

Index

A

- Abnormal parathyroid glands, 231
- Afirma Genomic Sequence Classifier (GSC), 161
- American Thyroid Association (ATA) guidelines, 26, 174
- Antithyroid drugs (ATD), 195, 196
- Apnea-hypopnea index (AHI) score, 224

B

- BABA robotic thyroidectomy, 268
- Benign nodules and goiters
 - assessment of patients, 146–148
 - carotid duplex, 145
 - FNA biopsy, 146
 - TOETVA and TORTVA
 - adverse events and complications, 152, 153
 - endocatch bag, 151
 - patient eligibility, 150–151
 - patient selection, 150–151
 - radioiodine, 150
 - thyroid capsule, 151
 - transorally resecting malignant tissue, 151
 - vestibular approach, 149
- Benign thyroid nodule, 262
- Berry's ligament, 237, 286
- Bethesda classification V or VI, 45, 150
- Bethesda system, 69
- Bilateral axillo-breast approaches (BABA), 146, 252
 - robotic thyroidectomy, 268
- Bilevel positive airway pressure (BiPAP), 226
- Bulky disease, 181

C

- Carbon dioxide (CO₂) embolism, 223
- Central neck dissection (CND)
 - anatomy of, 247, 248
 - endoscopic CND, 252–257
 - prophylactic vs. therapeutic, 248, 249
 - robotic CND, 257
 - TOETVA, 253
 - transoral approach, 249, 250
- Cervical endocrine disease, 50
- Completion thyroidectomy, 70–72
- Contemporary neck ultrasound, 49
- Continuous positive airway pressure (CPAP) therapy, 224
- Conventional (open) thyroidectomy decision-making process
 - case of conversion, 277–279
 - EMG tube oral vs. nasotracheal intubation, 113
 - expert opinion, 278–279
 - intraoperative assessment, 276–277
 - preoperative assessment, 275–276
 - preoperative exclusion criteria, 276
 - primum non nocere, 274
- Cost effectiveness analysis, 71

D

- da Vinci-Xi surgical system, 31, 36, 265
- DeBakey forceps, 27
- Dual-energy X-ray absorptiometry (DEXA), 205

E

- EBSLN monitoring, 113–114
- Electrocautery, 90

Electromyography (EMG), 34
 Endo-needle holder, 99
 Endoscopic CND, 252–257
 Endoscopic Kitner dissectors, 213
 Endoscopic transaxillary approach, 139
 ENSEAL® Tissue Sealing Device, 104
 External branch of the superior laryngeal nerve (EBSLN), 113, 238
 Extra-thyroidal extension (ETE), 70

F

Fine needle aspiration (FNA), 146, 180
 Follicular lesion of undetermined significance (FLUS), 182
 Follicular neoplasm, 44
 Follicular neoplasm Bethesda III and IV nodules, 262
 Follicular variant of papillary thyroid carcinoma (fvPTC), 65, 160
 ForceTriad™ energy, 105
 Four-dimensional (4D) CT scanning, 54, 207

G

Glomerular filtration ratio (GFR), 205
 Graves' disease, 26, 44, 45, 54–56, 146, 257
 clinical presentation, 193, 194
 diagnostic evaluation, 194–195
 epidemiology, 191–192
 pathogenesis, 192–193
 treatment
 ATD, 195, 196
 RAI, 196, 197
 surgery, 197
 TOETVA for, 198–200
 Graves' ophthalmopathy (GO), 193

H

HARMONIC ACE®+7 Shears, 104
 Harmonic curved sheers, 27
 Hartley-Dunhill procedures, 12
 Hashimoto's thyroiditis, 26, 45, 146, 192
 High-resolution transverse view B-mode gray-scale thyroid ultrasound, 50–53, 59
 Hyperthyroidism, 193

I

Indeterminate thyroid nodules
 definirion, 160
 molecular genetic testing, role of, 161, 162
 six-tiered Bethesda classification, 160

Indocyanine green (ICG), 239
 Institutional Review Board (IRB) protocol, 18
 International Neural Monitoring Study Group (INMSG), 107
 Intraoperative neural monitoring (IONM), 106, 133, 237, 238, 255
 Intraoperative parathyroid hormone assay (ioPTH), 209

