

# A Systematic Analysis of Lumbar Interbody Fusion Terminology

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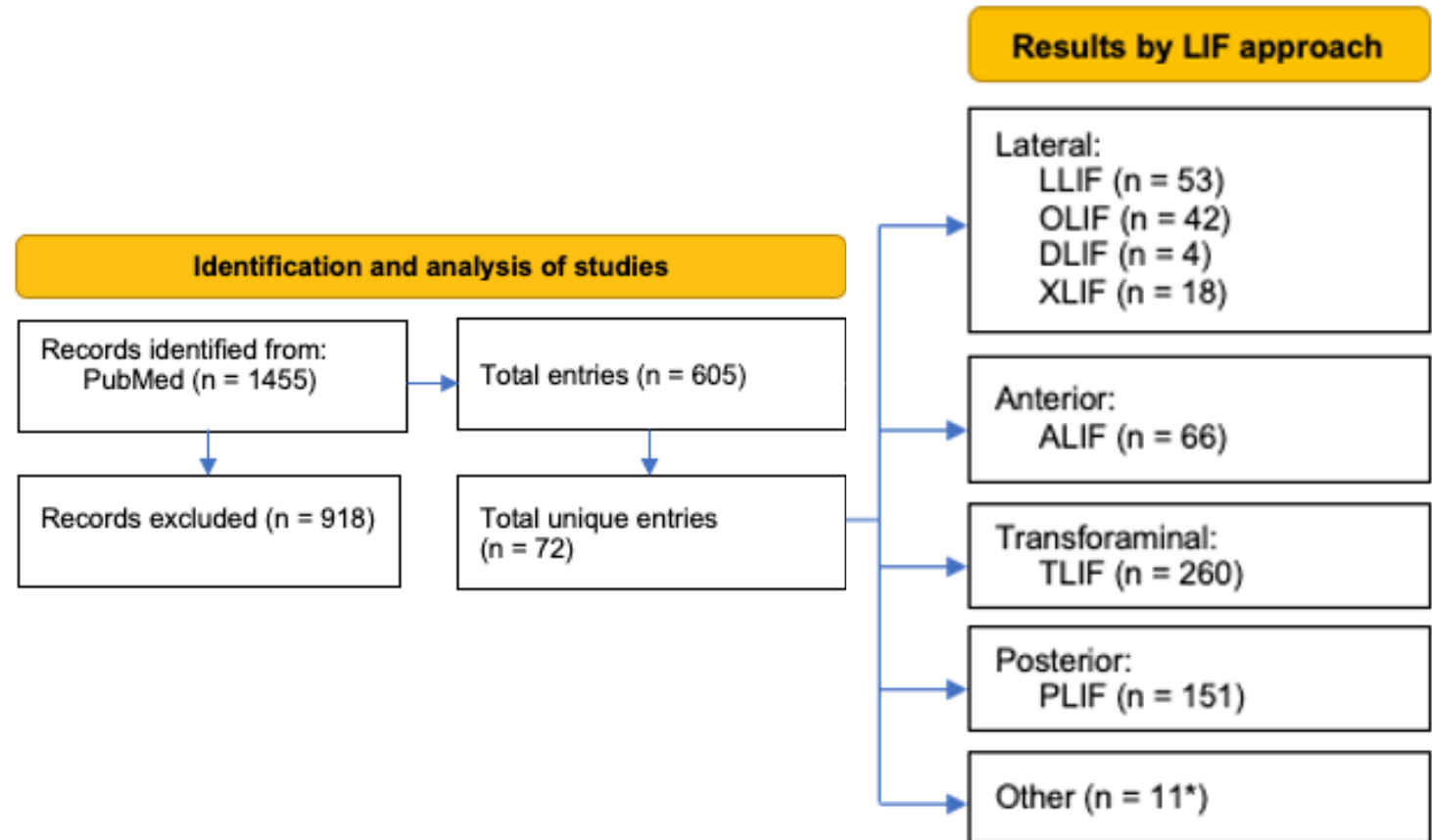


# Introduction

- ▶ Lumbar interbody fusion (LIF) techniques have seen impressive innovation in recent years, leading to an expansion of the LIF lexicon to reference these techniques
- ▶ Spine surgery community currently lacks a systematized communication system for LIF terminology
- ▶ Newer LIF terms frequently offer a slight descriptive advantage compared to traditional nomenclature and create more ambiguity
  - E.g., Terms such as extreme (XLIF), oblique (OLIF), and direct (DLIF) lumbar interbody fusion are used more loosely and confuse surgeons and researchers.
- ▶ **Aim of study:**
  - **Systematically analyze current LIF nomenclature in the literature to understand the current trends of LIF terminology and the degree of heterogeneity**
  - **This study may lay the groundwork for future LIF reporting guidelines**

