Research Square

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Treatment of Distal Radius Fractures in the Elderly: Surgical or Conservative? A Retrospective Study

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Research Article

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Abstract

Objective:

To compare the clinical efficacy and cost-effectiveness of surgical versus conservative treatment for distal radius fractures (DRF) in elderly patients.

Methods:

This single-center retrospective study enrolled 504 patients aged ≥ 65 years with DRF treated between July 2020 and October 2024. Patients were categorized into four groups based on treatment: Group A (conservative treatment for non-displaced fractures, n = 39), Group B (conservative treatment for displaced fractures by patient refusal of surgery, n = 160), Group C (surgical treatment for displaced fractures, n = 294), and Group D (conservative treatment for high-risk patients, n = 11). The primary outcome measure was the Patient-Rated Wrist Evaluation (PRWE) score. Secondary outcomes included wrist range of motion (ROM), radiographic parameters (radial length, volar tilt, ulnar inclination), complication rates, and medical costs.

Results:

At 3, 6, and 12 months post-treatment, PRWE scores were significantly better in Group C (surgical) compared to Group B (conservative) (all $P < 0.001$). Wrist ROM (flexion, extension, ulnar deviation, radial deviation) and the restoration of key radiographic parameters (radial length, volar tilt, ulnar inclination) were also significantly superior in Group C (all $P < 0.001$). All surgical patients (100%) achieved an "excellent" rating for articular surface congruity, significantly higher than the 56.25% in Group B ($P < 0.001$). There were no significant differences in fracture healing time or complication rates between the two groups. Regarding cost-effectiveness, although the average medical cost was significantly higher in Group C, health economic analysis yielded an incremental cost-effectiveness ratio (ICER) of ¥37,016 per quality-adjusted life year (QALY) for surgical treatment. When applying a commonly referenced willingness-to-pay (WTP) threshold of ¥150,000 per QALY (a threshold often set at 1–3 times the per capita GDP), the probability of surgical treatment being cost-effective exceeded 60%.

Conclusion:

For displaced DRF in the elderly, open reduction and internal fixation (ORIF) resulted in significantly better wrist function recovery and anatomical restoration compared to conservative treatment, without increasing complication risk. Considering advancements in implant technology, optimized perioperative management, supportive healthcare policies, and health economic evidence, surgical treatment is

recommended as a prioritized option for eligible elderly patients with displaced DRF to achieve better long-term functional outcomes and quality of life.

Introduction

Distal radius fracture (DRF) is a common osteoporotic fracture in the elderly, with its incidence rising significantly with age[1]. Although treatment strategies have been debated for years, a consensus on whether surgical or conservative management is preferable for elderly patients remains elusive[2]. Conservative treatment, while avoiding surgical risks, often leads to wrist stiffness and functional limitations due to prolonged immobilization[3]. Conversely, although surgery enables anatomical reduction, its safety, functional improvement benefits, and health economic efficiency in the elderly population require further validation[4]. In recent years, significant progress has been made in surgical techniques and perioperative management. Innovations in internal fixation implants (e.g., anatomical plates, polyaxial locking screws)[5] and advancements in minimally invasive techniques have greatly improved surgical precision and safety[6]. Simultaneously, the application of the Enhanced Recovery After Surgery (ERAS) concept has optimized perioperative care pathways[7]. Against this backdrop, this retrospective study analyzed clinical data from 504 elderly DRF patients treated in our hospital's orthopedics department between 2020 and 2024. It aims to systematically compare the differences between surgical and conservative treatment in terms of wrist function recovery, radiographic outcomes, complication rates, and medical costs, thereby providing evidence-based support for clinical decision-making.

Methods

Study Design

This was a retrospective study. A total of 504 elderly patients (aged ≥ 65) with DRF treated at our hospital's orthopedics department between July 2020 and October 2024 were included. Patients were divided into four groups based on treatment: Group A (conservative treatment for non-displaced fractures), Group B (conservative treatment for displaced fractures by patient refusal of surgery), Group C (surgical treatment for displaced fractures), and Group D (conservative treatment for high-risk patients). Baseline characteristics and one-year post-injury recovery data were recorded for all patients.

All patients provided informed consent. The study adhered to the ethical principles of clinical research outlined in the Declaration of Helsinki and was approved by the Medical Ethics Committee of our hospital.

Inclusion and Exclusion Criteria

Inclusion criteria

1. Age ≥ 65 years. 2. Clear history of trauma. 3. Diagnosis of DRF confirmed by X-ray or CT.

Exclusion criteria

1. Pathological fracture. 2. Old fracture. 3. Open fracture. 4. Concomitant ulnar styloid fracture. 5. Patients with multiple injuries. 6. Patients with incomplete follow-up data. 7. Patients with cognitive impairment or mental illness unable to cooperate with follow-up and questionnaire surveys.

Treatment Protocols

Patients were categorized into four groups based on treatment choice (Fig. 1):

● **Group A (Conservative Treatment for Non-displaced Fractures)**: Patients received neutral position splint immobilization. X-ray was reviewed at 2 weeks to confirm no displacement, followed by conversion to a neutral position cast for an additional 4 weeks. After cast removal at 6 weeks, X-ray confirmed no displacement, and patients were instructed on finger and wrist functional exercises. Regular X-ray follow-up continued until complete fracture healing.

● **Group B (Conservative Treatment by Refusal of Surgery for Displaced Fractures)**: Patients with displaced fractures refused surgery and opted for conservative treatment. Closed reduction under local anesthesia was performed, followed by cast immobilization in flexion or extension position based on fracture displacement. The remaining treatment protocol was identical to Group A.