K

Kocher incision, 281

L

Learning curve, 21, 26, 184
 LigaSure™ Maryland jaw, 105
 Lighted breast retractor, 27
 Lobectomy, 65
 Lugol's solution, 197
 Lymph nodes, 70
 Lymphocytic (Hashimoto's) thyroiditis, 54, 55

M

Maryland dissector, 27, 128
 Mediastinoscopy, 2
 Memorial Sloan Kettering Cancer Center (MSKCC), 65
 Microscopic extra-thyroidal extension (ETE), 65
 Mini-incision transverse cervicotomy, 277
 Minimally invasive video-assisted endoscopic thyroidectomy (MIVAT), 3, 4, 25, 250
 Modified Ikeda's arm position, 28
 Mosquito or hemostatic clamps, 92
 Multiple endocrine neoplasia (MEN) syndrome, 249

N

National Cancer Database (NCBD), 66
 Natural orifice transluminal endoscopic surgery (NOTES), 221
 Neck circumference, 223
 New European Surgical Academy (NESA), 4
 Noninvasive positive pressure ventilation (NIPPV), 226
 Novel surgical techniques
 assembling team, 20–21
 discussion with patients, 21–22
 early adoption, 18–19
 hospital privileges, 20
 preparation of surgeon, 18–19

O

- Obesity, 221, 222
- Obstructive sleep apnea (OSA), 226
- Oral cavity, 45
- Organization for Economic Cooperation and Development (OECD), 222
- Oscilloscope (A-mode/amplitude modulation), 49

P

- Papillary carcinoma, 262
- Papillary microcarcinoma, 44
- Papillary thyroid carcinoma, 273
- Papillary thyroid microcarcinoma (PTMC), 68
- Parathyroid glands, 239, 286
- Parathyroid hormone (PTH), 204
- Polysomnography, 224
- “Pop up” technique, 131
- Positron emission tomography (PET), 145, 146
- Primary hyperparathyroidism (PHPT), 204
- ProGrasp forceps, 27

R

- Radioactive iodine therapy (RAI), 195–197
- Recurrent laryngeal nerves (RLNs), 106, 134, 236–238, 285
- Remote access approaches (RAA), 44
- Retroperitoneoscopy, 2
- Revision thyroidectomy, 228
- Robot docking, 31–32, 36
- Robotic-assisted gasless transaxillary approach
 - console time, 32–33
 - flap creation, 29–31
 - incision and landmarks, 29
 - patient positioning, 28
 - patient selection, 26, 27
 - robot docking, 31–32
- Robotic-assisted retroauricular (facelift) approach
 - console time, 36–37
 - flap creation, 35
 - incision and landmarks, 34–35
 - patient positioning, 34
 - robot docking, 36
- Robotic bilateral axillo-breast approach (BABA), 26
- Robotic CND, 257
- Robotic minimally-invasive thyroid surgery, 174

S

- “Scarless” approach, 167
- Scar-less in neck approach, 25
- Scrub nurse, 81
- Sestamibi scanning, 54, 207
- Single-photon emission computer tomography (SPECT), 207
- Somatosensory evoked potentials (SSEP), 28
- Sporadic parathyroid adenoma, 228
- Sternocleidomastoid (SCM) muscle, 30
- Stratafix™ Ethicon, 95
- Suction-irrigator, 100

T

- Technetium 99m-sestamibi imaging, 207
- ThyGenX, 161
- ThyraMir, 161
- Thyroid cancer
 - ATA stratification, 179
 - causes for, 176
 - epidemiological trends
 - increased incidence hypothesis, 176–177
 - over-diagnosis hypothesis, 175
 - indication for, 180
 - management, trends in
 - cost-effectives utilization, 179
 - FNA, role of, 181
 - molecular testing, role of, 181–182
 - surgery, role of, 182–183
 - ultrasound and advance imaging, role of, 180–181
 - pathology and staging, 177
 - prognosis and stratification, 178–179
- Thyroidectomy vestibular approach (TOETVA), 274
- Thyroid enlargement, 145
- Thyroid lobectomy, 138
- Thyroid resection technique, 5, 6
- ThyroSeq assay, 161, 162
- TNM/AJCC classifications, 65
- TOET via vestibular approach (TOETVA), 107
- Total extrapariosteal endoscopic hernioplasty, 2
- Totally transoral video-assisted thyroidectomy (TOVAT), 9
- Transoral endocrine and neck surgery
 - anesthesia, 224
 - asymptomatic hyperparathyroidism patients, 229
 - CO₂ embolism, 223
 - flap-related complications, 239–240
 - impact of body habitus, 222–223
 - intraoperative care

