

CONTENTS

Section I: Conventional Screening, Newer Screening Methods, HPV Carcinogenesis, Biomarkers and HPV Vaccination

1. Cervical Cancer Screening in the Developing World	3
<i>Rengaswamy Sankaranarayanan, Pulikottil Okkuru Esmey, Somanathan Thara, Paulo Naud, Namory Keita, Twalib Ngoma</i>	
• Burden of Cervical Cancer	3
• Natural History and Control Options	4
• Screening Tests and Programs for Cervical Neoplasia	4
• New Paradigms in Cervical Screening	5
• Accuracy of Cervical Screening Tests	5
• Routine Screening Programs in Developing Countries	9
• Evidence for Incidence and Mortality Reduction Following Noncytology Screening Tests in Developing Countries	10
• Efficacy, Safety and Acceptability of Field Based Treatments for CIN in Developing Countries	11
• Cost-effective Screening Approaches in Low-Resource Settings	11
• Clinical Early Diagnosis	12
2. Cytology for Screening: Scope and Limitations.....	15
<i>Sharmila Pimple, Surendra S Shastri</i>	
• Cervical Cytology as an Effective Screening Test	16
• New Cytological Terminology	17
• The 2001 Bethesda System for Reporting Pap Smear Results (Abridged)	18
• Current Protocols for Management of Screen Positive	18
• Limitations of Cervical Cancer Screening in Developing Countries	19
• Cervical Cytology: New Technologies	21
• Cost-effectiveness of Cervical Cytology Cancer Screening	22
3. Management of Abnormal Pap Smears.....	26
<i>Rekha Wuntakal, Tony Hollingworth</i>	
• Basis for Cervical Screening	26
• Liquid Based Cytology	26
• Pathophysiology of Cervical Intraepithelial Neoplasia	27
• Prevention of Cervical Abnormalities	27
• Classification of Pap Smear	27
• Screening Programs	27
• Early Detection of Abnormal Pap Smear and Cervical Intraepithelial Neoplasia	28
• Management of Women with ASCUS Abnormality	28
• Features of Dyskaryosis on Cytology	29
• Colposcopic Features of Cervical Intraepithelial Neoplasia	29
• Histological Features of Cervical Intraepithelial Neoplasia	29
• Glandular Neoplasia	30
• Abnormal Cervical Cytology During Pregnancy and Management	30
4. Liquid Based Cytology.....	32
<i>Santosh Menon, Bharat Rekhi, Kedar Deodhar, Amita Maheshwari</i>	
• Screening Tests for Cervical Cancer	32
• Conventional Exfoliative Cervical Cytology (Papanicolaou Test)	32
• Liquid Based Cytology	33

5. HPV Carcinogenesis, Clinical Applications and Biomarkers in Cancer Cervix	36
<i>Shalini Rajaram, Shaili Nigam, Shilpa Kava</i>	
• Introduction	36
• Genome of HPV	37
• Mechanism of Carcinogenesis by HPV	38
• HPV Infection	38
• Development of Precancer and Cancer	40
• Clinical Implications of HPV Oncogenesis	41
6. Current Status of HPV DNA Testing.....	45
<i>Usha Rani Poli</i>	
• Natural History of HPV Infection	45
• HPV DNA Testing	46
• Polymerase Chain Reaction Method	46
• Hybrid Capture Assay (HC2)	46
• Performance of HPV DNA Test	46
• High NPV of HPV Testing	46
• Clinical Implications	47
• Age of Screening	47
• Key Issues in HPV Testing	47
• Clinical Utility of HPV Testing	47
• Adjunctive Testing for HPV DNA Test	47
• HPV DNA Testing in the Triage of Equivocal [ASCUS or Low-grade (LSIL)] Cytologic Findings	48
• Care HPV Test	48
• Management Options of Positive HPV Test	49
• Self Sampling for HPV DNA Testing	49
• Cost Effectiveness	49
• New Paradigms for Screening in the Age of HPV Vaccination	49
7. Role of Colposcopy in Diagnosis.....	51
<i>Sumita Mehta, Vijay Zutshi, Sruthi Bhaskaran</i>	
• Colposcopy for Primary Screening	52
• Colposcopy for Diagnosis of CIN	52
• Colposcopic Assessment of Microinvasion/Invasion	56
• Recording of Observations	56
• Accuracy of Colposcopy as Diagnostic Modality	57
• Disadvantages of Colposcopy in Diagnosis of CIN	58
• Colposcopic Directed Biopsy	58
8. Treatment of Cervical Intraepithelial Neoplasia	60
<i>Partha Basu, Srabani Mittal</i>	
• Cryotherapy	61
• Large Loop Excision of the Transformation Zone (LLETZ or LEEP)	62
• Cold Knife Cone Biopsy	63
• Hysterectomy	63
• Follow-up after Treatment of CIN	63
• Management of Cervical Intra-epithelial Neoplasia in Pregnancy	64
• Single Visit Approach for the Treatment of Cervical Intra-epithelial Neoplasia	64
9. HPV Vaccination in Primary Prevention of Cervical Cancer	66
<i>Rengaswamy Sankaranarayanan, Parimal Jivarajani, Smita Joshi</i>	
• Natural History of HPV Infection	66
• Immunology of HPV infection	68
• Immunology of HPV vaccination	68
• HPV vaccines	68
• Efficacy of HPV Vaccination in Inducing Immunity and Preventing HPV Infection and Cervical Neoplasia	69
• Clinical Practice Guidelines for HPV Vaccination	69
• Safety	70
• Challenges for HPV Vaccination in National Immunization Programs	70

