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Ambulatory

(Abstracts and Case Report/Series)

A Retrospective Study to Optimize Post-Anaesthetic Recovery Time After Ambulatory Lower Limb Orthopaedic Procedures at a Tertiary Care Hospital in Canada

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Introduction:

During the pandemic where the surgical waitlist is growing, efficient ambulatory surgical care continues to gain popularity in the hope to perform more cases within the same time interval.[1]

Working with perioperative staff and surgical team, our institution has implemented a high efficiency (HE) perioperative care model for lower limb surgery. This is achieved by standardizing surgical instruments and providing surgical nerve block and sedation to improve turnover and shorten recovery time. Further, by avoiding general anesthesia (GA) and airway manipulation, the risk of exposing staff and patients to airborne infection may be reduced. The primary outcome of our retrospective study is the postoperative recovery time between traditional (T) and HE surgical pathways and secondary outcomes include phase I recovery utilization, postoperative opioid use, total hospital length of stay, and preoperative time.

Methods:

The study is approved by the institution's human research ethics board. Consecutive patients that had undergone elective unilateral below-knee surgery at our tertiary academic trauma center through either the T or HE surgical pathway between 2017 to 2019 are screened for eligibility. All patients are adults, ASA I to IV, non-opioid-dependent who must have received a preoperative surgical nerve block in either pathway. Patients in the T group may receive GA at the discretion of attending anesthesiologists and patients in the HE group would receive sedation unless blocks are insufficient. Patients in both groups may bypass phase I recovery if scoring at least 9 on Aldrete's score at the end of the operation. Binary logistic regression is performed to determine the demographic characteristics that may predict surgical pathways. Analysis of covariance is used for primary and secondary outcomes.

Results:

1721 patients were initially screened with 1391 ultimately meeting the inclusion criteria and 553 and 838 patients in T and HE respectively. Gender, BMI (<35 and ≥35), ASA (1,2 versus 3, 4), Surgical type (below and above the ankle) were predictive of patient allocation whereas age (< 70 and ≥ 70) was not. Mean [95% CI] postoperative recovery time between T and HE was 144.7 [135.8 - 145.6] and 76.8 [73.2-80.5] minutes. Mean preoperative time, surgical time and total length of stay between T and HE are 46.5 [43.6-49.3] and 4 [46.0 – 50.22]; 61.5[69.7-63.4] and 41.3[39.8-42.8]; 334.0 [328.0-340.0] and 244.6[234.0-249.5] respectively.

Phase 1 recovery and opioid utilization between T and HE group were 88.7% vs. 5.37% (OR 0.0073, 95% CI 0.0049 to 0.0109) and 34.7% vs 11.1% (OR 0.235, 95% CI 0.1778 to 0.3098)
(Refer Tables and Graph)

Discussion:

Our HE model did not only shorten recovery and total hospital length of stay but also significantly reduce utilization of phase I recovery thereby reducing the number of staff involved in patient care. Further, despite both groups receiving preoperative surgical blocks, patients in the HE group were more likely to not require postoperative opioids. There are confounders in our retrospective study. We identify that patients who are less healthy and those with above ankle surgery were more likely to receive traditional care, which could contribute to the higher postoperative recovery time and opioid consumption.

References:

1. Awad IT, Chung F. Factors affecting recovery and discharge following ambulatory surgery. Can J Anaesth 2006; 53:858-72

Table 1:

	HE path	Traditional path	Total
Opioid = 0	378 (68.4%)	750 (89.6%)	1128
Opioid = 1	175 (31.6%)	87 (10.4%)	262
Total	553 (100.0%)	837 (100.0%)	1390

Table 2:

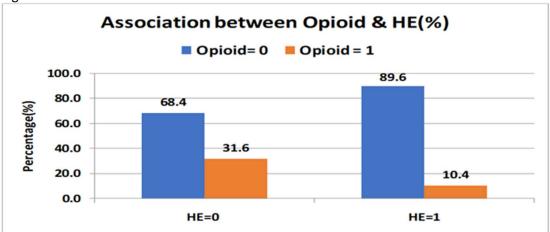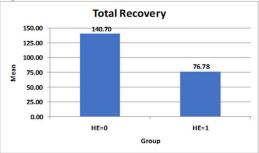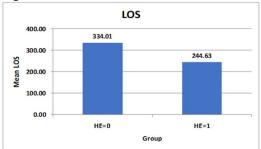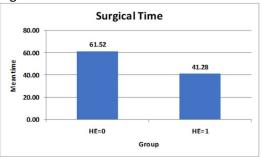| Variables	HE=0 (95% CI)	HE=1 (95% CI)	P value
Total Recovery	140.70 (136.38,145.03)	76.78 (73.31,80.26)	S, P<0.001
LOS	334.01 (327.98, 340.03)	244.63 (239.77,249.47)	S, P<0.001
Block Time	64.81 (61.25,68.36)	64.87 (62.27,67.47)	NS, P=0.90
Surgical Time	61.52 (59.65,63.40)	41.28 (39.78,42.79)	S, P<0.001
Opioid	3.29 (2.82, 3.75)	1.00 (0.63,1.37)	S, P<0.001
Prep Time	46.46 (43.60,49.32)	48.13 (46.03,50.22)	NS, P=0.37

Figure 1:

Association between Opioid & HE(%)

Figure 2:

Figure 3:

Figure 4:

Figure 5: