Introduction:
About 100 years ago, the German physiologist Pflüger stated that the cardio-respiratory system fulfils its physiological task by guaranteeing cellular oxygen supply and removing waste products of cellular metabolism.

Methods:
The study was performed in early postoperative period after major abdominal surgery in 160 patients. The physical condition of patients corresponded to 3 class of ASA. The median age was 46.0 (38.0- 62.0) years. Duration of the surgery was 6.4 (4.8- 9.5) hours. Surgery was performed under combined epidural anesthesia with mechanical ventilation. The study was conducted in the following stages: 1 - admission from operating room; 2 - in 1-3 hours; 3 - 4-7 hours; 4 - 8-12 hours; 5 - after 13-24 hours after the surgery.

Results:
Depend on rate of oxygen extraction index (ERO2) 4 groups were revealed: group 1 (n=44) - low ERO2 (< 21%) followed by recovery to normal levels to stage 2-3 (ERO2 = 22-32%), group 2 (n=42) - normal level ERO2 (22-32%) in all the stages, group 3 (n=40) - high levels ERO2 (>33%) with recovery to normal levels to stage 2, group 4 (n=34) - high ERO2 (> 35%) in all the stages. Oxygen extraction index at admission to ICU after surgery can be normal (26.25% of patients), reduced (27.5% of patients) or high (46.25% of patients). When oxygen extraction ratio is reduced metabolic recovery occurs classically after 4-7 hours; when ERO2 is elevated - after 8-12 hours. Core temperature improvement is connected with the restoration of oxygen homeostasis. So, under normal and reduced ERO2 even mild central hypothermia after surgery were not observed, and at an elevated ERO2 moderate hypothermia after surgery was observed with only to 4-7 hours post-surgery restoration.

Conclusion:
Maintaining an adequate tissue oxygenation is the cornerstone of metabolic response and postoperative recovery in patient after major abdominal surgery.

References: