

表 1 项目负责人发表论文汇总表

序号	论文名称	发表日期	发表刊物名称	第一作者	类别
1	In vitro investigation of nanohydroxyapatite/poly spindle composites used for bonetissue engineering	2016.07	Journal of Materials Science: Materials in Medicine	严玮	SCI/一类
2	Mechanical Properties and in vitro Bioactivity of Nano—Fibrous Hydroxyapatite Chitosan Composites	2017.06	Nano science and nano technology letters	严玮	SCI/一类
3	医学模拟教学在临床护理技能教学中的应用	2017.06	齐齐哈尔医学院学报	严玮	三类
4	ESPCE 教学方法在手术室护理教学中的应用	2015.07	齐齐哈尔医学院学报	严玮	三类
5	临床护理技能考核评价体系的建立与实践	2017.12	齐齐哈尔医学院学报	严玮	三类
6	直型留置针改良操作流程效果观察	2011.05	护理学报	严玮	四类
7	手术室护生实习压力源的质性研究	2011. 12	中华现代护理杂志	严玮	四类



# Mechanical Properties and *In Vitro* Bioactivity of Nano-Fibrous Hydroxyapatite/Chitosan Composites

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Hydroxyapatite/chitosan (HA/CS) nano-fibrous composites with HA contents of 0–80 wt% were prepared by *in situ* hybridization. The hydroxyapatite nano-fibers with average diameter of about 3 nm and length of 20–60 nm homogeneously disperse in the chitosan matrix. The compressive strength of these nano-fibrous HA/CS composites increase with the increasing HA content and reached the highest values of 178 MPa. The results of *in vitro* tests in simulated body fluid solutions indicate that the HA/CS bio-composites have good biodegradability and bioactivity. All the results suggested that the HA/CS bio-composites are appropriate to be applied as bone substitute in bone tissue engineering.

**Keywords:** Hydroxyapatite/Chitosan Nano-Fibrous, *In Vitro*, Bio-Compatibility.

## 1. INTRODUCTION

The development of bio-medical materials has long been a major goal in the field of bone tissue engineering. Natural bone is a kind of typical organic–inorganic nano-composite materials, which consists of collagen and minerals (appetites) and has an excellent balance between strength and toughness superior to either of its individual components.<sup>1</sup> Therefore, the most promising artificial biomaterials as bone substitutes should be organic–inorganic nano-composites in which inorganic nano-crystallites disperse in synthetic or natural polymer matrices.<sup>2–4</sup>

Owing to the chemical and biological similarity to the mineral phase of native bone, good biocompatibility, osteoconductivity, and bone-bonding properties,<sup>5,6</sup> hydroxyapatite (HA,  $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ ) was widely considered as guided bone regeneration and bone substitutes<sup>7–10</sup> and preferentially considered as the inorganic parts of the artificial biomaterials. However, the brittleness makes it impossible for HA to be used for load-bearing bone repair and substitute. On the other hand, because of the unique properties such as biodegradability by enzymes in human body, nontoxicity of the degradation product, antibacterial effect, and biocompatibility, CS-based biomedical materials have attracted much attention.<sup>11–14</sup> However, the lack of bone-bonding bioactivity and poor mechanical properties

at the high humidity condition limit the use of CS-based biomedical materials. Therefore, the nano-HA/CS composite materials are expected to possess the favorable properties of both CS and HA.

Recently, many efforts have been devoted to synthesize HA/CS composites by employing various methods, including mechanical mixing of HA powders in CS solution,<sup>15,16</sup> coating of HA particles onto CS sheet,<sup>17</sup> coprecipitation,<sup>18</sup> and alternate soaking process.<sup>19</sup> However, the *in vitro* biological activity of HA/CS is rarely investigated. In this work, the nano-fibrous hydroxyapatite/chitosan (HA/CS) composites with HA contents of 0–80 wt% were prepared using a *in situ* hybridization method and their *in vitro* behaviors in simulated body fluid (SBF) were investigated.

