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Research Article
Meta-Analysis of Different Surgical Methods for Breast Cancer Patients

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Abstract

Background and Objective: Breast cancer, a common malignancy, affects physical and mental health and quality of life. Surgical intervention remains a cornerstone of treatment, with traditional approaches impacting patients' psychosocial health. The aim of this study was to explore the clinical effect of different surgical methods on breast cancer patients. The study used PRISMA guidelines for systematic review and meta-analysis. **Materials and Methods:** An electronic databases was searched using search terms such as "breast cancer", "different surgical options" and "clinical efficacy". The quality of the data included in the study was evaluated according to the criteria in the Cochrane system evaluation manual. The results of randomized clinical controlled studies were analyzed using Review Manager (5.1.0). **Results:** Finally, nine clinical randomized controlled studies were included. The analysis showed that compared with the control group, the operation time of patients could be significantly shortened, reduce intraoperative bleeding, has a smaller incision length and shorter hospital stay. The breast conserving treatment group also had a higher quality of life score compared with the control group, breast conserving surgery did not increase the incidence of upper limb edema. **Conclusion:** Meta-analysis shows that the effect of different surgical methods on breast cancer patients can be significantly reduced by comparing the different operation methods.

Key words: Breast cancer, different surgical procedures, clinical efficacy, meta analysis

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

The incidence rate of breast cancer worldwide is relatively high. It belongs to a gynecologic malignancy. The disease is characterized by long-term treatment and critical development. It has a great threat to women's physical and mental health and quality of life[1]. The disease is prone to lymph node metastasis, which also leads to high mortality[2-4]. Due to the particularity of the location of the disease, it has a great impact on physical and mental health. The clinical treatment of breast cancer is still based on the operative position. Although traditional improvement is very effective in the treatment, the incision will have a great impact on the image of the female, resulting in a heavy blow to the female psyche[5].

Clinical medicine has developed many diagnostic and therapeutic methods for breast cancer. With the improvement of the quality of life, female patients are increasingly pursuing a beautiful image. Once breast cancer is developed, the body and mind will suffer a great heavy blow and even lose the courage to live, which will have a serious impact on their physical and mental health[6-8]. Therefore, compared with conventional resection, breast-conserving surgery and plastic breast-conserving surgery, it is easier to be accepted by female patients.

To further analyze the effect of different surgical methods on breast cancer, this article summarizes the comparative study of two treatments at home and abroad in recent years, including reviews, manager and meta-analysis, aiming at the operation time, intraoperative blood loss, incision length, length of stay and cosmetic effect of two treatments for breast cancer patients. The quality of life score and complications such as upper extremity edema, subcutaneous tissue necrosis, subcutaneous fluid and subcutaneous necrosis were compared and analyzed quantitatively[9,10]. To evaluate the clinical effect of two kinds of operations on breast cancer patients, such as excision and breast-conserving therapy, to provide a scientific and reliable basis for clinical practice.

MATERIALS AND METHODS

The study used PRISMA guidelines for systematic review and meta-analysis[11]. As of June 30, 2021, the system searched the electronic databases (PubMed, EBSCO, Elsevier, Springer, Wiley, Cochrane) using the following search terms. The search terms were: "Breast cancer", "different surgical options" and "clinical efficacy". There are no language restrictions for this search. The study was included if it met the following conditions: (a) Randomized controlled trial, (b) Tests in humans, (c) Breast cancer patient and (d) Adult patients were used. The exclusion criteria were as follows: (a) The research literature was repeated, (b) Systematic evaluation and meta-analysis and (c) After contacting the author, the results and complete research details will not be available.

Literature screening and data extraction: Four researchers excluded the references of the preliminary examination in strict accordance with the standard and independently screened the articles that did not meet the requirements. After carefully reading all possible selected materials, the two researchers fully discussed the different results included in the study or invited a third researcher to participate in the discussion.

Extract the data related to the research into the pre-developed unified table, including:

- **General information:** Title, first author and publication time
- **Research object:** Sample size
- **Outcome measures:** Evaluation of patient-related status

Quality evaluation: The tool used to evaluate the specific quality of the finally included literature and the bias risk assessment including RCT is Cochrane system evaluation manual version 5.1.0[12]. It includes the following seven evaluation criteria: (1) Generation of random sequence, (2) Assign hidden, (3) Double-blind for implementers and participants, (4) Blind method of outcome evaluation, (5) Integrity of result data, (6) Select report and (7) Other sources of bias.

All data were analyzed using Review Manager Version 5.1.0 (the Cochrane Collaboration, Software Update, Oxford), $p<0.05$ was considered statistically significant. Binary variables with 95% confidence interval (95% CI) and odds ratio (or) of weighted mean difference (WMD) were used for analysis and continuous variables had 95% CI. The χ^2 and I^2 to evaluate heterogeneity. The related data with no significant heterogeneity ($p>0.1$) were calculated by the fixed effect model and random effect model ($p<0.1$). The publication bias was visually evaluated by funnel plot and the standard error was analyzed according to the effect size (log or). If there is statistical heterogeneity in the analysis results, it is necessary to analyze the source of the heterogeneity of the results[13].

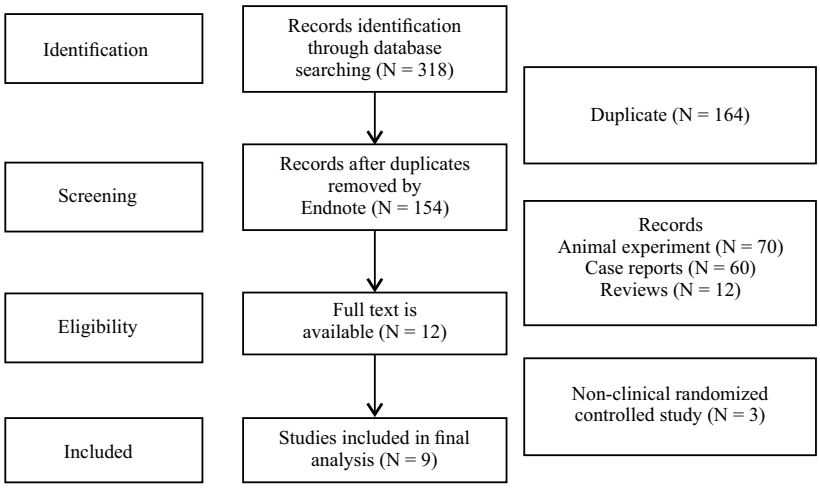


Fig. 1: Flow chart of included literature

Study population: A total of 318 potentially relevant articles were retrieved from the initial search. The repeated literature was excluded, 154 references were obtained and nonclinical randomized controlled studies such as review and case reports were excluded, 26 references were obtained. Read through the 26 references and finally, 9 qualified literatures were obtained according to the above inclusion and exclusion criteria, Jianjun[14], Jianyu[15], Liu and Lou[16], Guo[17], Elmas *et al.*[18], Weiqin *et al.*[19], Liwei[20], Elken[21] and Xingxue[22] (Fig. 1), involving 881 patients.

