**CONSORT 2010 checklist of information to include when reporting a randomised trial\***

|  |  |  |  |
| --- | --- | --- | --- |
| **Section/Topic** | **Item No** | **Checklist item** | **Reported on page No** |
| **Title and abstract** |  |  |  |
|  | 1a | Rapid rehabilitation technique with integrated Traditional and Western Medicine for postoperative-gastrointestinal function | 1 |
|  | 1b | **Background**:During the perioperative period, the characteristic therapy of TCM(Traditional Chinese Medicine)2,3is effective in improving postoperative rehabilitation. In large-scale hospitals practicing TCM, there is accumulating experience related to the promotion of fast recovery in the perioperative period. **Aim:**To evaluate the efficacy and safety of Yikou-Sizi powder hot compress on Shenque acupuncture point combined with rapid rehabilitation technique.**Methods**: This prospective, multicenter, randomized, and controlled study included two groups: the rapid rehabilitation treatment group and the control group. The patients received Yikou-Sizi powder hot compress in Shenque acupuncture point combined with rapid rehabilitation technique or routine treatment, respectively. Clinical observation regarding postoperative recovery of gastrointestinal function was performed, including thetime to first passage of flatus, first defecation, first normal bowel sounds, and safety index. The comparison between groups was conducted through descriptive analysis, analysis of variance, t-test, and the rank-sum test.**Results**: 1. Postoperative gastrointestinal function. There was a statistically significant difference in the postoperative first defecation time between the treatment and control groups (87.16±32.09 versus 109.79±40.25h, respectively) (P<0.05). Similarly, the initial recovery time of bowel sounds in the treatment group was found less than the one in the control group(61.17?26.75 versus 79.19?33.35h, respectively), and the difference observed between the groups was statistically significant (P<0.05). However, there was no statistically significant difference in the initial exhaust time between treatment and control groups(51.54±23.66 versus 62.24±25.95h, respectively) (P>0.05) .2. The hospitalization expenses for patients were 62283.45±12413.90 and 62059.42±11350.51 yuan, respectively. Although the cost of hospitalization was decreased in the control group, the difference was not statistically significant (P>0.05).3. Safety assessment. This clinical trial was safe without reports of any adverse reaction or event.**Conclusion**: The rapid rehabilitation technique with integrated Traditional Chinese and Western Medicine promotes the recovery of postoperative gastrointestinal function and is significantly better than standard approach for patients after colorectal surgery.  |
| **Introduction** |  |  |  |
| Background and objectives | 2a |

|  |
| --- |
| In recent years, rapid rehabilitation during the perioperative period is attracting considerable attention. Gastrointestinal dysfunction is key for rapid recovery during this period. However, the method of active intervention to promote the rapid recovery of gastrointestinal function after operation remains insufficient. |

 | 4 |
| 2b |

|  |
| --- |
| To evaluate the efficacy and safety of Yikou-Sizi powder hot compress on Shenque acupuncture point combined with rapid rehabilitation technique. |

 | 2 |
| **Methods** |  |  |  |
| Trial design | 3 |

|  |
| --- |
| This prospective, multicenter, randomized, and controlled study included two groups: the rapid 3rehabilitation treatment group and the control group. The patients received Yikou-Sizi powder hot compress in Shenque acupuncture point combined with rapid rehabilitation technique or routine treatment, respectively. Clinical observation regarding postoperative recovery of gastrointestinal function was performed, including the time to first passage of flatus, first defecation, first normal bowel sounds, and safety index. The comparison between groups was conducted through descriptive analysis, analysis of variance, t-test, and the rank-sum test. |

  |
| Participants | 4a |

|  |
| --- |
| Inclusion criteria(1) Patients who had undergone laparoscopic surgery for colorectal cancer. (2) Patients aged 40–75 years. (3) The duration of surgery was 1–4 hours. (4) The time of anesthesia was 1.5–4.5 hours. (5) The Traditional Chinese Medicine (TCM) pattern belonged to the Qi stagnation and Qi deficiency. (6) The patients provided informed consent.  |

 | 6 |
|  | 4b |

|  |
| --- |
| The patients underwent laparoscopic surgery for colorectal cancer from December 2014 to June 2017 in four institutions, namely the Second Affiliated Hospital of Guangzhou University of Chinese Medicine, the First Affiliated Hospital of Guangzhou University of Chinese Medicine, the Guangdong Provincial Integrative Chinese and Western Medicine Hospital, and Zhongshan Hospital of Chinese Medicine in China.  |