● **Group C (Surgical Treatment for Displaced Fractures)**: Patients with displaced fractures were advised and consented to surgical treatment. After hospitalization and preoperative preparation, open reduction and internal fixation (ORIF) with a plate was performed. Finger exercises were initiated on postoperative day 2, and wrist functional exercises began on day 7. Regular X-ray follow-up continued until complete fracture healing.

● **Group D (Conservative Treatment for High-Risk Patients)**: Patients with displaced fractures were advised surgery, but preoperative assessment revealed significant comorbidities and high surgical risk. Surgery was postponed, and conservative treatment (protocol as Group A) was administered.

Observation Indicators

Baseline Indicators

Collected patient information included: name, gender, age, fracture side, injury mechanism, treatment protocol, bone mineral density (BMD), Body Mass Index (BMI), Charlson Comorbidity Index (CCI), and American Society of Anesthesiologists (ASA) physical status classification.

Outcome Indicators

The primary outcome measure was the Patient-Rated Wrist Evaluation (PRWE) score[8], recorded at 3 months, 6 months, and 1 year post-injury.

Secondary outcomes included: fracture healing time (weeks); complications within 1 year post-injury (including delayed union, nonunion, implant loosening, implant failure); specific radiographic parameters instead of malunion rate (radial length, volar tilt, ulnar inclination, articular step/gap) (Fig. 2); wrist range of motion (flexion, extension, ulnar deviation, radial deviation) at 1 year post-injury; and total medical costs.

Articular surface congruity evaluation criteria

An articular step < 1 mm and a gap < 1 mm was rated "Excellent"; a step of 1–2 mm or a gap of 1–2 mm was "Medium"; a step or gap > 2 mm was "Poor".

Health-related quality of life was assessed using the EQ-5D-3L utility score (based on the Chinese urban population value set by Gordon G Liu in 2014)[9] and the EQ-5D visual analogue scale (EQ-VAS). The EQ-5D-3L evaluates health status across 5 dimensions (Mobility, Self-Care, Usual Activities, Pain/Discomfort, Anxiety/Depression) with 3 levels each (1. No problems; 2. Some problems; 3. Extreme problems). The EQ-VAS requires patients to mark their current overall health on a scale from 0 (worst imaginable health) to 100 (best imaginable health).

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics (version 26.0). Descriptive statistics summarized population characteristics. Continuous variables were tested for normality using the Shapiro-Wilk test. Normally distributed data are presented as mean ± standard deviation (SD); non-normally distributed data as median with interquartile range (IQR). Categorical variables are summarized as frequencies and percentages (n, %). For continuous variables, P-values were calculated using one-way analysis of variance (ANOVA). For categorical variables, P-values were calculated using the Chi-square test.

Results

Baseline Characteristics

This retrospective study included 504 elderly DRF patients treated between July 2020 and October 2024. Based on treatment decision, patients were divided into four groups: Group A (n = 39), Group B (n = 160), Group C (n = 294), and Group D (n = 11). Baseline demographic and clinical characteristics are shown in Table 1. Inter-group comparisons revealed significant differences in comorbidities and anesthesia risk profiles. Further comparison between Groups B and C showed no significant difference in CCI score distribution or ASA classification. Other baseline characteristics were comparable across all four groups, with no statistically significant differences.

Table 1

Baseline Characteristics BMD = Bone Mineral Density, BMI = Body Mass Index, CCI = Charlson Comorbidity Index, ASA = American Society of Anesthesiologists. P denotes the P-value from one-way ANOVA comparing differences among the four groups, P^1 denotes the P-value from t-test comparing CCI between Group B and Group C, and P^2 denotes the P-value from chi-square test comparing ASA Grade between Group B and Group C. *Statistically significant difference at $P < 0.05$.

Included	**Total, N = 504**	**Group A, N = 39**	**Group B, N = 160**	**Group C, N = 294**	**Group D, N = 11**	**P Value**
gender						0.310
Male, N (%)	161(31.94)	15(39.74)	48(30.00)	93(31.63)	5(40.91)	
Female, N (%)	343(68.06)	24(60.26)	112(70.00)	201(68.37)	6(59.09)	
age(years), Mean ± SD	78.56 ± 8.47	77.78 ± 8.89	79.37 ± 9.34	77.37 ± 10.74	79.37 ± 6.45	0.130
fracture side						0.510
left, N (%)	242(48.02)	16(42.31)	74(46.25)	146(49.49)	6(54.55)	
right, N (%)	262(51.98)	23(57369)	86(53.75)	148(50.51)	5(45.45)	
cause of injury						0.210
fall on flat ground	249(69.15)	23(58.97)	110(68.75)	207(70.58)	8(72.73)	
traffic accident	155(30.85)	16(41.03)	50(31.25)	87(29.42)	3(27.27)	
BMD(T), Mean ± SD	−1.79 ± 0.84	−1.78 ± 0.78	−1.78 ± 0.99	−1.81 ± 0.81	−1.86 ± 0.85	0.940
BMI(kg/m^2), Mean ± SD	22.81 ± 1.92	23.14 ± 1.76	22.89 ± 2.14	22.62 ± 2.21	22.80 ± 1.72	0.220
CCI, Mean ± SD	2.24 ± 1.15	2.18 ± 0.75	2.20 ± 0.95	2.16 ± 0.82	4.54 ± 0.67	<0.001*
			P^1 Value = 0.525			
ASA Grade						<0.001*
I, N (%)	118(23.41)	10(25.64)	32(20.00)	77(26.19)	0(0)	
			P^2 Value = 0.054			
II, N (%)	297(58.93)	22(56.41)	98(61.25)	176(59.86)	0(0)	
			P^2 Value = 0.683			
III, N (%)	78(15.48)	6(15.38)	30(18.75)	41(13.95)	0(0)	

Included	Total, N = 504	Group A, N = 39	Group B, N = 160	Group C, N = 294	Group D, N = 11	P Value
			P^2 Value = 0.067			
IV, N (%)	11(2.18)	1(0)	0(0)	0(0)	11(100)	
V, N (%)	0(0)	0(0)	0(0)	0(0)	0(0)	

Outcome Measurements

All patients were followed for one year, assessing wrist function, radiographic outcomes, and medical costs. The primary analysis focused on Groups B and C, which had balanced baseline characteristics. Results are shown in Table 2.