# Methods

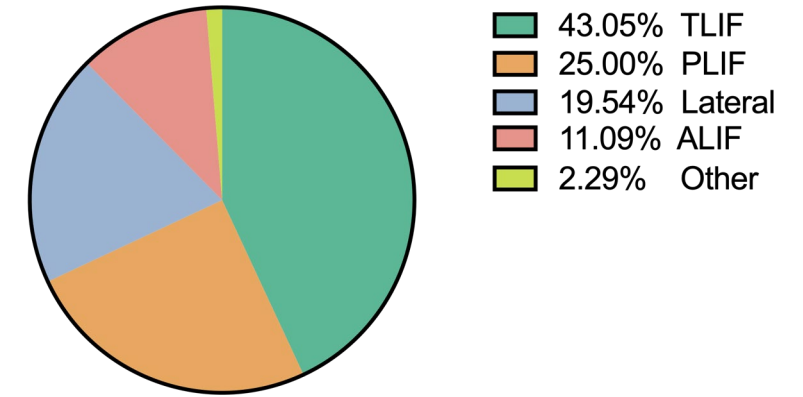
- ▶ Comprehensive query conducted through PubMed database
  - ▶ Keyword combination: “lumbar fusion OR lumbar interbody fusion”
- ▶ Exclusion criteria:
  - Non-English articles or articles written before the year 2017
  - Non-LIF procedures (e.g., thoracic or cervical interbody fusions)
  - Generalized terminology lacking sufficient information on the surgical approach
  - LIF techniques that are no longer mainstream (i.e., axiaLIF, CoFlex)
  - Systematic reviews



# Results

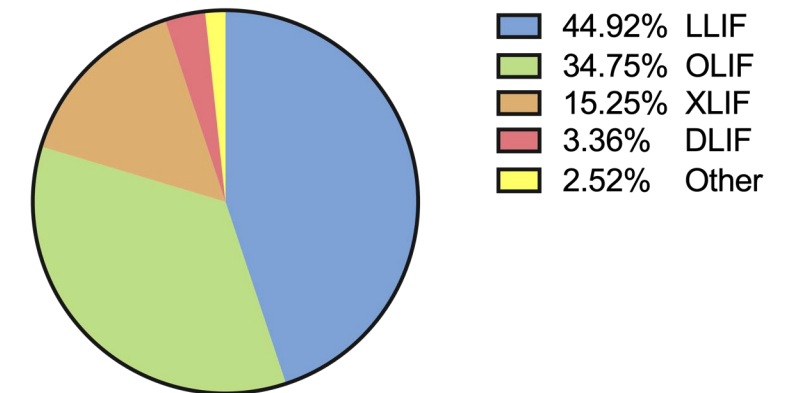
- ▶ Transforaminal approaches were described in 25 unique ways
  - MIS/MI-TLIF (31.4%, 80/255) and Wilste TLIF (1%, 2/255) both reference a paramedian approach
- ▶ Lateral approaches had 18 unique terms with a high degree of redundancy
  - OLIF/oblique (44.5%, 53/119) and ATP-LLIF/anterior-to-psoas (3.4%, 4/119) both referenced the same technique
  - DLIF/direct (3.4%, 4/119), XLIF/extreme (15.1%, 18/119), and TP-LLIF/transpsoas (7.6%, 9/119) all referenced procedures with negligible differences
- ▶ Anterior approaches had the lowest heterogeneity with eight unique terms
- ▶ Lumbosacral fusions contained notable inconsistencies
  - LD-ALIF (lateral decubitus), ATP-LLIF, and OLIF were all used and defined differently for L5-S1 fusions

Fig 1. Analysis of results by approach



Total=604

Fig 2. Analysis of lateral approach results



Total=118

# Results

- Total of 42 unique prefixes/suffixes overlapped in their usage

**Table 1. Unique Prefixes/Suffixes Describing Same Approach**

<b>Approach</b>	<b>Prefixes/Suffixes</b>
<i>Minimally invasive</i>	MI/minimally invasive (14.4%, 23/160)
	MIS/minimally invasive surgery (38.1%, 61/160)
	MISS/minimally invasive spinal surgery (0.6%, 1/160)
<i>Open</i>	O/open (12.5%, 20/160)
	CO/conventional open (1.3%, 2/160)
	TO/traditional open (1.3%, 2/160)
<i>Endoscopic</i>	Endo (0.6%, 1/160)
	Endoscopic-assisted (1.3%, 2/160)
	PE/percutaneous endoscopic (1.9%, 3/160)
<i>Robotic</i>	Rom/robotic-assisted, minimally invasive (0.6%, 1/160)
	Robot (1.3%, 2/160)

# Discussion

- ▶ To our knowledge, this is the first systematic review of LIF nomenclature
- ▶ This review showed a wide array of LIF terminology
  - 72 unique ways to describe LIF
  - 42 unique modifying prefixes/suffixes
- ▶ This review also revealed considerable redundancy among LIF terms with the following respectively referencing the same approach
  - ‘OLIF’, ‘Pre psoas’, and ‘ATP’
  - ‘DLIF’, ‘XLIF’, and ‘TP-LLIF’
  - ‘MIS-TLIF’, ‘Wilste’, and ‘Paramedian-approach’
- ▶ Limitations:
  - Captured only Pub-Med-indexed research articles over the past five years
  - There is likely unaccounted for LIF terminology, suggesting that the degree of LIF terms is more than reported in this review

# Conclusion

- ▶ Current LIF nomenclature contains many unique terms that are inconsistently defined, redundant, or ambiguous
  - This may unintentionally hamper communication and risks diminished validity of future research
- ▶ Future Studies
  - A standardized reporting system for LIF could enhance communication in the spine surgery community
  - This study lays the groundwork for future development of LIF reporting guidelines



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