Robotic Sympathetic Trunk Reconstruction for Compensatory Sweating after Thoracic Sympathectomy

Objectives
Endoscopic thoracic sympathectomy (ETS) may be complicated by the onset of disabling compensatory sweating (CS). The purpose of this case series is to describe the mid-term outcomes of robotic sympathetic trunk reconstruction (STR) for the reversal of CS in patients who had undergone ETS.

Methods
We conducted a retrospective study in patients who received robotic STR because of intolerable CS after ETS from October 2017 to August 2021. The severity of CS at different anatomical locations was examined before and after STR (every 6 months) using a visual analogue scale (VAS; range: 0-10; with values >7 indicating severe CS). Differences between pre- and post-STR VAS values were analyzed at different time points (6, 12, 18 and 24 post-operative months) with the Wilcoxon matched-pairs signed rank test.

Results
Thirty patients (24 men and 6 women, mean age: 42.8 years) were included in the study. The mean interval from ETS to STR was 19.7 years. The three most common sites showing severe CS before STR were the chest (100%), the back (100%), and the abdomen (76.9%). The nerve defects were bridged using sural nerves (mean length: 10 cm). No conversion to open technique was necessary, and we did not observe any intraoperative complication. None of the study patients developed the Horner's syndrome during the post-operative period. The severity of CS at 6 post-operative months was found to significantly decrease for chest (9.4 ± 0.89 vs. 5.83 ± 2.78, p<0.05), back (9.33 ± 0.84 vs. 6.03 ± 2.49, p<0.05), abdomen (7.33 ± 2.79 vs. 4.52 ± 2.86, p<0.05), and the buttocks (6.46 ± 2.97 vs. 4.66 ± 3.13, p<0.05). These findings were not transient and were noticeably maintained at 24 post-STR months (all p value remained < 0.05). Neither recurrent hyperhidrosis at the primary site nor the transition of CS to other locations was observed.

Conclusions
This is, to our knowledge, the largest case series to date to describe the clinical outcomes of robotic STR for the reversal of CS in patients who had previously undergone ETS. Our current data demonstrate that the benefits conferred by STR performed through a robotic approach were durable and sustained over time. Specifically, the severity of CS at 6 post-operative months was found to decrease significantly and were noticeably maintained at 24 post-STR months. Collectively, our results demonstrate the mid-term safety and effectiveness of robotic STR.

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