Total Knee Arthroplasty Outcomes Following Anterior Cruciate Ligament Reconstruction

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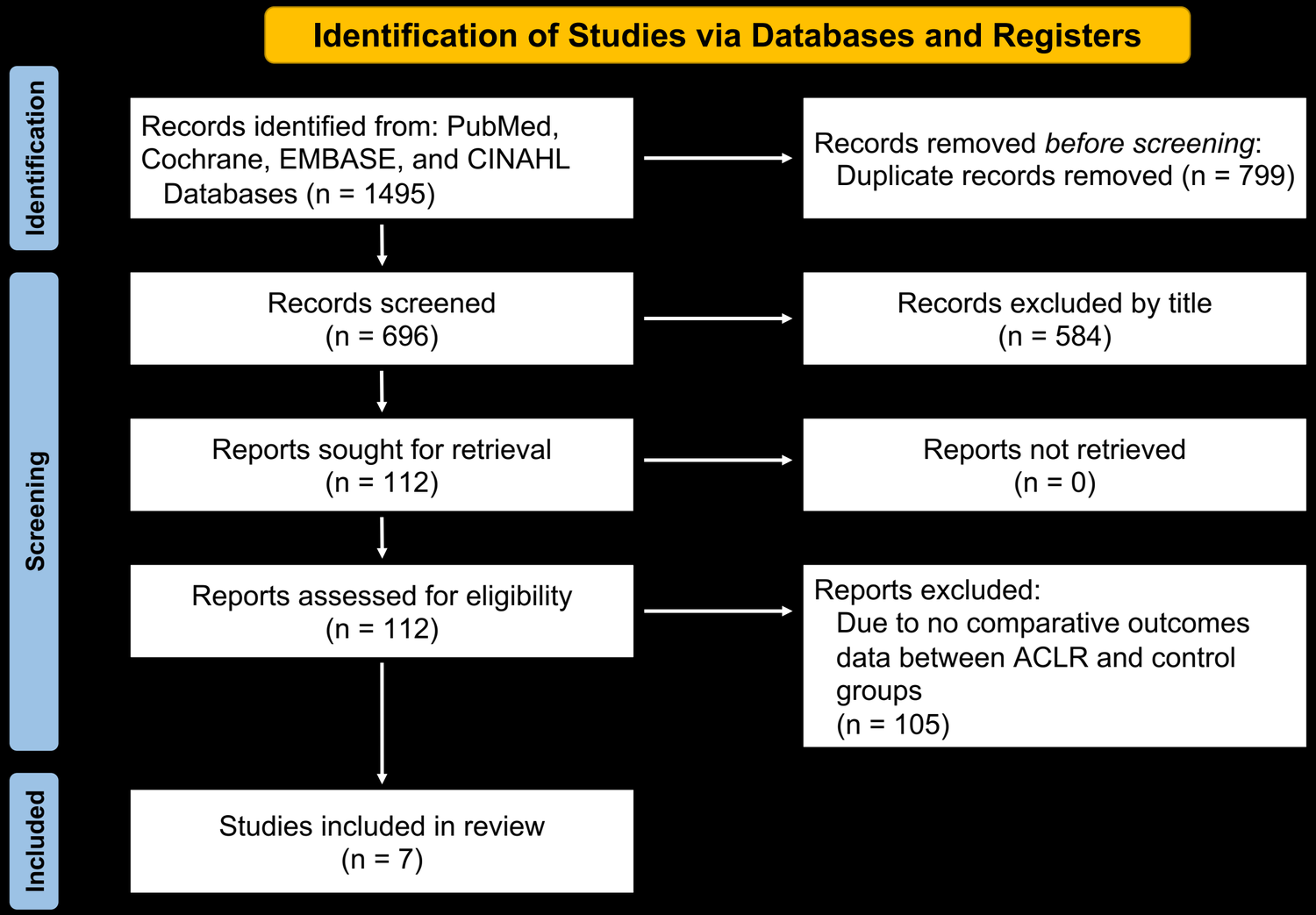
Introduction

- As the incidence of knee injuries increases in the U.S., the number of anterior cruciate ligament reconstructions and revisions (ACLR) also increases.[1]
- History of ACLR greatly increases the risk of knee osteoarthritis and eventual total knee arthroplasty (TKA).[2,3]
- Current literature on TKA following ACLR is scarce and mostly limited in the number of patients and to single institutions.
- The purpose of this review is to compare the outcomes of TKAs following previous ACLR versus no previous ACLR, and to determine if previous ACLR has any effect.

Methods

- Systematic review conducted using research databases - PubMed, Cochrane, EMBASE, and CINAHL.
- Retrospective studies comparing outcomes data for patients with TKA following an ipsilateral ACLR vs no previous ACLR (control group) were included.
- Preoperative demographics, intraoperative data, and postoperative outcomes data was collected.
- Functional outcomes data compared amongst the two groups of patients and statistical analysis was performed utilizing Review Manager (p-value of 0.05).

Figure 1. PRISMA Flow Diagram[4]



Results

- Seven retrospective case-control studies were included in final analysis.[5-11]
- 622 patients (253 males, 181 females, 188 unspecified) with a history of previous ACLR before TKA were compared to 1026 matched controls.
- Chi^2 tests revealed no significant differences in intervention effects across any of the studies for wound complications, revisions, infections, reoperation for any reason, Knee Society Knee Scores (KSKS), or Knee Society Function Scores (KSFS) ($p = 0.25, 0.57, 0.50, 0.26, 0.35, 0.08$, respectively).
- Z-tests for these same outcomes revealed no significant differences between the ACLR and control groups ($p = 0.08, 0.62, 0.15, 0.12, 0.33, 0.97$, respectively).
- Mean operative time of TKA was 97.34 minutes in patients with previous ACLR and 89.15 minutes in patients with no previous ACLR ($p = <0.0001$).

Table 1. Comparison of Complication Rates between ACLR and Control Groups

Complication	Incidence Rate in ACLR Group (%)	Incidence Rate in Control Group (%)	Chi^2 test, p-value	Z-test, p-value
Wound complications	5.88	4.83	0.25	0.08
Revisions	3.70	3.07	0.57	0.62
Infections	2.12	1.46	0.50	0.15
Reoperation for any reason	11.11	10.53	0.26	0.12

Table 2. Comparison of Outcomes between ACLR and Control Groups

Outcomes Measurement	ACLR Group	Control Group	Chi^2 test, p-value	Z-test, p-value
Knee Society Knee Score	89.44	90.47	0.35	0.33
Knee Society Function Score	89.21	88.13	0.08	0.97
Mean Operative Time	97.34 min	89.15 min	N/A	<0.0001

Limitations and Future Research

- Still a lack of published data on outcomes involving TKA following ACLR compared to TKA without previous ACLR.
- Existing data also lacks in consistency between outcome measurements used.
- Further research should be conducted with matched controls using a broader range of functional scores to compare between studies.
- Future work could include analyzing outcomes of TKA following any previous knee surgery, not just ACLR.

Conclusions

- Functional outcomes scores of KSKS and KSFS following TKA were not significantly different between the ACLR and control groups.
- However, there was a greater mean operative time in patients with previous ACLR.
- Despite the longer operative time, TKA proves to be safe and effective in patients with previous ACLR with no statistically significant greater risk of wound complications, revisions, infections, or reoperation for any reason.
- More research should be conducted with matched controls using a broader range of functional scores to compare between studies.

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