

Use of High Pressure for Retrograde Forced Impregnation of Lung

*Antoaneta Georgieva, Jordan Stoyanov, Ivelina Ivanova, Dimitar Sivrev**

Department of Anatomy, Faculty of Medicine, Trakia University, Stara Zagora, Bulgaria

*Corresponding author e-mail: dsivrev@abv.bg

We offer an improved method for forced lung impregnation. In this case, the organ is not placed under low pressure, but the silicone is injected retrograde by means of pressurized air that is fed into the bronchial tree. The results are good and the method is economical compared to the classic impregnation techniques.

Key words: plastination, Biodur S₁₀, impregnation, lung, bronchial tree

Introduction

There are many modifications in the classical S₁₀ technique, but the next four processing phases are always used:

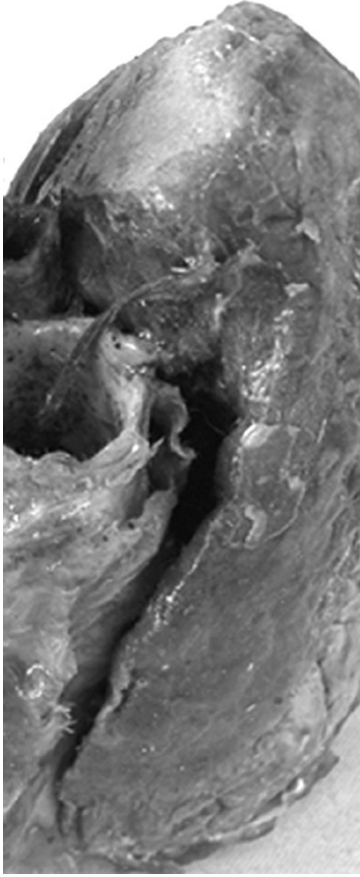
- ✓ Fixing and preparation;
- ✓ Dehydration;
- ✓ Forced impregnation;
- ✓ Gas curing.

Material and methods

Fixing is done with traditional fixing fluids: formaldehyde or alcohol.

We use the perfusion method and inject the fixator into the femoral vein. Routine preparatory techniques are the basis for the preliminary preparation of the biological material.

For dehydration, acetone is used as the most effective means [3]. It provides complete removal of water from tissues and is safe for fire or explosion. The water content of acetone is measured periodically, and when it is below the critical minimum, we replace it with a new one. Usually this happens once a week. Dehydration occurs at a temperature minus 27 degrees celsius [1].



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The classical impregnation is carried out at a gradual decreasing pressure, as the organ is immersed in Biodur S₁₀ [6]. Experiments were made to impregnate at room temperature as well as to combine platelets with blood vessels [2, 4].

We put the lung in chilled Biodur medium for 24 hours, filling the bronchial tree with silicone.

According to our modification, we put the lungs in chilled Biodur S₁₀ for 24 hours, filling the bronchial tree with silicone and connect it to a compressor that supplies atmospheric air at a pressure of 98.00-100.00 kPa. (**Fig. 1**).

The air pushes Biodur S₁₀ through the bronchial and alveolar walls together with dust particles, impregnating the lung tissue.

Results and Discussion

Lung treatment is not one of the difficult procedures in the plastination. It is also applied when this unique conservation method is put into practice [5]. Application of classical techniques gives good results but it is not economical if applied to a small number of organs.

Fig. 1. Lung preparation.

After processing, a high-quality preparation of lung is obtained which can be used in student training in the internal organ education cycle. The lung tissue is white or light pink, the consistency is soft, and the organ is life like. These results are corresponding to the publications of other authors [4, 7].

Conclusions

Retrograde forced impregnation is a very economical method – suitable for our conditions.

The most valuable quality of the lung preparation is that it is completely safe for human health.

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