Resolution of Pain and Predictors of Postoperative Opioid use after Bridge-Enhanced ACL Repair and ACL Reconstruction

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BACKGROUND

- Understanding the postoperative pain course and opioid medication intake is important for any new surgical procedure
- Bridge-enhanced ACL repair (BEAR™) is being evaluated as an alternative to ACL reconstruction[1,2]
- No literature currently exists documenting opioid consumption following this procedure

PURPOSE

- To compare postoperative pain scores and opioid usage between patients undergoing standard arthroscopic ACL reconstruction using hamstring autograft (ACLR) with those undergoing BEAR performed through an mini-arthrotomy
- Secondary analyses determined factors predictive of postoperative opioid use and levels of overprescription
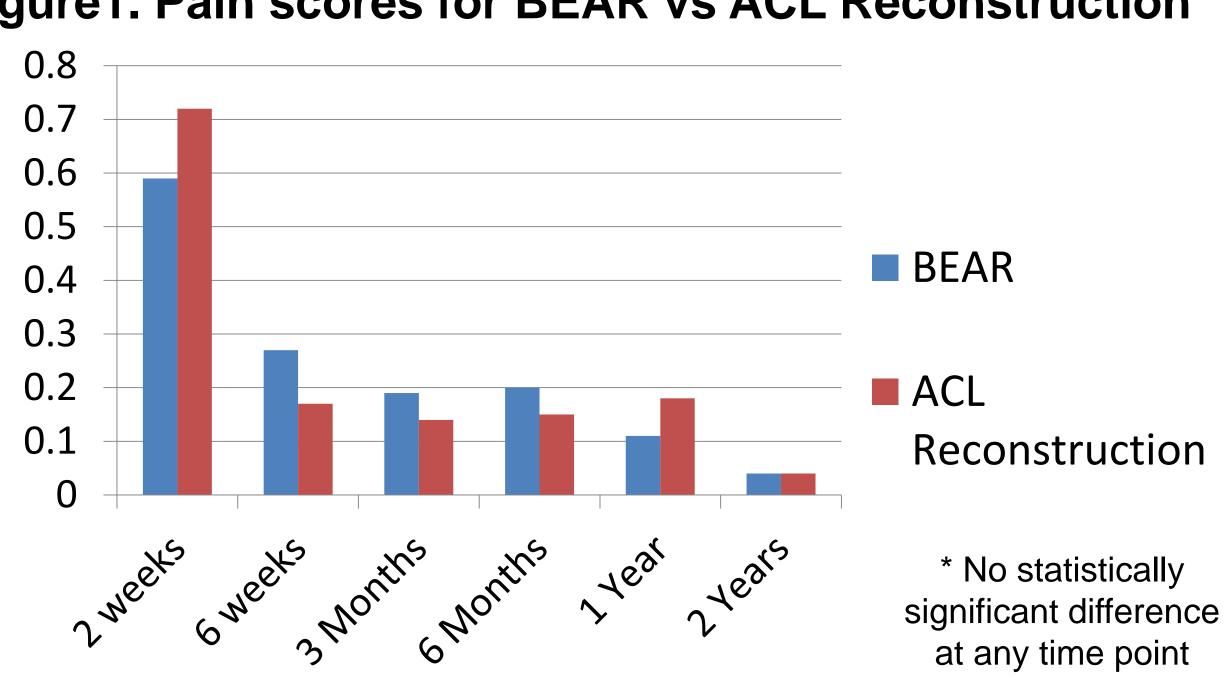
METHODS

Study design:
- Non-randomized controlled trial, 20 patients (10 ACLR, 10 BEAR), Aged 18-35
- All surgeries performed by a single surgeon

Outcomes:
- Pain medication log was provided to patients on discharge
- Pain score via visual analogue scale (VAS) was recorded at each visit
- Total inpatient and outpatient opioid use was calculated in morphine equivalent dose (MED) and number of pills (5mg oxycodone pills)
- Correlations between preoperative and intraoperative characteristics and postoperative opioid use were determined

