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Preface

Modern endocrine surgery – Striving for a better quality of life



Multidisciplinary approaches have become a megatrend in contemporary clinical medicine. Endocrine medicine in particular is thriving on the collaboration of many medical fields and specialties, breeding detailed treatment plans tailored to the individual patient. Endocrine surgery forms one of the main pillars of endocrine medicine. This is why the Editor-in-Chief and the Editorial Board of *Best Practice and Research Clinical Endocrinology and Metabolism* are to be praised for setting aside two issues to give endocrine surgery a voice in the endocrine community. The expert authors who contributed state-of-the-art reviews spanning the complete spectrum of endocrine surgical diseases, embraced this unique opportunity wholeheartedly. The first issue is devoted to thyroid surgery; the second issue addresses parathyroid surgery, adrenal surgery and surgery for paraganglioma and intestinal and pancreatic neuroendocrine tumours.

Conceptually, both issues of 'Modern Endocrine Surgery' outline the current state of evidence enriched with personal surgical experience and considers the following questions: (1) which surgical procedures have become available recently that improve the surgical management of endocrine diseases; and (2) which new evidence calls for greater surgical specialization, which volume-outcome correlations exist, which procedures are less invasive, less extensive, and less harmful but equally effective, providing similar or superior quality of life.

In most areas of operative medicine, the rush towards extensive surgery, rampant in the 1980s and 1990s, has petered out, giving way to a more balanced view on the surgical benefit–risk profile. The emphasis is now on reducing the operative burden by minimizing surgical trauma, fostering surgical quality control and valuing cosmesis more. This first issue of 'Modern Endocrine Surgery' includes four chapters that showcase less invasive, less extensive and less traumatic surgical interventions: (1) radiofrequency ablation (RFA) for symptomatic benign nodules [1]; (2) hemithyroidectomy for asymmetric benign multinodular disease [2]; (3) a risk-oriented therapeutic concept for intrathyroid papillary thyroid cancer [3]; and (4) a limited surgical approach to substernal goiter [4]. For RFA, Dobnik and Amrein found promising volume reduction rates and symptomatic improvements but caution that recurrence rates and patient satisfaction eventually 'will provide the basis for a meaningful overall cost–benefit analysis in the future'. Barczynski and Stopa-Barczynska [2] ponder the pros and cons of hemithyroidectomy for treatment of asymmetric benign multinodular goiter. Hemithyroidectomy may become an attractive alternative to total thyroidectomy if life-long follow-up can be assured. Hartl and coworkers discuss the recent tide, and potential for overtreatment, of low-risk papillary thyroid cancer. The authors conclude that it may be wise to combine more than one method for evaluating tumour growth, but caution that 'further prospective, well-structured studies are needed to define these risk groups, define new risk factors and in particular molecular factors, and

provide reliable statistics on outcomes.' For removal of substernal goiter, Hanson, Shaha and Wu advocate cervical mediastinoscopy and video/robotic assisted thoracoscopic surgery as alternatives to partial or complete median sternotomy. They continue that the 'evolution of radiological imaging and surgical technique, including the evolution of intraoperative nerve monitoring, has seen a significant narrowing of the surgical window where transsternal surgery is reliably indicated and beneficial.'

The recent progress of thyroid surgery has been flanked by improvements in quality control of intraoperative parathyroid gland and vocal cord function [5–7]. Schneider and co-workers explore the impact of continuous vagus stimulation (CVS) on intraoperative surgical strategy and postoperative outcome. Although rare, permanent vocal cord palsy, if bilateral, can have devastating consequences on the patient's quality of life, which must be absolutely avoided. Apart from facilitating identification and tracking of the recurrent laryngeal nerve (RLN), CVS assists the surgeon in 'tailoring intraoperative decision making to determine the safest course of action for patients with benign goiter' by clarifying the functional status of nerves encased by scar tissue or invaded by cancer [6]. These electrophysiologic findings are factored into surgical decision-making on whether to continue or postpone completion thyroidectomy of the unaffected side of the neck.

