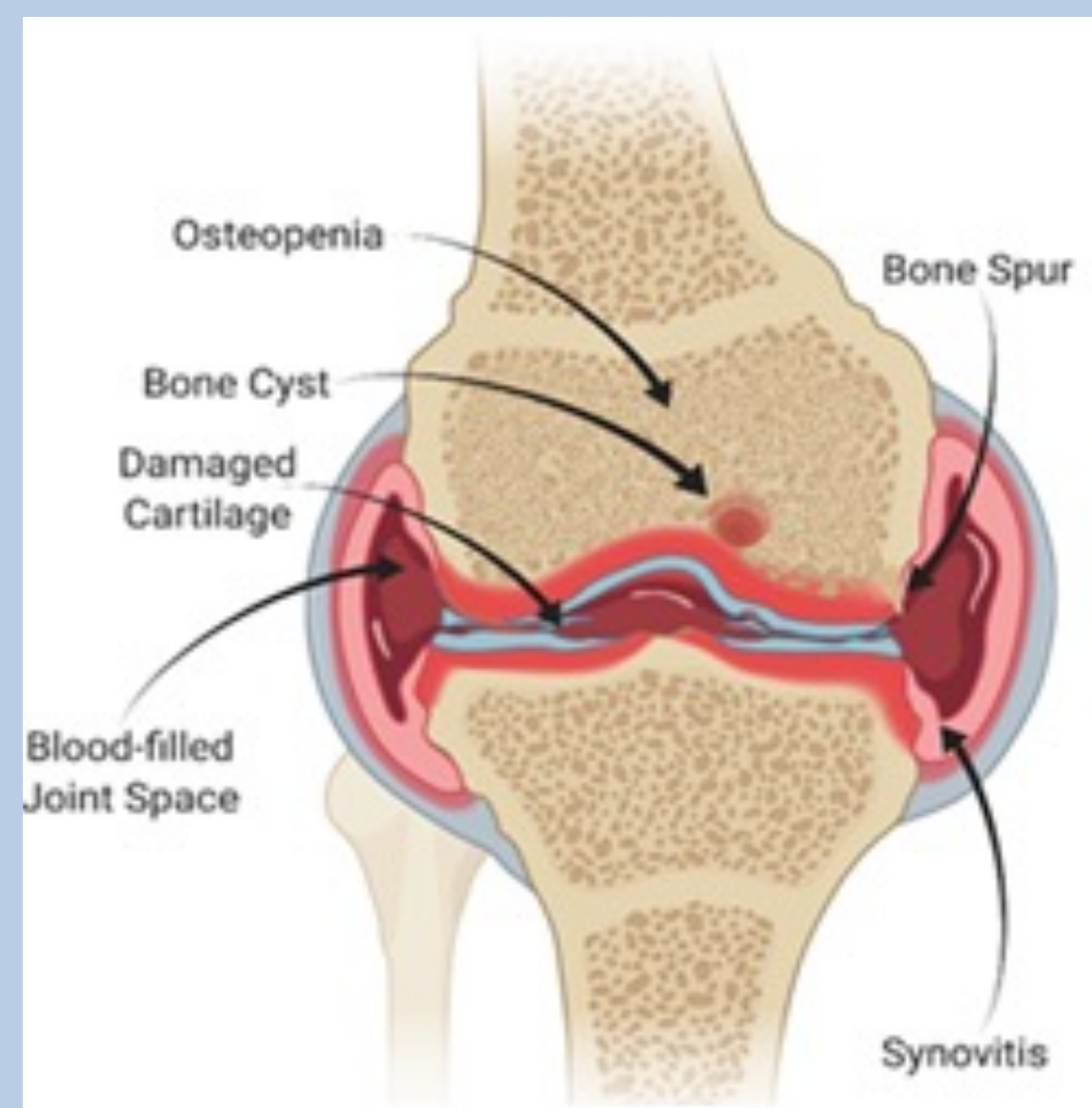


Figure 1: Hemarthritic joint pathophysiology
N. G. H. (2013). Nationwide Children's Hospital. Retrieved February 22, 2024, from <https://www.nationwidechildrens.org/family-resources-education/health-wellness-and-safety-resources/helping-hands/hemophilia-joint-muscle-bleeds-price-home-care>

