

# Oxygenator's Pressure Drop And Postoperative Inflammatory Response Following On Pump Coronary Surgery

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## Objective

Cardiopulmonary bypass still causes a systemic inflammatory response, despite significant improvements achieved in terms of bio-compatibility. Abnormal pressure drop across the oxygenator has been reported to occur in 1-5% of patients and has always been correlated only to the risk of acute oxygenator's dysfunction. Objective of our study was to compare the effect of pressure drop across the oxygenator to the early postoperative inflammatory response.

## Materials and Methods

Twenty-two patients undergoing elective coronary surgery were prospectively enrolled in the study. Inlet/outlet oxygenator pressure was continuously monitored through the entire cardiopulmonary bypass time. Full blood count analysis was obtained postoperatively after 6, 12 and 24 hours from ICU admission. Furthermore IL6 and IL8 were measured at postoperative day 1 and 2. Statistical correlation between oxygenator's pressure (inlet and pressure drop) and postoperative inflammatory markers were then evaluated.

## Results

The mean oxygenator's inlet pressure and pressure drop peaks were  $290\pm 48$  and  $77\pm 15$  respectively. 8 patients (36%) experienced inlet pressure  $>300$ mmHg. No patients experienced pressure drop  $>100$  mmHg. Statistical analysis revealed a significant correlation between inlet pressure and postoperative raise of both IL6 and IL8 ( $r=0,63$ ;  $p<0,001$ ). Furthermore, inlet peak pressure  $>300$ mmHg was associated with significantly higher IL6 and IL8 raise (table 1). No other statistical significant correlations were shown.

## Conclusions

Despite the use of coated oxygenators has reduced the risk of high pressure drop, abnormal inlet pressure is still frequently recorded. Significant correlation was founded between abnormal inlet pressure and postoperative IL6 and IL8 raise, thus confirming the role of oxygenators pressure in postoperative inflammatory response.

## Table 1

### Inlet Pressure

**> 300 mmHg**

### Inlet Pressure

**<300 mmHg**

*p*

**IL 6 (Day 1)** 710±594 177±134 **0.039**

**IL 6 (Day 2)** 132±126 85±18 **0.3**

**IL 8 (Day 1)** 295±227 78±87 **0.03**

**IL 8 (Day 2)** 73±31 30±10 **0.0062**