

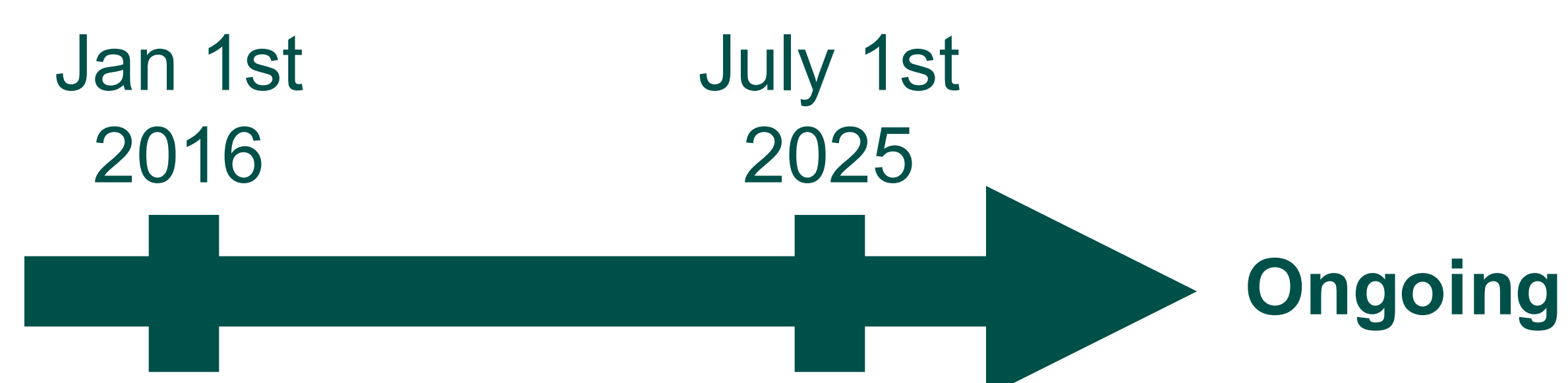
## Background

- Total Knee Arthroplasty (TKA) is well established as the most definitive treatment for chronic osteoarthritis
- TKA revisions can be indicated between 3-10% over a 10 year period
- Aseptic loosening has been shown to be the cause of 10-15% of TKA revisions but is not easily identifiable on all imaging modalities

## Aim

- To show local anesthetic injections, termed a “Lidocaine Challenge,” can serve as a diagnostic tool for TKA revision

## Methods



- Retrospective review of patients who received a TKA Revision after receiving an anesthetic injection in clinic prior to surgery
- The data gathering for this project is ongoing
  - 21 patients
- Main objectives reviewed:
  - Injection relief status
  - Intraoperative findings
  - Imaging findings pre-surgery

## Results

- 273 Patients have been screened to date that met the initial search criteria
- X-ray was the most frequently used (100%) while Bone Scan was often used (76%) to aid in TKA revision diagnosis. CT scans were infrequently used (38%)
- Lidocaine was used in 18 patients while Bupivacaine was used in 3 patients
- All patients within the study identified as White according to their medical record

## Figures

Table 1 – Demographics

	Male (n=12)	Female (n=9)
Age at Surgery (Avg)	64.7	65.7
Weight (Avg in lbs)	203.8	179.9
BMI (Avg)	29.2	30.61
Ethnicity	White (100%)	White (100%)
History of Tobacco Use	5 (41.2%)	2 (22%)
History of Alcohol Use	6 (50%)	3 (33.3%)
History of Drug Use	1 (8.3%)	1 (11.1%)
Prior Revisions	3 (25%)	1 (11.1%)