Table 2
Outcome Measures

Included	Total, N = 504	Group A, N = 39	Group B, N = 160	Group C, N = 294	Group D, N = 11	P Value (Between Group B and Group C)
PRWE(3m)	37.86 ± 13.61	49.71 ± 4.78	49.00 ± 5.51	28.99 ± 9.50	71.91 ± 4.05	<0.001*
PRWE(6m)	19.78 ± 11.29	25.23 ± 3.86	27.92 ± 3.55	13.13 ± 7.82	61.50 ± 5.02	<0.001*
PRWE(12m)	10.36 ± 9.11	7.72 ± 2.79	14.81 ± 3.11	6.59 ± 5.32	57.59 ± 6.57	<0.001*
Fracture healing time (weeks), Mean ± SD	8.58 ± 1.69	8.76 ± 1.56	8.62 ± 1.68	8.54 ± 1.71	8.23 ± 1.74	0.498
Complications, n(%)	0(0)	0(0)	0(0)	0(0)	0(0)	1.000
Flexion(°)	73.89 ± 12.25	79.28 ± 6.13	68.59 ± 10.87	77.79 ± 8.33	28.10 ± 12.42	<0.001*
Extension(°)	56.69 ± 9.53	59.32 ± 6.55	54.21 ± 8.24	59.13 ± 6.86	18.81 ± 6.21	<0.001*
Ulnar deviation(°)	31.96 ± 5.52	34.12 ± 3.10	28.80 ± 4.23	34.10 ± 4.12	13.10 ± 3.03	<0.001*
Radial deviation(°)	23.44 ± 4.43	25.22 ± 3.15	21.69 ± 4.11	24.68 ± 3.45	9.38 ± 2.46	<0.001*
Radial Lenght(mm)	9.43 ± 0.90	10.02 ± 0.40	8.69 ± 0.73	9.81 ± 0.66	7.67 ± 0.72	<0.001*
Volar Tilt(°)	8.78 ± 5.37	12.00 ± 2.30	4.24 ± 3.81	11.23 ± 3.99	2.71 ± 6.54	<0.001*
Ulnar Inclination(°)	21.04 ± 2.60	22.32 ± 1.72	19.57 ± 2.21	21.90 ± 2.15	15.19 ± 3.88	<0.001*
Articular step/gap, n(%)						
excellent	423(83.93)	39(0)	90(56.25)	294(100)	3(27.27)	<0.001*
medium	49(9.72)	0(0)	42(26.25)	0(0)	4(36.36)	<0.001*
poor	32(6.35)	0(0)	28(17.50)	0(0)	4(36.36)	<0.001*

PRWE=Patient-Rated Wrist Evaluation, EQ−5D−3L=EuroQol Five-Dimension Three-Level Questionnaire, VAS=visual analogue scale, *Statistically significant difference at P < 0.05.

Included	Total, N = 504	Group A, N = 39	Group B, N = 160	Group C, N = 294	Group D, N = 11	P Value (Between Group B and Group C)
EQ−5D−3L	0.831 ± 0.092	0.878 ± 0.028	0.744 ± 0.087	0.881 ± 0.029	0.597 ± 0.103	<0.001*
EQ−5D VAS	84.73 ± 17.02	95.22 ± 9.66	86.32 ± 15.52	93.13 ± 10.45	64.23 ± 20.98	<0.001*
Medical cost(yuan)	14216.07 ± 10770.06	4105.24 ± 558.52	3990.94 ± 620.81	21537.14 ± 8397.33	4225.36 ± 547.72	<0.001*
Out-of-pocket cost(yuan)	2843.21 ± 2154.01	821.05 ± 111.70	798.19 ± 124.162	4307.43 ± 1679.47	845.07 ± 109.54	<0.001*

PRWE=Patient-Rated Wrist Evaluation, EQ−5D−3L=EuroQol Five-Dimension Three-Level Questionnaire, VAS=visual analogue scale, *Statistically significant difference at P < 0.05.

Wrist Function

Assessed by PRWE score. At 3, 6, and 12 months post-treatment, Group C had significantly better PRWE scores than Group B (all P < 0.001, Fig. 3).

Wrist Range of Motion (ROM)

Group C had significantly greater ROM than Group B in all directions (flexion, extension, ulnar deviation, radial deviation) (all P < 0.001).

Radiographic Assessment

Group C showed significantly better restoration of radial length, volar tilt, and ulnar inclination compared to Group B (all P < 0.001). Regarding articular congruity rating, 100% of Group C patients achieved an "Excellent" rating, compared to only 56.25% in Group B. The remaining Group B patients were rated "Medium" (26.25%) or "Poor" (17.50%), indicating a highly significant inter-group difference (P < 0.001).

Fracture Healing and Complications

No significant difference was found between Groups B and C in fracture healing time (P = 0.498) or complication rate (P = 1.000). No complications were reported in the entire cohort.