RESULTS

Research characteristics: A total of 318 potentially relevant articles were retrieved from the initial search. Table 1 summarized the characteristics of these nine studies and evaluations.

According to Cochrane manual 5.1 evaluation tool, it shows the risk of bias in the study, which is judged by 10 criteria. The results showed that most experiments report the research design method, but few report the allocation hiding scheme, some experiments report a detailed blind design (Fig. 2).

Comparison of operation time between the two groups: All the included literatures studied the index of operation time. The average operation time of the two groups was heterogeneous ($Chi^2 = 14.09$, $df = 8$ ($p = 0.08$), $I^2 = 43\%$), so the fixed effect model is adopted. Compared with the control group, the average operation time of the breast-conserving operation group was shortened by $Z = 55.09$ ($p<0.00001$), indicating that the breast-conserving operation can significantly shorten the operation time of patients compared with the traditional operation method (Fig. 3a) and there was no publication bias in this study (Fig. 3b).

Comparison of intraoperative bleeding between the two groups: All the included literatures studied the index of intraoperative bleeding. There was heterogeneity in the intraoperative bleeding of the two groups: $Chi^2 = 33.24$, $df = 8$ ($p<0.0001$), $I^2 = 76\%$, so the fixed effect model is used. Compared with the control group, the amount of intraoperative bleeding in the breast-conserving operation group was reduced, $Z = 32.52$ ($p<0.00001$), indicating that compared with the traditional operation, the breast-conserving operation can significantly reduce the amount of intraoperative bleeding (Fig. 4a) and there was no publication bias in this study (Fig. 4b).

Comparison of incision length between the two groups: Seven kinds of literature studied the index of surgical incision length. There was heterogeneity in the incision length of the two groups: $Chi^2 = 7.67$, $df = 6$ ($p = 0.26$), $I^2 = 22\%$, so the fixed effect model is adopted. Compared with the control group, the average incision length of the breast-conserving surgery group was shortened by $Z = 98.41$ ($p<0.00001$), indicating that compared with the traditional surgery, the breast-conserving surgery can significantly shorten the incision length of patients (Fig. 5a), which has a more beautiful effect. There was no publication bias in this study (Fig. 5b).

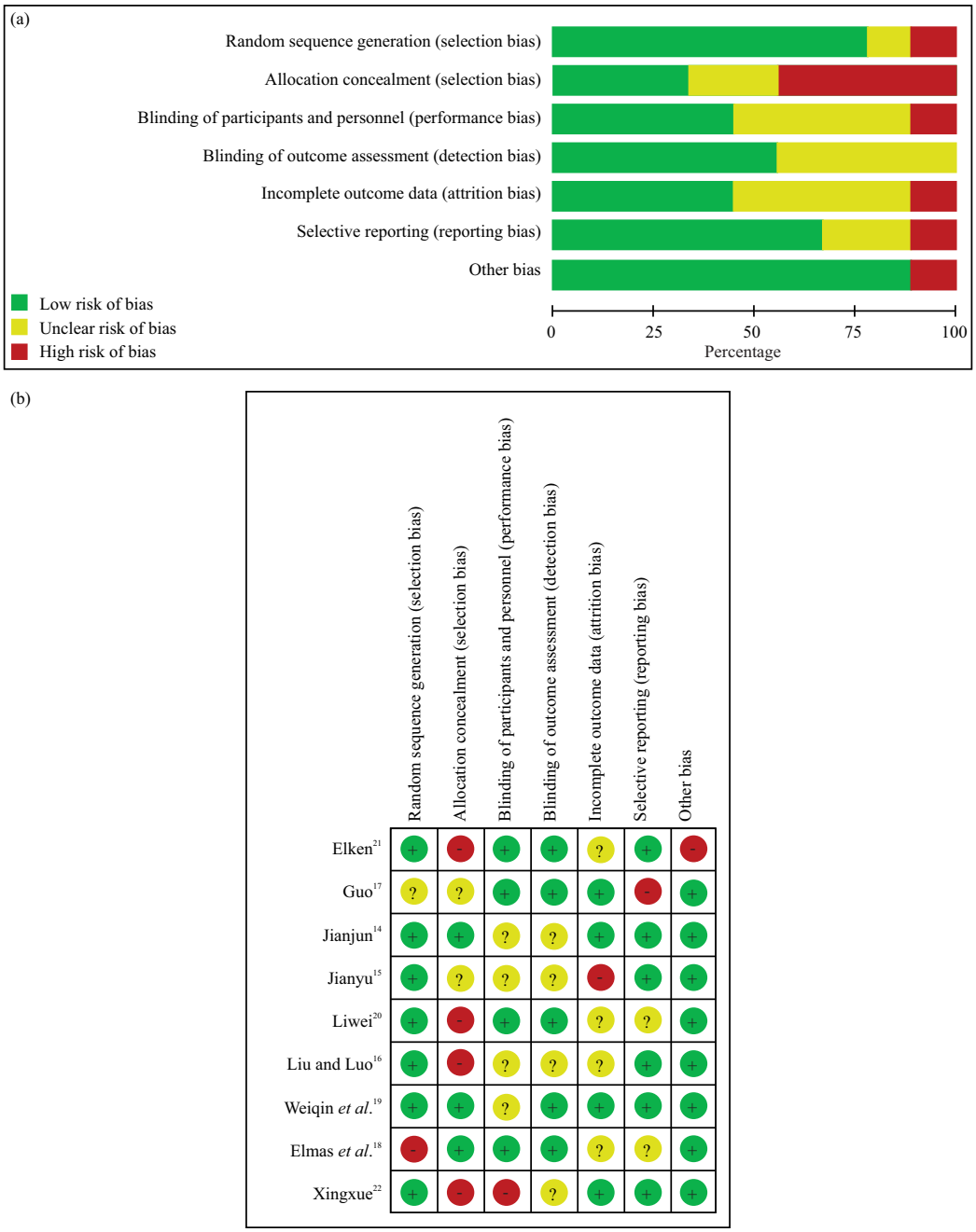


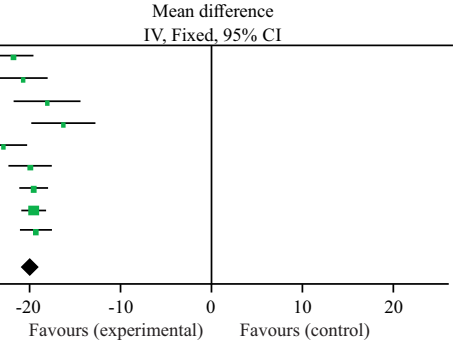
Fig. 2(a-b): (a) Bias risk assessment of included literature figure a bias risk summary: Review the author's judgment on the bias risk of each included study and (b) Bias risk map: Review the author's judgment on all bias risks, expressed as a percentage of all included studies

Comparison of hospitalization time between the two groups: Six literatures studied the index of operation time. The average operation time of the two groups was heterogeneous^2 = 8.84, df = 5 (p = 0.12), I^2 = 43%, so the fixed effect model is adopted. Compared with the control group, the average operation time of the breast-conserving operation group was shortened by Z = 38.01 (p<0.00001), indicating that the breast-conserving operation can significantly shorten the operation time of patients compared with the traditional operation method (Fig. 6a) and there was no publication bias in this study (Fig. 6b).