RESULTS
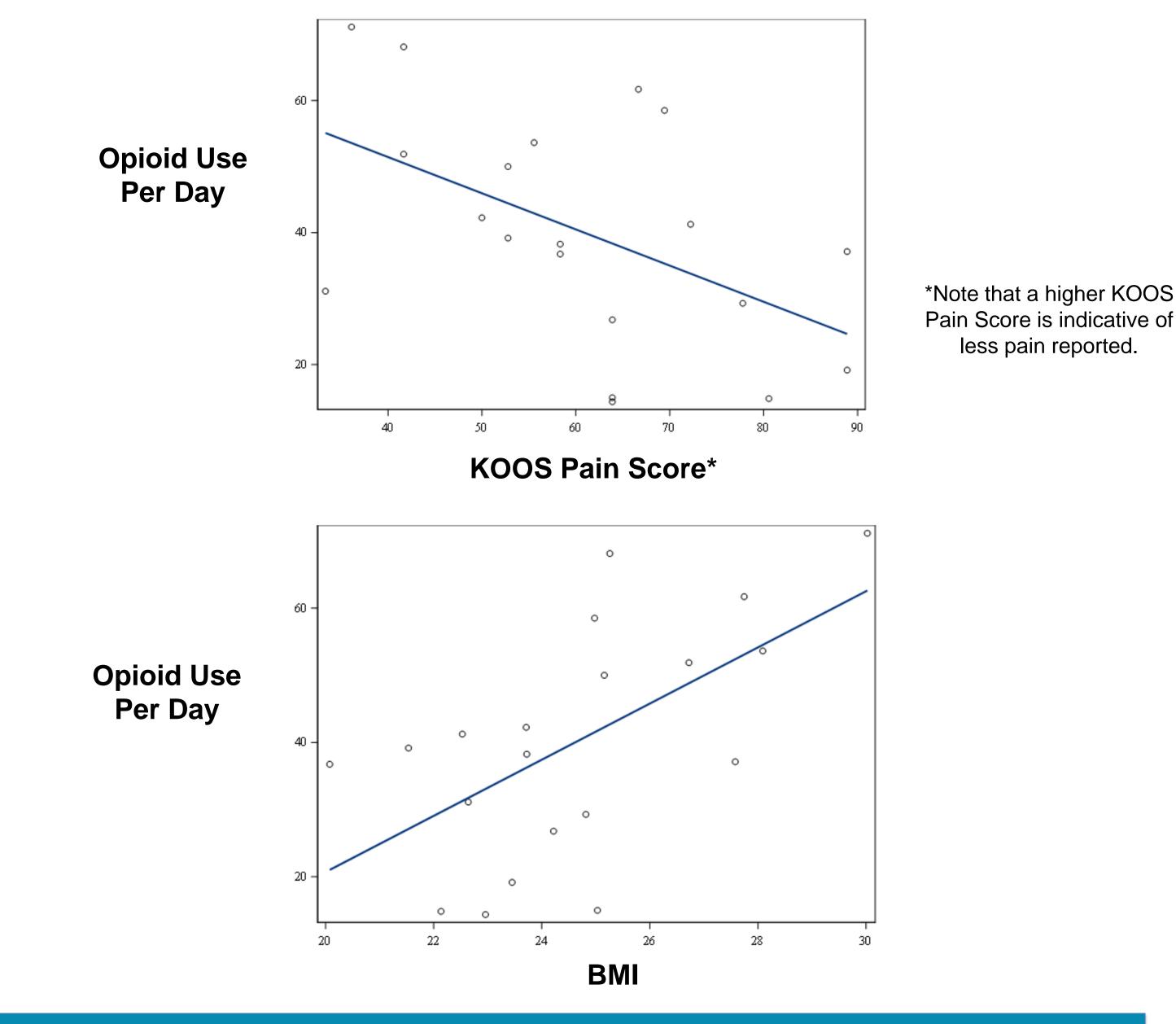
Figure1. Pain scores for BEAR vs ACL Reconstruction*

* No statistically significant difference at any time point

RESULTS

Table1. Opioid use & prescription amounts for BEAR vs ACLR

	Bridge-enhanced ACL Repair (n=10) Mean (SD) [range]	ACL Reconstruction (n=10) Mean (SD) [range]	p-value
Inpatient Medications			
Total MED administered in Post-Anesthesia Care Unit	18.0 (20.2) [0 – 72]	15.3 (8.0) [6 – 26.1]	>0.70
Outpatient Medications	145.5 (69.0) [0 – 232.5]	118.5 (96.6) [0 – 277.5]	>0.48
Total MED of Oxycodone (mg)			
Total MED of all outpatient meds (mg)*	169.2 (52.1) [75 – 237]	123 (91.3) [22.5 – 277.5]	>0.18
Total MED of all outpatients meds converted to number of 5 mg pills of oxycodone*	23 [10 – 32]	17 [3 – 37]	>0.18
Total MED, Inpatient and Outpatient (mg)	187.2 (57.1) [75 – 253.5]	138.3 (94.6) [29.7 – 308.5]	>0.18
Total MED of all meds converted to number of 5 mg pills of oxycodone*	25 [10 – 34]	19 [4 – 42]	>0.18
Average MED Per Day (mg)	35.8 (12.8) [15 – 53.6]	44.2 (20.9) [14.4 – 71.1]	>0.29
Prescriptions			
Total # oxycodone pills prescribed	64.8 (10.1) [60 – 84]	60 (0) [60 – 60]	>0.17
Total # oxycodone pills taken	19.4 (9.2) [0 – 31]	13.8 (11.9) [0 – 37]	>0.27
Total # oxycodone pills left over	45.4 (16.5) [29 – 74]	46.2 (11.9) [23 – 60]	>0.90

Figure2. Correlation of preoperative variables with opioid use

*Note that a higher KOOS Pain Score is indicative of less pain reported.

CONCLUSIONS

- Total overall opioid intake was not different between the patients undergoing BEAR vs arthroscopic ACLR
- Both groups had similar pain scores from 2 weeks to 2 years postoperatively
- Higher BMI and higher preoperative pain correlated with higher postoperative opioid use per day
- There was an overprescription of opioids across all patients

REFERENCES

1. Murray MM, Flutie BM, Kalish LA, Ecklund K, Fleming BC, Proffen BL, et al. The Bridge-Enhanced Anterior Cruciate Ligament Repair (BEAR) Procedure: An Early Feasibility Cohort Study. Orthop J Sports Med. 2016;4(11):2325967116672176
2. Murray MM, Kalish LA, Fleming BC, Flutie B, Freiberger C, Henderson RN, et al. Bridge-Enhanced Anterior Cruciate Ligament Repair: Two-Year Results of a First-in-Human Study. Orthopaedic Journal of Sports Medicine. 2019;7(3):232596711882435

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