## 2. METHODS

### 2.1. Preparation of Nano-Fibrous HA/CS

Biomedical grade CS (viscosity-average molecular weight  $4.5 \times 10^5$ ) with 95% degree of the deacetylation,  $\text{Ca}(\text{OH})_2$ , 85% orthophosphoric acid ( $\text{H}_3\text{PO}_4$ ) solution, and acetic acid ( $\text{CH}_3\text{COOH}$ , reagent grade) were used as starting materials. The detailed synthesis process was described in our previous work.<sup>14</sup> First, CS semipermeable membrane was prepared. Then the prepared CS- $\text{Ca}(\text{OH})_2$ - $\text{H}_3\text{PO}_4$  slurry was poured into a CS semipermeable membrane coated dialysis bag and then immersed into a 2 wt%

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## In vitro investigation of nanohydroxyapatite/poly(L-lactic acid) spindle composites used for bone tissue engineering

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**Abstract** Calcium phosphate ceramics such as synthetic hydroxyapatite and tricalcium phosphate are widely used in the clinic, but they stimulate less bone regeneration. In this paper, nano-hydroxyapatite/poly(L-lactic acid) (nano-HA/PLLA) spindle composites with good mechanical performance were fabricated by a modified in situ precipitation method. The HA part of composite, distributing homogeneously in PLLA matrix, is spindle shape with size of 10–30 nm in diameter and 60–100 nm in length. The molar ratio of Ca/P in the synthesized nano-HA spindles was deduced as 1.52 from the EDS spectra, which is close to the stoichiometric composition of HA (Ca/P & 1.67). The compress strength is up to 150 MPa when the HA content increase to 20 %. The in vitro tests indicate that HA/PLLA bio-composites have good biodegradability and bioactivity when immersed in simulated body fluid solutions. All the results suggested that HA/PLLA nano-biocomposites are appropriate to be applied as bone substitute in bone tissue engineering.

### 1 Introduction

Nanotechnology has shown promise in universally improving all materials used for bone regeneration through either constituent nano-materials or nanostructured surface features. Nano-materials possess superior properties compared to their micron-structured counterparts [1]. Therefore, nanotechnology involving understanding and controlling matter on the nanometer scale, where unique phenomena enable new functional applications, has been appealing in biomaterials [2]. Among nano-materials, nano-hydroxyapatite (nano-HA) has been widely used in scaffolds for bone tissue engineering as well as implant coating material. Owing to the chemical and biological similarity to the mineral phase of native bone, good biocompatibility, osteoconductivity, and bone-bonding properties [3, 4] hydroxyapatite (HA,  $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ ) was widely considered as guided bone regeneration and bone substitutes [5–8] and preferentially considered as the inorganic parts of the artificial biomaterials. However, the brittleness makes it impossible for HA to be used for load-bearing bone repair and substitute. By contrast, the ductile biodegradable polymers such as poly(lactic acid) (PLA), poly(L-lactic acid) (PLLA), poly(glycolic acid), and poly(D, L-lactic acid-glycolic acid) (PLGA) are biomaterials and their properties have been exploited in the fabrication of scaffolds for cell transplantation and tissue engineering [9–12]. The osteoconductivity of calcium phosphates combined with the good workability of the polyesters gave rise to the development of a variety of bio-ceramic/polyester composite scaffolds for bone tissue engineering [13–15]. For the same reason HA/PLLA nano-composites have received attention in orthopedic and dental applications.

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## 临床护理技能考核评价体系的建立与实践

严玮 张会

**【摘要】** 目的 构建临床护理技能考核评价体系并探讨其意义。方法 根据我院临床护理技能教学的实际情况,建立临床护理技能考核评价体系,同时应用于护理专业的教学实践。结果 各年级护理技能操作考核成绩、护理笔试成绩比较,差异无统计学意义( $P>0.05$ )。2014 级学生护理病例考核成绩高于 2013 级,2013 级学生病历考核成绩高于 2012 级学生,差异有统计学意义( $F=63.20$ , $q$  值分别为 3.67 和 18.15, $P<0.05$ )。在护理病例考核成绩中,各年级的护理问诊、护理体检、病历资料整理、护理诊断、护理计划和健康教育成绩之间比较,差异有统计学意义( $P<0.01$ )。结论 临床护理技能考核评价体系的构建对培养学生的创新性思维、临床能力和适应能力均具有重要意义。

**【关键词】** 护理; 教育考核; 评价体系; 临床能力

**Construction and practice of evaluation system of clinical nursing skills** YAN Wei. Nursing school of Sanlian University, Hefei, Anhui, 230601, China

