THE ADVANTAGES OF VIDEOASSISTED TREATMENT OF DELAYED CASES OF ESOPHAGEAL PERFORATION

ZALETY METODY WIDEOCHIRURGICZNEJ W OPÓŹNIONYCH PRZYPADKACH PERFORACJI PRZEŁYKU

Siarhei Panko[1, 2], Aleksandr Karpitski[2], Andrey Shestiuk[2], Rostislaw Boufalik, Andrej Ryzhko[2], Leonid Nikitjuk [2]

[1] Institute of Public Health The Jan Kochanowski University of Humanities and Sciences in Kielce, Poland
Dean: Prof. Stanisław Gluszek

[2] Brest Regional Hospital, thoracic surgery department. Brest, Belarus
Aleksandr Karpitski

SUMMARY

Objective: To show advantages of video assisted treatment of delayed cases (more than 24 hours) of thoracic esophageal perforation.
Material and methods: Within 2004–2007 years we observed 3 cases of esophageal perforation. Videothoracoscopy was carried out through the left pleural cavity for patients with injury in the lowest third thoracic esophageal and through the right pleural cavity in case of perforation of a medial part. The mediastinal pleura was dissected along of esophagus and a drainage tube was inserted through a pleural cavity into esophageal defect and then fixed by means of a nose-gastric tube in esophageal lumen.
Results: At all patients drainages from a pleural cavity are removed for the four days of the postoperative period. Transpleural tubes are removed from 7 to 14 day after operation. Esophageal-pleura-skin tubular fistulas were formed in the field of insertion of drainages which were spontaneously closed within 15–34 days.
Conclusions: The videoassisted thoracoscopy method of "fistulazation", developed by us (patent RB, No 3383, 18.07.06), has allowed to avoid formation of gastrostoma for enteral nutrition, to carry out adequately evacuation of excretions from the area of injury and a pleural cavity, as to quickly suppress inflammatory reaction in focus of a purulent inflammation that facilitates the postoperative period.

Key words: esophageal perforation, videoassisted operation, fistulazation.

STRESZCZENIE

Celem badania było rozpracowanie zachowawczo-małoinwazyjnej metody leczenia przedziurawienia przełyku u chorych, u których prawdziwe rozpoznanie zostało ustalone dłużej niż dobę.
Leczono trzech chorych z rozpoznaniem przedziurawienia piersiowego odcinka przełyku, spośród których dwa wypadki były rozpoznawane jako jatrogenne powikłania zabiegów endoskopowych, jeden spowodowany ciałem obcym. Ezofagoskopowo ujawniono, że dwaj chorzy mieli przetoki do jamy opłucnej i jeden tylko przekrwienie i obrzęk błony śluzowej z nadżerkami. Ostatecznie rozpoznanie zostało ustalone po przeprowadzeniu badań rentgenologicznych ze środkiem cieniującym Ponieważ u wszystkich chorych występowały objawy ropniaka opłucnej lub śródpiersia, a także ciężkich powikłań ze strony układu krążenia uznano, że wykonywanie tradycyjnej interwencji chirurgicznej z zeszyciem miejsca perforacji jest zbyt późne. Dlatego zostały zastosowane metody wideochirurgiczne w celu zmniejszenia ryzyka pooperacyjnego zgonu. Jeżeli przedziurawienie zostało zlokalizowana w dolnej 1/3 odcinka piersiowego, to małoinwazyjny dostęp wprowadziliśmy przez lewą jamę opłucną, jeśli pośrodku – przez prawą. Po wyczyszczeniu ropnej treści opłucnej przez miejsce przedziurawienia była wprowadzona specjalnie wykrojona rura drenażowa, utrwalona w przełyku za pośrednictwem cewnika dożołądkowego. Ta konstrukcja wywoływała formowanie przełykowo-opłucnowo-skórnej przetoki we wczesnym okresie pooperacyjnym. W ciągu pierwszego tygodnia nastąpiła likwidacja ropniaka opłucnej, a zewnętrzna przetoka zagoiła się po zastosowaniu leczenia zachowawczego obejmującego antybiotyki o szerokim zakresie działania oraz żywienie dojelitowe.
Konkluzja. Opracowana i opatentowana (patent RB, N 3383, 18.07.06) przez nas małoinwazyjna metoda leczenia przedziurawienia przełyku przy zaawansowanych powikłaniach septycznych i krążeniowych przyczynia się do wczesnej aktywności fizycznej pooperacyjnej chorych i umożliwia dojelitowe żywienie bez wykonywania zbędnej gastrostomii, czyli jejunostomii.

Słowa kluczowe: perforacji przełyku, metody wideochirurgiczne.

INTRODUCTION

Esophageal perforation has been considered a catastrophic and often life-threatening event, with very high mortality rates. Most of the cases are due to a complication in endoscopic manouvers and the best treatment, conservative rather than aggressive, remains a controversial topic. Delay in diagnostics and carrying out of surgical intervention is a major factor of high mortality [1, 2]. The delay in operation more than 24 hours leads to increase of mortality rates in 3 times [3]. Surgical tactics is various in the delayed cases and demands the „open" operative incisions, that essentially makes heavier the condition of patients.

OBJECTIVE

To show advantages of videoassisted treatment of a delayed cases (more than 24 hours) of thoracic esophageal perforation.

MATERIAL AND METHODS

In 2004–2007 period we observed 3 cases of esophageal perforation, 2 men and 1 women mean aged 64.3 years. One case is due to foreign body ingestion and 2 cases were spontaneous. In the all cases the lesion was in the thoracic part of the esophagus. All the patients were admitted very late (mean 38 h) to our department and presented disphagia, chest pain, fever and accompanying cardial pathology has been noticed at all patients that increased a degree of preoperative risk. Haematological analyses, radiological and endoscopic observation of esophagus was performed at receipt in the hospital and after operation.

The final confirmation of the diagnosis «esophageal perforation» has been established after radiological performance: X-ray (fig. 1), CT (fig. 2) and endoscopical one (fig. 3) and examinations of esophagus. In two cases by means of contrast X-rayscopy the leaking of a baric suspension through esophageal wall and pneumohydrothorax is noted. At one patient is found mediastinal emphysema without leaking of contrast substance to mediastinal cellulose tissue. In the all cases during diagnostic endoscopy is revealed defect of esophageal mucous membrane, and at two of them a fistula to a pleural cavity was revealed.

Videothoracoscopy was carried out through the left pleural cavity for patients with injury in the lowest third thoracic esophageal (n = 2) and through the right pleural cavity in case of perforation of a medial part