Pain Relief Level

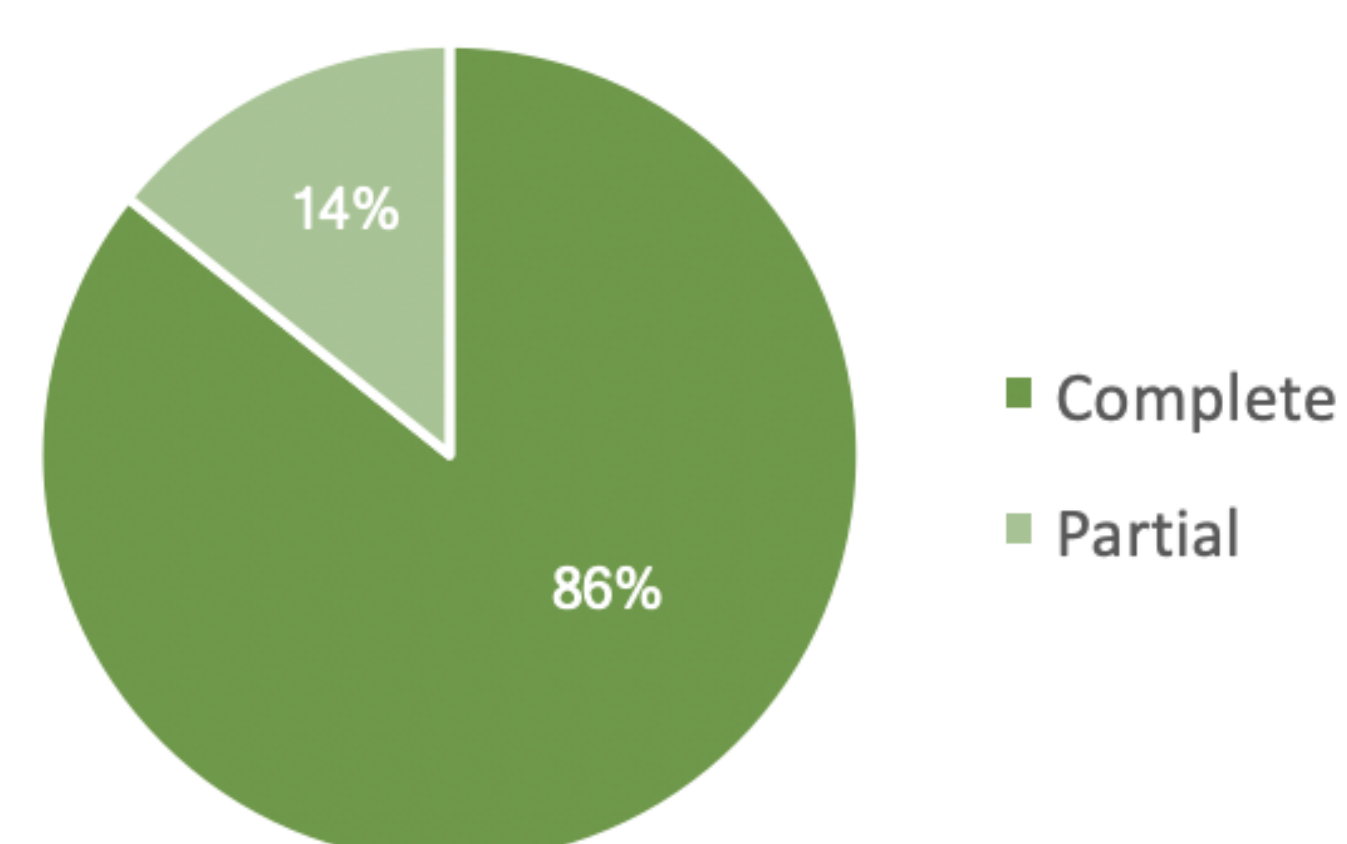


Figure 1 - 100% of patients experience some level of pain relief from the anesthetic injections