Quality of Life

The EQ-5D-3L utility index was significantly higher in Group C (0.881 ± 0.029) than in Group B (0.744 ± 0.087) (P < 0.001). Similarly, the self-rated health score on the EQ-VAS was significantly better in Group C (93.13 ± 10.45) than in Group B (86.32 ± 15.52) (P < 0.001).

Economic Indicators

The average total medical cost was significantly higher in Group C (¥21,537.14 ± ¥8,397.33) than in Group B (¥3,990.94 ± ¥620.81) ($P < 0.001$). Assuming a 20% patient co-payment under medical insurance, the average out-of-pocket cost remained significantly higher in Group C (¥4,307.43 ± ¥1,679.47) than in Group B (¥798.19 ± ¥124.16) ($P < 0.001$).

Cost-Effectiveness Analysis

The cost-effectiveness plane (Fig. 4) shows Group C in the upper-right quadrant (higher cost, higher effectiveness) and Group B in the lower-left quadrant (lower cost, lower effectiveness). Compared to Group B, Group C had significantly higher costs (average increase ¥4,200) but also higher health utility (average increase 0.1136 QALYs). Interpretation of the cost-effectiveness acceptability curve (CEAC, Fig. 5) shows an Incremental Cost-Effectiveness Ratio (ICER) point of ¥37,016 per QALY. This means the probability of choosing Group C is very low when the willingness-to-pay (WTP) threshold is below this value, but increases rapidly once the threshold exceeds it. At the commonly referenced WTP threshold of ¥150,000 per QALY, Group C has over a 60% probability of being the cost-effective option.

Discussion

The necessity of surgical treatment for DRF is a long-standing academic debate without consensus[10]. Our team believes significant progress has been made in surgical techniques and perioperative management in recent years. Technologically, internal fixation implants have evolved: anatomical plates better conform to the distal radius, reducing tendon irritation[11]; very distal plates allow effective fixation for fractures distal to the watershed line[12]; and polyaxial locking screws provide stable fixation for multi-directional distal fragments[5]. Surgically, approaches have been optimized, from the modified Henry approach to approaches preserving the pronator quadratus[13], with some even performing ORIF through a 15mm minimally invasive incision[14]. Perioperatively, new concepts like ERAS, though originating from major surgeries like joint replacement, have shown value in DRF management through multidisciplinary collaboration, precise anesthesia, early postoperative mobilization, and nutritional support[15]. Given these advancements, our team favors surgical treatment for displaced DRFs to achieve better clinical outcomes.

As a retrospective study, our results reflect real-world clinical decision-making for DRF. The four-group categorization illustrates the diversity and individuation of treatment strategies. Notably, Groups A and D had smaller sample sizes and imbalanced baselines, thus were analyzed descriptively. Groups B and C had sufficient cases and comparable baselines, making their comparison the focus for reliably assessing treatment effects.

Our study classified fractures only as displaced or non-displaced, without detailed typing (e.g., AO classification). We maintain that surgical treatment is clearly indicated for displaced DRFs. Although

closed reduction can achieve satisfactory alignment initially, the prolonged immobilization and delayed rehabilitation inherent to conservative treatment often lead to wrist stiffness, especially in the elderly, resulting in persistent functional impairment[16]. Our findings support this: at 3, 6, and 12 months, surgical Group C had significantly better PRWE scores than conservative Group B ($P < 0.001$), indicating better pain control and functional recovery. Group C also had significantly better wrist ROM in all directions ($P < 0.001$). Radiographically, surgery showed clear advantages. Group C had significantly better restoration of radial length, volar tilt, and ulnar inclination ($P < 0.001$). Crucially, 100% of surgical patients achieved an "Excellent" articular congruity rating, versus only 56.25% in Group B, with 17.50% rated "Poor" ($P < 0.001$), indicating surgery more reliably achieves anatomical reduction, providing a structural basis for long-term function.

ORIF for DRF is now a mature, standardized procedure. In early practice, implant-related complications like tendon irritation due to poor plate-bone fit (sometimes leading to attrition or rupture)[17] and issues like screw loosening or dorsal cortex penetration did occur[18]. However, with continuous implant improvement and refined technique, their incidence has decreased significantly. Widespread use of anatomical plates has improved bone-plate interface matching, reducing soft tissue interference. Locking screw systems have enhanced purchase and stability, lowering risks of loosening and migration. In our study, no surgical patient (Group C) experienced such complications or other serious adverse events during the one-year follow-up, clinically confirming the safety and reliability of current surgical protocols.

Given its relatively limited trauma, our center typically recommends surgery under emergency conditions for eligible DRF patients. The preoperative assessment is streamlined yet efficient, including basic tests (blood work, ECG) and multidisciplinary evaluation (orthopedics and anesthesiology) focusing on risk stratification via CCI and ASA classification[19,20]. Patients with CCI ≥ 5 or ASA ≥ IV are deemed high-risk and receive conservative treatment (Group D, $n = 11$). The small size of Group D indicates that most evaluated elderly patients tolerate this surgery well. Surgery is usually completed within 8 hours of injury, with discharge on postoperative day 2. Early discharge does not impede recovery; patients can often use the affected limb for some daily activities at discharge. This integrated pathway of emergency surgery, precise assessment, and accelerated recovery significantly improves treatment efficiency and enhances patient acceptance and satisfaction.