(a)

Study of subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (%)	Mean difference IV, Fixed, 95% CI
Elken[21]	75.31	4.42	46	97.03	6.04	46	10.7	-21.72 (-23.88, -19.56)
Guo[17]	65.49	4.01	25	86.17	5.36	25	7.3	-20.68 (-23.30, -18.06)
Jianjun[14]	92.37	8.32	50	110.42	9.92	48	3.8	-18.05 (-21.68, -14.42)
Jianyu[15]	80.83	7.71	35	97.19	7.01	35	4.2	-16.36 (-19.81, -12.91)
Liwei[20]	69.92	5.24	50	92.82	7.71	50	7.5	-22.90 (-25.48, -20.32)
Liu and Luo[16]	75.01	4.03	64	94.92	6.81	36	8.5	-19.91 (-22.34, -17.48)
Weiqin *et al*.[19]	70.71	3.97	62	90.23	5.52	62	17.5	-19.52 (-21.21, -17.83)
Elmas *et al*.[18]	71.28	3.38	50	90.84	3.49	47	26.8	-19.56 (-20.93, -18.19)
Xingxue[22]	84.02	4.47	90	103.31	6.65	60	13.6	-19.29 (-21.21, -17.37)
Total (95% CI)			472			409	100.0%	-19.92 (-20.63, -19.21)

Heterogeneity: $Chi^2 = 14.09$, df = 8 (p-0.08); $I^2 = 43\%$
Test for overall effect: Z = 55.09 (p<0.00001)



(b)

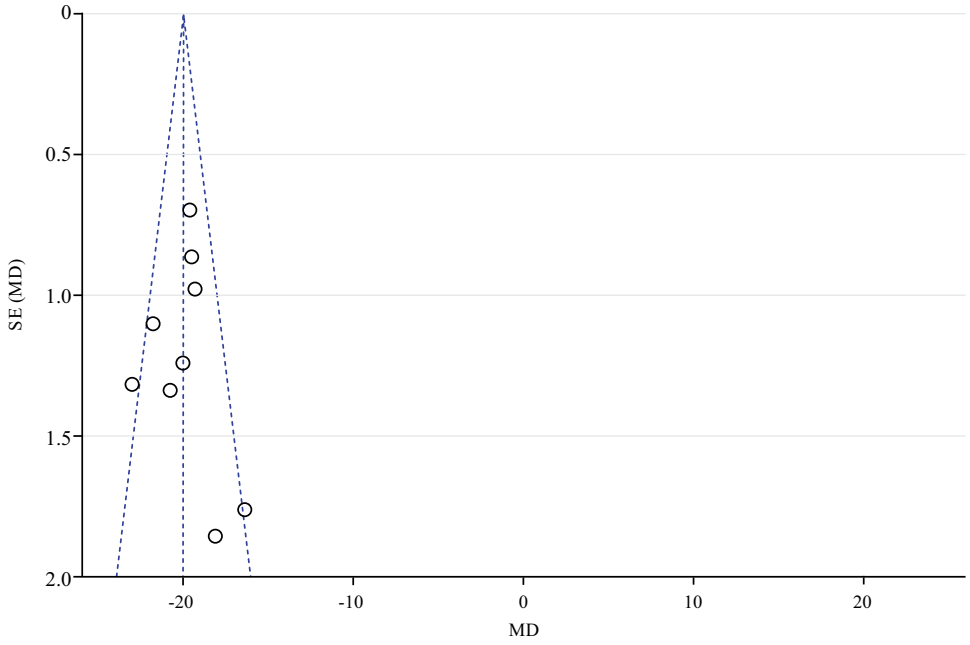


Fig. 3(a-b): (a) Comparison of average operation time between the two groups (forest diagram) and (b) Comparison of average operation time between the two groups (funnel diagram)

Comparison of quality of life scores between the two groups: The seven included literatures all studied the index of quality of life score. The average operation time of the two groups was heterogeneous^2 = 8.77, df = 6 (p = 0.19), I^2 = 32%, so the fixed effect model is adopted. Compared with the control group, the quality of life score of the breast conserving surgery group increased by Z = 56.41 (p<0.00001), indicating that compared with the traditional surgery, the breast conserving surgery can significantly improve the quality of life of patients (Fig. 7a) and there is no publication bias in this study (Fig. 7b).

Comparison of the incidence of postoperative complications between the two groups

Comparison of the incidence of postoperative upper limb edema between the two groups: The incidence of postoperative upper limb edema was studied in the three literatures. There was heterogeneity in the incidence of postoperative upper limb edema between the two groups: Chi^2 = 0.00, df = 2 (p = 1.00), I^2 = 0%, so the fixed effect model is adopted. Compared with the control group, there was no significant change in the incidence of postoperative upper limb edema in the breast conserving operation group, z = 1.57 (p = 0.12),

indicating that compared with the traditional operation, the breast conserving operation did not increase the incidence of postoperative upper limb edema (Fig. 8a) and there was no publication bias in this study (Fig. 8b).

Comparison of the incidence of subcutaneous tissue and skin necrosis between the two groups: Five literatures studied the incidence of subcutaneous tissue and skin necrosis in the two groups. There was heterogeneity in the incidence of subcutaneous tissue and skin necrosis in the two groups[2] = 0.65, df = 3 (p = 0.88), I^2 = 0%), so the fixed effect model is adopted. Compared with the control group, there was no significant change in the incidence of subcutaneous tissue and skin necrosis in the breast conserving operation group, Z = 1.26 (p = 0.21), indicating that compared with the traditional operation, the breast conserving operation did not increase the incidence of subcutaneous tissue and skin necrosis (Fig. 9a) and there was no publication bias in this study (Fig. 9b).

