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REVIEW

Problems and Reflections of Academic Team Building in the Clinical Practice of Accelerated Rehabilitation Surgery

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Abstract: Enhanced recovery after surgery, the advancement of ERAS concept and minimally invasive surgical techniques have greatly accelerated the recovery of patients after surgery. However, due to the relatively lagging development of the inherent clinical cooperation team model and operational procedures at this stage, the advantages of ERAS have not been fully utilized, and the widespread promotion and popularization of ERAS have been limited. Reviewing the global clinical practice and research progress of ERAS, the problems in ERAS team building are analyzed from the following aspects. First, ERAS team building requires simultaneous development of concept and technology; second, ERAS team building model suitable for national conditions; third, the "invisible burden" of ERAS team clinical work; fourth, how to integrate ERAS team building with hierarchical diagnosis and treatment; fifth, the challenges and opportunities of ERAS team building. Fifth, the challenges and opportunities of ERAS team building. In conclusion, ERAS team building should be aimed at promoting ERAS technology and benefiting patients.

Keywords: Accelerated rehabilitation surgery; disciplinary team building; invisible burden; graded diagnosis and treatment

Minimally invasive techniques have contributed to the development of enhanced recovery after surgery (ERAS), and the organic integration of the two has contributed to the development of less invasive and less risky surgical procedures and to the realization of "pain-free and risk-free" surgical procedurescite [1]. ERAS has been accepted by a wide range of surgeons and has benefited patientscite [2]. However, the acceptance of the ERAS concept is much greater than the clinical application, so what are the reasons why the "high level" technology has been put on the shelf? It is commonly believed that this is due to the lack of appropriate guidelines and norms in various specialties and concerns about the safety and security of doctors and patients. Combined with the effectiveness of global clinical practice, it can be said that this concern is superfluous. Combined with China's national situation, the reasons may be mainly the following: first, the ERAS concept is not well integrated into the operational process during clinical application, resulting in the decoupling of theory and technology; second, the existence of the wall effect in the current clinical cooperation of disciplinary teams, resulting in form over content; third, the additive effect in clinical application caused by the model of disciplinary collaboration (especially multidisciplinary collaboration), which increases the The invisible burden for doctors is increased clinical workload, and for patients is increased medical risk, hospitalization cost and reduced comfort. The root cause of the above problems is the problem of disciplinary team building, and a rational and highly integrated team will certainly contribute to the efficient and smooth implementation of ERAS. Therefore, this article discusses the current situation and problems in ERAS team building from the following aspects.

1 ERAS team building requires simultaneous development of concept and technology

The main feature of ERAS is integrated innovation, making full use of the latest technological tools and their timely application in clinical and patient services [3]. The initial phase of ERAS (before 1997) was characterized by detailed improvements aimed at accelerating the turnaround between specialties, as exemplified by the name Fast-track surgery (FTS), which optimizes the pre- and post-operative pathways to optimize the patient flow, such as reduction of examination time (in emergency departments [4]), anesthesia time and tracheal intubation time (in coronary artery bypass grafting [5]). anesthesia time and tracheal intubation time (coronary artery bypass graft surgery as an example [6]). Abdominal surgery includes improved perioperative dietary management [7]. The role of minimally invasive surgery was not fully realized due to the prevalence of minimally invasive techniques and the level of awareness of physicians.In the decade after 1997, the application of minimally invasive surgery deepened in various specialties and became widespread in certain disciplines, especially in laparoscopic surgery, significantly reducing surgical stress and complications, as well as shortening the length of hospital stay of patients.The ERAS name was once used as " enhanced recovery program after surgery", with "program" emphasizing the pivotal role of minimally invasive techniques (procedures) in rapid recovery [8]. From 1992 to 2006, the initial role of ERAS was revealed, emphasizing the full use of techniques and optimization of procedures in each specialty, without paying attention to team building, and with a clinical focus on complications rather than average length of stay.