Financial burden is a significant factor influencing treatment choice. Our results show the average total medical cost was significantly higher in Group C (¥21,537.14 ± ¥8,397.33) than in Group B (¥3,990.94 ± ¥620.81) ($P < 0.001$). However, national policies like volume-based procurement for orthopedic consumables have substantially reduced implant prices, lowering treatment costs from the previously common ¥40,000–50,000 range. Furthermore, basic medical insurance coverage alleviates the actual financial burden. In our region, the patient co-payment is typically 20% of total cost. The actual out-of-pocket cost was ¥4,307.43 ± ¥1,679.47 for Group C versus ¥798.19 ± ¥124.16 for Group B. The cost-effectiveness plane[21] (Fig. 4) visually shows Group C in the upper-right (higher cost, higher

effectiveness) and Group B in the lower-left (lower cost, lower effectiveness). Specifically, Group C gained an additional 0.1136 QALYs at an increased cost of ¥4,200. The ICER[22] for surgery was ¥37,016 per QALY. According to the CEAC (Fig. 5), at a WTP threshold of ¥150,000 per QALY (an official World Health Organization recommendation based on 1–3 times the per capita GDP)[23], the probability of surgery being cost-effective exceeds 60%. This health economic evidence confirms that although surgery has higher initial costs, the significant functional and quality-of-life improvements place the incremental cost within an acceptable range, potentially offering greater value, especially from a medium-to-long-term perspective.

Limitations

As a retrospective study with non-randomized treatment groups, potential confounding factors like selection bias exist. Secondly, the lack of detailed fracture classification (e.g., AO) limits in-depth analysis of efficacy for different fracture patterns. Furthermore, being a single-center study limits generalizability, and longer follow-up data for assessing long-term outcomes is lacking. Future multicenter prospective studies are needed for further validation.

Conclusion

For displaced DRF, ORIF resulted in significantly better wrist function recovery, range of motion, and radiographic parameters compared to conservative treatment, without increasing complication risk. Considering advancements in internal fixation technology, optimized perioperative management, supportive healthcare policies, and health economic evidence, surgical treatment is recommended as a prioritized option for eligible elderly patients with displaced DRF to achieve better long-term functional outcomes.

Declarations

Ethical Considerations

All procedures adhered to the ethical principles of clinical research outlined in the Declaration of Helsinki. The study was approved by the Medical Ethics Committee of Shanghai Seventh People's Hospital (SSJW-20190917).This is a retrospective study and clinical trial number: not applicable.

Consent to Participate

All patients provided informed consent.

Author Contributions

Pei-Rong Liu and Xiang Yu contributed to research design and implementation, and discussed research hotspots and technical difficulties. Rong-Guang Ao and Hai-Jian Lu collaborated on developing

treatment plans. Feng Zhou and Bing-Li Liu were responsible for collecting patient information and images. Xiang Yu and Qing Liu handled manuscript writing and statistical analysis. All authors participated in patient surgery and follow-up, critically revised the manuscript for important intellectual content, and approved the final version for publication.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of data and material

Due to ethical restrictions and participant confidentiality agreements, the raw data are not publicly available. De-identified data may be requested from the corresponding author with approval from the institutional ethics committee.

