

## Exploration of methods in radial artery punctures in elderly patients

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**Abstract: Objective:** To investigate success rate by oblique needle blood collection method in two different of the radial artery in elderly patients. **Methods:** Comparative study of two methods of blood puncture success rate in 290 cases of elderly patients done by randomization to conventional needle bevel upward and downward slope direction of the puncture. **Results:** The number of cases of successful puncture was 142 cases, the success rate was 98%; successful puncture 108 cases of the control group, the success rate were 74%. The difference was statistically significant ( $P < 0.01$ ). **Conclusion:** Syringe needle into the needle bevel down approach in the elderly in the success rate of radial artery blood was significantly higher than conventional acupuncture needle diagonally oriented aspirant.

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**Key words:** elderly patients; radial artery; puncture method

In recent years, radial artery puncture has been widely used clinically, either in clinical blood as arterial puncture, or arterial infusion therapy, have traumatic small, less pain, easy bleeding and puncture site bleeding and fewer complications. Radial artery puncture blood sampling technique is clinically important way to obtain blood samples, blood gas analysis is performed on clinically important operation. Since the radial artery structural features smaller in recent years, domestic demand for radial artery puncture technique has more clinical studies, such as: the location of the arm placed in [1], needles model size, the angle of the needle, syringe selection [2], etc. and so on. But when the puncture needle bevel orientation relationship between the success rate compared with no report. I department of Geriatrics, hospitalized elderly patients vascular situation is complex, radial artery puncture significantly increased the difficulty, according to the conventional methods are difficult to puncture meet clinical requirements. To improve the success rate, we are exploring the puncture needle method improvements, now two kinds of findings contrast described below.

### 1. Objects and methods

1.1 General information: select from September 2010 to December 2012 in our department hospitalized for radial artery puncture blood gas analysis in patients with 290 cases. Randomly divided into experimental group and control group 145 cases, 218 cases were male, female 72 cases; aged 62 to 98 years old; including various causes respiratory failure 189 cases, COPD 55 cases, 28 cases of septic shock, 22 cases of interstitial lung

disease, lung cancer, 18 cases, six cases of bronchial asthma.

### 1.2 Operation

1.2.1 The experimental group after routine disinfection, the surgeon with his left index finger and middle finger arterial pulse is set at the most obvious, fixed to the middle finger artery, right hand holding a syringe, the syringe needle bevel down in recent index finger arterial pulse at the previous point into the strongest needle, the needle angle according to the patient's fat, thin, and arterial depth, generally  $< 45^\circ$ ; in order to avoid damage to nerves, blood vessels thicker or harder for those who easily scroll, the needle should be slightly larger angle and speed appropriate to speed up the needle For smaller vessels, weak pulse, shallow vessels leaner patients, the needle angle should be smaller while slowly into the needle, the needle after needle puncture along the index finger pulp radial artery, up to a certain depth behind the back side of the needle pumping, because now use disposable plastic syringes larger friction contact surface of the inner wall, the needle even in the arteries, arterial blood enters the syringe is not easy to own, you need a little suction to complete specimen collection. Blood shall be within 3 seconds after emptying the air inside the blood samples, and closed with a cork or Pusey needle, gently shake the needle to prevent blood clotting, immediate submission.

1.2.2 The control group in accordance with basic nursing 4th edition oblique radial artery puncture blood punctures method [3]. Puncture failure experimental group method is used again puncture.

## 2. Results

Experimental group, the number of cases of successful puncture 142 cases, the success rate was 98%; successful puncture 108 cases of the control group, the success rate was 74%; puncture failure of the control group 37 cases, and then follow the experimental group puncture method, the number of successful cases of 36 cases, the success rate was 97%. The difference was statistically significant ( $p < 0.01$ ).

## 3. Discussion

Arterial blood gas analysis is used to detect respiratory function and acid-base balance is an important indicator, is to determine whether patients with hypoxia and carbon dioxide retention reliable method to guide oxygen therapy, adjusting the parameters of mechanical ventilation and correct acid-base and electrolyte imbalance is of significant importance. Clinically, the arterial blood gas analysis collected is to rescue critically ill patients with respiratory failure and nursing techniques commonly used. While repeatedly puncture caused by the suffering of patients and their families not only satisfied, but also affect the patient's medical treatment. Many patients admitted to our department for older patients with multiple diseases, such as: family care due to improper sequelae of cerebral infarction in patients with limb contractures can not make straight arm straighten posture; senile psychosis and agitation in patients with dementia is not fit puncture; elderly radial artery tortuosity incidence, and most patients had atherosclerosis, vascular elasticity is poor and easy to slide easily puncture success; peripheral circulatory failure or shock patients radial artery pressure is low, weak pulse, low blood back so obvious difficulty puncture increases and so on. To improve the success rate, we take the puncture needle bevel down method, and vascular puncture needle bevel contact surface increases, so blood is not easy to slide, which greatly improved the success rate, effectively reducing the operation to the patient the suffering caused. Face every day for patients in need of emergency treatment, in order to race against time to save their lives, which requires clinical nurse must be familiar with timely and accurate arterial puncture technique and successfully collected blood, the use of different methods of operation, hand and heart to understand, so learn more, see more, ask more, think more practice, more experience, sum up experience in clinical practice, and continuously improve the quality of care.

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