After 2007, the concept of ERAS and minimally invasive surgery penetrated into all specialties and spread to hospitals at all levels. The main criteria for the success of ERAS programs are the reduction of hospitalization days and costs. ERAS should be judged by patient-reported outcomes (PROs). This criterion focuses on the patient's comfort and patient safety, and the success of the ERAS program is evaluated from the patient's perspective, fully reflecting the "patient-centered" concept of mockery. To truly embody the "patient-centered" concept, ERAS requires the collaboration of medical (surgeons, anesthesiologists), nursing (nursing and caregivers), rehabilitation (rehabilitation and physical therapists) and nutrition departments to achieve a win-win situation for both patients and society.

2 Establishment of ERAS team building model suitable for national conditions

The difficulty in ERAS team building is that there is no uniform, effect-affirming model, which is limited by the medical situation in each country or hospital, making it impossible to fully exploit the clinical application and popularize and promote its use [9,10]. Perioperative multimodal care is a surgeon-led model with passive participation of other members, which is characterized by the composition of team members subject to both departmental and performance appraisal constraints (fencing). This model was the main tool used in early ERAS practice, with surgeon-led (with each specialist, anesthesiologist or nurse providing their own protocols) under which executive protocols are formed and implementation is guided, such as surgical process optimization based on minimally invasive techniques (intraoperative fluid management for anesthesia, postoperative pipeline management for nursing and pain management for the pain unit).

The main advantage of multi-modality collaboration in clinical feasibility is that the protocol is fixed, the operation process is clear, and the team members all have rules to follow. However, the disadvantages are also obvious: first, the clinical effectiveness of ERAS cannot be evaluated correctly, e.g., the same method applied to different patients may or may not be effective; team members are all passive in implementing the protocol, and when the final result is unsatisfactory, it is difficult to find out at which stage the problem occurs. Secondly, ERAS protocols cannot be updated or changed in a timely manner, such as nurses can only implement the protocols without timely evaluation of their effectiveness. Third, the main work is done in the surgery, which is dominated by surgeons, and the initiative of other members is poor, which makes it difficult to evaluate the performance of other department members in hospital management and also limits the sustainability of the program implementation.ERAS multimodal collaboration may be mainly applied to certain single diseases or cases, and the ERAS program is relatively simple and easy to implement [11]; for example, in the application of ERAS multimodal collaboration in pain management surgeons are responsible for regional blocks, anesthesiologists focus on systemic medications and adverse effects, and nursing provides timely assessment and feedback on outcomes [12].

In addition, some specialties believe that they should play a greater role in the multimodal operation. In fact, certain specialties do have a leading role to play in specific phases of ERAS. For example, expanding the scope of work of anesthesiologists and playing a leading role in team building, "anesthesiologist as perioperative surgical home" is a useful exploration [13], where anesthesiologists are involved in the entire management of the perioperative period: preoperative assessment, perioperative anesthesia choice of methods and drugs, documentation and evaluation of the protocol's effectiveness. The advantage of this model is that it helps to accumulate experience and continuous improvement of the protocol, but the disadvantage is also evident that

the root cause of the problem may be overlooked in favor of detailing. For example. In response to postoperative incisional pain, the anesthesiologist applies a combination of methods to manage the pain, ignoring the side effects of each protocol, when in fact the main cause of the pain is caused by drain placement. The root cause of the pain is the drainage tube, and the surgeon can achieve pain relief by changing the diameter of the drainage tube, the method of fixation, or even by options such as not leaving it in place or pulling it out early.