Table 1: General information of included literature

Study	Jianjun[14]	Jianyu[15]	Liu and Luo[16]	Guo[17]	Elmas *et al.*[18]	Weiqin *et al.*[19]	Liwei[20]	Elken[21]	Xingxue[22]
Study period	2017.7-2018.8	2016.6-2018.5	2015.1-2017.1	2019.8-2020.7	2016.6-2018.11	2013.1-2014.5	2019.11-2020.10	2018.1-2019.7	2018.6-2020.2
Country	China	China	China	China	Turkey	China	China	China	China
Study design	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study	Retrospective cohort study
Case	50	35	100	25	44	62	50	46	90
Control	48	35	100	25	27	62	50	46	60
Operation time									
Case	92.37±8.32	80.83±7.71	75.01±4.03	65.49±4.01	71.28±3.38	70.71±3.97	69.92±5.24	75.31±4.42	84.02±4.47
Control	110.42±9.92	97.19±7.01	94.92±6.81	86.17±5.36	90.84±3.49	90.23±5.52	92.82±7.71	97.03±6.04	103.31±6.65
Intraoperative bleeding									
Case	56.61±5.51	52.13±5.02	48.39±3.02	57.02±5.82	42.85±3.89	49.69±4.27	48.92±5.01	55.82±3.73	60.93±4.95
Control	76.91±6.58	72.61±6.71	65.39±5.52	77.02±7.78	62.84±3.22	69.02±5.69	67.02±5.09	74.25±4.01	79.02±6.27
Incision length									
Case	7.82±1.02	7.29±0.84	5.93±0.63	/	6.48±0.74	8.83±0.93	6.62±1.17	5.93±0.62	/
Control	15.62±1.48	13.02±1.16	13.04±0.92	/	14.16±1.05	16.35±1.32	14.93±1.41	13.72±1.21	/
Length of stay									
Case	14.82±1.42	14.51±1.18	14.84±1.03	/	14.91±1.25	/	15.52±2.01	13.72±1.21	/
Control	19.20±1.58	19.03±1.73	19.03±1.40	/	19.84±1.33	/	21.03±2.36	18.29±1.15	/
Quality of life score									
Case	9.04±1.17	8.03±0.91	8.37±1.01	8.12±0.53	/	/	8.65±1.02	7.62±0,43	7.72±0.62
Control	5.93±1.04	5.61±0.72	5.72±0.61	5.51±0.42	/	/	6.23±0.98	5.55±0.31	5.18±0.33
Upper limb edema									
Case	/	/	/	0	1	/	1	/	/
Control	/	/	/	1	3	/	3	/	/
Subcutaneous tissue or skin necrosis									
Case	/	0	1	0	0	/	1	/	/
Control	/	2	1	1	0	/	2	/	/
Subcutaneous effusion									
Case	/	/	1	/	1	1	/	0	1
Control	/	/	2	/	2	2	/	1	3

Data are expressed as number or Mean±Standard Deviation

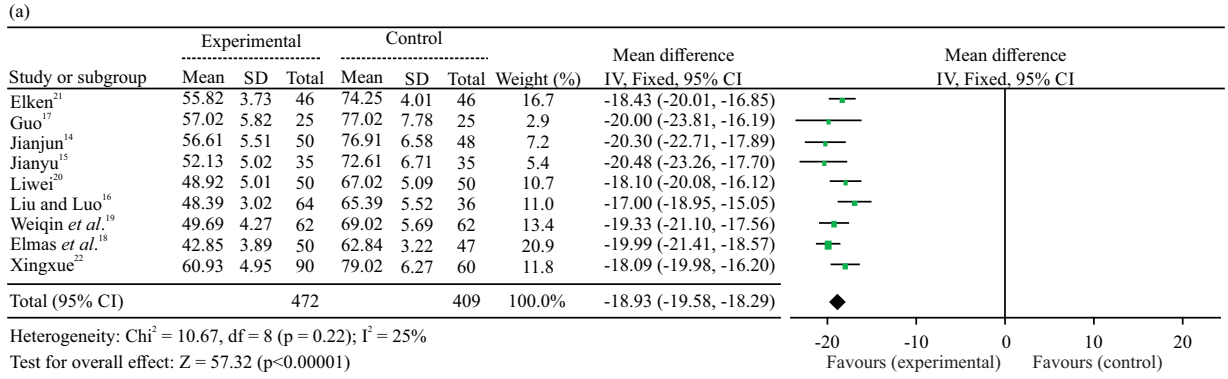


Fig. 4(a-b): Continue

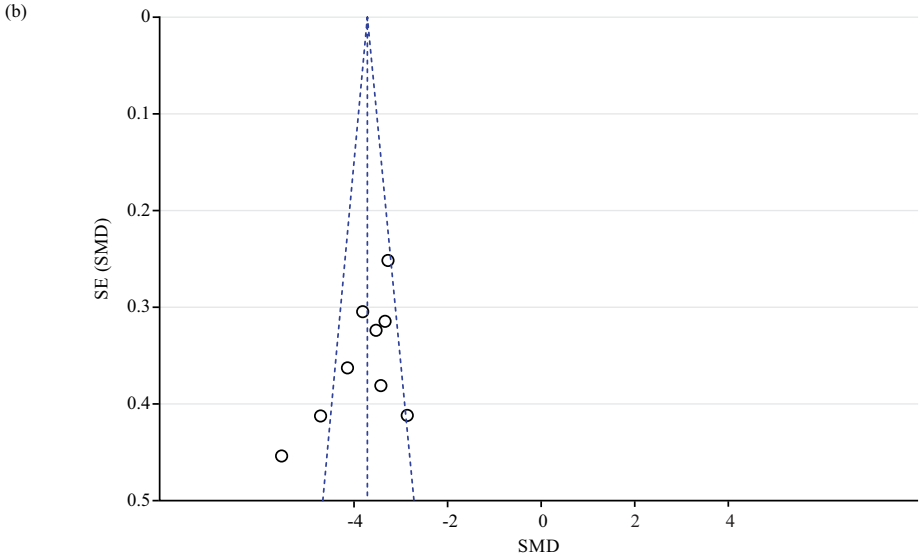
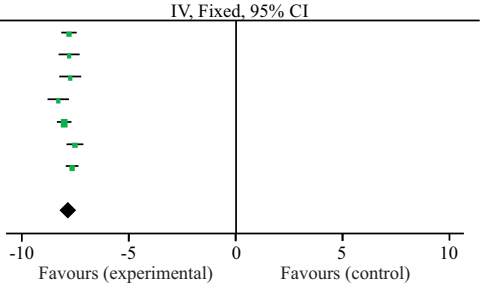


Fig. 4(a-b): (a) Average intraoperative bleeding volume of patients in the two groups (forest diagram) and (b) Average intraoperative bleeding volume of the two groups (funnel diagram)

(a)

Study or subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (%)	Mean difference IV, Fixed, 95% CI
Elken[21]	5.93	0.62	46	13.72	1.21	46	15.7	-7.79 (-8.18, -7.40)
Jianjun[14]	7.82	1.02	50	15.62	1.48	48	9.5	-7.80 (-8.31, -7.29)
Jianyu[15]	5.29	0.84	35	13.02	1.16	35	10.8	-7.73 (-8.20, -7.26)
Liwei[20]	6.62	1.17	50	14.93	1.41	50	9.4	-8.31 (-8.82, -7.80)
Liu and Luo[16]	5.03	0.63	64	13.04	0.92	36	21.2	-8.01 (-8.35, -7.67)
Weiqin *et al*.[19]	8.83	0.93	62	16.35	1.32	62	15.0	-7.52 (-7.92, -7.12)
Elmas *et al*.[18]	6.48	0.74	50	14.16	1.05	47	18.3	-7.68 (-8.04, -7.32)
Total (95% CI)			357			324	100.0%	-7.82 (-7.98, -7.66)

