

## CASE STUDY

# The Use of Capnography for Procedural Sedation in an Emergency Department

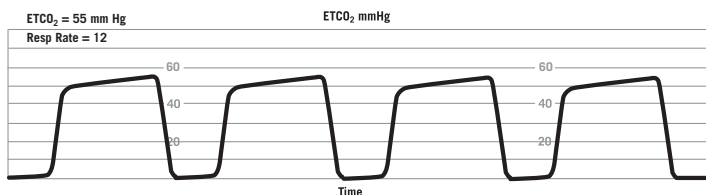
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## PROFILE

A 23-year-old male presented to the Emergency Department due to injuries suffered in a motorcycle accident. The patient had a left distal tibia/fibula fracture and was placed in a cervical collar due to the distracting injury. No other injuries were noted. Procedural sedation was performed in order to reduce the injury prior to surgical intervention. The patient's end-tidal CO<sub>2</sub> was continuously monitored during procedural sedation to assess adequacy, depth of respiratory status, and other vital signs. The Respironics CO<sub>2</sub>SMO® Capnograph with the CAPNOSTAT® Sensor in sidestream mode were applied, using a nasal cannula.

## CLINICAL COURSE

The patient was prepared for the procedural sedation as per hospital policy. Etomidate and Fentanyl were administered intravenously to minimize pain and maximize patient tolerance for the procedure. The capnogram and End-Tidal CO<sub>2</sub> (ETCO<sub>2</sub>) values were used to evaluate CO<sub>2</sub> during sedation. The baseline ETCO<sub>2</sub> was 50 mmHg. During the procedure, ETCO<sub>2</sub> levels never exceeded 55 mmHg.



During the procedure, the patient experienced increased discomfort. After confirming the patient's ETCO<sub>2</sub> was stable, an additional dose of Etomidate and Fentanyl was administered and the patient's discomfort was relieved.

Following the procedure, the ETCO<sub>2</sub> was 47 mmHg, and the patient was responsive to verbal stimuli. At no time during the procedure was the patient apneic or hypoxic. No signs of hemodynamic distress were observed. The total procedure time was 30 minutes. At the completion of the procedure, the patient was alert, oriented, and was transported to radiology for follow-up studies.

## DISCUSSION

The use of continuous capnography enabled the clinical team to evaluate CO<sub>2</sub> and assess the patient's ventilatory status. The team was then able to titrate medications to an acceptable Ramsey score (sedation assessment score) while maintaining adequate ventilation. Without the availability of capnography and the data it provides, the redosing of Etomidate and Fentanyl during the procedure likely would not have occurred.

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