The expansion and depth of the ERAS field has made it increasingly difficult to achieve surgery-led multimodal collaboration. Multimodal health care protocols may be realistic for clinical research or for smaller hospitals, but multidisciplinary team approach is needed for multicenter clinical research or replication [14]. ERAS is an integrated innovation in which the team first develops a consensus on the goal of accelerated recovery for a particular condition, and then everyone optimizes the protocol and implements it, recording the results and then optimizing it. the ERAS protocol requires the pooling of wisdom and new technologies from various specialties, jointly agreeing on the operational procedures that need to be changed, and optimizing them accordingly based on their respective changes in the simplest effective way as an implementation plan. For example, in abdominal surgery, a questionnaire was sent to physicians involved in all specialties of abdominal surgery to investigate the perioperative concerns to achieve accelerated recovery (e.g., no nausea and vomiting, independent activity, and early diet), which were agreed upon and not related to the specialty; based on this goal, procedures in anesthesia, surgery, and care were developed and the ERAS protocol was continuously optimized [15]. However, the main shortcoming of multidisciplinary collaboration is that each specialty can overload the overall ERAS protocol with overly specialized protocols, making it cumbersome and difficult to implement [16]. How to make a deep integration between disciplines around ERAS is the direction of research.

The multidisciplinary collaboration model has been recognized, but is difficult to replicate clinically. The main reason remains that patients are hospitalized in surgery and that the medical team leader responsibility system leads to unlinked, unmotivated and unsustainable performance of certain team members. Therefore, the problem needs to be considered and the appropriate ERAS team needs to be formed in the context of each hospital. The more mature model in China is the West China Hospital of Sichuan University (patient-centered, multidisciplinary collaboration model), where patients are housed in the thoracic surgery department and other departments (rehabilitation, pain, nutrition, etc.) all come directly to check in and give orders, while performance is attributed to the respective departments. The other is the model of the First Affiliated Hospital of Zhejiang University (ERAS ward), where the ward teams are all from different specialties, each doing their own job and collaborating with each other, which has also achieved remarkable results. From the perspective of the current domestic medical system, ERAS ward is a relatively easy to implement program, and several hospitals have already implemented thoracic surgery to bring in personnel from related disciplines, such as rehabilitators and physiotherapists.

3 The "hidden burden" of the ERAS team’s clinical work

The "hidden burden" refers to the additional workload, risks and costs associated with the work. The "hidden burden" in clinical practice refers to medical interventions that can be done or not done. These medical interventions increase the workload of physicians as well as the risk and cost to patients. The multidisciplinary teamwork model in ERAS clinical practice may create "hidden burdens" for both physicians and patients: from the medical perspective, increased workload and operational risk; from the patient perspective, increased medical risk and cost.

In the early days of multidisciplinary teamwork for ERAS protocol implementation, due to the little experience of cooperation between teams, each specialty wanted to apply the latest achievements of its own specialty to the ERAS protocol, which were the best individually, but were not optimal when placed in the whole ERAS process, and medical interventions and medical services were relatively common to do additive. The result is an increase in physician workload (invisible burden) on the one hand, and an increase in patient risk and cost (invisible burden) on the other. The reason for this is the consistent mental model of doctors and patients, the lack of regulation of new programs and excessive consideration of work safety (doctors and patients), which leads to the creation of unnecessary tests. But these additional medical interventions are considered by the various specialties to be the best and desirable. Therefore. Multidisciplinary collaboration may have the problem of overly cumbersome ERAS processes in the early stages of application, sometimes to the detriment of accelerated recovery. However, after a period of clinical application, the protocols have become more and more refined through exploration and improvement among the disciplines. A reasonable trade-off between medical interventions and medical services is the best ERAS protocol [17].

