Supplemental Material I

- Details on data collection and intervention administration

Document:
Visual Analog Scale (VAS) for Self-Assessment of Pain Intensity
Study Title/Number:
Subject ID:
Visit:
Date of Assessment:
Instructions: Dear subject, please make a mark (e.g., "X" or "|") on the 10-centimeter line below to indicate the average pain intensity you have experienced in the past 24 hours. The left end of the line represents "No pain" (0 points), and the right end represents "The most intense pain you can imagine" (10 points).
Pain Visual Analog Scale (VAS)

疼痛视觉模拟评分（VAS）

(No pain) (Most intense pain)
Scoring Criteria (For research staff reference):

- **0 points:** No pain.
- **1-3 points (Mild pain):** Pain does not interfere with daily life and can be ignored.
- **4-6 points (Moderate pain):** Pain affects concentration and interferes with work or sleep.
- **7-9 points (Severe pain):** Pain causes disability and an inability to concentrate.
- **10 points:** The most intense pain imaginable.

Final VAS Score (To be completed by research staff): _____ . _____ points (Measure the distance from the "0 cm" starting point to the subject's mark, precise to the millimeter, e.g., "5.2 points").
Research Staff Signature: _____

Document:

Oswestry Disability Index (ODI) Questionnaire

Study Title/Number: Subject ID: Visit: Date of Assessment:

Instructions: Dear subject, This questionnaire is designed to help us understand how your back pain (or leg pain) affects your daily life. Please read each section and check the box " √ " next to the statement that best describes your situation today. You should choose only one answer for each section. If you are unable to perform an activity for reasons unrelated to your pain, please try to estimate whether you could do it if you did not have the pain.

Section 1: Pain Intensity

☐ 0. I have no pain at the moment.

☐ 1. The pain is very mild at the moment.

☐ 2. I have moderate pain at the moment.

☐ 3. I have severe pain at the moment.

☐ 4. I have very severe pain at the moment.

☐ 5. I have the worst pain imaginable at the moment.

Section 2: Personal Care (e.g., washing, dressing)

☐ 0. I can look after myself normally without causing extra pain.

☐ 1. I can look after myself normally, but it causes extra pain.

☐ 2. It is painful to look after myself, and I am slow and careful.

☐ 3. I need some help but can manage most of my personal care.

☐ 4. I need help every day for most aspects of personal care.

☐ 5. I cannot dress myself, wash with difficulty, and stay in bed.

Section 3: Lifting

☐ 0. I can lift heavy weights without extra pain.

☐ 1. I can lift heavy weights, but it causes extra pain.

☐ 2. Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned (e.g., on a table).

☐ 3. Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned.

☐ 4. I can lift only very light objects.

☐ 5. I cannot lift or carry anything at all.

Section 4: Walking

☐ 0. Pain does not prevent me from walking any distance.

☐ 1. Pain prevents me from walking more than 1 kilometer.

☐ 2. Pain prevents me from walking more than 500 meters.

☐ 3. Pain prevents me from walking more than 100 meters.

☐ 4. I can only walk using a stick or crutches.

☐ 5. I am mostly confined to bed and can only shuffle to the bathroom.

Section 5: Sitting (on a standard chair)

☐ 0. I can sit in any chair for as long as I want.

☐ 1. I can sit in any chair, but not for too long.

☐ 2. Pain prevents me from sitting for more than 1 hour.

☐ 3. Pain prevents me from sitting for more than 30 minutes.

☐ 4. Pain prevents me from sitting for more than 10 minutes.

☐ 5. Pain prevents me from sitting at all.

Section 6: Standing

☐ 0. I can stand for as long as I want without extra pain.

☐ 1. I can stand for as long as I want, but it gives me extra pain.

☐ 2. Pain prevents me from standing for more than 1 hour.

☐ 3. Pain prevents me from standing for more than 30 minutes.

☐ 4. Pain prevents me from standing for more than 10 minutes.

☐ 5. Pain prevents me from standing at all.

Section 7: Sleeping

☐ 0. My sleep is never disturbed by pain.

☐ 1. My sleep is occasionally disturbed by pain.

☐ 2. Because of pain, I have less than 6 hours of sleep.

☐ 3. Because of pain, I have less than 4 hours of sleep.

☐ 4. Because of pain, I have less than 2 hours of sleep.

☐ 5. Pain prevents me from sleeping at all.

Section 8: Sex Life (Optional - may skip, but please note)

☐ 0. My sex life is normal and causes no extra pain.

☐ 1. My sex life is normal but causes some extra pain.

☐ 2. My sex life is nearly normal but is very painful.

☐ 3. My sex life is severely restricted by pain.

☐ 4. My sex life is almost absent because of pain.

☐ 5. Pain prevents any sex life at all and causes extra distress.

Section 9: Social Life

☐ 0. My social life is normal and does not increase my pain.

☐ 1. My social life is normal but increases the level of pain.

☐ 2. Pain has no significant effect on my social life apart from limiting more energetic activities (e.g., sports).

☐ 3. Pain has restricted my social life, and I do not go out as often.

☐ 4. Pain has restricted my social life to my home.

☐ 5. I have no social life because of pain.

Section 10: Traveling (Getting around)

☐ 0. I can travel anywhere without pain.

☐ 1. I can travel anywhere, but it gives me extra pain.

☐ 2. Pain is bad, but I can manage journeys of over two hours.

☐ 3. Pain restricts me to journeys of less than one hour.

☐ 4. Pain restricts me to short necessary journeys of less than 30 minutes.

☐ 5. Pain prevents me from traveling except for hospital visits.

(To be completed by research staff)

Scoring: Score for each section (0-5 points):

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___ 8. ___ 9. ___ 10. ___

Total Score: _____ points

Disability Index Percentage: (Total Score / (Number of questions answered * 5)) × 100% = _____ %

(Note: If all 10 sections are answered, the denominator is 50. If any section is not answered,

the denominator is "Number of answered sections × 5")

Disability Classification (For reference):

0%-20%: Minimal Disability

21%-40%: Moderate Disability

41%-60%: Severe Disability

61%-80%: Crippled

81%-100%: Bed-bound or exaggerating symptoms.