Fig. 1. X-ray-examination with a contrast substance

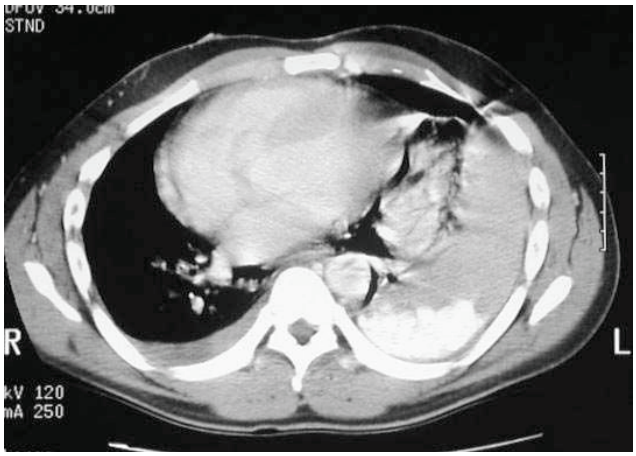


Fig. 2. Computed tomography scan

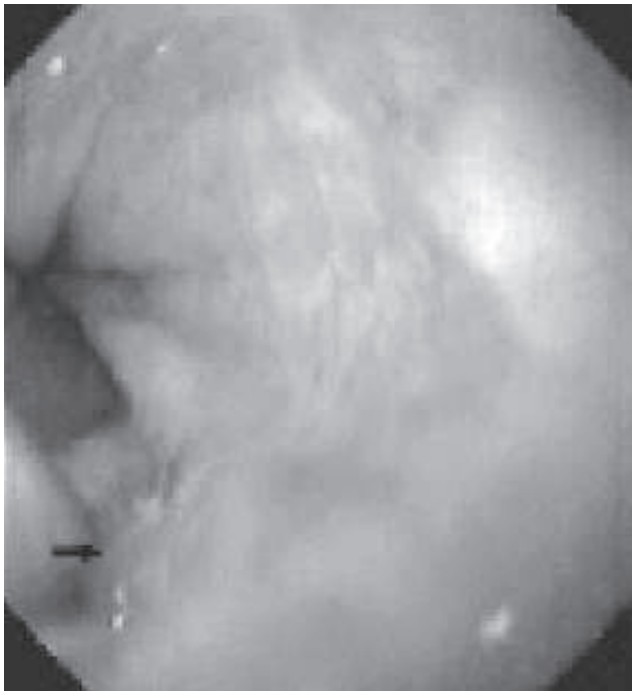
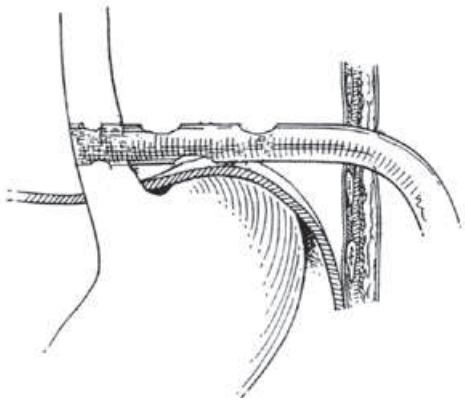
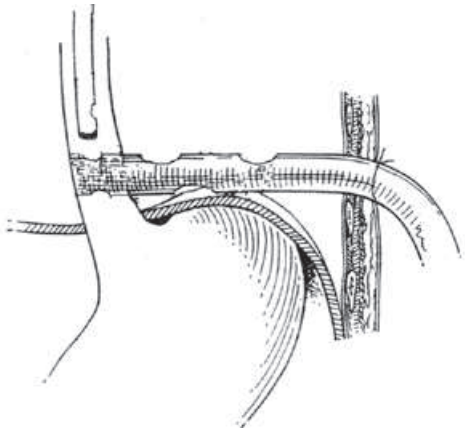


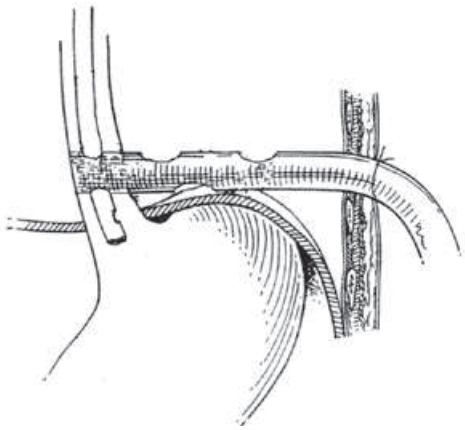
Fig. 3. Esophageal endoscopy (perforation)



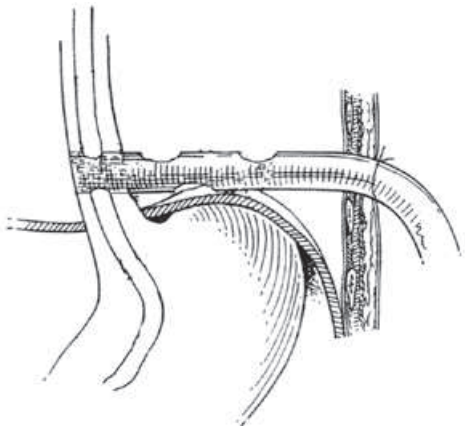
Step 1



Step 2



Step 3



Step 4

Fig. 4. The method of «fistulazation»

(n = 1). Application of a primary seam of esophagus wound has been recognized inefficient considering long time after injury at these patients.

