



Analysis of the Application Value of Micro-Course Combining PBL Teaching Method in the Clinical Practice of Anesthesia Graduate Students

Ting Lu

Anesthesiology and Perioperative Medicine, First Affiliated Hospital with Nanjing Medical University, Nanjing 210029, Jiangsu, China
DOI: 10.32629/jcmr.v4i4.1466

Abstract: Objective: Exploring the Application Value of Micro lessons Combined with PBL Teaching Method in Clinical Internship of Anesthesiology Graduate Students. Methods: Through controlled experiments, 42 anesthesia graduate students who were interning in hospitals were selected as the research subjects. They were divided into two groups using a random number table: the traditional group using traditional teaching and the combined group using micro lessons combined with PBL teaching, with 21 people in each group. Collect and compare data on teaching effectiveness and method satisfaction for two groups. Results: In terms of teaching effectiveness, the theoretical knowledge score of the joint group was (91.61 ± 3.97) points, the clinical operational skills score was (93.74 ± 4.44) points, and the total score was (92.90 ± 3.16) points, which showed a significant improvement compared to the conventional group's (85.44 ± 2.89) points, (87.92 ± 5.25) points, and (86.57 ± 4.71) points ($P < 0.05$); the satisfaction rate of the joint group with teaching methods is 95.24%, which is significantly higher than the conventional group's 61.90% ($P < 0.05$). Conclusion: The application value of combining micro-course and PBL teaching method in the clinical practice of anesthesia graduate students is high, which can not only significantly improve the teaching effect, but also be favored by clinical practice graduate students, which is worthy of promotion.

Keywords: micro course; PBL teaching; anesthesiology; graduate; clinical practice

1. Introduction

Clinical practice is anesthesia graduate students combine the important way of theoretical knowledge and clinical practice, the personal ability and clinical work in the future, so the anesthesia graduate student of clinical practice teaching quality has higher requirements, and the teaching method of clinical practice can have a direct impact on teaching quality, so explore a more scientific and effective teaching scheme has become one of the focus of the clinical practice scientific research. Micro Curriculum is a kind of network curriculum with video as the carrier of knowledge, which can meet students' ready and personalized learning.[1]The PBL teaching method is a teaching method which focuses on the students and focuses on the problem solving, and the Teachers encourage students to study actively and enthusiastically by guiding them. [2] Since the traditional teaching takes knowledge explanation as the midpoint, students' behavior of acquiring knowledge is passive and the effect is poor. In this study, the teaching method for some clinical practice anesthesia graduate students, and explored their application value. The report is as follows.

2. Data and methods

2.1 General information

Through controlled experiments, 42 anesthesia graduate students who were interning in hospitals were selected as the research subjects. They were divided into two groups using a random number table: the traditional group using traditional teaching and the combined group using micro lessons combined with PBL teaching, with 21 people in each group. In the traditional group, there were 11 males and 10 females, with an average age of (25.67 ± 2.18) years; There were 8 males and 13 females in the joint group, with an average age of (25.33 ± 1.97) years. In terms of general information such as gender and age, there was no significant difference between the two groups ($P > 0.05$),

2.2 Methods

1.2.1 The traditional group implements the traditional teaching mode: the teacher teaches the knowledge according to the outline of graduate clinical practice, including anesthesiology theoretical knowledge and clinical practice skills, etc.

1.2.2 Implementing microlecture combined with PBL teaching method for joint groups: ① Pre-class preparation for teaching physicians: The teaching physicians use micro lesson teaching methods to provide pre-class explanations based on the key points, difficulties, and clinical anesthesia operation skills outlined in the teaching outline., so as to mobilize the

enthusiasm of trainee students and make them make full pre-class preview.② For the preparation problems of internship graduate students, conduct pre-class preview according to the typical clinical pathology, and design related problems centering on the key and difficult points by consulting materials and searching literature.③ In group discussion, the intern graduate students will be discussed in groups of 4~5. According to the micro class videos, the preview and the checked literature, the opinions and solutions to the typical cases and the designed problems. According to the discussion, the teaching doctors answered the questions and explained the key knowledge points involved in the questions, so as to help the trainee graduate students to better understand and master the key and difficult points in anesthesia teaching.④ Clinical practice, during the practice, the doctor should guide endotracheal intubation, nerve block and other clinical operation skills for the internship students, and actively guide the operation process, point out the problems in the operation in time and explain and supervise the problems.⑤ Summary reflection, each team according to the micro class video, proposed problems and cases to discuss the results, systematically summarize and reflection, through the nail or WeChat for the focus of anesthesia teaching knowledge and skills, and reflection on easy to forget, confusing knowledge and problems in operation, etc., improve the quality of teaching.