Research Staff Signature: _____

Document:
SF-36 Health Survey Short Form
Study Title/Number:
Subject ID:
Visit:
Date of Assessment:
Instructions: This questionnaire is designed to understand your views about your health and daily life abilities. Please answer all questions by checking "√" the option that best applies to you based on your actual situation over the *past week*. Choose only one answer for each question.

1. In general, would you say your health is?

☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Poor

2. Compared to one year ago, how would you rate your health in general now?

☐ Much better now than one year ago
☐ Somewhat better now than one year ago
☐ About the same as one year ago
☐ Somewhat worse now than one year ago
☐ Much worse now than one year ago

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

No.	Activity	Limited a lot	Limited a little	Not limited at all
3a	Vigorous activities (e.g., running, lifting heavy objects, strenuous sports)	☐	☐	☐
3b	Moderate activities (e.g., moving a table, vacuuming, playing Taiji)	☐	☐	☐
3c	Lifting or carrying groceries	☐	☐	☐
3d	Climbing several flights of stairs	☐	☐	☐
3e	Climbing one flight of stairs	☐	☐	☐
3f	Bending, kneeling, or stooping	☐	☐	☐
3g	Walking more than 1,500 meters	☐	☐	☐

No.	Activity	Limited a lot	Limited a little	Not limited at all
3h	Walking several hundred meters	☐	☐	☐
3i	Walking one hundred meters	☐	☐	☐
3j	Bathing or dressing yourself	☐	☐	☐

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

		Yes	No
4a.	Cut down on the amount of time you spent on work or other activities	☐	☐
4b.	Accomplished less than you would like	☐	☐
4c.	Were limited in the *kind* of work or other activities	☐	☐
4d.	Had *difficulty* performing the work or other activities (e.g., it took extra effort)	☐	☐

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

		Yes	No
5a.	Cut down on the amount of time you spent on work or other activities	☐	☐
5b.	Accomplished less than you would like	☐	☐
5c.	Didn't do work or other activities as carefully as usual	☐	☐

6. How much bodily pain have you had during the past 4 weeks?

☐ None
☐ Very mild
☐ Mild
☐ Moderate
☐ Severe
☐ Very severe

7. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

☐ Not at all

☐ A little bit
☐ Moderately
☐ Quite a bit
☐ Extremely

8. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

No.	Description	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
8a	...did you feel full of life?	☐	☐	☐	☐	☐	☐
8b	...have you been a nervous person?	☐	☐	☐	☐	☐	☐
8c	...have you felt so down in the dumps that nothing could cheer you up?	☐	☐	☐	☐	☐	☐
8d	...have you felt calm and peaceful?	☐	☐	☐	☐	☐	☐
8e	...did you have a lot of energy?	☐	☐	☐	☐	☐	☐
8f	...have you felt downhearted and depressed?	☐	☐	☐	☐	☐	☐
8g	...did you feel worn out?	☐	☐	☐	☐	☐	☐
8h	...have you been a happy person?	☐	☐	☐	☐	☐	☐
8i	...did you feel tired?	☐	☐	☐	☐	☐	☐

9. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

☐ All of the time

☐ Most of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

10. Please choose the answer that best describes how true or false each of the following statements is for you.

No.	Description	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
10a	I seem to get sick a little easier than other people	☐	☐	☐	☐	☐
10b	I am as healthy as anybody I know	☐	☐	☐	☐	☐
10c	I expect my health to get worse	☐	☐	☐	☐	☐
10d	My health is excellent	☐	☐	☐	☐	☐

(To be completed by research staff)

SF-36 Dimension Scoring Table

Health Dimension	Abbr.	Corresponding Question Numbers	Raw Score	Standardized Score (0-100)
Physical Functioning	PF	3a, 3b, 3c, 3d, 3e, 3f, 3g, 3h, 3i, 3j		
Role Limitations due to Physical Health	RP	4a, 4b, 4c, 4d		
Role Limitations due to Emotional Problems	RE	5a, 5b, 5c		
Energy/Fatigue	VT	8a, 8e, 8g, 8i, 8h*		
Emotional Well-being	MH	8b, 8c, 8d, 8f, 8h*		
Social Functioning	SF	9, 9*		
Bodily Pain	BP	6, 7		

Health Dimension	Abbr.	Corresponding Question Numbers	Raw Score	Standardized Score (0-100)
General Health	GH	1, 10a, 10b, 10c, 10d, 2*		

Note: Scoring for some dimensions requires recalculation or reversal of specific items according to the scoring manual.

Summary Scores:

- Physical Component Summary (PCS): ____
- Mental Component Summary (MCS): ____

Rater Signature: _____

Document:
EQ-5D-5L Health Questionnaire
Study Title/Number:
Subject ID:
Visit:
Date of Assessment:
Instructions: This questionnaire is designed to understand your health status today. Please indicate which statements best describe your own health state **today** by checking the box "√" next to the most appropriate response in each of the following five sections.

Part 1: Health Status Description

Please choose the ONE statement in each group that best describes your health **TODAY**.

No.	Dimension	No Problems	Slight Problems	Moderate Problems	Severe Problems	Unable/Extreme Problems
1	**Mobility** (e.g., walking or moving about)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
2	**Self-Care** (e.g., washing or dressing)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
3	**Usual Activities** (e.g., work, study, housework)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
4	**Pain / Discomfort**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
5	**Anxiety / Depression**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Your health state today is best described by the digits: _____ _____ _____ _____ _____
(Please enter one digit for each dimension, e.g., 1 1 2 3 1)

Part 2: Visual Analogue Scale (EQ-VAS)

We would like to know how good or bad your health is TODAY.
The scale below ranges from 0 to 100.
Please click or mark on the line below to indicate how your health is TODAY.
0 represents the **worst health you can imagine**.

100 represents the **best health you can imagine**.