Intraoperative Findings

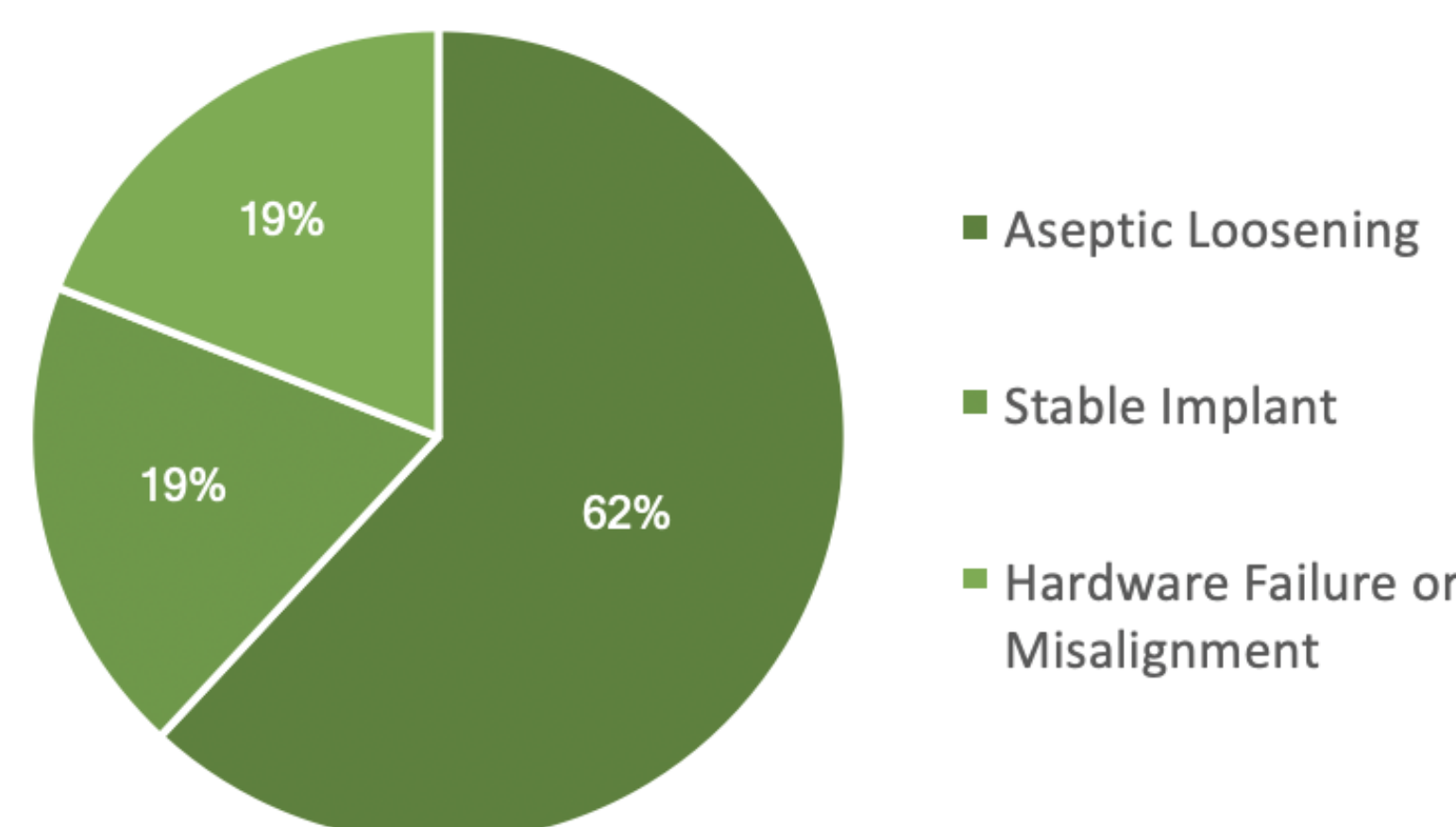


Figure 2 - Our hypothesized leading cause for revision of “Aseptic Loosening” occurred in 13 of the 21 patients