ERAS protocols developed in collaboration with multidisciplinary teams are continuously optimized after clinical research and practice, and trade-offs in operational procedures, specifically in clinical medical practice refer to: additive medical services to improve the patient experience [18]; and subtractive medical interventions to reduce risk and pain. This is the more desirable approach, but it increases the medical workload and is an invisible burden for the hospital (increased workload but no charge). Such as early postoperative bedside activities, the need to reduce unnecessary monitoring and tube placement; such as postoperative cardiac monitoring (medical intervention), if not installed, the need for nurses to perform bedside blood pressure monitoring

every 2 hours (medical services), etc.; no postoperative urinary catheter retention, the need for nurses to pay extra attention and take measures to make patients urinate as early as possible and other work because there is no medical intervention, urinary catheter and cardiac monitoring is also no way to charge, creating the original does not Some problems exist that increase the risk of health care and require additional services from health care providers [19, 20].
The clinical work between plus (medical services) and minus (medical interventions) fully reflects the connotation of ERAS. Providing individualized and humanized services while ensuring patient safety invariably increases the workload and intensity of health care staff, as well as the operational risk of health care staff, thus increasing the need for teamwork.

4 How to integrate ERAS team building with hierarchical diagnosis and treatment

The ERAS concept currently focuses more on perioperative clinical treatment and outcomes, such as preoperative education, diet, minimally invasive surgical methods and reduction of complications [21]; ERAS requires us to expand our focus on patients from the perioperative period to the whole life cycle; to shift from reducing complications to not affecting postoperative quality of life and returning patients to normal life and work [22]. Combined with the current domestic healthcare system and status quo, especially with the implementation of Healthy China and the hierarchical diagnosis and treatment system, team building needs to include allied hospitals, community hospitals, and family physicians. Through the implementation of ERAS program to promote the reasonable flow of patients among family doctors, community doctors, and specialists, the role of medical resources at all levels can be brought into play to improve medical services and achieve a win-win situation for patients, hospitals, and society, in order to truly achieve the convenience of patients' access to medical care, save patients' costs, and enable patients to quickly return to society and life, which is beneficial to their physical and mental health.
How to better integrate graded care into the clinical practice of ERAS, probably a better solution is to initially include family doctors, community doctors and allied hospital doctors in the team building to participate in all phases of the ERAs program to deepen the understanding of the ERAS program and better understand their role and function, and also to provide suggestions for the optimization of the program. In fact, day surgery should now be a good template, with treatment in specialty hospitals and rehabilitation in the primary care and community. Day surgery centers are a great link and a perfect arena for the demonstration of ERAS theory and minimally invasive surgical techniques [23].
The process of ERAS team building is also the process of continuous optimization of ERAS programs, reducing medical interventions, increasing medical services, allowing patients to truly experience individualized and humanized medical care, improving patient satisfaction, maximizing the hospital's strained medical resources, better providing quality services to more patients, and truly maximizing patient benefits, which is the clinical application of ERAS. The real meaning of ERAS clinical application is. The construction and collaboration of multidisciplinary teams and the promotion of hierarchical diagnosis and treatment have truly achieved patient-centered and problem-oriented, with multiple parties working together to solve patients' problems and improve medical quality.

5 Challenges and opportunities for ERAS team building

At present, the model and operation of ERAS team building is still in an immature stage. The more prominent problem is that the medical billing items are mostly the cost of materials during medical interventions, while the cost of medical services is very little, and the required additional medical services cannot be charged, which is one of the main reasons for the slow promotion. Team building, staffing and performance assessment walls between specialties are probably the main difficulties facing the implementation and promotion of the program at present. How to solve the contradiction between reality and ERAS team building is also an opportunity for our ERAS development. The country is now vigorously promoting the construction of medical association hospitals and the hierarchical diagnosis and treatment system, especially the promotion of ambulatory surgery to solve the "difficulty in seeing patients and hospitalization", which provides more space for the promotion and implementation of ERAS. There is still a long way to go to achieve the goal of ERAS, and ERAS team building is always on the way, and new elements need to be injected from time to time, not limited to the hospitalization period, but based on the whole life cycle of the patient's rehabilitation practice.
The exploration and practice of ERAS for 20 years has brought the development of surgery to a new stage; we should expand the scope of ERAS team building and explore new models that cannot be confined within the hospital, but should be expanded outside the hospital (within the medical association, community and family doctors) to truly reflect patient-centeredness, with treatment in the hospital and rehabilitation at home.

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