 | 5,6 |
| Interventions | 5 | The patients in control group received routine treatment. While the patients in rapid rehabilitation treatment group with integrated Traditional Chinese and Western Medicine received routine treatment and Yikou-Sizi powder hot 9press. The TCM Reyanbao of Yikou-Sizi powder hot compress was applied to the Shenque acupuncture point on the first day after the operation. The treatment was used twice daily (i.e., at 9:00 and 16:00) for 30 min each time. The drugs were replaced every 3 days and the treatment lasted for 7 days after surgery.  |
| Outcomes | 6 | Primary outcomes: the first bowel sounds recovery, first anal exhaust and defecation time, and the incidence 10,11 of complications. Secondary outcomes: sex, age, time of anesthesia, time of operation, and amount of intraoperative blood loss, hospitalization expenses. Safety evaluation: three routine examinations, biochemical indicators, stress indicators, inflammatory markers, and electrocardiogram  |
| Sample size | 7b | The sample size was estimated using the two sample mean comparison method. Based on the results of the8preliminary test, the defecation times after operation in the control group and treatment group were *X* 1=134.2hours, S1=31.1 and *X* 2=109.9 hours, S2=42.1, respectively. The above data were used to calculate the valueof the overall parameter. When α=0.05 and β=0.10, the data were inserted into the PEMS 3.1（Package forEncyclopaedia of Medical Statistics 3.1） for Windows software package (Department of Health Statistics,Huaxi School of public health, Sichuan University, China). The calculated sample size in each group was 50patients. Accounting for a potential 15% discontinuation rate, the total estimated sample size for this study was116 patients (58 patients per group).  |
| Randomisation:

|  |
| --- |
|  |

 |  |  |  |
| Sequence generation  | 8 |

|  |
| --- |
| The patients who met the inclusion criteria were enrolled in the clinical trial. They were randomly assigned to the two groups through the central random allocation interactive network operation system (http://www.gztcmgcp.com/sjxt/login.asp). 8 |

  |
| Allocationconcealment mechanism | 9 |

|  |
| --- |
| Sequentially numbered containers were used to implement the random allocation sequence 8 |

 |
| Implementation | 10 |

|  |
| --- |
| Patients were randomly assigned to the two groups through the central random allocation interactive network8,11operation system (http://www.gztcmgcp.com/sjxt/login.asp). The research data were processed by third parties (New drug research office in Guangdong hospital of Traditional Chinese Medicine) to ensure an objective and accurate evaluation. The surgeons enrolled participants, and the researchers assigned participants to interventions  |

 |
| Blinding | 11 |

|  |
| --- |
| The TCM treatment used in the study was volatile.Thus,it was difficult to perform a blinded study.11 |

  |

|  |  |  |  |
| --- | --- | --- | --- |
| Statistical methods | 12 |

|  |
| --- |
| Through the use of descriptive statistical analysis, count data calculated constituent ratio and frequency, the two groups were compared using the  or Fisher’s exact test. Measurement data were calculated as follows: ,min, max, and median (M), and the two groups were compared using the t with normal distribution and uniform variance. The rank-sum test was used for either non-normal distribution or non-uniform variance. The test level was α=0.05.The statistical review was performed by a biomedical statistician.11 |

 |
| **Results** |  |  |
| Participant flow (a diagram is stronglyrecommended) | 13 | 23Exclusion (34 patients) Randomly assigned (156 patients)Screening (190 patients)Control group (78 patients)Elimination (45 patients)Rapid rehabilitation treatment group (78 patients)Control group(54 patients of the PPS set) Rapid rehabilitation treatment group (57 patients of the PPS set) |
| Recruitment | 14 |

|  |
| --- |
| The patients underwent laparoscopic surgery for colorectal cancer from December 2014 to June 2017 in four institutions. 5 |

 |
| Baseline data | 15 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 　Group | Control group (n=51) |  Treatment group (n=60) |  | P |
| n | % | n | % |  |  |
| Sex | Male (n=61) | 28 | 51.9 | 33 | 57.9 | 0.409 | 0.522 |
| Female (n=50) | 26 | 48.1 | 24 | 42.1 |

Table 2. The two groups according to sex (%) (intent-to-treat population)28Table 3. Age, time of anesthesia, time of operation, and amount of intraoperative blood loss in the two groups ()