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Figures

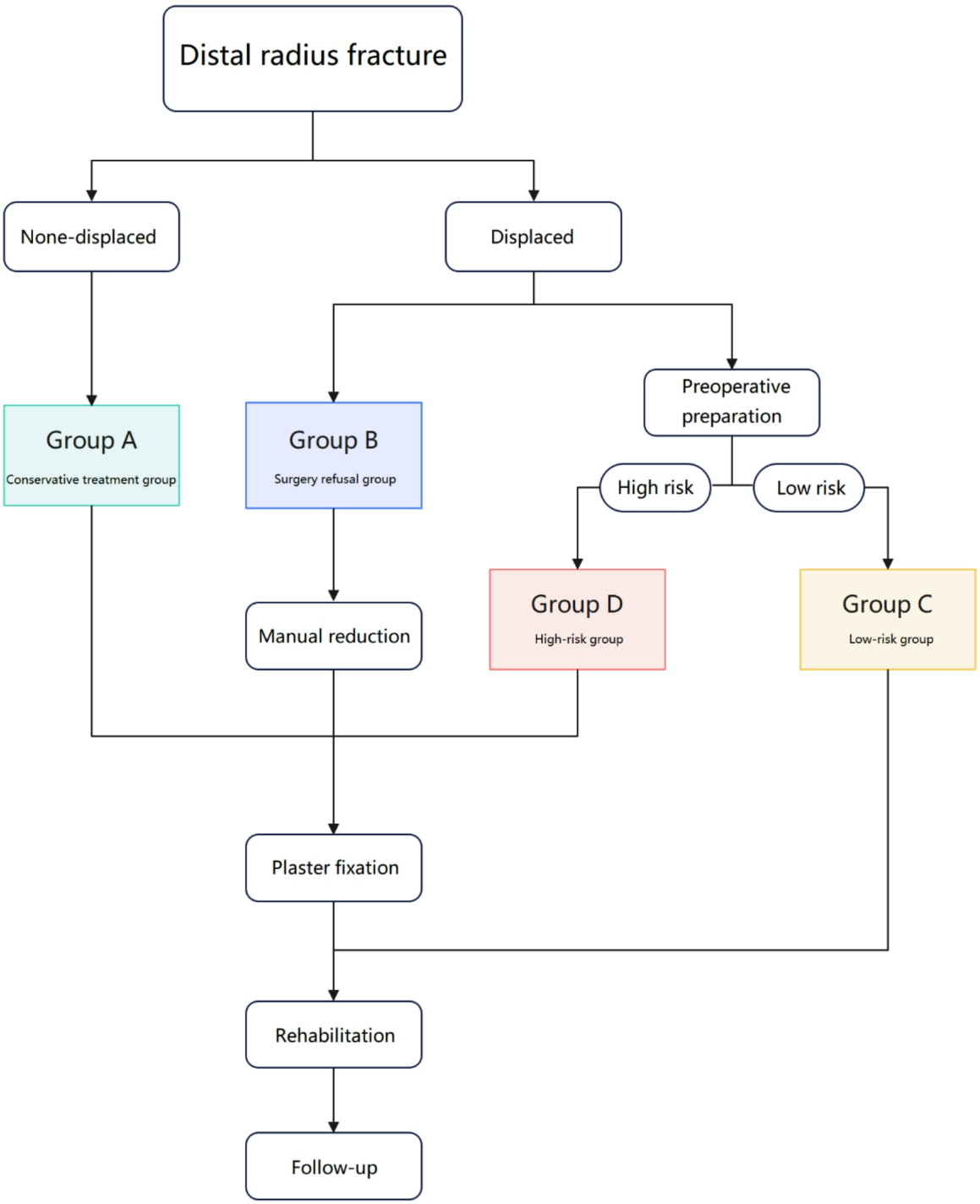


Figure 1

Treatment Grouping Diagram

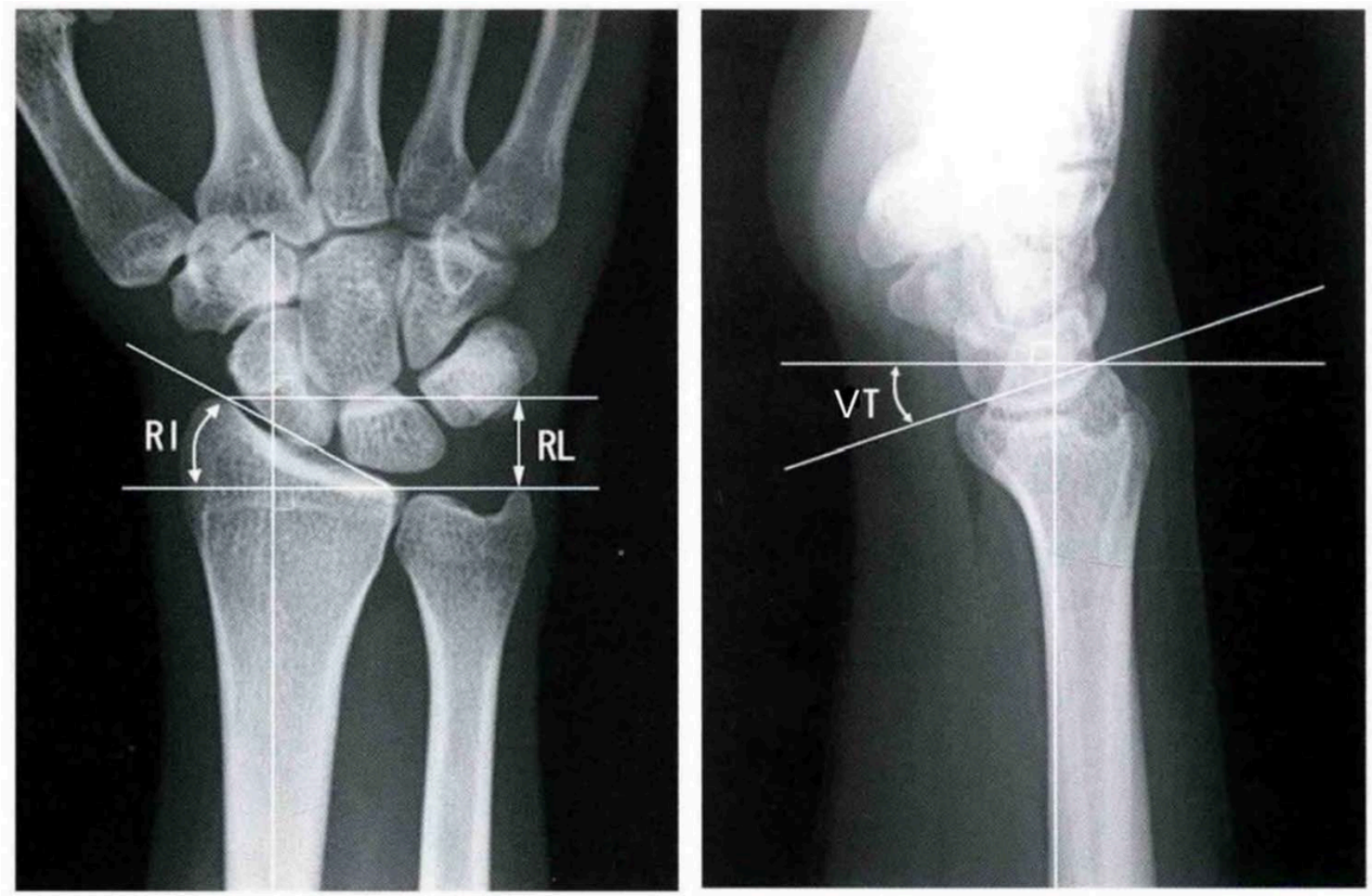


Figure 2

Measurements of Radial Lenght (RL), Radial Inclination (RI), and Volar Tilt (VT). RL = Radial Length, RI = Radial Inclination, VT = Volar Tilt.