Heterogeneity: $Chi^2 = 7.67$, df = 6 (p = 0.26); $I^2 = 22\%$
Test for overall effect: Z = 98.41 (p<0.00001)



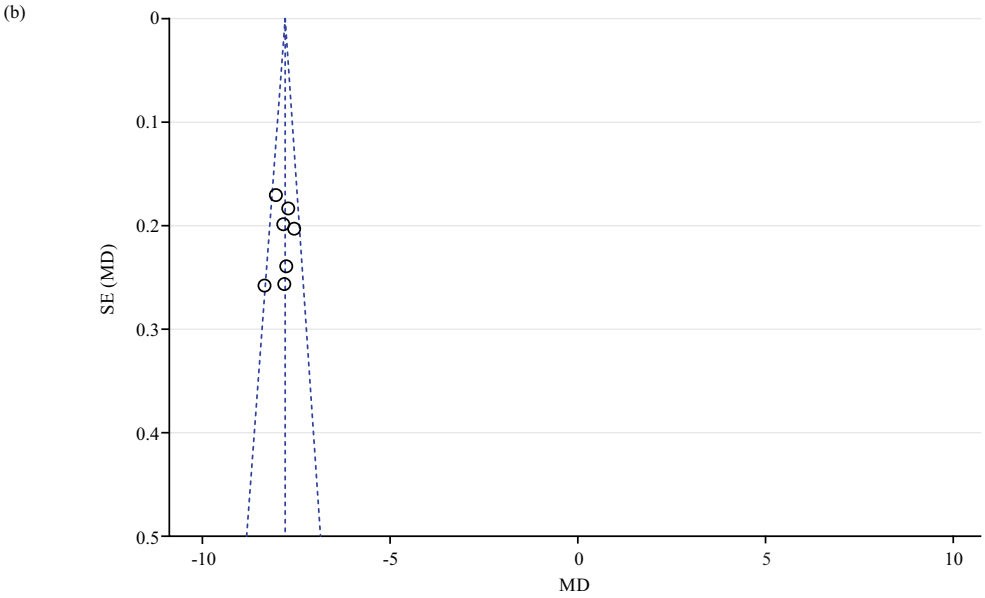


Fig. 5(a-b): (a) Incision length of patients in two groups (forest diagram) and (b) Incision length of two groups (funnel diagram)

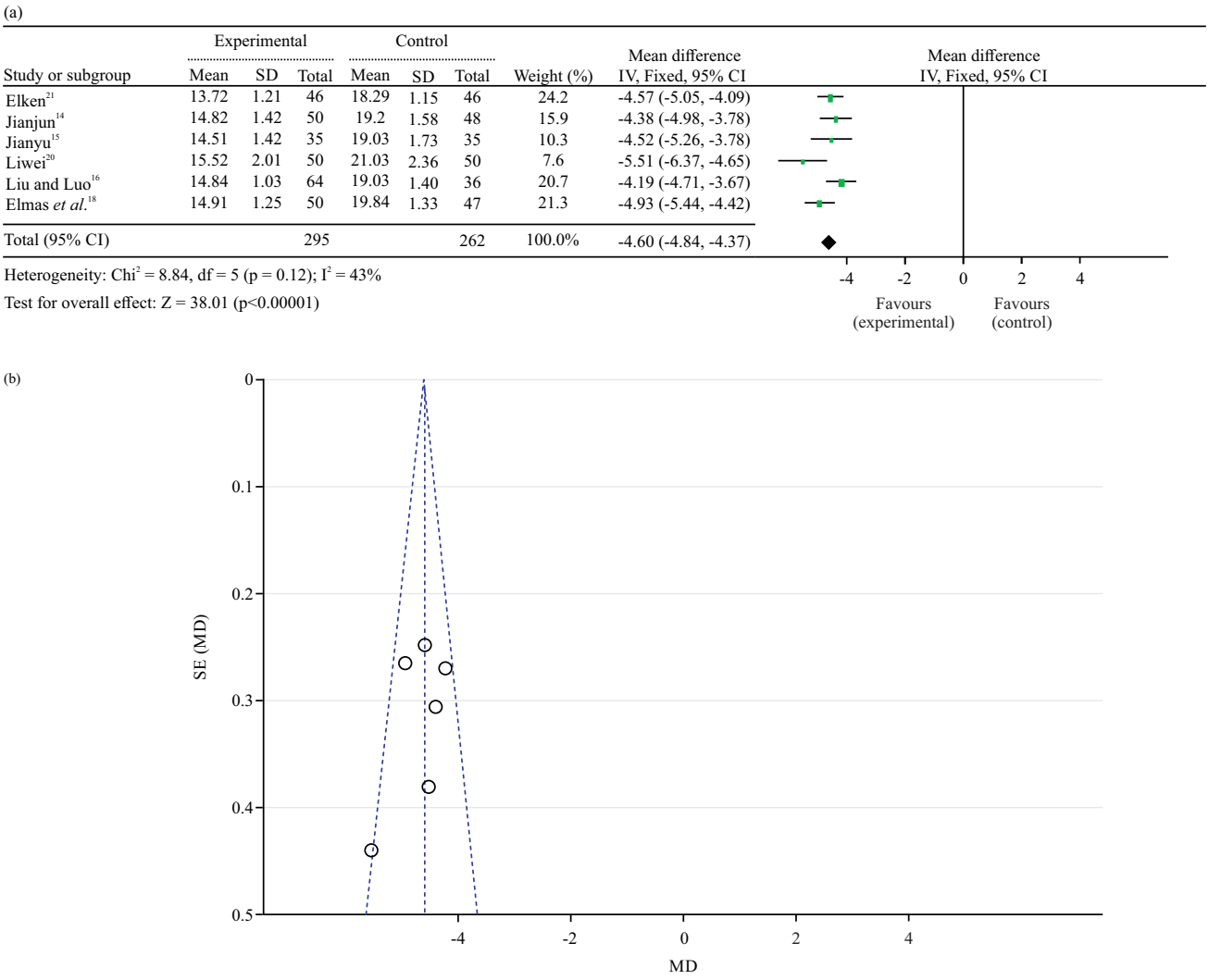


Fig. 6(a-b): (a) Comparison of hospitalization days between the two groups (forest map) and (b) Comparison of hospitalization days between the two groups (funnel chart)