┼──┼──

0 (Worst imaginable health) 100 (Best imaginable health)

Your mark here: _____

Your overall health score today: _____ points (0 to 100 points)

(To be completed by research staff)

EQ-5D-5L Scoring Sheet

Item	**Result**
Health State Profile	_____ _____ _____ _____ _____ (5-digit code)
Health Utility Index Score	_____ (Calculated based on the Chinese value set)
Health VAS Score	_____ (Score marked by the subject: _____ points)

Research Staff Signature: _____

Document:
Clavien-Dindo Classification of Surgical Complications (Grade III and Above)
Study Title/Number:
Subject ID:
Date of Surgery:
Date of Assessment:
Assessing Physician:
Instructions: This form is used to assess major complications (Grade III and above) occurring in the postoperative period (typically within 30 days). Please select the highest matching grade based on the management of the complication. Check the box " √ " in front of the confirmed grade (based on the highest grade).
Major Complication Grading (Clavien-Dindo Grade ≥ III)

Complication Grade	Definition and Description	Occurred? (Y/N)	Complication Name/Description	Intervention Required
Grade IIIa	Complication requiring surgical, endoscopic, or radiological intervention **not** under general anesthesia. (e.g., puncture drainage under local anesthesia, endoscopic hemostasis).	□		
Grade IIIb	Complication requiring surgical, endoscopic, or radiological intervention **under** general anesthesia. (e.g., re-exploration in the operating room, laparoscopic or open surgery).	□		
Grade IVa	Life-threatening complication (including CNS complications*)	□		

Complication Grade	Definition and Description	Occurred? (Y/N)	Complication Name/Description	Intervention Required
	requiring single-organ support (e.g., dialysis, mechanical ventilation).			
Grade IVb	Life-threatening complication requiring multi-organ support.	☐		
Grade V	Death of the patient.	☐		

**CNS: Central Nervous System*

Complication Details

(To be completed for each complication)

1. **Complication Name:**

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2. **Time of Onset:** Postoperative Day _____
3. **Clinical Manifestations and Diagnostic Basis:**

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4. **Detailed Management Process** (including intervention name, timing, outcome):

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5. **Assessment of Causality to Surgery:** ☐ Directly Related ☐ Possibly Related ☐ Possibly Unrelated ☐ Unable to Determine

---

Assessment Summary

- **Highest Clavien-Dindo Grade:** Grade _____
- **Multiple Complications?** ☐ Yes (Please list): _____ ☐ No
- **Has the complication resolved?** ☐ Yes ☐ No ☐ Unresolved at discharge
- **Did it lead to an unplanned readmission?** ☐ Yes, _____ readmission(s) ☐ No

Assessing Physician Signature: _____

Document:
Reoperation Data Collection Form
Study Title/Number:
Subject ID:
Date of Initial Surgery:
Data Extractor:
Date of Extraction:
Instructions: This form is used to systematically collect data on reoperation events related to the initial surgery from medical records. Please complete the following information based on the medical record documentation.

Part 1: Patient Baseline Information

- **Name of Initial Surgery:**

- **Primary Diagnosis for Initial Surgery:**

- **Date of Discharge (from initial surgery):**

Part 2: Reoperation Event Record

(If multiple reoperations occurred, please duplicate this section for each event)

Item	**Details / Record**
1. Did an unplanned reoperation occur?	☐ Yes (Please continue) ☐ No (Data collection ends)
2. Reoperation Sequence Number	The _____ reoperation
3. Date of Reoperation	____ (Postoperative Day _____ from initial surgery)
4. Primary Reason for Reoperation	☐ Hemorrhage / Hematoma ☐ Infection (superficial/deep) ☐ Anastomotic Leak ☐ Internal Fixation Failure/Displacement ☐ Organ Dysfunction ☐ Ileus ☐ Other (Please specify): _____
5. Name of Reoperation Procedure	_____
6. Nature of Reoperation	☐ Emergency Surgery ☐ Elective Surgery
7. Causality Relationship to Initial Surgery	☐ Directly Related ☐ Possibly Related ☐ Possibly Unrelated

Item	Details / Record
8. Outcome after Reoperation	☐ Recovered ☐ Improved ☐ Not Improved / Required further surgery ☐ Died
Brief Description of Clinical Scenario and Operative Findings:	_____
	_____

Part 3: Data Summary and Calculation

- **Did reoperation occur in this case?** ☐ Yes ☐ No
- **Total number of reoperations in this case:** _____
- **Remarks (if needed):**

Data Verifier Signature: _____

Document: Operative Time Record Form (Skin Incision to Skin Closure)
Study Title/Number:
Subject ID:
Patient Name/Initials:
Date of Surgery:
Recording Nurse/Anesthetist:
Instructions: This form is used to accurately record key surgical time points. Please complete the following times precisely based on the operative and anesthesia records. Use the 24-hour clock format for all times (e.g., 14:05).

Recording of Key Surgical Time Points

No.	Time Point	Definition	Recorded Time (HH:MM)
1	**Time into OR**	Time when patient enters the operating room.	
2	**Anesthesia Start Time**	Time when anesthesia induction begins.	
3	**Surgery Start Time**	Time of skin incision.	
4	**Surgery End Time**	Time when skin closure is completed.	
5	**Anesthesia End Time**	Time when anesthesia is discontinued and patient begins to awaken.	
6	**Time out of OR**	Time when patient leaves the operating room.	

Core Time Calculations (Unit: minutes)

Calculation Item	Formula / Description	Result (Minutes)
Total OR Occupancy Time	(Time out of OR - Time into OR)	
Total Anesthesia Time	(Anesthesia End Time - Anesthesia Start Time)	
Core Operative Time	(Surgery End Time - Surgery Start Time)	

Calculation Item	Formula / Description	Result (Minutes)
(Primary focus of this study)	i.e., Skin-to-skin time.	

Record of Special Circumstances

- [ ] Change of primary surgeon during the operation.
- [ ] Operation paused for non-clinical reasons (e.g., awaiting equipment, frozen section pathology).
- [ ] Surgery involved two or more distinct, independent procedures.

Remarks (Briefly describe any special circumstances affecting operative time):

Recorder Signature: _____

Verifier Signature: _____

Document: Radiation Exposure Data Record Form
Study Title/Number:
Subject ID:
Date of Surgery:
Recorder:
Equipment Model:
Instructions: This form is used to record equipment dosimetry data related to radiation exposure during the surgical procedure. Please accurately complete the form based on the report data displayed on the fluoroscopy equipment screen at the end of the surgery.