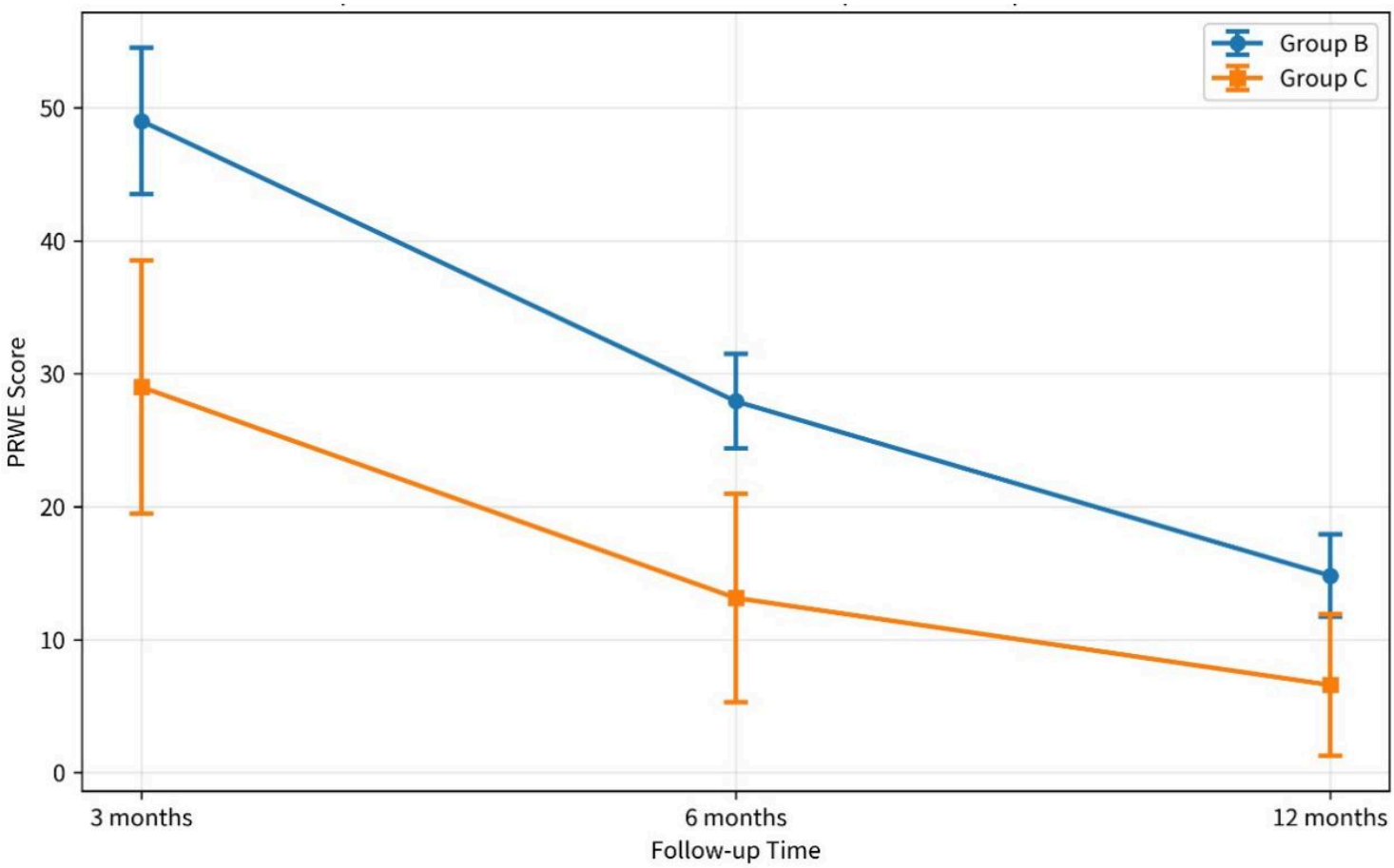


Figure 3

Comparison of PRWE Scores Between Group B and Group C Over Time

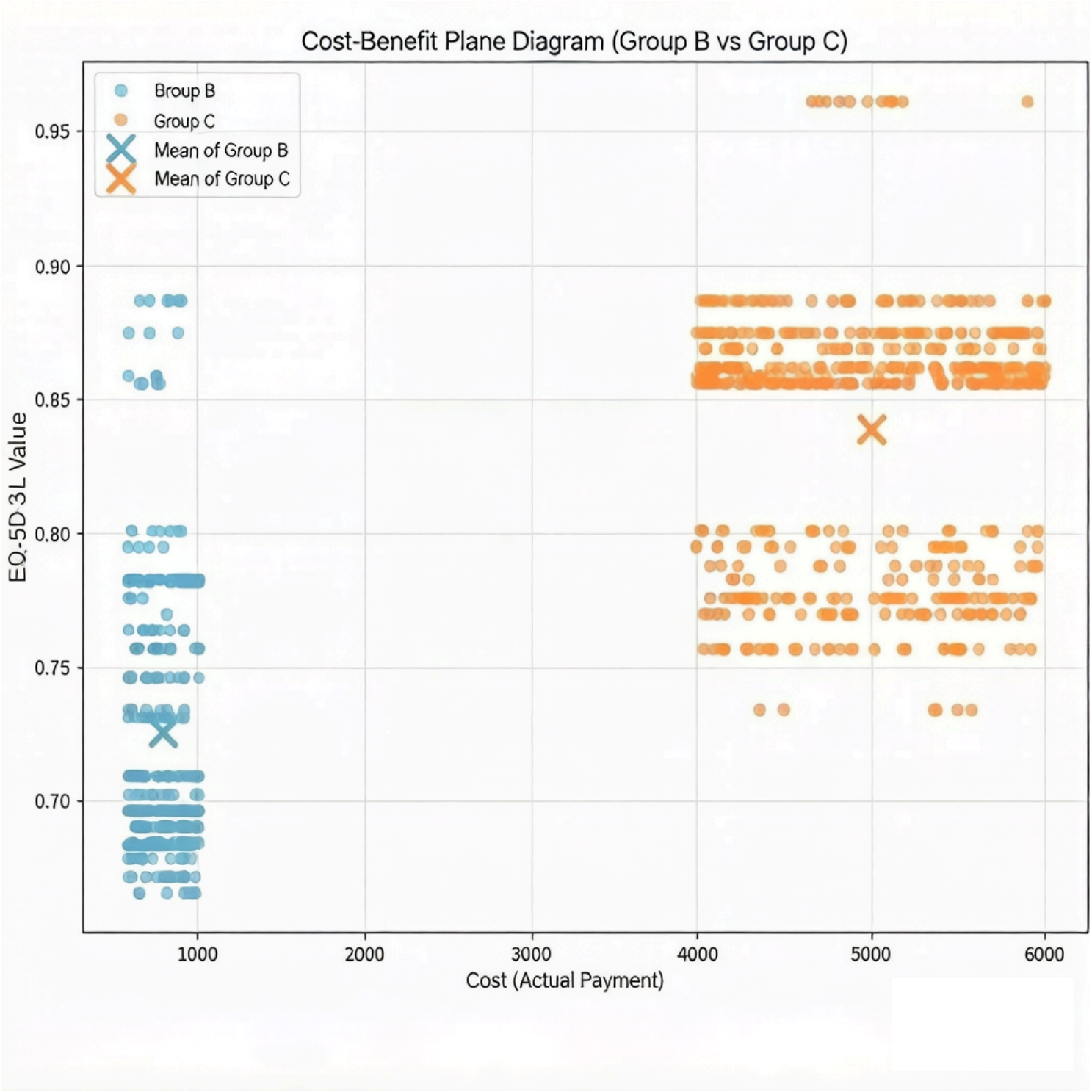