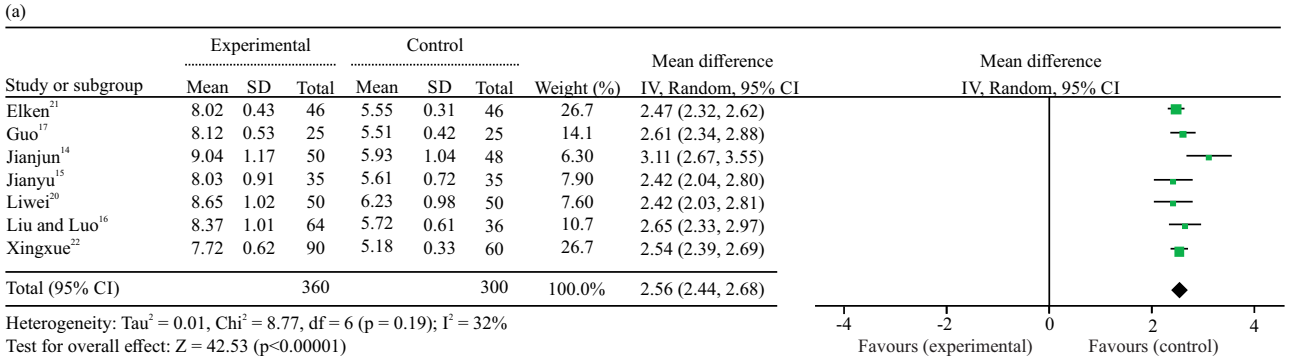


Fig. 7: Continue

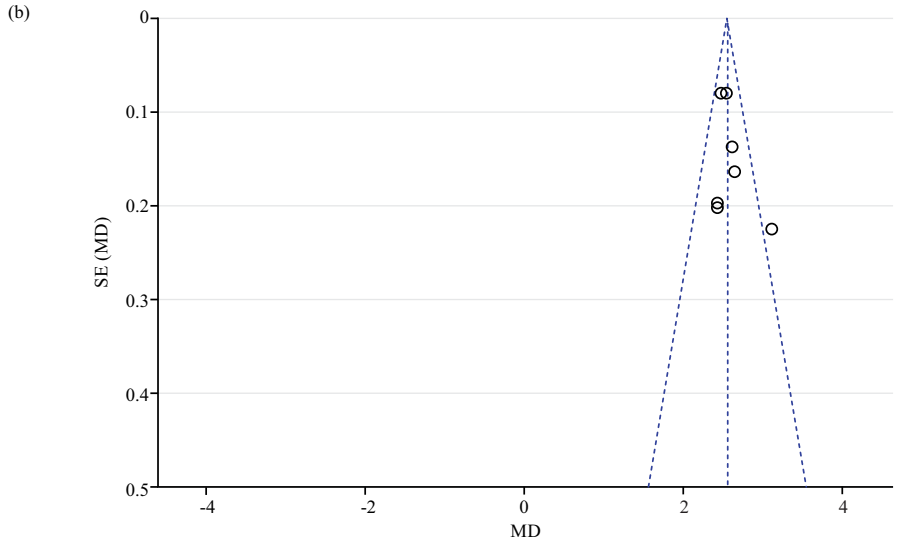


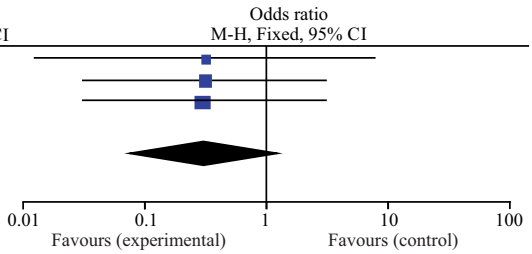
Fig. 7(a-b): (a) Comparison of quality of life scores between the two groups (forest map) and (b) Comparison of quality of life scores between the two groups (funnel chart)

(a)

Study or subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight (%)	Odds ratio M-H, fixed, 95% CI
Guo[17]	0	25	1	25	19.8	0.32 (0.01, 8.25)
Liwei[20]	1	50	3	50	39.5	0.32 (0.03, 3.18)
Elmas *et al*.[18]	1	50	3	47	40.7	0.30 (0.03, 2.98)
Total (95% CI)		125		122	100.0%	0.31 (0.07, 1.33)
Total events	2		7			

Heterogeneity: $Chi^2 = 0.00$, df = 2 (p = 1.00); $I^2 = 0\%$

Test for overall effect: Z = 1.57 (p = 0.12)



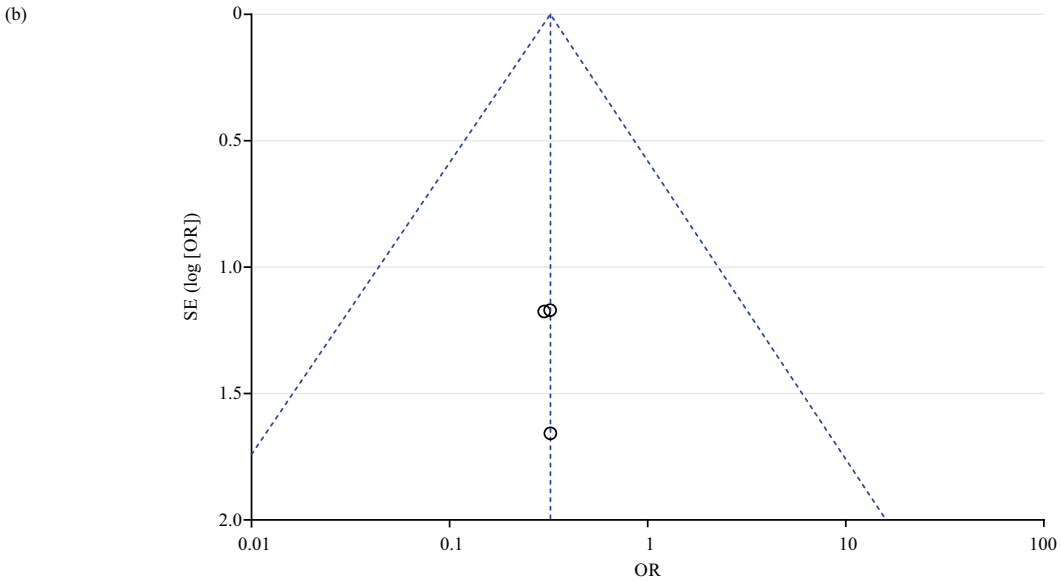


Fig. 8(a-b): (a) Comparison of the incidence of upper limb edema between the two groups (forest map) and (b) Comparison of the incidence of upper limb edema between the two groups (funnel chart)

