A Smartphone Application Improves Collection of Postoperative Pain, Function, and Opioid Consumption After Anterior Cruciate Ligament Reconstruction

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Summary: We track response rates of a smartphone application to assess post-operative pain in ACL reconstruction patients.
In the wake of a national opioid epidemic, much emphasis has been placed on efforts to prescribe the minimal amount of narcotic medication needed to maintain adequate pain control.

To adequately evaluate analgesia and opioid consumption in the immediate postoperative period, regular patient reported outcomes are necessary.

To attempt to understand the patient experience in the immediate post-operative period, we created a smartphone application to track patient pain control and opioid use in the immediate post-operative period.
Hypothesis

• We hypothesized that response rates would be higher when using this smartphone application compared to an email-based patient survey utilized at our institution.
Methods

• A smartphone application for tracking post-operative patient pain and opioid use was developed at our institution.

• This application was given to all patients of a single surgeon undergoing anterior cruciate ligament (ACL) reconstruction from January 2017 to March 2018.

• Response rates for the smartphone application were calculated and compared to that of our institutional email 2-week post-operative registry capture, collected from May 2016 to May 2018.
Methods: the smartphone application

• From the application, patients were asked to log three times daily information regarding pain, medication use, and other outcomes of interest.

• Pain was documented throughout the first post-operative week for a total of 19 possible pain score reports.

• Patients were considered to have adequate response when they responded to =7 of the 19 question sets after surgery, as this corresponds to an average of at least one entry per day.
FUSE pain App
(Follow Up Surgical Evaluation)
What Happens To The Data

• Red Cap data base.
• HIPPA Compliant
• Easily viewed and manipulated to:
  – Monitor individual patient usage
  – See trends in certain groups
  – Compare multiple cohorts
Results

• 238 patients who underwent ACL reconstruction downloaded the smartphone application from January 2017 to March 2018.

• 2,030 email-based surveys were sent out to an overlapping population of sports medicine patients after surgery from May 2016 to May 2018.

• Compared to the email-based survey, the smartphone application boasted a 14.6% higher response rate (67.2% vs. 52.6%, p<.0001).

• The mean number of scores recorded for the smartphone application was 10.95 ± 7.11.
Single Patient

# of Percocet Taken

Pain Scores out of 10
Conclusions: Main Take Away Points

- Given significantly higher response rates with the smartphone application when compared to an email survey in a similar patient population, it seems that a smartphone application represents an excellent modality to assess patient reported pain and opioid consumption after ACL reconstruction.

- By obtaining granular data on postoperative pain and opioid consumption, rather than on a once a week basis (or even less frequently), clinicians and researchers will be able to far better trend and track patient pain control and opioid use patterns.
References