Figure 4

Cost-Benefit Plane Diagram：Broup B vs Group C：

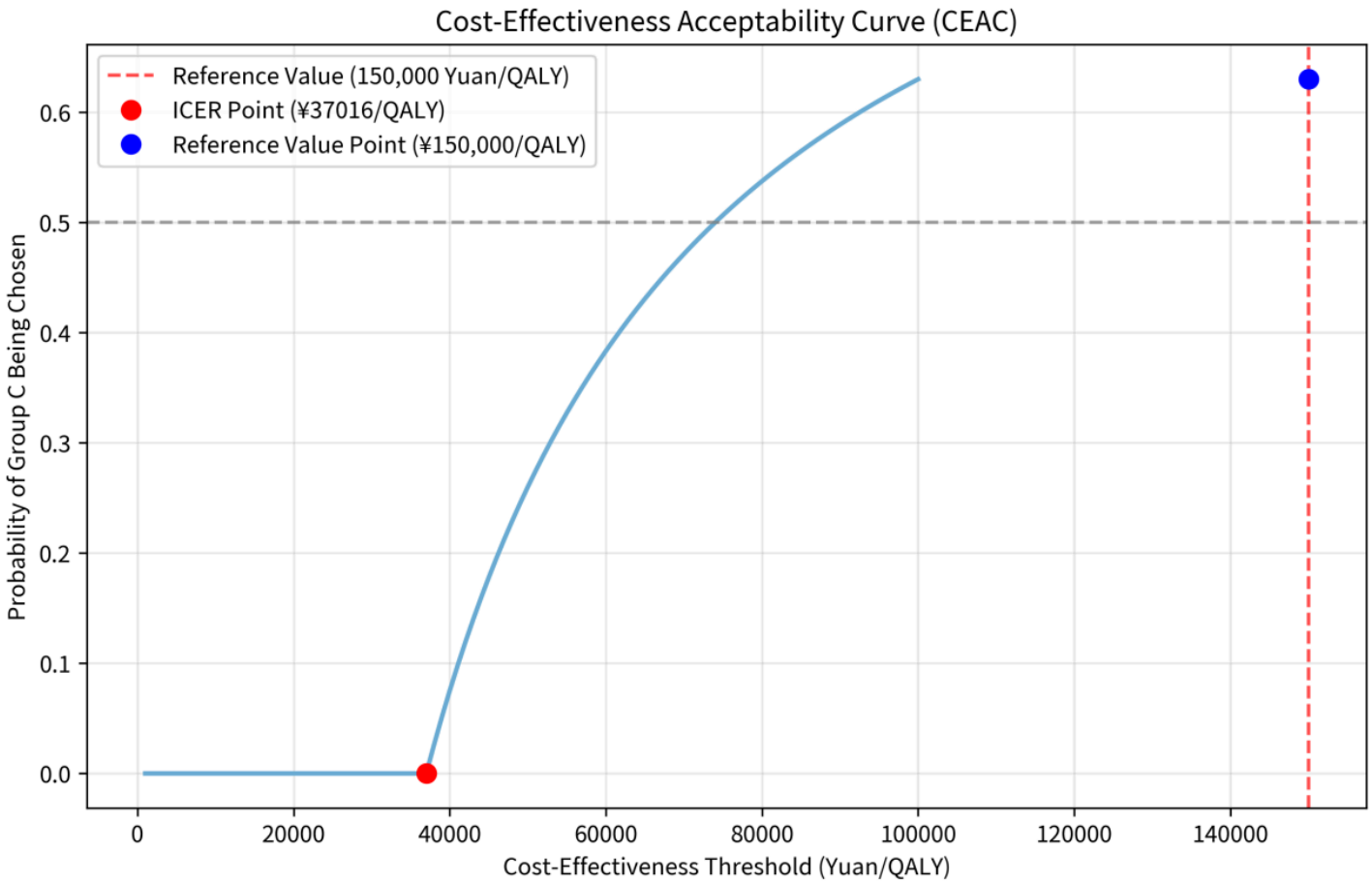


Figure 5

Cost-Effectiveness Acceptability Curve（CEAC）