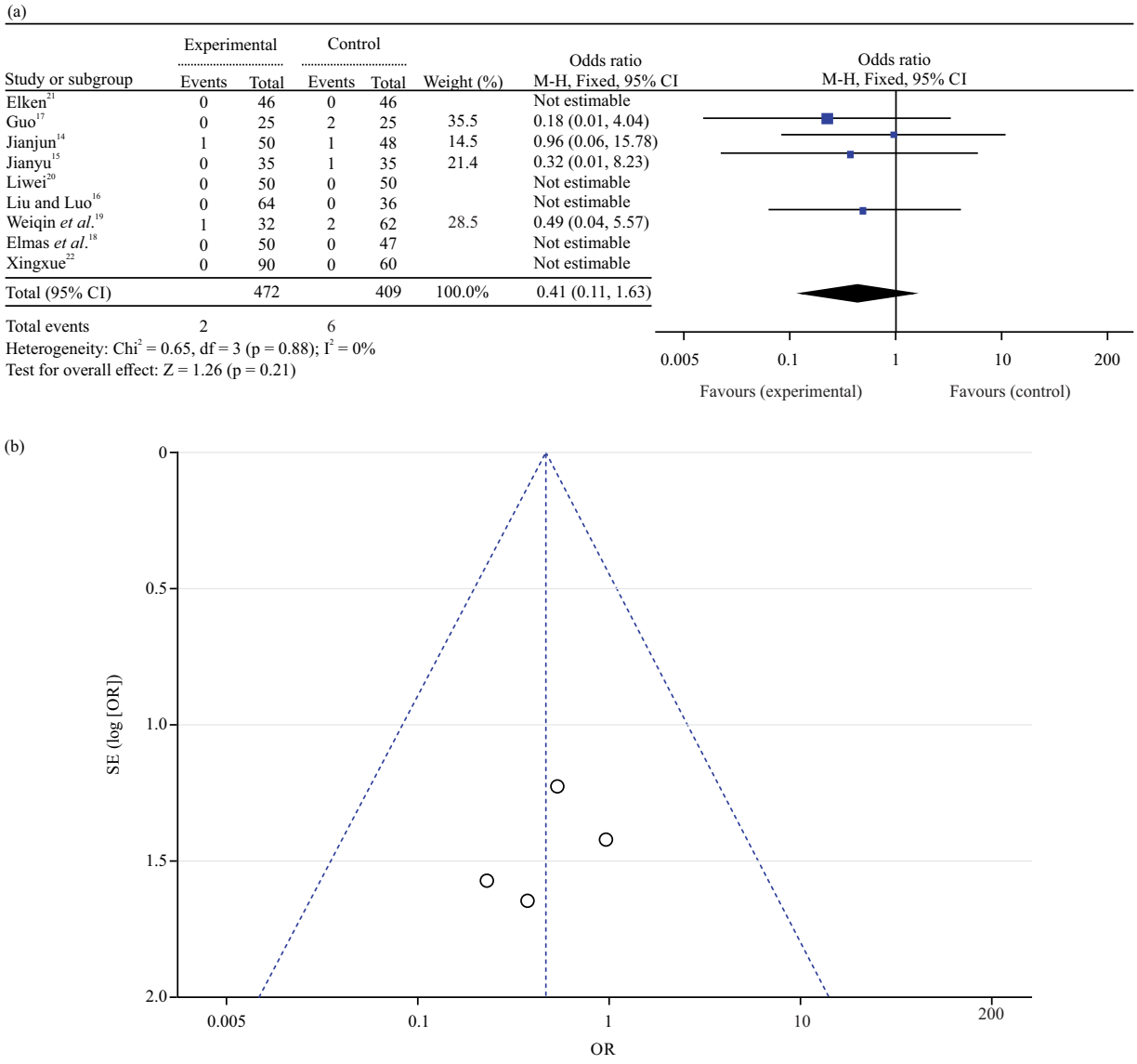


Fig. 9(a-b): (a) Comparison of the incidence of subcutaneous tissue and skin necrosis between the two groups (forest diagram) and (b) Comparison of the incidence of postoperative subcutaneous tissue and skin necrosis between the two groups (funnel diagram)

Comparison of the incidence of subcutaneous effusion between the two groups: The incidence of subcutaneous effusion was studied in 5 literatures. There was heterogeneity in subcutaneous effusion between the two groups (heterogeneity: $Chi^2 = 1.92$, df = 4 (p = 0.75), $I^2 = 0\%$), so the fixed effect model is adopted. Compared with the control group, the incidence of subcutaneous effusion in the breast conserving operation group was z = 1.41 (p = 0.16), indicating that compared with the traditional operation, the breast conserving operation did not increase the incidence of subcutaneous effusion (Fig. 10a) and there was no publication bias in this study (Fig. 10b).

DISCUSSION

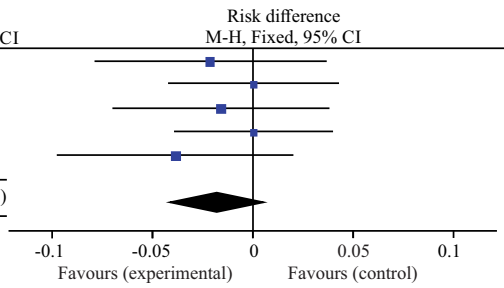
With the continuous improvement of living standards, women play an important role in society and the family. At the same time, their pressure is also higher and higher, resulting in a higher and higher risk probability of cancer[11]. In recent years, the incidence rate of breast cancer has been increasing in China. Breast is a specific sign of women. It not only has the physiological function of breastfeeding but is also an important symbol of beauty evaluation. Once the disease is diagnosed, breast cancer cannot get timely treatment, which will not only affect its physical and mental health but also pose

(a)

Study or subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight (%)	Risk difference M-H, Fixed, 95% CI
Elken[21]	0	46	1	46	16.8	-0.02 (-0.08, 0.04)
Liu and Luo[16]	0	64	0	36	16.8	0.00 (-0.04, 0.04)
Weiqin *et al*.[19]	1	62	2	62	22.6	-0.02 (-0.07, 0.04)
Elmas *et al*.[18]	0	50	0	47	17.6	0.00 (-0.04, 0.04)
Xingxue[22]	1	90	3	60	26.2	-0.04 (-0.10, 0.02)
Total (95% CI)		312		251	100.0%	-0.02 (-0.04, 0.01)
Total events	2		6			

Heterogeneity: $Chi^2 = 1.92$, df = 4 (p = 0.75); $I^2 = 0\%$

Test for overall effect: Z = 1.41 (p = 0.16)



(b)