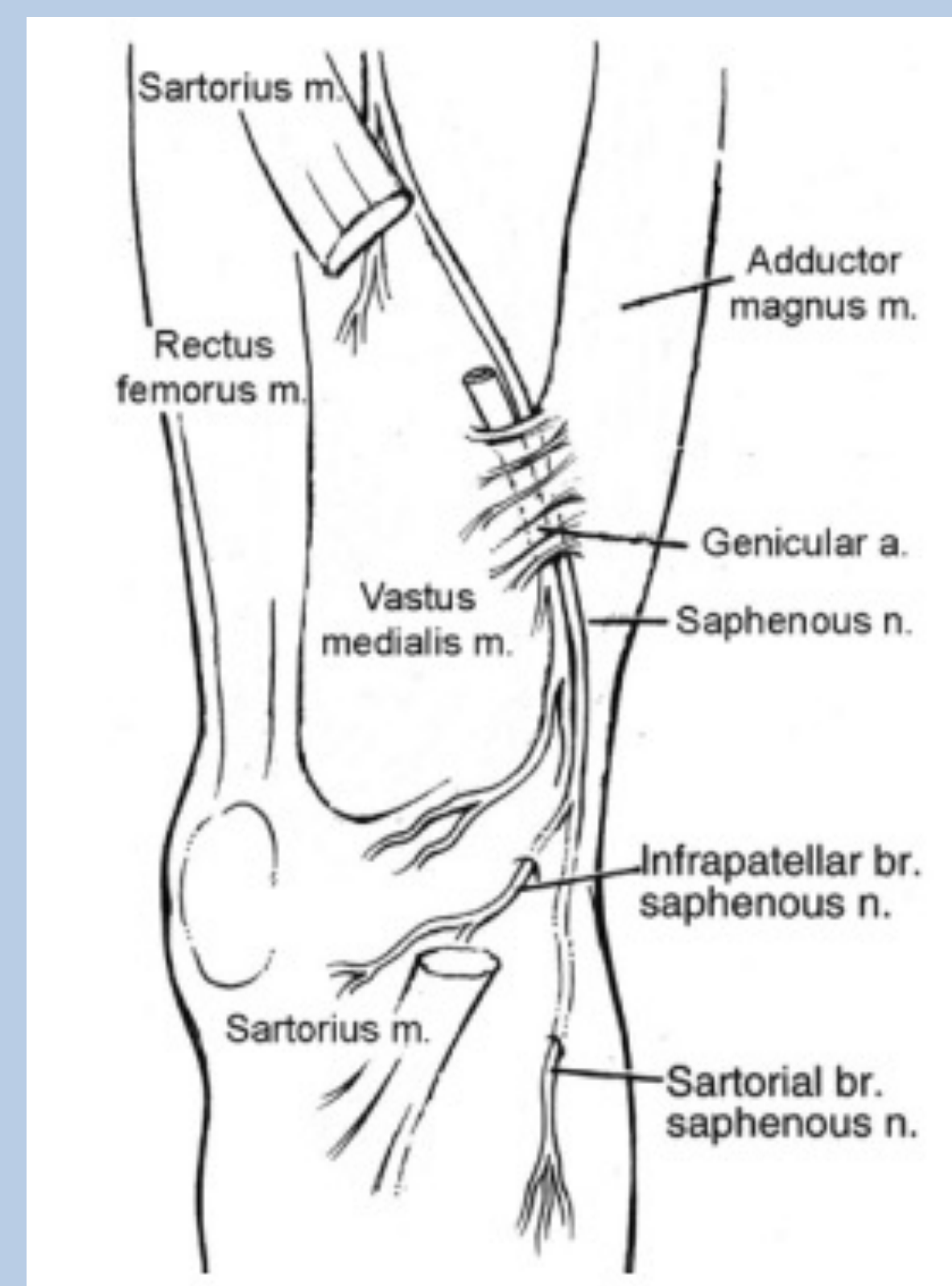


Figure 2: Anatomy of medial knee
Trescott AM, Brown RN, Karl LW. Infrapatellar saphenous neuralgia - diagnosis and treatment. Pain Physician. 2013 May-Jun;16(3):E315-24. PMID: 23703431.

Case Report

Patient 1: 66 yo M with hemophilia A, chronic pain, opioid tolerance presented for elective TKA. He experienced severe post-operative pain without relief from a multimodal regimen (MMR) of fentanyl, ketamine, hydromorphone, and etc. Due to his opioid tolerance, we anticipated PPSP and the need for prolonged analgesia. The multimodal team agreed to USGPC. The APM service performed single-shot saphenous nerve block, and **ultrasound-guided cryoneurolysis of the lateral femoral cutaneous nerve (LFCN), saphenous nerve, and infrapatellar branch of the saphenous nerve (IBSN).** He was discharged on POD 4 without additional opioids.