2.3 Observing indicators

(1) The judgment of teaching effect is evaluated by the theoretical examination paper and skill operation scoring standards made by the hospital. The assessment scores for both theory and operation are 0-100 points, and the total score for both items is calculated in a 1:1 ratio.

(2) Satisfaction with teaching methods was evaluated by the hospital-made satisfaction questionnaire, which was divided into three types: very satisfaction, general satisfaction and dissatisfaction. The sum of all cases except the percentage of the total cases is satisfaction.

2.4 Statistical methods

Using SPSS 25.0 data analysis software, measure and count data were described using sum rates, and t-tests and χ^2 tests were used for inter group comparisons. When the difference is statistically significant, $P < 0.05$.

3. Results

3.1 Teaching effect of the two groups

In terms of teaching effectiveness, the combined group was significantly better than the traditional group in terms of theoretical knowledge, clinical operation skills and total performance ($P < 0.05$). See Table 1.

Table 1. Teaching effect of the two groups (, points) $\bar{x} \pm s$

| Group | Period | Speculative knowledge | Clinical operation | Total points |
|---|-----------------------|-----------------------|--------------------|--------------|
| Traditional group (n=21) | Before the internship | 64.61±7.02 | 78.34±4.09 | 71.32±5.44 |
| | After the internship | 85.44±2.89* | 87.92±5.25* | 86.57±4.71* |
| Joint group (n=21) | Before the internship | 65.13±6.85 | 79.27±5.12 | 72.43±5.48 |
| | After the internship | 91.61±3.97* | 93.74±4.44* | 92.90±3.16* |
| Pre-internship comparison between the groups | t price | 0.243 | 0.650 | 0.659 |
| | P price | 0.809 | 0.519 | 0.514 |
| Post-internship comparison between the groups | t price | 5.758 | 3.879 | 5.114 |
| | P price | < 0.001 | < 0.001 | < 0.001 |

Note: $P < 0.005$ for *.

3.2 Teaching satisfaction of the two groups

In terms of comparison of teaching satisfaction, 95.24% of the satisfaction of the combined group improved significantly compared with 61.90% of the conventional group ($P < 0.05$). See Table 2.

Table 2. Teaching satisfaction status [n (%)]

| Group | Example number | Very satisfied | General satisfaction | Discontent | Degree of satisfaction |
|-------------------|----------------|----------------|----------------------|------------|------------------------|
| Traditional group | 21 | 5 (23.81) | 8 (28.10) | 8 (28.10) | 13 (61.90) |
| Joint group | 21 | 9 (42.86) | 11 (52.38) | 1 (4.76) | 20 (95.24) |
| χ^2 price | | | | | 6.929 |
| P price | | | | | 0.008 |

4. Discussion

Anesthesia is an important medical discipline, it covers wide areas, clinical operation is many, is a multidisciplinary comprehensive discipline, in addition to master the related pathophysiology, anesthetic pharmacology knowledge, also need to other knowledge of subsubject, but also need to be proficient in a variety of puncture skills and surgical skills, learning difficulty is higher. PBL teaching method is problem-oriented and helps students to grasp the key points of knowledge comprehensively and accurately through the guidance of teachers. In recent years, PBL teaching method has been widely used in the field of medical education. [3][4] However, it is often combined with other teaching methods due to its lack of guidance when used alone. [5][6] Wang Jie applied PBL teaching method in operating room practice teaching and found that compared with traditional teaching methods, PBL teaching method can effectively stimulate interns' initiative and enthusiasm, more conducive to cultivating their problem analysis and solving ability, and improve their performance in theory and practice, thereby improving interns' satisfaction with teaching content. [7] Lü Sucong applied PBL teaching method to clinical teaching of gastroenterology, aiming to explore a student-centered and problem oriented teaching method that can arouse the students' study enthusiasm, enhance the communication between the teacher and the teacher, improve the quality of the teaching, and help them to set up good clinical thinking, and achieve the goal of teaching. [8] Wang Lichao and others have improved PBL teaching and applied it to the study of General Surgery, and the conclusion is that PBL teaching can improve students' grasp of general knowledge of surgery, improve their practice ability, and improve their teaching quality. [9] Li Wei probed into the application of PBL teaching in clinical medicine and came to the conclusion can not only exercise the clinical thinking ability of medical students, but also effectively integrate theoretical knowledge and practical operations, which is conducive to improving teaching quality. [10] Qian Qiu and others explored the the application of PBL teaching method in the Standardization Training of Anesthesiologists. They pointed out that this teaching method can improve awareness of various exam scores, increase interest in anesthesiology, increase satisfaction during training, increase weekly learning time, and is worth applying. [11]

