PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where the item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Page 1: The title explicitly defines the study as a "Systematic Review".
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 5: Structured into Background, Objective, Methods, Results, and Conclusion.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 6: Discusses LDH morbidity (60–80%) and the "revolution" of minimally invasive surgery.
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 6: The purpose is to synthesize evidence (up to 2025) comparing TELD and IELD.
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 7: Lists criteria including RCTs/Cohort studies and patients aged 18–80.
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 7: Lists PubMed, Embase,

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			Cochrane, and Web of Science.
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 7: Keywords include "TELD," "IELD," and "lumbar disc herniation".
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 7: Two independent reviewers performed study selection.
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Page 7: Independent extraction with a third senior author for disagreements.
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 7: Outcomes defined as clinical features (VAS, ODI) and complications.
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Page 7: MRI-confirmed LDH and patient demographics were sought.
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 7: Newcastle-Ottawa Scale (NOS) and Cochrane Risk of Bias tool were used.
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Page 10: Uses

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			success rates, VAS pain scores, and ODI functional scores.
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 7: Conducted per PRISMA 2020 statement.
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Page 7: Data extraction performed by independent reviewers.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Page 15+: Utilizes Table 1 (clinical features) and Table 2 (quality assessment).
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 12: Narrative synthesis was used as heterogeneity precluded meta-analysis.
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Not applicable: Quantitative pooling was not performed.
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Not applicable: Quantitative pooling was not performed.
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Page 12: Limitations note potential bias from English-language restrictions.

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Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Not reported: Formal GRADE assessment was not conducted.
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 9 & Figure 2: 1,055 records identified; 31 studies included.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Page 9: Explains 57 reports were excluded for small sample size or lack of comparison.
Study characteristics	17	Cite each included study and present its characteristics.	Page 15 (Table 1): Summarizes approach, anesthesia, and recovery times.
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Page 9 & Table 2: Reports the average NOS score of 7/9 for included cohort studies.
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimates and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Page 15 (Table 1): Presents re-herniation rates and safety profiles per technique.
Results of	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Page 10: Success rates

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syntheses			(85–95%) summarized for 5,873 patients.
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Page 10: Narrative synthesis confirms safety and cost-effectiveness ($6,800–$7,100/QALY).
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Not applicable: No meta-analysis conducted.
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Not applicable: No meta-analysis conducted.
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Not reported
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Not reported
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 12: Results interpreted as showing endoscopic superiority for tissue preservation.
	23b	Discuss any limitations of the evidence included in the review.	Page 12: Discusses limitations like the database scope and sample size floor (n=20).
	23c	Discuss any limitations of the review processes used.	Page 12: Acknowledges lack of

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			prospective PROSPERO registration.
	23d	Discuss implications of the results for practice, policy, and future research.	Page 13: Recommends future 5–10-year long-term follow-up and robotic navigation.
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 5 & Page 7: Explicitly states "Not prospectively registered".
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Page 5 & Page 7: Explicitly states "Not prospectively registered".
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable. The review was not registered.
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 14: Declares no specific grant received from funding agencies.
Competing interests	26	Declare any competing interests of review authors.	Page 14: Authors declare no competing interests or commercial conflicts.
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Page 14: Confirms all generated data are included in

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			the article.