Part 1: Overall Radiation Exposure Data

Item	Value	Unit
Total Fluoroscopy Time		minutes (min)
Dose Area Product (DAP)		mGy·cm²
Cumulative Dose (CD)		mGy
Dose Rate		mGy/min

Part 2: Phased Radiation Exposure Record

Surgical Phase	Fluoroscopy Time (min)	DAP (mGy·cm²)	Remarks (e.g., positioning, puncture, catheter placement)
Phase 1			
Phase 2			
Phase 3			
Total			

Part 3: Equipment and Setting Information

Item	Record
Fluoroscopy Equipment Model	☐ C-arm ☐ DSA ☐ Other: _____
Default Acquisition Mode	☐ Low Dose ☐ Standard ☐ High Definition
Pulse Frequency	_____ frames/sec

Item	Record
Average Distance between Surgeon and Tube	☐ <50 cm ☐ 50-100 cm ☐ >100 cm

Part 4: Personnel Protection Record

Personnel	Lead Apron Worn?	Thyroid Shield Worn?	Protective Glasses Worn?
Primary Surgeon	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Assistant Surgeon	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Scrub Nurse	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

Remarks:

Recorder Signature: _____

Document: Length of Hospital Stay and Discharge Status Record Form
Study Title/Number:
Subject ID:
Patient Name/Initials:
Date of Surgery:
Data Extractor:
Date of Extraction:
Instructions: This form is used to extract information related to the length of hospital stay from medical records and to determine if the case meets the "same-day discharge" criteria. Please complete accurately based on admission notes, operative reports, discharge summaries, and nursing records.

Part 1: Key Time Points Record

Time Point	**Date and Time (YYYY-MM-DD HH:MM)**
Admission Time	
Surgery Start Time	
Surgery End Time	
Time out of Operating Room	
First Time Ambulated/Out of Bed	
First Oral Intake Time	
Urinary Catheter Removal Time	(If applicable)
Discharge Time	

Part 2: Length of Stay Calculation and Discharge Status Determination

Calculation Item	**Result**
Total Length of Stay (LOS)	(Discharge Date - Admission Date) = _____ days
Postoperative Length of Stay	(Discharge Date - Surgery Date) = _____ days
Does this case qualify as "Same-Day Discharge" for this study? (Typically defined as discharge on the day of surgery	☐ Yes (Please complete Section 3A below) ☐ No (Please proceed to Section

Calculation Item	Result
without an overnight stay)	3B below)

Part 3A: Same-Day Discharge Details *(Complete if "Yes" above)*

Item	Details
Time from surgery end to discharge	_____ hours _____ minutes
Discharge pathway	☐ Directly from Recovery Room ☐ from Day Ward ☐ from Regular Ward
Were vital signs stable at discharge?	☐ Yes ☐ No
Did discharge meet predefined same-day surgery discharge criteria?	☐ Fully Met ☐ Partially Met, but deemed safe by physician ☐ Not Met
Discharge destination	☐ Home ☐ Transferred to other facility (Please specify): _____

Part 3B: Non-Same-Day Discharge Details *(Complete if "No" above)*

Item	Details
Primary reason for delayed discharge (Check all that apply)	☐ Medical Reasons (e.g., pain, nausea/vomiting, fever) ☐ Surgery-Related Reasons (e.g., bleeding, complications) ☐ Non-Medical Reasons (e.g., awaiting family, transportation, social factors) ☐ Planned admission (not a candidate for same-day surgery)
Was delayed discharge related to a complication?	☐ Yes (Complication: _____) ☐ No

Part 4: Data Summary

- **Discharge status for this case:** ☐ Same-Day Discharge ☐ Non-Same-Day Discharge
- **Remarks** (Other relevant information):

Data Verifier Signature: _____

Document: Patient Satisfaction Survey Questionnaire
Study Title/Number:
Subject ID:
Visit Point: (e.g., 1 Week Postoperatively)
Date of Assessment:
Instructions: Dear Sir/Madam, Thank you for participating in this survey. This questionnaire is designed to understand your satisfaction with the recent medical care you received. Please indicate your experience by checking "√" the option that best matches your true feelings. Your feedback is crucial for helping us improve our services. Thank you for your cooperation!

Part 1: Overall Satisfaction

1. Overall, how satisfied are you with the medical service you received?

- ☐ Very Dissatisfied
- ☐ Dissatisfied
- ☐ Neutral
- ☐ Satisfied
- ☐ Very Satisfied

Part 2: Satisfaction with Specific Aspects *(Please select one answer for each row)*

No.	Item	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
2	**Attitude of Medical Staff** (e.g., courtesy, respect, patience)	☐	☐	☐	☐	☐
3	**Professional Competence of Medical Staff** (e.g., skilled procedures, clear explanations)	☐	☐	☐	☐	☐
4	**Waiting Times** (e.g., for consultation, tests, surgery scheduling)	☐	☐	☐	☐	☐
5	**Hospital Environment & Facilities** (e.g., cleanliness, quietness, comfort)	☐	☐	☐	☐	☐

No.	Item	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
6	**Pain Management** (e.g., Was your pain promptly and effectively controlled?)	☐	☐	☐	☐	☐
7	**Information & Communication** (e.g., regarding condition, treatment options, risks)	☐	☐	☐	☐	☐
8	**Satisfaction with Treatment Outcome**	☐	☐	☐	☐	☐

Part 3: Willingness and Suggestions

9. How likely are you to recommend our services to friends or family?

- ☐ Very Unlikely
- ☐ Unlikely
- ☐ Uncertain
- ☐ Likely
- ☐ Very Likely

10. Please provide any comments or suggestions to help us improve. We value your feedback:

_____

_____

(To be completed by research staff)

Satisfaction Score Summary

Dimension	Corresponding Question Numbers	Average Score (1-5 points)
Overall Satisfaction	1, 9	
Process Satisfaction	2, 3, 4, 5, 7	
Outcome Satisfaction	6, 8	
Total / Overall Average Score	(Average of all items)	

