

60. THE SUCCESSFUL USE OF LOCAL KNEE BLOCK FOR OVER 7,000 KNEE ARTHROSCOPIES AT THE FLORIDA CENTER FOR KNEE SURGERY BETWEEN 1982 AND THE PRESENT

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Introduction: Back in 1982 knee arthroscopy was in its infancy. Orthopedic surgeons were becoming increasingly dissatisfied with slow turnover times, and other logistic problems presented to their arthroscopic patients by traditional acute care hospitals operating rooms. In addition, many of them failed to purchase and maintain state-of-the-art arthroscopic and video equipment. Surgeons were finding it possible to pass on substantial cost savings to their patients by moving certain procedures to an out-patient setting. Arthroscopic knee surgery seemed to fit well into this paradigm.

Dr. Jack Barrett, an early proponent of arthroscopic knee surgery, renovated his office to include a surgical suite and recovery room dedicated to knee surgery. In the beginning, various conventional anesthetic methods were tried. They all had serious shortcomings in the out-patient office setting:

1. Spinal anesthesia—
 - a. headache—14%
 - b. relatively slow recovery resulting in recovery room backup slowing the OR schedule
 - c. failure of the technique in 10% of cases
 - d. significant hypotension in 32% of cases
2. General anesthesia (ethrane and N₂O by mask)
 - a. post op nausea and vomiting 28% of cases
 - b. laryngospasm and other airway issues in 2% cases.
3. Femoral-sciatic—unacceptable failure rate of 22%

Anesthesia and surgery put some thought to conceiving a new way to do these cases. Our goals were:

1. low failure rate
2. safety
3. high patient and surgeon satisfaction
4. cost effectiveness
5. efficiency (quick turnovers)

We decided to do away with the tourniquet and came up with the knee block which, to our knowledge, had not been previously described.

Methods: All patients received a careful preop evaluation and were screened for co-morbidities. ASA 3, 4 and 5 patients were eliminated. The patients were fasted according to ASA guidelines. Pre-op labs and x-ray were dictated by patient history. Upon arrival to the Center, approximately 1.30 hours before scheduled surgery, the patients changed into a hospital gown and vital signs were obtained. They were then brought to the preop block area and placed in a comfortable chair. The patient always identified the operative knee and scrubbed it for 10 minutes. They were then placed on a stretcher and attached to standard monitors. A nitrox mask (which delivered 50% N₂O-O₂) was then given to the patient and he or she were instructed in its use. A 22g hep-lock was then placed in a convenient vein. The block was then administered to the patient in the following manner.

- a. three portals were marked—2 medial (inferior and superior) and 1 lateral (inferior) see drawing #1.
- b. Using ½% lidocaine with epinephrine these portals were initially injected using a 27g needle from the skin to and thru the joint capsule into the joint—taking special care to anesthetize the joint capsule widely, after initial injection a 22g needle was used. A total of 10 cc was usually necessary for each portal.
- c. Finally, 20 cc of 2% lidocaine with epinephrine were injected, thru one of the previously anesthetized portals, directly into the joint, using an 18g needle.

Typically, the block was in place for a minimum of 15 minutes before the start of the surgery. When the patient was called to surgery, he or she walked with the assistance of the circulating nurse into the OR and positioned themselves on the OR table. Standard monitors were placed, and a nasal O₂ cannula was placed at 2l/min. Nitrous oxide was offered to the patient by mask (which they controlled) and the knee was prepped and draped. Following surgery, in most cases, the patient walked, with assistance, to the recovery area, where he was monitored and discharged by criteria.

Results—

1. 7124 patients underwent knee arthroscopy between 1982 and the present at The Florida Center for Knee Surgery utilizing the knee block described above.
2. 141 patients of 1.9% required supplemental general anesthesia of some sort.
3. patient satisfaction (based on post op surveys was 91%)
4. surgeon satisfaction was very high
5. cost savings were substantial
6. there were no fatalities and only 1 patient required urgent transfer to a hospital (grand mal seizure, initially managed in the center and transferred post ictal for work up)
7. 468 patients refused all forms of anesthesia but general
8. 1 patient developed a septic arthritis

Discussion: We describe a safe, cost effective method for providing anesthesia for knee arthroscopy which has the advantages of simplicity, safety and efficiency. To our knowledge, we were the first to employ this method and note that in recent years many clinicians have described similar techniques with success.^{1,2,3,4,5,6,7,8,9,10,11}

Our cost analysis of per case savings vrs. general or spinal anesthesia indicates an approximately \$600.00/case saving which is in agreement with other studies.¹²

We notice no significant signs of lidocaine toxicity (with the exception of one patient who suffered seizures but was noted have a seizure disorder in retrospect). This is in agreement with studies of lidocaine blood levels in patients receiving similar blocks which were noted to be in non toxic range.⁹

Conclusion: The knee block, which we have described, is a simple, safe solution for the anesthesiologist called upon to provide anesthesia for knee arthroscopy. We describe a very large series of patients in which we have employed this technique.

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