**【Abstract】 Objective** Construct the evaluation system of clinical nursing skills and discuss its significance. **Methods** According to the actual situation of clinical nursing skills teaching in our university, the evaluation system of clinical nursing skills was established and applied to the teaching practice of nursing specialty. **Results** After the establishment of the evaluation system of clinical nursing skills, the clinical nursing skills of 2012 grade, 2013 grade and 2014 grade nursing students in our university were assessed and evaluated. Compared within different grades, the nursing skills assessment results and the nursing written test results without statistically significant difference ( $P>0.05$ ). It was found that nursing examination scores of grade 2014 was higher than that of grade 2013, and the score of grade 2013 was higher than the grade 2012, the differences were statistically significant ( $F=63.20$ ,  $q=3.67$  and 18.15,  $P<0.05$ ). In the assessment of clinical nursing case, the scores of the nursing interrogation, nursing physical examination, medical record arrangement, nursing diagnosis, nursing plan and health education achievement of each grades were significantly different ( $F=37.16-134.11$ ,  $q=3.76$  and 25.14,  $P<0.01$ ). **Conclusions** The construction of the assessment system of clinical nursing skills is of great significance to train students' innovative thinking, clinical ability and adaptive ability.

**【Key words】** Nursing skills; Education assessment; Evaluation systems; Clinical ability

临床护理技能教学是护理教育的重要内容,其中对学生临床实践综合能力的培养已成为目前我国护理教学改革的关键<sup>[1]</sup>。我们在探讨技能教学改革方案的同时,也应关注到传统的护理理论考试、技能考试方法及其评价标准已经不能完全适应护理学教育发展的趋势和护理综合能力的培养。为更有效地考核与评价学生临床护理技能,探索和建立能够科学衡量学生综合能力和素质的评价体系,使考试不仅是对学生能力的评价,也是对知识和技能的整合过程,为其搭建从学校过渡到临床的桥梁<sup>[2]</sup>。因此,我院于 2013 年组建临床护理综合实验室,并建立临床护理技能考核评价体系,进行了 3 年的教学实践,取得了较好的教学效果,现报道如下。

### 一、对象与方法

1. 研究对象:选择安徽三联学院护理学院 2012 级、2013 级和 2014 级 892 名护理专科学生,其中女 829 名,男 63 名,年龄 19~22 岁;2012 级护生 297 名,2013 级护生 291 名,2014 级 304 名。3 届护生在年龄、性别和录取成绩等一般资料比较,差异无统计学意义( $P>0.05$ ),具有可比性。

2. 方法:(1)建立考核与评价体系:①建立考核与评价体系的原则与意义:护理学是一门应用性、实践性和人文性很强

的学科,护理专业教育的目标是强化护理临床综合实践能力,培养临床岗位胜任力的实用型人才<sup>[3]</sup>。因此构建一套科学、规范、可行的临床护理技能评价体系,对指导临床教学实践,提高护理服务质量和人才培养质量具有重要意义。②考核与评价体系的内容:此考核与评价体系包括 3 个一级指标(护理操作考核、护理病例考试、护理笔试)和 120 个二级指标(考核项目),每个考核项目都有准备质量标准、操作(考核)质量标准和终末质量标准,并制定严格的评分标准。考核与评价体系的具体内容包括以下几个方面:护理操作考核:根据学校制定的护理操作技能考试大纲和实验大纲的要求,我院教师集体讨论并咨询专家统一意见后,根据其难易程度将考核项目分为基础护理操作和常用护理操作。护理病例考试:包括护理问诊、护理体检检查、病历资料整理、护理诊断、护理计划和健康教育,对以标准化病人(SP)为基础的护理病例完成上述一系列任务。护理笔试:考试内容主要是对学生职业态度和评判性思维能力方面的考查。(2)考核方法:①考核时间与要求:在二年级护理学基础、内外妇儿护理学等专业课程学习结束后,对学生进行第一部分护理操作考核,根据其难易程度分为基础护理操作和常用护理操作。学生考核通过才可以进入临床实习,考核不合格需重新参加临床护理技能训练。进入临床实习后,我院教师和实习医院教学人员紧密衔

