

included from 2004 up to and including 2019, so the study accurately reflects current practice. Data, including complications, were collected from routine care with the aim of improving patient outcomes, instead of from administrative databases designed for other purposes<sup>47,48</sup>. In addition, multivariable analysis was performed to investigate the effect of extent of surgery, with adjustment for patient and disease factors.

This study also has several limitations. Registry data are prone to missing data and typing and coding errors. As data on individual patients were deidentified upon registration, missing data could not be retrieved and were therefore handled using multiple imputation, which is currently considered the best method<sup>49,50</sup>. Differences in duration of follow-up were observed in both registries and so at least transient complications were used as proxies for permanent complications. Laryngoscopy was not performed routinely in all patients in all centres. Therefore, some patients with RLN palsy might have been missed. Laryngoscopy was probably performed selectively (in patients with signs or symptoms of RLN palsy or in those with loss of IONM signal) and, in the absence of routine evaluation of RLN function by IONM and/or laryngoscopy, rates of RLN palsy might not be comparable across centres<sup>42,44</sup>. Postoperative hypoparathyroidism was determined based on oral medication with active vitamin D and/or calcium; information on levels of parathyroid hormone was not available in the quality registers used in the present study. In addition, in several centres the policy might have been to treat patients routinely with calcium or active vitamin D during the perioperative phase. This could have led to overestimation of the transient hypoparathyroidism rate. Neither database captured data on inadvertent resection of parathyroid glands and this could therefore not be analy-

MTC in many institutions in the present study suggests that further centralization might be necessary to improve outcomes. More extensive surgery increases the risk of complications. The high rate of N0 disease after lymph node dissection underscores the need for adequate patient counselling, and the need for improved prognostic factors that can be used to select patients for more extensive surgery.

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