

# The Nociception Level (NoL) in Patients Undergoing Video-Assisted Thoracoscopic Surgery (VATS) With and Without Thoracic Epidural Analgesia. A case series.



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## Background

PMD100™ (Medasense Biometrics Ltd., Ramat Yishai, Israel) is a novel non-invasive nociception monitor. The device integrates multiple physiological parameters, including heart rate, heart rate variability, photo-plethysmogram, skin conductance, its fluctuations and their time derivatives to compute a real-time level of nociception (NoL).

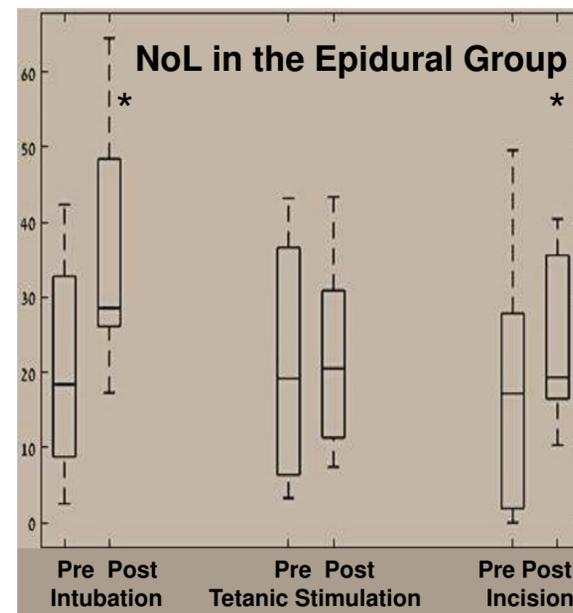
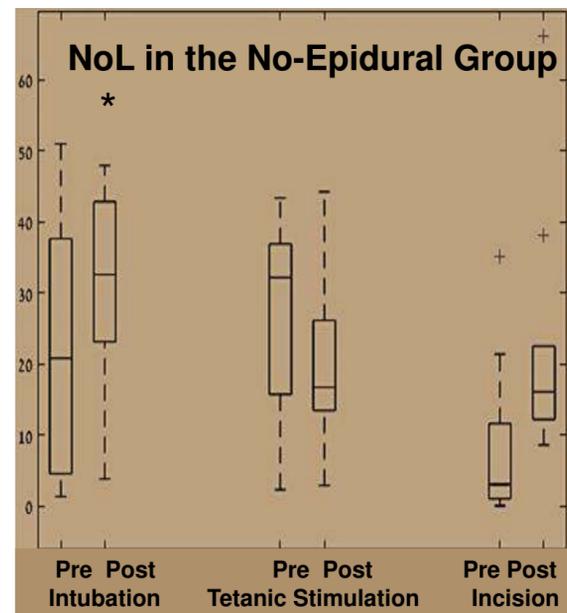
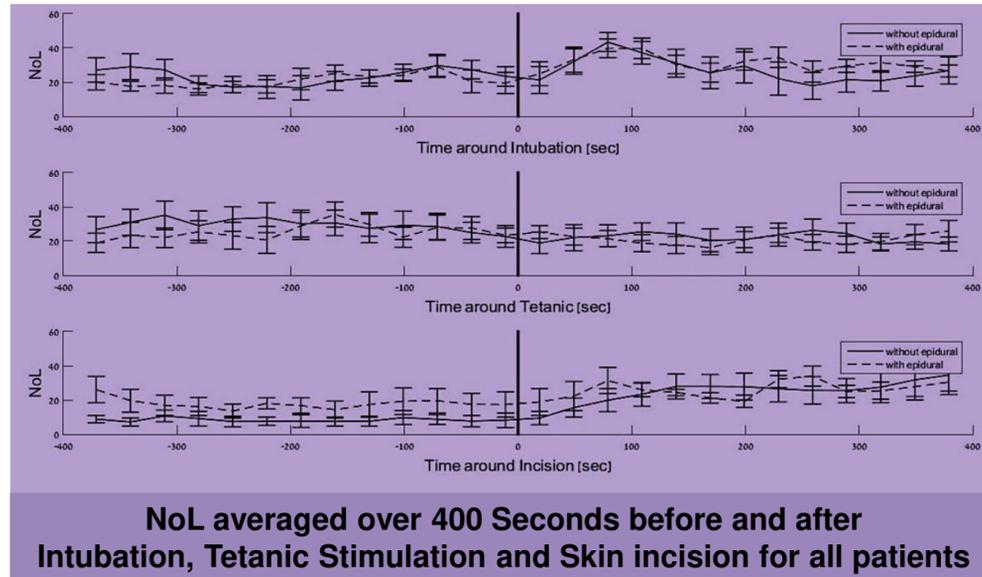
The NoL ranges from 0-100: A NoL of 0 represents a low sympathetic activation suggesting a pain free state, and vice versa.<sup>1</sup> Thoracic epidural analgesia (TEP) improves surgical outcomes after thoracotomies. Side effects include sympathectomy, hypotension, changes in skin temperature and a decreased cardiac accelerator fiber tone. These changes could affect NoL measurements.

The purpose of this pilot was to evaluate the feasibility of NoL measurements in the setting of epidural analgesia.

## Methods

25 subjects underwent Video-Assisted Thoracoscopic Surgery (VATS) under general anesthesia. Preoperative TEP were placed per anesthesiologist's discretion.

Routine, weight-based induction using lidocaine, propofol, fentanyl, and vecuronium was performed, followed by intubation and ulnar tetanic stimulation (60mA, 100 Hz, 20 seconds).



## Methods

The NoL and hemodynamic parameters were continuously measured from the start of anesthesia until 5 minutes after skin incision.

If in situ, TEP was bolused with 5mL 2% lidocaine 5 minutes before skin incision. NoL values were compared using the student t-test 60 seconds before and 150 seconds after the nociceptive events.

## Results

17 out of 25 (68%) consented subjects were analyzed, of which 8 received an epidural (47%). 8 subjects were excluded due to technical issues (32%).

The NoL significantly increased after intubation in all patients from 21.6 (4.1) to 33 (3.9) (p=0.007) and after skin incision in patients of the No-Epidural group: 8.4 (4) to 22, 5 (6.1); p=0.001, but not in the Epidural group: 17.4(6.9) to 24.3 (4.4);p=0.07.

## Conclusion

The PMD100™ monitor reliably detected an increase in nociception (NoL) after intubation and skin incision in the No-Epidural group.

The NoL did not increase in the epidural group after skin incision, suggesting effective analgesia.

Importantly, these results suggest that the PMD100™ monitor may be used in patients with TEP.