

---

SHORT COMMUNICATION

---

## Endoscopic ultrasound in esophageal cancer

Makovnik P, Mlkvy P, Majek J, Slezak P, Kollar T

*St. Elizabeth Oncology Hospital, Bratislava, Slovakia. [bll@fmed.uniba.sk](mailto:bll@fmed.uniba.sk)*

### Abstract

**The first prototype of an endoscopic ultrasound (EUS) was constructed in Japan in 1980. The evolution continued quickly and within the past ten years this method became available in routine practice. One of the most significant indications of EUS in esophagus are locoregional staging and posttherapeutic monitoring of the esophageal cancer. (Ref. 4.)**

**Key words:** endoscopic ultrasound, esophageal cancer.

---

St. Elizabeth Oncology Hospital, Bratislava, and National Cancer Hospital, Bratislava, Slovakia

**Address for correspondence:** P. Makovnik, MD, St. Elizabeth Oncology Hospital, Heydukova 10, SK-812 50 Bratislava 1, Slovakia

The first prototype of an endoscopic ultrasound (EUS) was constructed in Japan in 1980. The evolution continued quickly and within the past ten years this method has become available in routine practice. EUS became available in Slovakia with a particular delay. Since 2001 it has become available at the St. Elizabeth Oncology Hospital in Bratislava. Within the same year endoscopic ultrasound devices were bought by the Hospital of St. Cyril and Metod in Bratislava as well as by University Hospitals in Martin and Košice.

The most important difference in EUS devices is in the positioning of the ultrasound plane scan. The instrument with the ultrasound plane scan positioned straight on the axis of the endoscope (radially) facilitates the orientation. The position of the section plane of the linear scan instrument is longitudinal as to the axis of the endoscope. The latter position makes the orientation difficult, however it enables to take biopsy through the working channel under the direct visual control. In this longitudinal plane it is possible to set on the scanned deposit. A water-filled rubber balloon placed on the ultrasound scanner and in contact with the wall improves the surveyed region. Endoscopic ultrasounds are equipped with built-in scanners with either 7.5 or 12 MHz frequency. The frequency can be selected and changed directly on EUS instruments. The indication of the use of EUS is given by the anatomical and technical possibilities of the method. The high frequency of ultrasound waves enables to examine a surrounding area of about 4 to 6 cm. In this way it can be possible to obtain a detail scan of the digestive organ wall and its direct neighbourhood. Ultrasound endoscopy of the oesophagus is most frequently indicated in coincidence with locoregional (TN) pre-therapeutic staging and post-therapeutic monitoring of the esophageal cancer (1). EUS is a valuable method in the diagnosis of submucosal tumours. It enables to differentiate intramural tumours from extramural impressions of oesophageal or stomach walls. The endoscopic ultrasonography does not replace other diagnostic methods, but it provides additional information on pathological findings especially in the wall and of digestive organs and their direct neighbourhood. Esophageal carcinomas are usually diagnosed late and most of the patients are already in the stage, when radical surgery is not possible. The most important task of staging is to define the operability or inoperability of patients. The correct decisions based on staging are not only to the benefit of the radically operated patients, but also of those in whom the operation was considered as being useless. There are numerous comparative studies relating to various investigating methods determining the precision of

staging. The precision of staging is compared with the definitive pathological diagnosis. When comparing the methods of EUS and computer tomography (CT), it is EUS that comes out as being more accurate either in T or in N staging (2). E.g. in the study of Holden et al (1996) the precision of stage determination by use of CT and EUS was 40 % versus 89 % for T stage, and 33 % versus 73 % for N stage. EUS is not able to determine metastases except for those in lymph nodes of the coeliac axis.

Should the biopsy be performed by endoscopy, EUS is important in the differentiation of submucosal formations from extraluminal impressions. According to the echogenicity of the tumorous mass EUS allows to differentiate between lipoma and leiomyoma. It is also possible to measure the depth of infiltration by other infrequent benign tumours e.g. granular cell tumour and to determine the possibility of their endoscopic removal (3, 4).

For the patient the EUS procedure is similar to gastroscopy, but the instrument is more robust with a rigid distal end comparing to the usually used gastroscopes, so the introduction phase is more difficult. Local anaesthesia with mesocain and (according to requirement) midazolam intravenously is used for premedication. The investigation takes longer time than standard gastroscopy. Contraindications are the same as for endoscopy of the upper part of gastrointestinal tract. The complications could be general, connected with used premedication and influenced e.g. by the cardiopulmonary diseases of the patient. Local complications are perforation and haemorrhage. The risk of local complication is higher by the dilatation of stenotic esophagus. More serious complications described in the literature are not higher as 0.05 %.

## Reference

1. **Dancygier H, Lightdale C.** Endosonography in Gastroenterology. Stuttgart, Thieme 1999, 232 p.
2. **Boyce H Jr, Culverhouse J.** Endosonographic Staging of Esophageal Cancer. *Cancer Control* 1996; 6 (1): 28–35.
3. **Horáková M, Beseda A, Makovník P.** Granular cell tumor pažeráka endoskopická liečba. *Endoskopie* 2002; 11 (3): 47–50.
4. **Novotný I, Feit J.** Objemný leiomyom jícnu, diagnostika a endoskopické řešení. *Čes Slov Gastroent Hepatol* 2002; 56 (2): 67–70.

Received January 7, 2003.  
Accepted February 7, 2003.