Micro class is wireless electronic equipment speed circulation in recent years, a line of novel teaching mode, as a supplement to classroom teaching, can help students use class fragmentation time marching personalized learning, and micro class will knowledge in the form of pictures, animation or video, enable the students to more intuitive, systematic knowledge learning. Xia Xiaohui [12] and other scholars have probed into the application value of microinstruction in the clinical teaching of Bible surgery, the results show that microinstruction can improve the effect of teaching. Conclusion: To enhance the students' ability to communicate and think and to improve their satisfaction. Chen Li [13] and other researchers investigated the application of microinstruction in gynecologic practice, and concluded that the application of micro lesson teaching method in gynecological internship teaching has significant effects, can effectively increase trainees' interest in learning and thereby enhance their theoretical and operational skills, which has practical value; Tan Xiaohong [14] and others explored the application of micro lesson teaching method in clinical internships in oncology, and found that the method of micro lesson video teaching can improve the training effect of Gu Wei's puncture surgery for clinical interns in oncology. It is worth further promoting and researching in the process of clinical internship teaching in oncology; Li Yue [15] and others explored the application of micro courses in the teaching of anesthesia theory, pointing out that the application of mobile learning mode using micro courses as a carrier in clinical anesthesia theory teaching for undergraduate students has improved their enthusiasm for self-directed learning, and the learning methods of micro courses have increased their learning freedom and improved the quality of teaching.

Recently, a lot of scholars have combined the teaching method of micro-curriculum with the PBL method, and it had a good effect. Zhu Jinhai [16] and others analyzed the application of micro-curriculum and PBL in the training and teaching of breast cancer, and concluded that the combination of microlecture and PBL teaching model in the field of breast cancer diagnosis and treatment residential training and teaching can obtain good residential training and teaching effect, improve the theoretical knowledge level, operation technology level, residential training satisfaction of residents, and have high application value; Yin Lingling [17] and others applied the microcourse and PBL method to the teaching of TCM nursing in the department of gastroenterology. Finally, it is proved that the teaching method can effectively improve the performance of the trained nurses, enhance their autonomous learning ability and master their specialized knowledge, and has a remarkable effect. Liao Ting [18] et al, explored the application effect of the combination of micro lessons and PBL teaching mode in radiation therapy nursing teaching, and pointed out that this teaching mode can significantly improve the exam scores, internship teaching effectiveness, and satisfaction with teaching of nursing students.

In addition, the combination of micro courses and PBL teaching method has a wide range of applications in the field of anesthesia. Xue Mei [19] and others studied the application of PBL combined with the mini-class in the treatment of residual hemorrhage. It is suggested that using this approach in the teaching of anesthesia can increase the teaching efficiency,

motivate the students to take initiative, improve their self-learning, innovate and solve problems, and get good effect in clinical teaching. Liu Wei[20] et al, conducted a study on the application of the combination of Weike technology and PBL teaching method in pediatric anesthesia internship teaching. They pointed out that this teaching method can play a good role in cultivating pediatric anesthesia talents, strengthening the improvement of pediatric anesthesia internship teaching work, improving the quality and efficiency of teaching, and innovating teaching methods

So the anesthesia for part of clinical practice microlecture combined with PBL teaching method, the results show that the joint group in the theoretical knowledge, clinical operation scores and scores are significantly better than the conventional group and group anesthesia clinical practice graduate student 95.24%, the satisfaction rate of teaching method was higher than that of the routine group 61.90% ($P < 0.05$), the effect is good.

In conclusion, the application value of microlecture combined with PBL in clinical practice is discussed, which can not only improve the personal ability of anesthesia graduate students but also increase their satisfaction with teaching methods, which deserves to be promoted.