- Transoral endocrine and neck surgery (*cont.*)
- airway management, 225
 - patient positioning, 224
 - surgical techniques, 225
 - obesity classification, 221, 222
 - OSA, 226
 - postoperative in-hospital period, 225, 226
 - preoperative assessments, 224
 - reoperation in
 - complications of, 233–239
 - distorted anatomy, 228
 - parathyroid glands, 239
 - remote access approaches, roles of, 229–231
 - RLNs, 236–238
 - SLN, 238
 - thyroidectomy and parathyroidectomy, indications for, 228–229
 - TOETVA, 231–233, 240
- Transoral endocrine surgery (TES), 281
- and neck surgery (*see* Transoral endocrine and neck surgery)
 - ultrasound
 - anatomic exposure, 51
 - disease location, 52–54
 - high-quality neck ultrasonography, 50
 - inflammation, 54, 56
 - malignancy, 56–59
 - size and volume estimation, 51
- Transoral endoscopic parathyroidectomy
- vestibular approach (TOEPVA), 41, 221
 - advantages, 215
 - disadvantages, 214, 215
 - history of remote access, 211
 - indications for, 204, 205
 - ioPTH, 209, 210
 - localization studies, 206–209
 - preoperative planning
 - operative procedure, 212–214
 - postoperative care, 214
 - preoperative setup, 212
 - remote access approach, 211
 - PTH, 204
 - remote access techniques, 203
 - transoral parathyroidectomy, 211
- Transoral endoscopic thyroidectomy vestibular approach (TOETVA), 12, 41, 195, 198, 221
- central port tract, 283
 - CND technique, 250, 252
 - complications, 290
 - bleeding, 141
 - broken suture, 142
 - iatrogenic tracheal injury, 140
 - intraoperative complication, 140–142
 - oral vestibule wound, 142
 - postoperative complication, 142
 - RLN injury, 141, 142
 - wrong plane dissection, 140
 - contraindications, 79, 112
 - cost-to-benefit ratio, 77
 - endoscopic instruments
 - atraumatic grasper, 96
 - endo-needle holder, 99
 - endo-peanut, 98
 - endosurgical clip appliers, 100
 - Maryland dissector, 95
 - right-angle clamps, 97
 - suction-irrigator, 100
 - traumatic grasper, 97
 - equipment and energy device, 123
 - CO₂ setup, 94
 - electrocautery, 90
 - hydrodissection, 90
 - mosquito or hemostatic clamps, 92
 - surgical scalpel, 90
 - suture materials, 95
 - vascular tunneler, 92–94
 - veress needle, 90, 91
 - equivalence trials, 289
 - fluorescence imaging, 114
 - hypoglossal nerve injury, 121
 - indications for, 78, 122
 - infection, 287
 - intermittent stimulation methods, 111
 - Kocher incision, 281
 - lateral stab incisions, 284
 - neural monitoring
 - EBSLN monitoring, 113–114
 - endotracheal tube-based electrodes, 112
 - IONM, 107
 - nerve monitor systems, 113
 - setting and standards, 107
 - stimulating electrodes, 108–112
 - teamwork, 108
 - non-inferiority trials, 289, 290
 - open procedure and hematoma, 287
 - parathyroid glands, 286
 - patient preparation
 - anesthesia perspectives, 83
 - dental care, 82
 - disinfection, 84
 - draping, 86, 87
 - irrigation spoid, 85
 - operation room set up, 83