Patient 2: 33-year-old opioid-naïve M with hemophilia A presenting for elective TKA. Given the perceived success of the prior patient who received cryoneurolysis for TKA and the patient's post-operative pain after MMR, all providers agreed to **USGPC of the LFCN, saphenous nerve, IBSN.** He endorsed significant pain relief and didn't require opioids upon discharge.

Upon follow-up, both patients reported significant, long-lasting relief of their knee pain and were both appreciative of the results of the procedure, which lasted for about 1-2 months. There were no apparent complications.

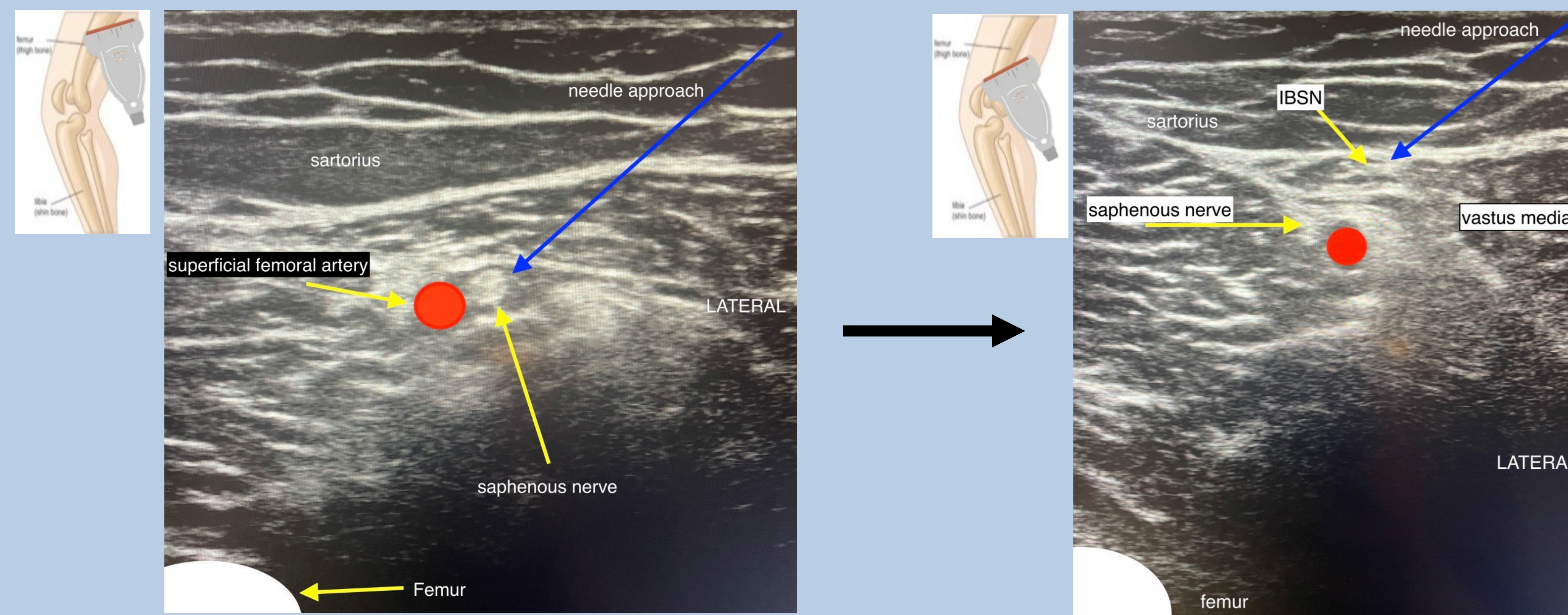


Figure 3: Ultrasound images of USGPC of IBSN (right) in comparison to standard saphenous nervous block (left)

Intervention

- For these cases, we performed **USGPC of the LFCN, saphenous nerve, IBSN.**
- Blocks were performed with high frequency linear ultrasound (Sonosite, Bothell, WA), local anesthesia with 1% lidocaine, and a handheld cryoprobe (Iovera Smart Tip, Myoscience, USA).
- To maintain standard of care, adductor canal single-shot blocks were performed with bupivacaine 0.25% and dexamethasone PF.

Conclusions

- Cryoneurolysis has been utilized for many different pain syndromes targeting various nerves.⁵ Results have shown improved pain scores as well as decreased opioid consumption.⁵
- With ultrasound guidance and the latest portable handheld devices, cryoneurolysis is a viable option to offer patients with acute pain for prolonged and meaningful pain control.
- For patients at high risk of rebound pain from single-shot blocks and a contraindication to indwelling perineural catheters, cryoneurolysis of the LFCN, saphenous nerve, and IBSN may offer prolonged post-surgical analgesia. Further studies are needed to assess the safety and benefits of cryoneurolysis in hemophilia patients.

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