Document: Satisfaction with Life Scale (SWLS) - Healthcare Staff Version
Study Number:
Healthcare Staff ID:
(For privacy protection, please do not write your name)
Department/Position:
Date of Assessment:
Instructions: Dear colleague, Thank you for your participation! This questionnaire aims to understand your current overall feelings about life, to promote the physical and mental health and professional well-being of healthcare staff. Please read the following five statements and indicate the extent to which you agree or disagree with each, based on your current true feelings, by checking "√" the most appropriate option. There are no right or wrong answers. The results will be kept strictly confidential and used for aggregate analysis only. Thank you for your participation.
Scale Content

No.	Statement	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	In most ways my life is close to my ideal.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
2	The conditions of my life are excellent.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
3	I am satisfied with my life.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
4	So far I have gotten the important things I want in life.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

No.	Statement	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
5	If I could live my life over, I would change almost nothing.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

(For research staff use)

Scoring and Interpretation

Item	Details
Total Scale Score	_____ points (Sum of scores from all 5 items, range 5-35)
Satisfaction Level	☐ 5-9: Extremely Dissatisfied ☐ 10-14: Dissatisfied ☐ 15-19: Slightly Dissatisfied ☐ 20: Neutral ☐ 21-25: Slightly Satisfied ☐ 26-30: Satisfied ☐ 31-35: Extremely Satisfied

Brief Notes:

Research Staff Signature: _____

Maslach Burnout Inventory™

MBI Forms and Scoring Keys:

Human Services - MBI-HSS
Medical Personnel - MBI-HSS (MP)
Educators - MBI-ES
General - MBI-GS
Students - MBI-GS (S)

- The Maslach Burnout Inventory (MBI) is a copyrighted instrument and is not reproduced here. Researchers may obtain the official version from the copyright holder.

Supplementary Material II

- Informed Consent Form

ZIBO FIRST HOSPITAL

Patient Consent Form

Form Number：F-730217-003A Version number：2024-08-B

Dear Participant,

We're inviting you to take part in the clinical study titled "Clinical Research on Ultrasound-Assisted Transforaminal Endoscopic Lumbar Discectomy for Lumbar Disc Herniation," approved by ZIBO First Hospital . This study will be conducted at ZIBO First Hospital, with an estimated 80 volunteers participating. The study has been reviewed and approved by the Ethics Committee of ZIBO First Hospital.

Study Name and Introduction

Lumbar Disc Herniation (LDH) is a common spinal disorder that often leads to severe low back pain and lower limb neurological symptoms, greatly impacting patients' quality of life and ability to work. Although conservative treatment can alleviate symptoms in many cases, surgical intervention remains the primary option for patients with significant nerve compression or ineffective conservative treatment. Traditional open surgery can effectively relieve nerve compression but is associated with high trauma, long recovery times, and a high risk of complications, which has raised concerns for both surgeons and patients over time.

In recent years, the use of endoscopic spinal technology has really cut down on surgery-related trauma. Compared to traditional surgery, endoscopic discectomy offers smaller incisions, less muscle dissection, and faster recovery for patients. However, finding the exact spot of the lesion during surgery is still a big challenge due to the complex anatomical structure of the surgical area.

This study aims to evaluate the effectiveness of ultrasound guidance versus fluoroscopy guidance in endoscopic spinal surgery. By comparing these two guidance methods, we hope to provide a more scientific basis for clinical practice to help choose the most suitable surgical plan for patients. The study will focus on indicators such as patients' quality of life, postoperative pain, and complication rates, striving to provide a safer and more effective treatment option for single-segment LDH patients.

The research team consists of several experienced spinal surgeons, pain specialists, and researchers. The information you provide will be kept strictly confidential and used only for relevant analyses in this study. We encourage you to carefully read the informed consent document before participating in this study and to communicate with the research team at any time to address your questions and concerns.

Objectives and Goals

The main goal of this study is to see how effective and safe ultrasound guidance is compared to fluoroscopy guidance in percutaneous endoscopic discectomy. Specific goals include:

1. Safety Assessment: Regular monitoring and evaluation of participants will be conducted to gather info on any side effects that might come from the different guidance methods, thereby determining their safety profile. This includes but is not limited to any discomfort during surgery, postoperative complications (such as infections, bleeding, etc.), and abnormal signs or laboratory results during the recovery period. We will focus on various indicators of postoperative recovery to ensure participants' health and safety.

2. Tolerance Assessment: Evaluate patients' tolerance to different guidance techniques during endoscopic spinal surgery, including intraoperative pain, anesthesia reactions, and postoperative recovery. Tolerance is an important factor affecting patients' surgical experience and postoperative recovery. Through regular follow-ups with participants, we hope to clearly understand the impact of different guidance methods on overall patient tolerance.

3. Preliminary Effectiveness Assessment: By evaluating patients' health status, pain scores, functional assessments, and quality of life, we want to get a preliminary idea of how well the treatments work after endoscopic spinal surgery. We will use standardized assessment tools, such as Visual Analog Scale (VAS) and Oswestry Disability Index (ODI), to quantify patients' pain and functional status, providing a basis for subsequent analyses.

4. Dose Exploration: Determine the optimal application methods of different guidance techniques in endoscopic spinal surgery to achieve the best therapeutic effects while minimizing potential risks. We will analyze the impact of different guidance techniques on surgical duration, blood loss, and postoperative recovery time, providing references for future clinical applications.

5. Pharmacokinetic and Pharmacodynamic Analysis: Although this study primarily focuses on comparing surgical guidance techniques, we will also pay attention to the pharmacokinetic and pharmacodynamic characteristics of anesthetic drugs used during surgery, analyzing their application effects and patient responses under different guidance methods. This analysis will help us gain a more comprehensive understanding of drug application during the surgical process to improve patient safety and comfort.

Through this study, we hope to clarify the relative advantages of ultrasound guidance versus fluoroscopy guidance in percutaneous endoscopic discectomy, aiming to provide scientific guidance for clinical physicians in related fields and lay the foundation for future research. We hope your participation can make a positive contribution to medical research and provide better support and assurance for your treatment process.

