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The Introduction of a Multimodal Clinical Pathway for Outpatient Total Knee Arthroplasty in the Era of COVID-19

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An interdepartmental quality initiative

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Introduction

- With concern for staffing and equipment shortages caused by Covid-19, it seems justifiable to cancel elective cases. However, these delays in care are not without consequences.
- Before the pandemic, our total knee arthroplasty surgical service had transitioned to a next day discharge with large success.
- Given the constraints caused by COVID-19, we developed an anesthetic protocol that would allow for expedited discharge following surgery.

Methods

- Patient selection for the new outpatient knee arthroplasty protocol was extended to patients who were eligible for the next day knee program.
- Non eligible patients were left to the surgeons' and anesthesiologists' discretion.
- A new anesthetic protocol was developed to best suit a same day discharge. Pain management consisted of a multimodal approach that limits the use of opioids, minimizes pain, and facilitates early mobilization.

Results

	Next day knee	Same day Knee
Number of patients needing IV hydromorphone post op	15	11
Number of patients needing oral opioids post op	41	32
Average pain score in hospital	3.9	3.8
Average pain score at 2 weeks	3.3	3
Number of patients filling narcotics following surgery	25	20
Total number of narcotics refills following surgery	49	27

Discussion

- Quick acting spinal anesthesia with 2% mepivacaine allows for a dense surgical block, but resolves quickly so post-anesthesia care unit stays are significantly shorter.
- Our muscle-sparing regional blocks, in addition to local infiltration by the surgeon intraoperatively, have allowed patients to have adequate pain control throughout the perioperative period.
- The addition of liposomal bupivacaine to the adductor canal block also appears to be giving significantly prolonged anterior knee analgesia with no apparent sequalae.

The combination of a short acting spinal and muscle-sparing regional blocks, including **adductor canal** and **iPACK** blocks, can allow for successful outpatient total knee arthroplasty.

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Tables

Table 1: Pre and Post Surgical Medications

Night Prior	Morning of	Discharge
Celecoxib 200 mg	Celecoxib 200 mg	Celecoxib 200 mg BID x 3d, then daily until complete (disp #14)
Pregabalin 50 mg	Acetaminophen 1000 mg	Pregabalin 50 mg BID x 3d, then nightly until complete (disp #14)
Acetaminophen 1000 mg		Acetaminophen 1000 mg TID
		Oxycodone 5mg 1-2 tab q 4h PRN (disp #42)

Table 2: Anesthesia Protocols

Next day knee anesthesia protocol	Same day knee anesthesia protocol
0.5 or 0.75% bupivacaine spinal	Spinal 60mg 2% mepivicaine
Postoperative adductor canal 20cc 0.5% ropivacaine	Preop adductor canal with 10cc 0.5% bupivacaine, 10cc 13.3% liposomal bupivacaine
	Preop iPACK block 20cc 0.2% ropivacaine
Posterior injection by surgeon (bupivacaine 120mg, epinephrine 300mcg, morphine 8mg)	Posterior injection by surgeon (bupivacaine 50mg, epinephrine 100mcg)
Propofol sedation	Propofol sedation

Table 3: Demographics

	Next day knee	Same day Knee
Number of patients	48	49
Average age	63	63
Average ASA score	2.3	2.2
Average anesthesia time (min)	136	135
Average procedure time (min)	88	82
Average LOS (hrs)	42	12

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