

# Gastric tonometry

The principle of the method is regional **measurement of partial pressure CO<sub>2</sub> (PtCO<sub>2</sub>)** of the gastric mucosa. Using this method, we can detect **perfusion disorders of the splanchnic area** very soon, which will manifest itself in a **very early rise in mucosal PtCO<sub>2</sub>**.

We have **two possibilities** how to explain this rise:

- In ischemia, there is a transition to anaerobic metabolism. Tissue metabolic acidosis develops with an increase in CO<sub>2</sub> production as a result of the bicarbonate buffering reaction.
- In hypovolemia, aerobic metabolism may still be maintained, but CO<sub>2</sub> elimination is impaired due to reduced splanchnic blood flow.

This method probably has a great future, because it monitors hemodynamic disorders well in advance in all types of shock conditions and is **minimally invasive**.

## ***Realization of the method:***

- It is performed by inserting a special catheter with a balloon into the stomach. It lies on the gastric mucosa and after 10 minutes the concentration of CO<sub>2</sub> in the balloon and in the cells of the gastric mucosa equalizes thanks to diffusion through the semipermeable membrane.
- The CO<sub>2</sub> value in the balloon is then measured, which is the PtCO<sub>2</sub> value.
- Furthermore, the regional pH is calculated using the etCO<sub>2</sub> and arterial pH values.
- According to these values, further therapy is being carried out with the aim of improving the perfusion of tissues in a shock state. This is another method that monitors the quality of organ perfusion in addition to diuresis values.

## **Links**

### **Related articles**

Cardiopulmonal monitoring

### **References**

- HAVRÁNEK, Jiří: *Cardiopulmonal monitoring*