Imaging Matching to Intraoperative Findings

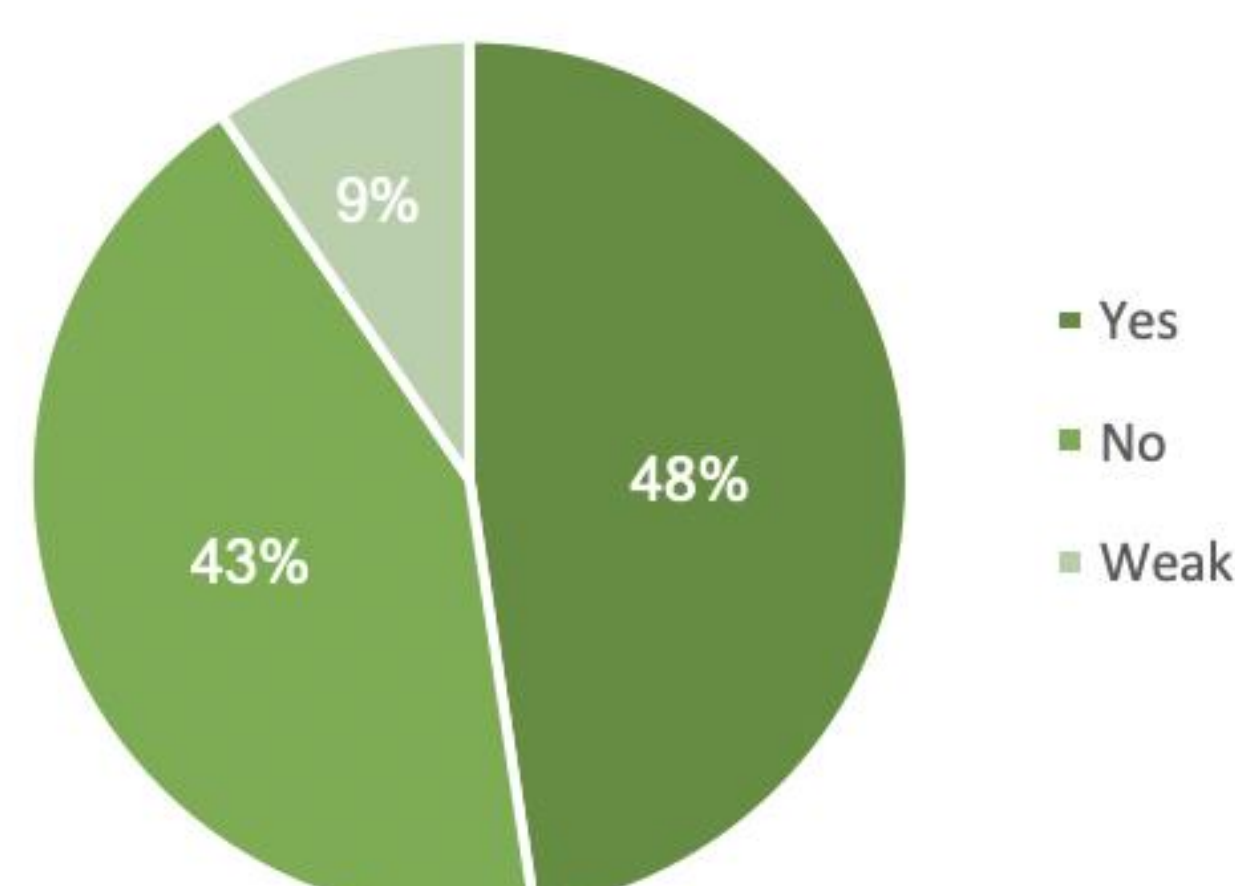


Figure 3 - Imaging correlated with intraoperative findings 48% of the time. This included negative results of no notable findings on imaging and a stable implant. Weak predictors were those that indicated aseptic loosening was only “possible” on radiology review and not strongly indicative of it

## Conclusions

- Male and female populations appeared to be generally similar in their demographics
- Prior revision history was relatively rare
- Anesthetic injections appear to be effectively ruled in with a positive “Lidocaine Challenge”
- Other causes of painful TKA and a means for revision appear to be difficult to effectively rule out by a “Lidocaine Challenge”
- Imaging alone was inconsistent in predicting intraoperative findings of TKA revisions

## Limitations

- The sample size at this point is small
- The patient population is relatively homogenous
- Pain relief is a subjective measure of the outcome
- Recording of the level of pain relief is variable in its wording and its duration
- Imaging modalities ordered for each patient can vary but x-ray is always ordered
- Intraoperative findings varied
- Interpretations of imaging can be challenging for review due to the subtle nature of findings
- Medical records and prior imaging from other institutions may not have been available
- Due to the ongoing nature of this project, full statistical analysis has not yet been completed

## Future Studies

- Further standardization of an imaging and injection combination could be performed to identify the best way to diagnose a TKA revision
- Comparing how effective imaging modalities are at identifying intraoperative findings in TKA revision
- Determining if certain causes for TKA revision do not lead to pain relief after anesthetic injection

## References

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