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Control group (n=54) | Treatment group (n=57) | Z | P |
| Age (Y) | 58.28±10.28 | 58.96±10.95 | 0.387 | 0.699 |
| Time of anesthesia (h) | 4.71±0.78 | 4.42±1.07 | 1.317 | 0.188 |
| Time of operation (h) | 3.75±0.76 | 3.57±0.85 | 0.980 | 0.327 |
| Intraoperative bleeding (mL) | 81.93±60.46 | 81.3±47.31 | 0.546 | 0.585 |

 |
| Numbers analysed | 16 |

|  |
| --- |
| A total of 154 patients were enrolled in this study and randomly assigned to the two groups. Of those, 39 patients were excluded, and four patients discontinued from the study. Therefore, the final analysis included a total of 111 patients 11 |

 |
| Outcomes andestimation | 17 |

|  |
| --- |
| There was a statistically significant difference in the postoperative first defecation time between the treatment and control groups (87.16±32.09 versus 109.79±40.25 hours, respectively (P<0.05). Similarly, there was a statistically significant difference in the initial recovery time of bowel sounds (61.17±26.75 versus 79.19±33.35 hours, respectively (P<0.05); However, there was no statistically significant difference in the initial exhaust time between the two groups after the operation (P>0.05)12 |

  |
| Ancillary analyses | 18 |

|  |
| --- |
| According to the variance test, the total hospitalization expenses for patients in the two groups showed homogeneity; thus, we performed an independent sample t test. The analysis revealed a non-significant reduction in hospitalization costs reported in the control group compared with those observed in the treatment group (P＞0.05)13 |

 |
| Harms | 19 |

|  |
| --- |
| During the period of clinical observation, there were no adverse reactions observed in the two groups. There were no abnormal changes in the three routine examinations, biochemical indicators, stress indicators, inflammatory markers, and electrocardiogram. 12,13In terms of complications, there was 1 case in the treatment group and 4 cases in the control group.  |

  |
| **Discussion** |  |  |
| Limitations | 20 |

|  |
| --- |
| This study had some limitations. Firstly, the TCM treatment used in the study was volatile. Thus, it was difficult to perform a blinded study, which may have impact on the primary outcomes and secondary outcomes. Moreover, early postoperative enteral feeding and mobilization after surgery could be essential for the study results, which were different in ERAS surgical protocols. Finally, painkillers were used for postoperative pain management, including opioids, tramadol, dexmedetomidine, and so on. The medication relieving pain for the patients was individualized. However, it could take effects on monitored symptoms which were recorded by the doctors and patients.  |

 14 |
| Generalisability | 21 |

|  |
| --- |
| During the perioperative period, the characteristic therapy of TCM is also effective in improving postoperative rehabilitation. By employing the latest advances in TCM and Western medicine, we combined external therapy with the rapid rehabilitation program to form a perioperative fast recovery technique. We observed that the combined rapid rehabilitation technique promotes the recovery of gastrointestinal function after laparoscopic colorectal surgery and reduces the cost of hospitalization. 13 |

  |
| Interpretation | 22 |

|  |
| --- |
| In conclusion, this study showed that the perioperative rapid rehabilitation technique with integrated TCM and Western Medicine promotes the recovery of gastrointestinal function in patients who underwent laparoscopic surgery for colorectal cancer, with a favorable safety profile. Therefore, this rapid rehabilitation technique with integrated TCM and Western Medicine is worthy of further clinical investigation. 17 |

  |
| **Other information** |  | 22 |
| Registration | 23 |

|  |
| --- |
| This study was registered in the Chinese Clinical Trial Registry, and the registration number is ChiCTR-IOR-14005744  |

 |
| Protocol | 24 |

|  |
| --- |
| The full trial protocol can be accessed on the journal named MEDICINE.  |

51,2 |
| Funding | 25 | Guangdong Provincial Department of Finance,No.[2016]150-9; Guangdong Provincial Department of Science and Technology,No.[2015]722014A020212278;Guangdong Bureau of Traditional Chinese Medicine,No.[2016]1220164021;Guangzhou University of Chinese Medicine planning,No.[2018]6-18; Special funds for construction of national and regional TCM in diagnosis and treatment centers(Letter of the state administration of Traditional Chinese Medicine,No.[2918]205 for Department of Surgery in Guangdong hospital of Traditional Chinese Medicine. |

\*We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up to date references relevant to this checklist, see [www.consort-statement.org.](http://www.consort-statement.org/)