Study Process

1. Participant Selection

This study will recruit patients with single-segment lumbar disc herniation (LDH) who are treated at our hospital. Participants must meet the following inclusion criteria:

① Aged between 18 and 75 years;

② Diagnosed with single-segment lumbar disc herniation, confirmed by imaging studies (such as MRI or CT);

③ Ineffective conservative treatment, with a physician recommending endoscopic lumbar discectomy;

④ Able to understand the study content and sign the informed consent form.

Exclusion criteria include:

① Presence of severe systemic diseases (such as heart disease, liver or kidney failure, etc.);

② Severe mental illness or cognitive impairment that prevents understanding of the study content;

③ Recent history of other related surgeries or treatments;

④ Pregnant or breastfeeding women.

During the screening process, the research team will conduct detailed medical history inquiries and physical examinations for all potential participants to ensure they meet the above criteria. All participants will undergo thorough preoperative assessments, including imaging studies, laboratory tests, and anesthesia evaluations before enrollment.

2. Grouping

Participants will be randomly assigned to two groups, with 40 cases in each group:

Fluoroscopy Group: Undergo endoscopic surgery guided by traditional C-arm fluoroscopy.

Ultrasound Group: Undergo ultrasound-guided surgery to improve accuracy and safety.

Random grouping will be conducted using a computer-generated random number table to ensure the randomness and scientific nature of the grouping. The research team will ensure that participants remain unaware of their group assignments throughout the trial to reduce bias.

3. Specific Steps

3.1 Preoperative Assessment and Preparation

Before surgery, all participants will undergo detailed preoperative assessments, including:

Medical History Collection: Detailed inquiries about the patient's medical history, symptoms, and previous treatments.

Imaging Studies: MRI or CT scans to confirm the location and extent of the lesions.

Laboratory Tests: Including blood routine, liver and kidney function, electrolytes, etc., to assess the patient's overall condition.

Anesthesia Assessment: An anesthesiologist will evaluate the patient to determine the anesthesia plan.

Before surgery, the research team will explain the surgical process, potential risks, and expected outcomes in detail to the participants, ensuring they understand all information. Participants must sign the informed consent form, indicating their agreement to participate in this study.

3.2 Monitoring and Recording During Surgery

The surgery will be performed in a sterile environment, with all participants undergoing endoscopic surgery under general or local anesthesia. The specific steps are as follows:

Positioning: Determine the surgical incision location based on imaging data.

Guidance Method:

Fluoroscopy Group: Use C-arm for real-time imaging guidance to ensure surgical instruments accurately reach the lesion site.

Ultrasound Group: Use color Doppler ultrasound for preoperative localization and real-time guidance monitoring during the puncture to improve positioning accuracy.

Surgical Operation:

Under local anesthesia, insert the endoscope through a small incision to remove the protruding disc tissue.

During the surgery, record the surgical duration, blood loss, and occurrence of complications.

Postoperative Monitoring: After surgery, patients will be transferred to the recovery room for monitoring, observing vital signs and anesthesia recovery.

3.3 Postoperative Follow-up and Assessment

All participants will undergo regular follow-up after surgery, with the follow-up schedule as follows:

1 week postoperatively: Conduct preliminary assessments, including pain scores, activity levels, and monitoring for complications.

1 month postoperatively: Assess quality of life, pain levels, and functional recovery.

2 months postoperatively: Conduct imaging re-examination (such as MRI) to evaluate the effectiveness of disc removal and recurrence.

6. months postoperatively: Reassess quality of life, pain levels, and functional recovery, and collect relevant data.

During each follow-up, the research team will use standardized questionnaires (such as VAS, ODI, etc.) to evaluate participants' pain and quality of life. Additionally, any adverse events and complications will be recorded and addressed accordingly.

3.4 Data Collection and Management

Throughout the study, data from all participants will be systematically collected and managed. Data includes:

Basic demographic information (age, gender, occupation, etc.);

Clinical characteristics (medical history, imaging results, etc.);

Surgical-related data (surgical duration, blood loss, complications, etc.);

Follow-up results (pain scores, quality of life assessments, etc.).

All data will be anonymized to protect participants' privacy. Data management will comply with relevant laws and regulations, ensuring data security and integrity. The research team will regularly audit the data to ensure its accuracy and reliability.

3.5 Ethical Considerations

This study will adhere to the Declaration of Helsinki and relevant ethical guidelines to ensure that participants' rights are fully protected. An ethics committee will be established to review the research protocol and oversee the implementation of the study. All participants must sign an informed consent form, indicating their voluntary participation in this study and understanding the potential risks and benefits.

Through the detailed description of the study process above, we hope to provide clear information to participants, enabling them to make informed choices. At the same time, we also look forward to providing valuable data support for clinical practice through this study.

7. Possible Risks and Discomfort

Before participating in this study, you should know about the possible risks and discomforts. Although we will take all necessary measures to ensure your safety and comfort, any medical procedure may carry certain risks. The following are known and potential risks you may face:

4.1 Surgical-Related Risks

Infection: Despite our use of sterile techniques during surgery, there remains a risk of infection. Infections can happen at the surgery site or even deeper, and in severe cases, may require additional treatment or surgery.

Bleeding: Bleeding may occur during surgery, especially if blood vessels are damaged during the procedure. Bleeding may require blood transfusions or further surgical intervention.

Nerve Injury: During discectomy, there is a risk of inadvertently damaging surrounding nerve structures, which may lead to postoperative sensory abnormalities, limb weakness, or other neurological dysfunctions.

Spinal Cord Injury: Although this is very rare, spinal cord damage may occur during surgery, leading to severe consequences, including paralysis.

Recurrent Disc Herniation: After surgery, the disc may herniate again, leading to symptom recurrence. This may require further treatment or surgery.

Anesthesia-Related Risks: Surgery typically requires general or local anesthesia. Anesthesia may cause discomfort such as nausea, vomiting, headache, or drowsiness. In rare cases, anesthesia may lead to severe allergic reactions or other complications.

4.2 Pain and Discomfort

Postoperative Pain: After surgery, you may experience pain and discomfort. This pain is usually temporary and can be managed with medication, but in some cases, it may persist for a longer duration.

Swelling and Bruising: The surgical site may experience swelling and bruising, which is typically a normal response to surgical trauma. In most cases, this condition will improve over time.

