

**DIFFERENCES IN COUGH REFLEX SCALES BETWEEN END-
INSPIRATORY EXTUBATION TECHNIQUES AND
CONVENTIONAL EXTUBATION IN PATIENT
UNDERGOING GENERAL ANESTHESIA
WITH ENDOTRACHEAL TUBE AT
RST DR. SOEDJONO MAGELANG**

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ABSTRACT

Background: Endotracheal Tube (ETT) extubation frequently triggers a cough reflex, posing a risk for postoperative airway complications and hemodynamic fluctuations. Efforts to facilitate a safe, smooth emergence quality can be achieved through modifying the respiratory phase, namely the end-inspiratory extubation technique. Objective: To determine the difference in the cough reflex scale between the use of end-inspiratory and conventional extubation techniques in general anesthesia ETT patients at IBS RST Dr. Soedjono Magelang.

Methods: This study employed an analytical observational design with a prospective comparative approach. Sampling was conducted using consecutive sampling on 66 adult respondents aged 18-59 years undergoing general anesthesia with an ETT. Data were collected using observation sheets, utilizing the Minogue Scale to measure the peri-extubation cough reflex scale. Data analysis was performed univariately and bivariately using the Mann-Whitney U and Fisher's Exact tests.

Results: A total of 51.5% of respondents experienced a grade 1 cough in the end-inspiratory extubation group, compared to 24.2% in the conventional extubation group. The Mann-Whitney U test results indicated a statistically significant difference in the cough reflex scale ($p = 0.039$). Fisher's Exact test results showed that the proportion of clinically significant coughs (moderate-severe) had a 1.33 times higher risk of occurring in the conventional extubation group; however, this did not reach statistical significance (95% CI 0.323-5.500).

Conclusion: There is a significant difference between the end-inspiratory and conventional extubation techniques regarding the overall incidence of the cough reflex. However, in terms of clinically significant coughing, there is no significant difference. This technique is recommended as a safe standard of care to support smooth emergence.

Keywords: End-Inspiratory Extubation, Cough Reflex, Smooth Emergence, General Anesthesia, Patient Safety

**PERBEDAAN TEKNIK EKSTUBASI *END INSPIRATORY* TERHADAP
REFLEKS BATUK PADA PASIEN GENERAL ANESTESI
ENDOTRACHEAL TUBE DI RST DR.
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ABSTRAK

Latar Belakang: Ekstubasi *Endotracheal Tube* (ETT) sering memicu refleks batuk yang berisiko menyebabkan komplikasi jalan napas dan fluktuasi hemodinamik pasca-operasi. Upaya memfasilitasi kualitas *smooth emergence* yang aman dapat dilakukan melalui modifikasi fase pernapasan, yakni teknik ekstubasi *end-inspiratory*.

Tujuan: Diketahui perbedaan skala refleks batuk antara penggunaan teknik ekstubasi *end-inspiratory* dan ekstubasi konvensional pada pasien general anestesi ETT di IBS RST Dr. Soedjono Magelang.

Metode: Penelitian ini menggunakan desain observasional analitik dengan pendekatan komparatif prospektif. Pengambilan sampel dilakukan secara *consecutive sampling* terhadap 66 responden pasien dewasa usia (18-59 tahun) yang menjalani anestesi umum dengan ETT. Data ini dikumpulkan melalui lembar observasi yang mencatat skala refleks batuk saat ekstubasi, Skala *Minogue* untuk mengukur skala refleks batuk saat peri-ekstubasi. Analisis data dilakukan secara univariat dan bivariat menggunakan *Mann-Whitney U* dan *Fisher's Exact*.

Hasil: Sebanyak 51.5% responden mengalami batuk grade 1 pada kelompok ekstubasi *end-inspiratory* dan 24.2% yang mengalami batuk grade 1 pada kelompok ekstubasi konvensional. Hasil uji *Mann-Whitney U* menunjukkan perbedaan skala refleks batuk yang bermakna secara statistik ($p = 0,039$). Hasil uji *Fisher's Exact* menunjukkan proporsi kejadian batuk bermakna klinis (sedang-berat) beresiko 1.33 kali lipat akan terjadi pada kelompok ekstubasi konvensional, namun secara statistik belum mencapai kemaknaan (CI 95% 0.323-5,500).

Kesimpulan: Terdapat perbedaan antara ekstubasi *end-inspiratory* dan ekstubasi konvensional terhadap penurunan kejadian refleks batuk secara umum. Namun, dari segi batuk bermakna klinis tidak ada perbedaan yang signifikan. Teknik ini direkomendasikan sebagai standar asuhan yang aman untuk mendukung kelancaran *smooth emergence*.

Kata Kunci: Ekstubasi *End-Inspiratory*, Refleks Batuk, *Smooth Emergence*, General Anestesi, Keselamatan Pasien.