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## 医学模拟教学在临床护理技能教学中的应用

严玮 张会 宋江艳

**【摘要】** 目的 探讨医学模拟教学(SBME)方法在临床护理技能教学中的应用效果。方法 选取本学院 110 名二年级护理专业专科学生,采用随机分组的方法将其分为实验组和对照组。实验组在教学过程中采用医学模拟教学(SBME)的方法,对其进行临床护理技能教学的授课;对照组仍采用传统常规教学授课模式。课程结束后进行临床护理技能考核,并对相应教学方法满意度进行问卷调查。结果 采用 SBME 方法的实验组技术考核成绩为(86.51±1.05)分、(82.09±10.19)分和(91.49±3.14)分,对照组分别为(81.20±1.03)分、(77.35±2.90)分和(88.79±4.19)分,实验组护理技术考核成绩和对教学方法满意度的调查结果均明显高于对照组( $P<0.05$ )。结论 医学模拟教学(SBME)方法应用于临床护理技能教学,有助于提高护理专业学生临床护理综合能力,培养团队合作精神和缩短临床适应期。

**【关键词】** 医学模拟; 教学; 临床综合能力

The application of simulation based medical education in clinical nursing skills teaching YAN Wei.

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**【Abstract】 Objective** To discuss the effect of SBME (simulation based medical education) in clinical nursing skills teaching. **Methods** Chose 110 nursing students in grade two and divided them into experimental group (EG) and control group (CG) randomly, the EG was taught using SBME method in clinical nursing teaching and the CG was given traditional mode, the assessment of nursing skills was carried out at the end of course, and the corresponding questionnaire of teaching satisfaction was given. **Results** In the EG, the scores of nursing skills were (86.51±1.05), (82.09±10.19) and (91.49±3.14), respectively. While in the CG, the corresponding scores were (81.20±1.03), (77.35±2.90) and (88.79±4.19), respectively. It was clear that the score of nursing skills and the satisfaction of EG were obviously higher than that of CG ( $P<0.05$ ). **Conclusions** SBME is effective in improving compressive abilities of clinical nursing, cultivating team spirit and shortening the period of clinical adaptation.

**【Key words】** Medical simulation; Teaching; Compressive ability of clinics

临床护理技能教学是护理学的重要组成部分,其中对护生临床实践综合能力的培养已成为当前我国护理教学改革的关键。由于目前护生临床护理实践日益受到限制,护理实践教学的难度呈上升趋势,传统、常规的临床护理技能教学方法已不能完全适应护理学教育发展的趋势和护理综合能力的培养。因此,一种利用模拟技术创设出模拟病人或模拟临床场景,代替真实病人进行临床基本技能教学和实践的方法—医学模拟教学(SBME),已被广泛应用于临床实践教学,并对医学教育产生了重要影响<sup>[1]</sup>。为了规范教学和提高临床护理综合能力,我院于 2014 年组建临床护理综合实验室,在护理学基础、内外科护理学等临床课程和临床实习时的护理技能教学实践中应用医学模拟教学(SBME)方法,效果较好,现报道如下。

### 一、对象与方法

1. 研究对象:选择本院 2014 级护理专科 1~2 班学生共计 110 名,其中女生 101 名,男生 9 名,年龄 19~22 岁。采用随机分组的方法将其分为实验组和对照组,其中实验组 55 人(女生 51 人,男生 4 人),实验组每 5 人为一个训练小组,提前分组,其中 1 人任组长。对照组 55 人(女生 50 人,男生 5 人),两组护生在年龄、性别、录取成绩比较差异无统计学意

义( $P>0.05$ ),均衡可比。

2. 研究方法:对照组采用传统常规的教学方法。课堂教学以授课教师为主体,采用目前主流的“传授—接受”直线单向教学模式,教师依据“理论讲授—操作演示—学生练习—考核”流程进行分课程、分操作项目授课,在练习的过程中教师进行督促指导。

实验组采用医学模拟教学(SBME)方法。具体计划安排:①首先在一年级下学期,本院开设护理学导论、护理学基础和健康评估课程时,授课教师初步采用 SBME 方法对护生的临床护理基本技能进行铺垫和早期训练接触。②在二年级内、外、妇儿护理学等专业课程学习中,教师应将基础护理和专科护理的理论操作知识进行整合系统化,同时将各专科常见疾病设计成典型临床护理案例,应用 SBME 方法在临床护理技能教学中进行模拟训练,护生围绕具体案例模拟临床护理工作,灵活运用医学基础和专业知识技能去分析、评估和解决问题,分步骤、分阶段完成对患者的接诊、救护工作。应用 SBME 方法在模拟仿真的教学环境中开展训练,让护生能够提前进入临床综合专业环境,缩短学生临床适应期<sup>[2]</sup>。