Section II: Pathology of Cervical Cancer

- 10. Histopathology of Preinvasive Squamous Lesions and Microinvasive Squamous Cell Carcinoma.....77**
Neelam Wadhwa
- Introduction 77
 - Histology of Endocervix 78
- 11. Pathology of Carcinoma Cervix87**
Kedar K Deodhar, Bharat Rekhi, Santosh Menon
- Precursor Lesions 87
 - CIN 1 88
 - Microinvasive Squamous Carcinoma 91
 - Squamous Cell Carcinoma 91
 - Endocervical Adenocarcinoma 93
 - Uncommon Carcinomas and Neuroendocrine Tumors 94
- 12. Adenocarcinoma and other Rare Histologic Entities: Clinical Aspects.....98**
S Sucheta, K Chitrathara
- Adenocarcinoma 98
 - Other Rare Cancers of Cervix 99

Section III: Surgical Management of Early Stage Disease

- 13. Surgical Anatomy of the Cervix105**
Bhupesh Kumar Goyal
- Introduction 105
- 14. Staging and Investigative Work-up114**
Shalini Rajaram, Neha Kumar
- Routes of Spread of Cervical Cancer 114
 - Staging 115
 - Limitations of Clinical Staging 118
- 15. Sentinel Lymph Node Evaluation128**
Manoj Babu R, Chitrathara K, Shalini Rajaram
- Role of Sentinel Node Biopsy in Cervical Cancer—Potential Uses and Advantages 128
 - Pitfalls and Challenges 129
 - Technique of Sentinel Lymph Node Biopsy 130
 - Studies on Sentinel Lymph Node Biopsy 133
- 16. Radical Trachelectomy135**
Abraham Peedicayil, Sean Dowdy
- History 135
 - Staging of Early Cervical Cancers 136
 - Tumor Spread 136
 - Radical Vaginal Trachelectomy with Laparoscopic Lymphadenectomy 136
 - Operative Technique—Radical Vaginal Trachelectomy 137
 - Radical Abdominal Trachelectomy 140
 - Operative Steps 140
- 17. Radical Hysterectomy with Pelvic Lymphadenectomy145**
Peter Heintz, Alexander Peters
- Patient Selection 145
 - Radical Hysterectomy and Pelvic Lymphadenectomy 146
 - Preoperative Assessment 146
 - Lymphatic Drainage of the Cervix 149
 - The Operation 149
 - Preservation of Ovarian Function 153
 - Postoperative Care 153
 - Complications 153

18. Surgical Technique of Radical Abdominal Hysterectomy	155
<i>K Chitrathara</i>	
• Radical Hysterectomy—Author's Modification	155
19. Laparoscopic Radical Nerve-sparing Hysterectomy	158
<i>E Leblanc</i>	
• Anatomy	158
• Patient Position and Preparation	159
• Pelvic Lymphadenectomy	159
• Laparoscopic Nerve-Sparing Radical Hysterectomy	163
• Posterior and Lateral Exposure	163
• Anterior Exposure	165
• Cardinal Ligament Resection	165
• Vaginal Dissection, Extraction and Closure	168
20. Radical Vaginal Hysterectomy	172
<i>Partha Basu</i>	
• Indications for Surgery	173
• Surgical Technique	173
21. Complications of Radical Surgery	183
<i>Shalini Rajaram, Harpreet Kaur</i>	
• Factors Affecting Outcome	183
• Intraoperative Hemorrhage	184
• Intraoperative Injuries	185
• Infections	185
• Postoperative Hemorrhage	185
• Fistula Formation	186
• Lymphocyst	186
• Venous Thrombosis and Pulmonary Embolus	186
• Neuropathies	187
• Rectal Dysfunction	187
• Bladder Dysfunction	187
• Sexual Dysfunction	188
• Lymphedema	188
• Measures to Decrease Complication Rates	188

