

**PENGARUH TEKNIK *POSITIVE PRESSURE EXTUBATION* (PPE)
TERHADAP PERUBAHAN HEMODINAMIK PADA
PASIEEN DENGAN ANESTESI UMUM**

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ABSTRAK

Latar Belakang: Ekstubasi merupakan fase kritis dalam anestesi umum yang dapat memicu respons stres simpatis berupa ketidakstabilan hemodinamik, seperti hipertensi dan takikardia. Teknik *Positive Pressure Extubation* (PPE) dikembangkan sebagai metode ekstubasi untuk membantu mempertahankan stabilitas ventilasi dan hemodinamik pasien pasca-anestesi umum.

Tujuan: Mengetahui pengaruh teknik *Positive Pressure Extubation* terhadap perubahan *Mean Arterial Pressure* (MAP), *Heart Rate* (HR), dan saturasi oksigen (*SpO₂*) pada pasien anestesi umum di RSUD Kota Bandung.

Metode: Penelitian ini menggunakan desain quasi experiment dengan pendekatan *Pretest–Posttest Control Group Design*. Teknik sampling yang digunakan adalah *consecutive sampling* dengan jumlah sampel sebanyak 70 responden yang dibagi menjadi kelompok intervensi dan kelompok pembandingan. Pengumpulan data dilakukan melalui observasi perubahan hemodinamik sebelum dan sesudah ekstubasi. Analisis data menggunakan uji *Wilcoxon Signed Rank Test* dan *Mann–Whitney*.

Hasil: Hasil analisis statistik menggunakan uji *Mann-Whitney* menunjukkan terdapat perbedaan selisih perubahan yang signifikan pada variabel MAP ($p=0,000$) dan HR ($p=0,027$) antara kedua kelompok, di mana kelompok intervensi efektif meredam lonjakan tekanan darah dan denyut jantung secara signifikan dibandingkan kelompok pembandingan. Sementara itu, pada parameter respirasi, variabel saturasi oksigen (*SpO₂*) juga menunjukkan perbedaan yang signifikan secara statistik antara kedua kelompok ($p=0,031$), hal ini membuktikan bahwa teknik PPE memberikan stabilitas hemodinamik yang lebih baik sekaligus mengoptimalkan kualitas oksigenasi pasca-ekstubasi.

Kesimpulan: Teknik *Positive Pressure Extubation* lebih efektif dalam menjaga stabilitas hemodinamik dibandingkan teknik ekstubasi konvensional pada pasien pasca-anestesi umum di RSUD Kota Bandung.

Kata Kunci: Anestesi umum, ekstubasi, hemodinamik, *Positive Pressure Extubation*.

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**THE EFFECT OF POSITIVE PRESSURE EXTUBATION (PPE)
TECHNIQUE ON HEMODYNAMIC CHANGES IN PATIENTS
UNDERGOING GENERAL ANESTHESIA**

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ABSTRACT

Background: Extubation is a critical phase in general anesthesia that may trigger sympathetic stress responses resulting in hemodynamic instability, such as hypertension and tachycardia. The Positive Pressure Extubation (PPE) technique was developed as an extubation method to help maintain ventilatory and hemodynamic stability in patients after general anesthesia.

Objective: To determine the effect of the Positive Pressure Extubation technique on changes in Mean Arterial Pressure (MAP), Heart Rate (HR), and oxygen saturation (SpO₂) in patients undergoing general anesthesia at Bandung City Regional Hospital.

Methods: This study used a quasi-experimental design with a Pretest–Posttest Control Group Design approach. The sampling technique used was consecutive sampling with a total of 70 respondents divided into intervention and control groups. Data collection was carried out through observation of hemodynamic changes before and after extubation. Data were analyzed using the Wilcoxon test and the Mann–Whitney.

Results: Statistical analysis using the Mann–Whitney test showed significant differences in the changes of MAP ($p=0.000$) and HR ($p=0.027$) between the two groups, in which the intervention group was more effective in reducing increases in blood pressure and heart rate compared to the control group. Meanwhile, for the respiratory parameter, oxygen saturation (SpO₂) also showed a statistically significant difference between the two groups ($p=0.031$). These findings indicate that the PPE technique provides better hemodynamic stability while optimizing post-extubation oxygenation quality.

Conclusion: The Positive Pressure Extubation technique was more effective in maintaining hemodynamic stability compared to the conventional extubation technique in post-general anesthesia patients at Bandung City Regional Hospital.

Keywords: General anesthesia, extubation, hemodynamic, Positive Pressure Extubation.