3. 评价方法:护生在临床实习前进行临床护理技能考核,考核内容以具体临床案例为框架来考查护理技能项目。见表 1。同时设计调查问卷,调查护生对其相应教学方法的满意度,满意度包括满意、基本满意、不满意。

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正发挥其应有的作用。

7. 各校要加入就业信息服务平台,在网上设立就业专栏,及时网上公布毕业生就业信息及招聘单位信息,使供需双方及时了解对方信息,明确就业意向和应聘的政策、策略、择业方向,提高成功率,达到供需双方双赢的目的。决定学生的就业成败在很大程度上取决于及时、全面地获取就业信息,因此各校要加入网络信息化建设<sup>[4]</sup>。

8. 各校要重视“就业双选会”的作用。通过统计通过“就业双选会”达成的就业率可占 30%—30%,所以各校要重视信息,精心组织“就业双选会”。会议既要由辅导员个性化指导各个毕业生;同时学校各部门紧密配合,系统的实施,会后及时

召开研讨会,总结“就业双选会”成效,为下一步就业工作的开展提供依据。

#### 参考文献

- 丁燕红. 高校毕业生就业指导对就业的影响——基于广东省高职院校的调查[J]. 中国大学招生, 2012, 4: 46-49.
- 李俊青. 高校毕业生就业指导的理论与对策研究[J]. 教育研究, 2012, 3: 34-37.
- 朱文勇. 朱文. 刘强. 3+3 模式护理专业学生的满意度调查[J]. 吉林医药学院学报, 2012, 3: 46-48.
- 葛立军. 谈高校就业指导中心对大学生就业[J]. 重庆工业职业技术学院学报, 2008, 2(3): 425-433.

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## ESPCE 教学方法在手术室护理教学中的应用

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**【摘要】** 目的: 探讨 ESPCE (讲解-模拟-练习-交流-评价) 教学方法应用于外科手术室护理教学中的效果及可行性。方法: 选取 136 名护理专业学生, 采用随机实验方法将其分为观察组和对照组, 观察组采用 ESPCE 教学方法, 对照组采用传统教学方法, 教学结束后进行理论、操作考核, 并对护理学生进行教学满意度的问卷调查。结果: 观察组理论、操作考核成绩分别为(92.31±2.38)分和(95.48±3.14)分, 对照组分别为(89.12±2.83)分和(88.79±4.19)分, 观察组理论、操作考核成绩均显著高于对照组( $P < 0.0001$ ); 观察组教学满意度也明显高于对照组( $P < 0.0001$ )。结论: ESPCE (讲解-模拟-练习-交流-评价) 教学方法应用于手术室护理教学可行且有效, 在提升学生的专业知识、能力和素质方面优于传统教学方法。

**【关键词】** 手术室; 外科护理; 教学方法

Application of ESPCE teaching method in teaching of operating room nursing. YAN Wei, et al. Jilin University, Jilin, Anhui 230021, China.

**【Abstract】** Objective: To discuss the effect and possibility of ESPCE (explanation-simulation-practice-communication-evaluation) teaching method applied in the teaching of surgical operating room. Methods: Selected 136 nursing students who were divided into observation group and the control group using random class experiment method, the observation group were taught using ESPCE teaching method and the control group were taught using traditional teaching methods, the evaluation of theory and operation was done at the end of teaching, and the questionnaire of satisfaction of teaching was done. Results: For the observation group, the scores of theory and operation were 92.31±2.38 and 95.48±3.14, respectively, while for the control group, the corresponding scores were 89.12±2.83 and 88.79±4.19, respectively. It was clear that the scores of operation and theory of observation group was obviously higher than that of control group ( $P < 0.0001$ ). In addition, the scores of satisfaction of observation group were higher than those of control group ( $P < 0.0001$ ). Conclusion: ESPCE (explanation-simulation-practice-communication-evaluation) teaching method applied in the teaching of surgical operating room is possible and effective, which is better than the traditional teaching method in improving the professional knowledge, ability and quality of nursing students.