Activity Limitations: During the postoperative recovery period, you may find your activities are limited. This limitation is usually temporary, but in some cases, recovery time may be prolonged.

4.3 Psychological and Emotional Impact

Anxiety and Depression: Undergoing surgery and treatment can cause emotional issues like anxiety and depression. You may feel worried about the surgical outcome or frustrated with the recovery process.

Changes in Body Image: After surgery, you may have a different perception of your body image, especially if there are scars or other visible changes. This change may affect your self-esteem and mental health.

4.4 Other Potential Risks

Allergic Reactions: You may have allergic reactions to anesthetic drugs, disinfectants, or other medications. Such reactions may manifest as rashes, itching, or difficulty breathing.

Thrombosis: After surgery, due to reduced activity, you may face the risk of deep vein thrombosis. This condition may lead to leg swelling, pain, or even more severe complications such as pulmonary embolism.

Instrument Failure: Instruments used during surgery may malfunction, potentially causing surgical delays or other complications.

Long-Term Complications: Although most patients can return to normal life after surgery, a small number may face long-term complications such as chronic pain or functional impairment.

4.5 Monitoring and Management

To minimize the above risks, we will take the following measures:

Conduct a comprehensive assessment before surgery to determine your suitability for participation in this study.

Strictly adhere to sterile operating procedures during surgery to reduce the risk of infection.

Monitor your vital signs and pain levels to address any discomfort promptly.

Provide appropriate pain management plans to help alleviate postoperative pain.

Conduct regular follow-ups postoperatively to assess your recovery and address any potential issues in a timely manner.

4.6 Your Responsibilities

As a participant, you need to:

Inform the physician of your medical history, allergy history, and current medications truthfully before surgery.

Follow the physician's advice and guidance, including preoperative preparation and postoperative care.

Contact the medical team promptly if you experience discomfort or abnormal symptoms.

4.7 Conclusion

Participating in this study will provide you with the opportunity to receive a new treatment method, but it also carries certain risks. Before deciding whether to participate, please carefully consider the information above and discuss any concerns or questions with your physician. We hope this study gives useful data for future treatments and that you will have a positive experience and outcome during your participation.

Possible Benefits

Patients participating in this study may gain various direct and indirect benefits. First, the primary aim of the research is to evaluate the effectiveness of ultrasound guidance versus fluoroscopy guidance in percutaneous endoscopic discectomy. By comparing these two guidance methods, the study will provide patients with safer and more effective surgical options, thereby improving their overall treatment experience.

Direct Benefits

1. Pain Relief: This study aims to find more effective surgical methods to alleviate patients' pain by comparing two different guidance techniques. Participants may experience significant pain relief after surgery, directly improving their quality of life.

2. Improved Quality of Life: As pain alleviates, patients' daily activity levels will improve, allowing them to better engage in work, family, and social activities. This improvement in quality of life will not only reflect physical health but also positively impact mental well-being.

3. Increased Surgical Safety: By using ultrasound and fluoroscopy guidance, the visibility during surgery will significantly increase, thereby reducing the incidence of surgical complications such as infections and bleeding. This means participants may face fewer risks during surgery and the recovery period.

4. Reduced Medical Costs: If the study results indicate that ultrasound guidance is more effective and safe in endoscopic surgery, it may lead to reduced medical expenses for patients in subsequent treatments. For example, reducing the need for additional treatments or hospital stays due to complications will lower overall healthcare costs.

Indirect Benefits

1. Contribution to Future Treatment Methods: Participating in this study not only aids in personal treatment outcomes but also provides valuable data and experience for the medical community. This data will help optimize treatment plans for patients with single-segment lumbar disc herniation (LDH) in the future, advancing research in related fields.

2. Enhanced Patient Trust in the Medical Process: Participation in clinical research allows patients to gain a deeper understanding of the development and application of medical technologies, enhancing their trust in the medical process. This trust can encourage patients to be more proactive in accepting other medical interventions in the future.

3. Promotion of Medical Education and Research: This study will provide learning and practical opportunities for medical students and young doctors, promoting their understanding and mastery of new technologies and methods. This not only helps improve the quality of medical services but also lays the foundation for the training of future medical talents.

4. Psychological Support and Social Interaction: Participating in clinical research often allows patients to connect with others who have similar experiences, providing emotional support and helping them better cope with the psychological stress brought on by illness.

In summary, participating in this study may not only bring direct health benefits to patients but also promote medical development and social progress on a broader level. We encourage all eligible patients to consider participating in this study to jointly advance the development of medical science and contribute to the health of themselves and others.

Alternative Options

Before considering participation in this study, patients should be aware of alternative treatment options available. While this study aims to evaluate the effectiveness of ultrasound guidance versus fluoroscopy guidance in percutaneous endoscopic discectomy, there are still other effective treatment methods to consider.

1. Conservative Treatment

For patients with single-segment lumbar disc herniation (LDH), conservative treatment is usually the first choice. Conservative treatment includes the following methods:

Physical Therapy: Physical therapists can develop personalized rehabilitation plans based on the patient's specific situation, including traction, massage, heat therapy, and cold therapy to alleviate pain and improve function.

Medication: Non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, and steroids can be used to relieve pain and inflammation. Physicians will prescribe appropriate medications based on the patient's specific condition and provide guidance on usage.

Injection Therapy: Epidural steroid injections can directly deliver medication to the affected area to reduce inflammation and pain.

2. Other Surgical Options

If conservative treatment is ineffective and symptoms severely affect quality of life, patients may consider other surgical options:

Open Discectomy: This traditional surgical method involves a larger incision to directly remove the protruding disc tissue, suitable for larger or more complex disc herniation cases.

Minimally Invasive Surgery: In addition to endoscopy, other minimally invasive techniques, such as lumbar disc radiofrequency ablation, are available, which typically offer advantages such as less trauma and faster recovery.

Spinal Fusion: For patients with accompanying spinal instability or other structural issues, spinal fusion may be a suitable option, stabilizing the spine by fusing adjacent vertebrae.

3. Comprehensive Treatment Plans

In some cases, combining multiple treatment methods may yield better results. For example, patients may receive conservative treatment while regularly undergoing physical therapy and considering surgical intervention when necessary. Comprehensive treatment plans can be flexibly adjusted based on the patient's specific situation to achieve optimal results.

