

## IMPROVING THE TECHNIQUE OF PROVIDING AEROSTASIS IN LUNG SURGERY

*Abdullajanov B.R., Isakov P.M.*

*Andijan State Medical Institute*

*Abdullajanov B.R. – e.mail. – [Doctor0275@mail.ru](mailto:Doctor0275@mail.ru)*

*Isakov P.M. – e.mail. – [dr.isaqovpolat@gmail.com](mailto:dr.isaqovpolat@gmail.com)*

**Abstract.** The ideological basis for this study was the possibility of developing a new method for ensuring the tightness of sutures in lung surgery. The conducted series of preclinical studies allowed to substantiate the possibility of using Hemoben gel for intraparenchymatous injection into lung tissue to strengthen the damaged area in order to ensure aero- and hemostasis. Thus, a method has been developed to achieve aero- and hemostasis in lung surgery, characterized by a new option for the introduction of a biological composite material in the form of a gel substance by intraparenchymatous piercing of the damaged tissue area for direct adhesion of small bronchioles and vessels. Advantages of the method: the method is a new technique for achieving hemo- and aerostasis in lung surgery, which is characterized by the interstitial application of a biological substance in the area of the injured parenchyma of the organ, providing adhesion of small bronchioles and vessels.

**Keywords:** providing aerostasis in lung surgery; Hemoben; thoracoscopic interventions; achievements of aero- and hemostasis;

The ideological basis for this study was the possibility of developing a new method for ensuring the tightness of sutures in lung surgery. It should be noted that the proposed method has no analogues, since the biological implant is not applied superficially, but is injected directly into the lung parenchyma in the area of damage. The design of the study is based on four consecutive stages. The first stage is an experimental study. At this stage, the method of gel substance formation was worked out, the biological reaction of tissues and the timing of gel resorption were studied. Next, a series of biochemical analyses was performed, including the separation of phospholipids of lung tissue by thin-layer chromatography. After that, a series of biochemical analyses was carried out, including the study of the level of generation of reactive oxygen species, the activity of the enzymatic link of the antioxidant system, as well as an assessment of the intensity of membrane destructive processes in lung tissue in dynamics with various methods of aerostasis on an experimental model.

The conducted series of preclinical studies allowed to substantiate the possibility of using Hemoben gel for intraparenchymatous injection into lung tissue to strengthen the damaged area in order to ensure aero- and hemostasis. A method for achieving hemo- and aerostasis has been developed for clinical practice. The method is performed as follows:

the main stage of resection or other type of intervention on the lung is performed and the damage zone is revised;

next, to achieve local aero- and hemostasis in damaged or sutured lung tissue, a gel of the following composition is prepared: the powdered composition of Hemoben in an amount of 1.0 g is mixed with 30 ml of saline solution with continuous stirring for 1 minute;

a needle injection is performed at a distance of 5 mm from the edge of the damaged lung parenchyma and then the needle is moved superficially at a depth of 5 mm at an angle of 30 ° from the periphery (injection site) towards the center of the wound surface, while 0.5-1.0 ml of Hemoben gel is injected;

this procedure is repeated 3-4 times depending on the volume of the wound surface until the gel completely imbibes the entire wound defect;

after holding a pause of 2-3 minutes, the lung is straightened with the supply of an oxygen-air mixture of 500-700 ml on inspiration and a pressure of up to 20 mm of water;

when additional places of air intake appear, the procedure for introducing Hemoben gel is repeated, while the depth of introduction of Hemoben gel should also not exceed 5 mm;

after reaching full aerostasis, the surface of the lung wound is treated with 70% alcohol;

the pleural cavity is drained and the wound is sutured.

Advantages of the method:

- the method is a new technique for achieving hemo- and aerostasis in lung surgery, which is characterized by the interstitial application of a biological substance in the area of the injured parenchyma of the organ, providing adhesion of small bronchioles and vessels;
- Hemoben gel is a non-toxic, bioabsorbable substance from cotton cellulose derivatives;
- after injection into the lung parenchyma, the gel additionally absorbs water and swells, resulting in an additional compression effect and complete hemo- and aerostasis;

- gel resorption occurs within 5-7 days after administration without a pronounced inflammatory reaction and without scarring and fusion with the parietal pleura;
- due to the fact that the gel is located in the parenchyma of the lung, increased pressure during inhalation does not contribute to a violation of aerostasis;
- since the gel is elastic, there are no violations in the excursion of the lungs;
- the Hemoben gel used has a hemostatic property, which has an additional local hemostatic effect.

Thus, a method has been developed to achieve aero- and hemostasis in lung surgery, characterized by a new option for the introduction of a biological composite material in the form of a gel substance by intraparenchymatous piercing of the damaged tissue area for direct adhesion of small bronchioles and vessels. The proposed method is characterized by ease of use, does not lengthen the operation time and is not expensive, since a domestic remedy is used. The method can be used for both open and thoracoscopic interventions, helps to reduce the risk of developing insolvency in aero- and hemostasis.

## REFERENCES

1. Yakubov F., Sadykov R., Niyazmetov S. & Sapaev D. (2023). Improving the method of hemo- and aerostasis in lung surgery using the domestic hemostatic wound coating "Hemoben". *International Bulletin of Medical Sciences and Clinical Research*, 3(10), 33–40. <https://researchcitations.com/index.php/ibmscr/article/view/2778>
2. Yakubov F.R., Sapaev D.S., & Niyazmetov S.B. (2023). The treatment of the results of pleural empyema complicated with bronchopleural fistula. *Research Journal of Trauma and Disability Studies*, 2(4), 241–246. <http://journals.academiczone.net/index.php/rjtds/article/view/748>
3. Sapaev DS, Yakubov FR, Yakhshiboev SS. Evaluation of the factors influencing the choice of laparoscopic echinococcectomy in liver echinococcosis (LE) and its impact on postoperative outcomes. *Exp Parasitol*. 2023 May;248:108495. doi: 10.1016/j.exppara.2023.108495. Epub 2023 Mar 5. PMID: 36871791.
4. Рузибаев Р.Ю., Курьязов Б.Н., Сапаев Д.Ш., Якубов Ф.Р., Рузматов П.Ю., & Бабаджанов А.Р. (2019). Современная оценка проблем диагностики и хирургического лечения эхинококкоза. *Вестник Национального медико-хирургического Центра им. Н. И. Пирогова*, 14 (1), 134-139.
5. Якубов Ф.Р, Сапаев Д.Ш, & Ниязметов С.Н. (2023). Ўпканинг анатомик резекциясидан кейинги асоратлар. *Journal of universal science research*, 1(5), 10–12. <https://doi.org/10.5281/zenodo.7883971>