**【Key words】** Operation room; Surgical nursing; Teaching method

外科护理学是护理专业的核心课程,对于培养知识、能力、素质并重的护理人才起着至关重要的作用<sup>[1]</sup>。其中手术室护理是外科护理学的重要组成部分,是培养护生专业技能的关键阶段和“实用性”护理人才的重要环节<sup>[2]</sup>。如何使护理学生掌握掌握手术室基本操作技能,提高教学质量是手术室护理教学的重点和难点。目前传统的“以教师为中心,以

课堂讲授为主”教学模式不利于护理学生对专科知识和技能的掌握及应用,为此我院在 2003 级护理专业的“外科护理学”手术室护理教学中采用 ESPCE (讲解-模拟-练习-交流-评价) 教学方法,效果良好,现报道如下。

#### 一、对象与方法

1. 研究对象: 选取我院 2003 级护理专科 1 班、2 班学生为研究对象,共计 136 名,年龄 19—23 岁,均为高中毕业后经全国统一高考录取,学制 3 年。采用随机实验方法将其分为观察组和对照组,其中观察组 68 人(男生 7 人,女生 61 人);

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※基础护理

## 直型留置针改良操作流程效果观察

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**[摘要]**目的 观察直型安全留置针改良操作流程的临床应用效果。方法 将200例使用直型安全留置针静脉穿刺的手术患者随机分为对照组和观察组,对照组采用德国贝朗公司培训的操作流程,套管进入血管后,操作者左手用“V”形加压法,即中指按压套管尖端血管,食指固定针梗,同时右手拔出针芯,连接已排气的延长管及输液器。观察组采用改良后的操作流程,套管进入血管后,不使用“V”形加压法按压套管尖端血管,而采用操作者将患者前臂抬高约60°,同时左手缚固定针梗,右手拔出针芯,观察外套管中的血液即将到达管口时,连接已排气的延长管及输液器。结果 观察组1次穿刺成功率高于对照组,操作时间短于对照组( $P<0.05$ 或 $P<0.01$ );观察组血液回流污染率低于对照组( $P<0.01$ )。结论 直型安全留置针的改良操作流程可缩短操作时间,提高穿刺成功率,减轻患者静脉穿刺的痛苦,降低感染风险。

**[关键词]**安全留置针;直型;改良操作流程;抬高前臂

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### Clinical Value of Improved Operation Process of Straight Catheter

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**Abstract:** **Objective** To observe the clinic value of improved operation process of straight catheter. **Methods** 200 patients with venous puncture using straight catheter were randomly divided into control group and experiment group. Patients in control group were treated with operating procedure from Germany Brown Company while patients in experiment group were treated with improved operational procedure. **Results** The successful rate in experiment group was higher and the operating time was shorter than those of control group ( $P<0.05$  or  $P<0.01$ ). Besides, the contamination rate of back blood was lower ( $P<0.01$ ), which enhanced the satisfaction of both nurses and patients. **Conclusion** Improved operation process of straight catheter can shorten operating time, release the suffering of patients with venous puncture and enhance the satisfaction of patients.

**Key words:** intracran safety, straight type; improved operation process; raising forearm

静脉留置针具有减少血管穿刺次数,减轻患者痛苦,操作方便,易于固定,能有效满足输液、输血等临床抢救需要的特点,目前已被广泛应用<sup>[1]</sup>。临床上常使用两种静脉留置针:直型静脉留置针与Y型静脉留置针<sup>[2]</sup>。两种型号的留置针各有优缺点,在输液速度方面,直型留置针最快流速可达到32 ml/min, Y型留置针最快流速只有23 ml/min<sup>[3]</sup>,直型留置针流速明显快于Y型。鉴于我院以急诊手术为主,为确保手术患者术中能够快速输血输液,我科常规使用直型安全留置针为患者输液。但在操作过程中发现血液回流污染,按压点疼痛导致手术患者恐惧,患者满意度下降,增加感染风险等问题,因此对操作流程进行改良,取得了满意的效果,现报道如下。

17~72岁,平均51.4岁,穿刺部位为前臂以下的手背静脉和腕部静脉。病例纳入标准:意识清楚,能积极配合及正确回答问题;16~75岁;生命体征平稳,无血液系统疾病,运用随机数字表,将符合纳入标准的患者随机分为两组,观察组100例,对照组100例。两组性别、年龄、穿刺部位、手术方式等比较,差异无统计学意义( $P>0.05$ ),具有可比性。手术患者均使用德国贝朗公司生产的20 G直型安全留置针。

### 1.2 方法

1.2.1 穿刺方法 由工作3年以上且熟练掌握静脉留置针穿刺技能的护士操作。(1)对照组:常规准备并消毒皮肤,根据安全型留置针的使用说明书及德国贝朗公司培训的操作流程,右手食指抵住针梗,拇指与中指捏紧针尾呈30°角进针,见透明杆回血后