4. Consult Professional Physicians

Before deciding whether to participate in this study, it is advisable for patients to communicate thoroughly with professional physicians. Physicians will provide professional advice based on the patient's condition, physical status, and personal needs, helping them assess the pros and cons of various treatment options. Through discussions with physicians, patients can better understand their conditions and make the most suitable choices.

In conclusion, while this study offers a new treatment option, patients still have various alternatives to consider. When making a decision, please ensure you fully understand all available options and consult professional medical personnel for the best advice.

Privacy and Data Confidentiality

In this study, we place great importance on participants' privacy and data confidentiality. All participants' information will be handled strictly in accordance with relevant laws and regulations to ensure that their personal privacy is not disclosed. The following are some specific measures we take regarding privacy protection and data confidentiality:

1. Data Anonymization

All collected data will be anonymized before analysis. Participants' information will be de-identified, meaning that personal identifiers such as names and ID numbers will be removed to ensure that individuals cannot be traced. Thus, even if data is leaked, participants' identities cannot be identified, thereby protecting their privacy.

2. Restricted Data Access

Only authorized research team members will have access to participants' data. We will establish strict data access control mechanisms to ensure that only necessary personnel can view and process the data. Additionally, all research team members must sign confidentiality agreements, committing not to disclose any participant information.

3. Data Storage Security

All collected data will be stored in a secure database with encryption measures to prevent unauthorized access. We will conduct regular security audits to ensure the safety of the data storage system. We will also regularly back up data to prevent data loss due to unforeseen circumstances.

4. Clear Purpose of Data Use

Participants' data will only be used for the purposes of this study and will not be used for other commercial purposes or unrelated research. We promise not to sell or transfer participants' information to third-party organizations. After the study concludes, we will properly handle all data in accordance with relevant laws and regulations, including destroying data that is no longer needed.

5. Protection of Participants' Rights

Participants have the right to inquire about their data usage at any time and request modifications or deletions of their personal information. If participants have any questions or concerns regarding data processing, they can contact the research team at any time, and we will respond promptly.

6. Compliance with Laws and Regulations

This study will strictly adhere to national and local laws and regulations regarding personal information protection and data privacy, including the Personal Information Protection Law of the People's Republic of China and other relevant legal documents. We commit to following these laws and regulations throughout the study to ensure participants' information security and privacy rights are fully protected.

Through these measures, we hope to provide participants with a safe and reliable research environment, allowing them to participate in this study with peace of mind while also providing valuable data support for future research in related fields.

Voluntariness and Right to Withdraw

Participation in this study is entirely voluntary, and you have full rights and freedom in deciding whether to participate. We hope you can carefully read all the contents of this informed consent form before participating and consult the research team promptly if you have any questions. You have the right to choose not to participate in this study at any stage or to withdraw at any time after participation without any negative impact or penalty.

If you decide to withdraw from the study, your medical services will not be affected, and you will continue to receive necessary medical care. The decision to withdraw from the study will not affect your relationship with the hospital or physician, nor will it affect your future treatment options. We encourage you to maintain communication with the research team during your participation, and if you feel uncomfortable or have any concerns during the study, please inform us promptly.

During the study, you may encounter some discomfort or confusion, which are normal reactions. If you feel uncomfortable during your participation or have any questions about any aspect of the study, you can choose to withdraw at any time. We will respect your decision and ensure that your withdrawal process is as smooth as possible.

Additionally, we commit to protecting your privacy and personal information during the study. All collected data will be kept strictly confidential and used only for the purposes of

this study. Your identity information will be anonymized to ensure that your privacy is fully protected.

In summary, participation in this study is entirely voluntary, and you have the right to withdraw at any time without any negative impact on your medical services. We hope you fully understand this and feel assured when making your decision.

Costs and Compensation

Participation in this study may involve certain costs, but we'll do our best to keep your costs down. The specific cost situation is as follows:

Surgical Costs: Patients participating in this study will undergo percutaneous endoscopic discectomy, and the surgical costs will be charged by the hospital according to normal pricing standards. According to hospital policies, some patients may qualify for insurance reimbursement; please consult the hospital's financial department for specific details.

Transportation and Accommodation Compensation: To alleviate participants' financial burden, we will provide certain medical compensation. The specific compensation standards will be determined based on participants' actual situations, such as registration fees and dressing change fees. Additionally, if participants require hospitalization for treatment, we will also provide corresponding accommodation compensation based on actual circumstances.

Other Compensation: During the study, if any additional medical expenses arise due to participation in this study (such as postoperative complications), we will evaluate them according to hospital policies and provide appropriate compensation as needed.

Please note that all compensation must be applied for after the study concludes, and the specific application process and required materials will be explained to participants in detail during the study. We hope these measures can reduce your financial burden during your participation in this study, allowing you to focus more on treatment and recovery.

Contact Information

If you have any questions about this study or need further information, feel free to reach out to us anytime. Here are our contact details:

Principal Investigator: Shang Chao

Phone: 18553361838

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Phone: 18553372976

Email: fengchunlin1234@126.com

We encourage you to contact us at any time before, during, or after your participation, whether regarding the study content, surgical process, potential risks, or any other questions.

We are dedicated to providing you with the best support and assistance. Your feedback and inquiries are very important to us, and we hope to provide you with the best support and help.

Thank you for your attention and support for this study. We look forward to working together to improve treatment outcomes for patients with lumbar disc herniation.

Informed Consent Signature Page

Participant Statement: I have read the above introduction regarding this study and fully understand the risks and benefits that may arise from participating in this study. I voluntarily agree to participate in this study.

I agree □ or refuse □ the use of my medical records and pathological specimens for other research purposes beyond this study.

Participant Signature: Date: __ __ __ __

Participant Phone Number:

Researcher Statement: I confirm that I have explained the details of this study to the participant, particularly the risks and benefits that may arise from participating in this study.

Researcher Signature: Date: __ __ __ __

Researcher's Work Phone: Mobile Number:

Contact Number for the Ethics Committee Office of ZIBO First Hospital: 0533-4251979