References

- [1] Zhou Shun, Wang Dong, Zhang Jiawei, et al. Application of micro-course joint case teaching method in teaching for emergency clinical interns [J]. China, 2022,12 (23): 93-96.
- [2] von nini. Analyze the application value of PBL teaching method in clinical nursing teaching [J]. China Science and Technology Journal Database Medicine, 2023,000 (007): 0031-0033.
- [3] Guo Shixin, Zhou Yan, Zhang Jiannan male. Application of PBL teaching method in standardized training of imaging residents in oncology medicine [J]. Chinese Science and Technology Journal Database (full-text edition) Education Science, 2023,000 (006): 0029-0032.
- [4] Li Yuanming, Chen Jiahua, Harimu Kerimu. Application and exploration of PBL teaching method in Cardiothoracic surgery teaching [J]. Health Industry in China, 2023,020 (6): 175-179.
- [5] Bu Mingqiang, Zhang Weiwei, honest, etc. Application of PBL combined with CBL teaching method in clinical practice teaching in otolaryngology [J]. Health Industry in China, 2023,20 (10): 180-182.
- [6] Fan Zhibo, Sun Qian, Zhang Qian, et al. The application effect of PBL combined evidence-based nursing teaching method in nursing students in gastroenterology [J]. Henan Medical Research, 2023,32 (13): 2419-2422.
- [7] Wang Jie Observation on the Application of PBL Teaching Method in Operating Room Internship Teaching [J]. China Continuing Medical Education, 2022, 14 (14): 59-63.
- [8] Lv Sucong and Zhou Pengzhi The application of PBL teaching method in clinical teaching of gastroenterology [J]. China Continuing Medical Education, 2021, 013 (016): 41-45.
- [9] Wang Lichao, Li Weinan, Zhang Wenda, Gong Zishun, Zhu Zhiguo, Shi Zongxin. Application of Improved PBL Teaching Method in the Learning of General Surgery [J]. Medical Aesthetics and Cosmetology, 2021, 030 (003): 169-170.
- [10] Li Wei Progress in the Application of PBL Teaching Method in Medical Clinical Teaching [J]. Chinese Science and Technology Journal Database (Citation Edition) Medical and Health, 2022 (6): 0205-0207.
- [11] Qian Qiu, Kang Li The Application of PBL Teaching Method in Clinical Teaching of Standardized Training for Anesthesiologists [J]. Chinese Journal Database of Science and Technology (Abstract Edition) Medical and Health, 2022000 (004): 169-171.
- [12] Xia Xiaohui, He Xuenong, Zhou Changlong. Exploring the Application Value of Micro lesson Teaching Method in Clinical Teaching of Undergraduate Neurosurgery [J]. China Continuing Medical Education, 2023, 15 (15): 64-68.
- [13] Chen Li, Li Xia. Application research of micro course teaching method in gynecological internship teaching [J]. China Continuing Medical Education, 2021, 13 (3): 4-7.
- [14] Tan Xiaohong, Sun Jierong, and Chao Heshu. The Application of Micro courses in Clinical Internship in Oncology [J]. Education and Teaching Forum, 2021 (22): 137-140.
- [15] Li Yue, Wei Shaoting, Cui Lin, et al. The application of micro courses in the teaching of anesthesia theory [J]. China Continuing Medical Education, 2021, 13 (6): 15-18.
- [16] Zhu Jinhai, Li Yulong, Wang Lin, et al. Analysis of the application of micro courses combined with PBL teaching method in the diagnosis and treatment of breast cancer [J]. China Continuing Medical Education, 2022, 14 (2): 56-59.
- [17] Yin Lingling, Shi Changli, Hong Lili. Application of PBL teaching in Gastroenterology [J]. Journal of Traditional Chinese Medicine Management, 2023,031 (007): 187-190.
- [18] Liao Ting, Liang Meiling, Zhou Xiaomei, Lu Chunping, Wei Hongjiao. Research on the effectiveness of micro course combined with PBL teaching mode in nursing teaching of radiotherapy department [J]. Western Quality Education, 2022, 8 (3): 128-130.
- [19] Xue Mei, Wei Changwei The application of PBL combined with flipped classroom micro lesson teaching method in

- clinical anesthesia teaching for international students [J]. Chinese Medical Records, 2022, 23 (8): 61-64.
- [20] Liu Wei, Du Min, Jiang Rui. The application of micro lesson technology combined with PBL teaching method in pediatric anesthesia internship teaching [J]. Family Health, 2020, 000 (010): 143.