Perforation of a low third thoracic esophagus was accompanied by a fistula to the left pleural cavity and pyopneumothorax. At the moment of operation these patients had the expressed clinical symptoms of purulent fever and heavy accompanying cordial pathology. In this situation it has been decided to install drainage for sanity purulent center. The access to esophagus was carried out through the left pleural cavity by formation of three chest ports for insertion of optics and tools. The massive purulent coverings on pleural surfaces and exudate were determined during the observation of pleural cavities. Endoscopy examination during operation has only allowed to find out localization of esophageal wall defect. With use of the technique developed by us, the polyvinyl drainage tube was inserted through a pleural cavity into esophageal defect and then fixed by means of a nose-gastric tube in esophageal lumen. This method of "fistulazation" has allowed to avoid formation of gastrostoma for feeding, to carry out adequately evacuation of excretions from the area of injury and a pleural cavity (fig. 4) [4].

Access was carried out by means of three chest ports through the right pleural cavity for perforation of a median third of gullet. Gathering of gas bubbles under mediastinal pleura covering the thoracic esophageal has been revealed in the pleural cavity. However the place of perforation was not revealed. The mediastinal pleura was dissected along of esophagus where the infiltrated tissue was observed. This operation is finished by installation through a pleural tube to esophageal areolar tissue and drainage of a pleural cavity. Then, a gastric catheter is inserted for feeding the patient. The feed through the gastric catheter began from the first day after operation as well as early physical activity of patients.

RESULTS

Pains disturbed only in the field of standing drainages and it only was required applications not narcotic anesthetizing. Temperature reaction normalized within 7–10 days. At all patients drainages from a pleural cavity are removed for the four days of the postoperative period. Trance pleural tubes are removed from 7 to 14 day after operation. Esophageal-pleura-skin tubular fistulas were formed in the field of insertion of drainages which were spontaneously closed within 15–34 days. The positive dynamics is noted during carrying out tool and laboratory examinations.

The average concentration of leukocytes in peripheral blood has decreased from receipt in the hospital to the seventh postoperative day from 13.9*10^3/mcL to 9.5 *10^3/mcL, and a Leukocyte Index (LI) from 4.8 to 0.47, that testified to reduction of inflammatory reactions and absence of purulent complications.

The radiological examinations at the moment of discharge from hospital (fig.5) did not reveal leak of contrast over esophageal outlines and deformation of its cavities. At date of discharging, a "gentle" scar was visualized with control endoscopy examinations in the place of a projection of former esophageal perforations.

Fig. 5. Esophageal contrast radiographs (21 day after operation)

CONCLUSIONS

1. The developed by us videoassisted thoracoscopy method of treatment of the delayed esophageal perforation (more than 24 hours) possesses smaller operation trauma in comparison with standard surgical techniques that allows to apply this method to treatment of patients in bad condition with an accompanying pathology.
2. This method allows to carry out enteral feeding without formation gastrostoma and quickly to suppress inflammatory reaction in focus of a purulent inflammation that facilitates the postoperative period.

BIBLIOGRAPHY

[1] Gupta N, Kaman L. Personal management of 57 consecutive patients with esophageal perforation. The American Journal of Surgery 2004; 187: 58–63.
[2] Kallis P et al. Spontaneous rupture of the oesophagus (Boerhaave's syndrome): conservative versus surgical management. Journal of the Royal Society of Medicine 1991; 84: 690–691.
[3] Sulimanov RA et al. Injury and spontaneous lesions of thoracic esophageal. Surgery 1999; 2: 18–20.
[4] Karpitskj AS et al. Thoracoscopy method of treatment of patients with Boerhaave's syndrome. Thoracal and cardiovascular surgery 2006; 1: 66–69.

The author address:

Prof. Siarhei Panko
Faculty of Health Sciences
The Jan Kochanowski University in Kielce
25-317 Kielce, Al. IX Wieków Kielc 19
e-mail: pan@brsu.brest.by