Owing to their unique vascularization and proximity to the thyroid capsule, the parathyroid glands can be jeopardized during thyroid surgery. Intraoperative imaging techniques, indocyanate green (ICG) near-infrared imaging (NIFI) and parathyroid autofluorescence (AF) NIFI, may help decrease the risk of postoperative hypoparathyroidism. Rudin and Berber suggest performing 'a multicentre study comparing ICG or AF technology to conventional thyroidectomy to objectively document whether the use of these technologies reduces permanent hypocalcemia'.

The extent of surgery, which correlates to the risk of operative complications, remains another area of contention. Three chapters deal with the inherent conflict between a 'one-size-fits-all' approach and personalized surgical care: for Graves' disease [8]; for follicular neoplasms [9]; and for hereditary C-cell disease [10]. For Graves' disease, the pendulum has swung from subtotal to total thyroidectomy because of comparable complication rates in experienced hands [8]. Although it eliminates the autoantigen-bearing organ, total thyroidectomy does not appreciably change the clinical course of the associated ophthalmopathy. For follicular thyroid cancer (FTC), preoperative diagnosis is limited. Fine needle aspiration cytology, molecular cytology, and intraoperative frozen section cannot reliably distinguish between follicular adenoma and FTC. Current evidence suggests that hemithyroidectomy may be adequate not only for asymmetric benign multinodular goiter, but also for intrathyroid papillary thyroid cancer, and low-risk FTC without vascular invasion or gross extrathyroid extension [9]. Prophylactic surgery for gene carriers of hereditary C cell disease has revolutionized the practice of personalized medicine. The previous age-based concept of prophylactic thyroidectomy has been superseded by the DNA-based/biochemical concept, in which serum calcitonin which exceeds the upper normal limit of the assay heralds impending malignant transformation and signifies a closing window of opportunity.

Two illustrative chapters show how progress in thyroid research and clinical practice transforms endocrine surgery: (1) natural orifice transluminal endoscopic surgery (NOTES) for optimal cosmesis [11], and (2) the impact of registries recording surgical volume and outcome on the quality of thyroid surgery [12]. The era of cosmesis-conscious thyroid surgery, ranging from minimal neck incision to extracervical approaches, was ushered in by Paolo Miccoli from Pisa in the late 1990s. The quest for better cosmesis culminated in the recent advent of transoral endoscopic thyroidectomy by vestibular access (TOETVA) and transoral robotic thyroidectomy (TORT). Technically intriguing and unrivalled in cosmesis (no cervical scar), transoral thyroidectomy can give rise to complications unheard of in conventional thyroid surgery. Technical details, indications for, perioperative management and clinical outcomes of transoral thyroidectomy are well described. The authors reason that 'this new endocrine surgery field may, in the near future, establish itself as a viable alternative to other endoscopic surgeries for the treatment of selected thyroid conditions.' With respect to cosmesis, one may add: not only as an alternative to other endoscopic procedures but also to non-operative treatment modalities.

Quality control of surgical outcomes has been the hallmark of good clinical practice ever since. This principle is embodied by Theodor Kocher who was awarded the Nobel prize in 1909 for acknowledging his catastrophic outcomes of 'cachexia strumipriva' after total thyroidectomy. Learning from this failure, hemithyroidectomy became Kocher's favourite thyroid procedure for avoidance of

postoperative hypothyroidism, a condition untreatable at that time. Great strides have been made since to define the minimum number of operations compatible with low surgical morbidity. Perhaps reflecting variable neck anatomy, the thyroid gland has defied these efforts so far [12]. Thus, it is fair to suggest that 'every surgeon should know their own outcomes and how they compare with their peers and engagement in thyroid surgery registries can facilitate this.'

This special issue of *Best Practice and Research Clinical Endocrinology and Metabolism* endeavours to provide the most current information on thyroid surgery while highlighting differences of opinion. The Editor-in-Chief, the Editorial Board, and the Managing Editor, are to be congratulated on the two issues of 'Modern Endocrine Surgery'. We trust that both issues may stimulate further research in the field, in pursuit of better personalized care and greater quality of life for our patients.

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