- positioning, 83–84
- preoperative prophylactic
 - antibiotics, 82
- postoperative care, 103, 139, 140
- postoperative peculiarities
 - discharge, 103
 - EBDs, 106
 - energy based devices, 104
 - ENSEAL® Tissue Sealing Device, 104
 - follow-up examination, 103
 - HARMONIC ACE®+7 Shears, 104
 - LigaSure™ Maryland jaw, 105
 - smoke effect, 105, 106
 - THUNDERBEAT, 105
- pre-operative peculiarities
 - direct laryngoscopy, 80
 - inclusion and exclusion criteria, 78–79
 - preoperative imaging, 79
 - scrub nurse, 81
 - second assistant, 80
 - surgeon candidacy, 80
 - surgical anatomy, 82
- preoperative preparation, 122
- re-operation, 139
- RLN, 285
- room setting, 124
- safety and risk/benefit ratios, 282
- safety outcomes, 287–288
- scarless approach, 78
- specimen extraction and closure
 - adhesion barriers, 101
 - chlorhexidine/povidone iodine, 101
 - compressive dressing, 101
 - drain, 101
 - extraction bag, 100–101
 - hemostatic materials, 101
- specimen removal, 286, 287
- subplatysmal flap, 284
- superiority trials, 289
- superior pole of thyroid, 285
- surgical equipment, 88
- surgical steps and complications, 283
- trachea, thyroid free from, 286
- vestibular approach
 - completion thyroidectomy, 139
 - endobag, 135
 - IONM, 134
 - Maryland dissector, 128
 - multifilament suture, 137
 - orotracheal intubation, 125
 - “pop up” technique, 131
 - superior laryngeal nerve injury, 133
 - symphysis menti, 125
 - video-assisted minimally invasive thyroidectomy, 121
- Transoral endoscopic vestibular approach
 - CO₂ gas insufflation, 41
 - indications and contraindications, 44
 - patient selection criteria, 43–46
 - thyroid malignancies management
 - cost, 183
 - learning curve, 184
 - oncological endoscopic thyroid surgery, 185–186
 - patient selection, 184, 185
- TOETVA AND TOEPVA,
 - challenges, 42, 43
- Transoral parathyroidectomy, 46
- Transoral partial parathyroidectomy (TOPP), 11
- Transoral robotic thyroidectomy
 - advantage, 268, 269
 - da Vinci Xi, 267
 - disadvantages, 269–270
 - follicular thyroid carcinoma, 267
 - indications and contraindications, 262, 263
 - instruments, 267
 - mechanisms of retraction, 267
 - preoperative factors, 263
 - procedures
 - console stage, 265–266
 - docking stage, 265
 - postoperative management, 266
 - working space formation, 264–265
 - surgical approaches, 267
 - tremor elimination, 267
 - trocars, 267
- Transoral Robotic Thyroidectomy minimally invasive techniques, 261
- Transoral Robotic Thyroidectomy transoral vestibular approach, 262
- Transoral robotic vestibular approach (TRVA), 174
- Transoral thyroidectomy, 82
 - Berry’s ligament, 163
 - history of, 1, 2
 - indications for, 164
 - lower lip just anterior, 162
 - new millennium, 2–4
 - nodule and implications, size of, 165–168
 - preclinical investigations
 - cadavers, anatomical studies, 7–9
 - Downton’s observations, 7
 - intraoral approach, 7
 - living animals, TOVAT application, 10
 - totally transoral approach, 6

Transoral thyroidectomy (*cont.*)
 premature clinical implementation
 animal cadavers, 11
 avascular dissection plane, 11
 permanent RLN paralysis, 11
 submandibular triangle, 11
 TOPP, 11
 safety and feasibility, 164–165
 small-to-moderate sized nodules, 164
 strap muscles, 162, 163
 surgeon judgment, 168–169
 TOVAT and TOETVA, 12
 Transoral thyroid surgery, 41
 Transoral vestibular approach (TOE), 174
 Transverse view high-resolution B-mode
 ultrasound, 55
 TSH receptor autoantibodies (TRAb), 194

V

Vascular tunneler, 92–94
 Veress needle, 90, 91
 Video-assisted minimally invasive
 thyroidectomy, 121

V-Loc™ (Covidien™), 95

W

Well differentiated thyroid cancers
 (WDTC), 63, 175
 ATA schema, 65
 extent of lymphadenopathy, 65
 histologic subtype, 64
 low disease-specific mortality rates, 64
 microscopic ETE, 65
 outcomes, lobectomy, 65–68
 outcomes, RAI, 68
 preoperative risk prediction
 completion thyroidectomy, 70–72
 cytology, 69
 ETE, 70
 lymph nodes, 70
 multifocal tumors, 69, 70
 nodule size, 69
 pre-operatively assessable risk
 factors, 70
 surgical decision making, 68–69
 total thyroidectomy, 64