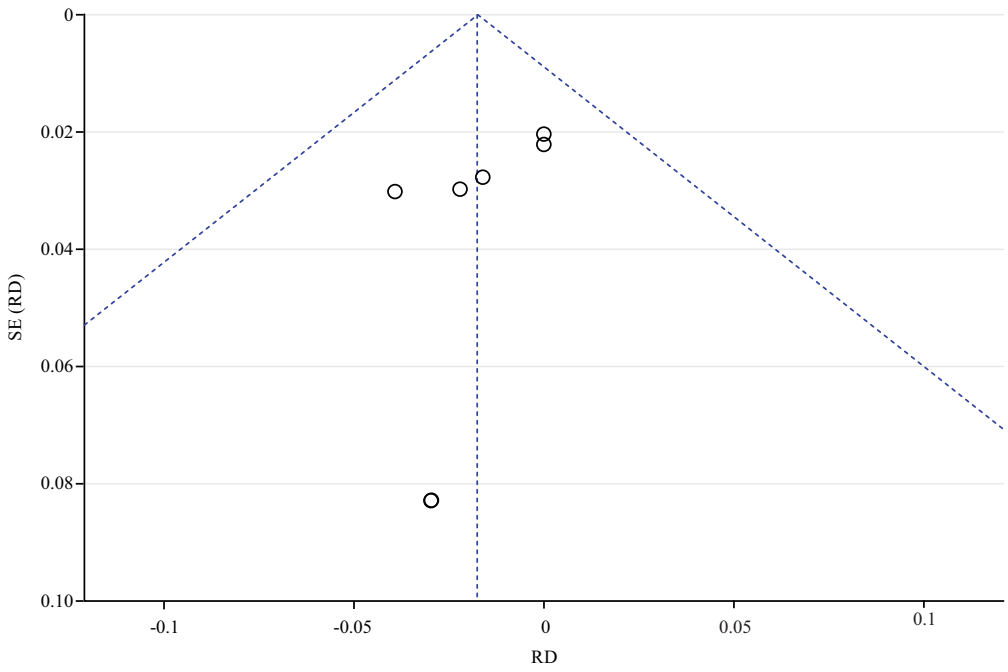


Fig. 10(a-b): (a) Comparison of the incidence of subcutaneous effusion between the two groups (forest diagram) and (b) Comparison of the incidence of subcutaneous effusion between the two groups (funnel chart)

a serious threat to the quality of life[23-27]. Therefore, choosing a reasonable treatment method is of great significance to clinics and women. In this study, we conducted a meta-analysis of two pieces of literature on breast cancer treated by excision and breast conserving surgery and compared the advantages of breast conserving therapy for breast cancer patients. Nine related RCT studies were included, including 881 patients. Through meta-analysis, we found that breast conserving treatment can significantly shorten the operation time, reduce the amount of intraoperative bleeding, have smaller incision length and shorter hospital stay, breast conserving treatment also has better cosmetic effect score, higher quality of life score and lower incidence of complications.

According to the clinical data survey in recent years, the incidence rate of early breast cancer is gradually younger. So the treatment of this disease has been widely recognized in clinical practice[28]. For early breast cancer, surgical treatment is the main treatment. According to the different treatment methods, there are some differences in the therapeutic effect[29]. Some scholars have shown that early breast cancer with breast conserving surgery for early breast cancer has shorter operation time, smaller incision, less intraoperative blood loss, significant curative effect and higher safety[30]. Some researchers have found that modified radical mastectomy has an important role in the treatment of breast cancer. It can make breast and upper limb physiological function have a good prognosis and make regional lymph nodes effectively cleaned. Free skin flap attached to the surface of pectoral muscle can reduce necrosis[31]. In the implementation of surgical treatment, on the premise of

clarifying the nerve direction, especially when there are bleeding symptoms in the accompanying vessels, the ligation position can significantly improve the surgical effect[32]. The results of this study showed that compared with traditional resection, breast conserving minimally invasive treatment can significantly shorten the operation time, reduce the amount of intraoperative bleeding and have smaller incision length and shorter hospital stay, which was consistent with the above results[14]. Research results showed that the visual effect of the breast surgery group after breast surgery was significantly better than that of the control group treated with modified radical mastectomy and the quality of life was higher[33]. Some researchers found that modified radical mastectomy is mainly to remove pectoralis minor muscle, retain pectoralis major muscle, maintain upper arm function and thoracic contour, ensure radical resection of tumor tissue and medial thoracic lymph nodes, reduce residual cancer cells, damage to vessels and nerves in affected areas and avoid distant metastasis and recurrence after an operation and help to improve the survival rate of patients[34]. The results of this study showed that compared with traditional resection, breast conserving minimally invasive treatment has a higher cosmetic effect score and quality of life score, which is consistent with the above results. The main reason we consider is that breast-conserving minimally invasive treatment can preserve the whole breast as much as possible, solve the problems of breast loss, deformation and obvious scar after standard or improved radical mastectomy, fully meet the patients' requirements for breast beauty, do not affect the self-confidence of female patients as much as possible, stabilize the patients' mentality and avoid the psychological pressure and obstacles caused by total mastectomy, So that they can participate in the later recovery with a good attitude, which can be consistent with that when they are not ill, so as to greatly improve the postoperative quality of life of patients.

Some research results showed conventional surgery with transverse crescent and longitudinal spindle incision to remove the focus and metastatic lymph nodes can improve the body's response to tumor and improve the body's defense function, but important nerves and blood vessels may be damaged during the operation, increasing the risk of complications such as upper limb lymphedema, subcutaneous tissue necrosis, subcutaneous effusion and subcutaneous skin necrosis. Affect the immune function of the body[35]. The results showed that the incidence of upper limb edema, subcutaneous tissue necrosis, subcutaneous effusion and subcutaneous skin necrosis decreased significantly, which was consistent with the above results.

Nevertheless, because there are few relevant literature sources concerning the complications included in this study, it is important to validate the conclusions through extensive clinical investigations.

This research has some deficiencies. Firstly, despite the thorough search of numerous databases, only Chinese and English-related literatures were ultimately included, potentially resulting in selection bias of the article. Secondly, the inclusion of merely 9 high-quality RCTs may result in an inadequate total sample size for analysis. Some projects for analysis only include 5-7 literature, necessitating further verification of the conclusions through numerous clinical trials. Lastly, the inclusion of numerous Chinese literatures in this study may result in regional bias in the final finding.

CONCLUSION

Through comparative analysis of the effect of different surgical methods on breast cancer patients, the results showed that breast conserving therapy significantly shortened operation time, reduced intraoperative blood loss, shorter incision length and shorter hospitalization time. The breast-conserving therapy also had a better beauty score, higher quality of life score and lower incidence of complications. However, due to the limitations mentioned above, it is necessary to conduct large-scale prospective, randomized trials to support the results of our current study.

SIGNIFICANCE STATEMENT

The study aimed to evaluate the comparative effectiveness of breast-conserving operation versus traditional resection in breast cancer treatment. Through the analysis of 9 high-quality randomized controlled trials involving 881 patients, this study revealed significant advantages of breast-conserving operation. Compared to traditional resection, breast-conserving operation demonstrated shorter operation times, reduced intraoperative bleeding, smaller incisions and shorter hospital stays. Additionally, it yielded higher cosmetic effect and quality of life scores while lowering the incidence of complications. These findings are crucial for clinical practice, particularly in enhancing patient well-being and satisfaction. Despite limitations such as regional bias and sample size, this study highlights the importance of further large-scale randomized trials to validate its conclusions and improve breast cancer treatment outcomes.

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