Section IV: Radiotherapy and Chemotherapy: Management of Early and Advanced Disease

22. Radiation Therapy in Cancer Cervix: Principles and Techniques	195
<i>Dinesh M</i>	
• External Beam Radiation Therapy	195
• Brachytherapy	196
• Prognostic Factors in Carcinoma Cervix	198
• Treatment in Early Stage Cervical Cancer Stage I B1, Non-bulky Stage IIA1	199
• Adjuvant Radiation Therapy	199
• Locally Advanced Stage (FIGO Stage IIB -IVA)	199
• Treatment for Relapse	200
• External Radiation Therapy Planning	200
• Complications in Radiation Therapy	201
• Late Toxicities of Radiation	202
• Role of MRI /PET fusion in Radiotherapy Planning—Dr Joseph Edison	203
23. Concurrent Chemotherapy and Radiation for Carcinoma Cervix	205
<i>Wesley M Jose, K Pavithran</i>	
• Chemoradiation Therapy	205

- 24. Interstitial Brachytherapy in Cancer Cervix.....210**
GK Rath, DN Sharma, Amit Bahl, Haresh KP, PK Julka
- Introduction 210
 - Dose Rate: LDR, MDR, HDR and PDR 211
- 25. Chemotherapy for Cervical Cancer: An Update.....214**
Gaurav Prakash, Lalit Kumar
- Introduction 214
 - Neoadjuvant Chemotherapy Followed by Radiation 215
 - NACT Followed by Surgery 216
 - Neoadjuvant Chemotherapy for Fertility Preserving Surgery 216
 - NACT: Newer Drugs 216
 - Concurrent Chemoradiation Therapy (CCRT) 217
 - Adjuvant Chemotherapy 217
 - Recent Developments: Targeted Therapies 218
- 26. Complications of Pelvic Radiotherapy in Gynecological Malignancies221**
Umesh Mahantshetty, Hsueh Ni Lee, Reena Engineer, Supriya Chopra, Shyam Kishore Shrivastava
- Introduction 221
- 27. Postradiation Conservative Surgery230**
K Chitrathara
- Introduction 230
 - Assessment of Pelvic Operability 231
 - Ureter and Bladder 233
 - Justification of Salvage Conservative Hysterectomy 236
 - The Modifications used in Modified Radical Hysterectomy (MRH) 236
 - Steps of the Procedure 237
 - Complications 240
 - Simple Measures of Skin Care in Lymphedema Legs 240

Section V: Management of Recurrent and Metastatic Disease

- 28. Pelvic Exenteration245**
K Chitrathara, Manoj Babu R
- Introduction 245
 - Indications and Patient Selection 247
 - Operative Procedure 248
 - Technique of Pelvic Exenteration 248
 - Postoperative Care 259
 - Complications 259
 - Pelvic Exenteration in Endometrial Cancer 260
 - Pelvic Exenteration in Ovarian Cancer 261
- 29. Role of Chemotherapy in Recurrent/Metastatic Cervical Cancer.....263**
Sudeep Gupta, Randeep Singh
- Evaluation of the Patient 263
 - Prognostic Factors for Predicting Response to Treatment 264
 - Single Agent Chemotherapy 264
 - Double Agent Chemotherapy 264

Section VI: Imaging Modalities for Cancer Cervix

- 30. Role of Imaging.....271**
Rema P
- Ultrasound 272
 - Computed Tomography 272

- Magnetic Resonance Imaging 273
- Positron Emission Tomography 276

Section VII: Special Case Scenarios

31. Pregnancy and Cervical Neoplasia.....281

Bindiya Gupta, Shalini Rajaram

- Diagnosis 281
- Colposcopy 282
- Cervical Biopsy 282
- Management 282
- Prognosis 284

32. Management of Invasive Carcinoma Cervix after Inadvertent Hysterectomy.....286

Joseph Edison

- Introduction 286

Section VIII: Palliative Care

33. Palliative and End of Life Care for Patients with Cervical Cancer.....295

AM Muckaden

- Physical Symptoms and their Management 295
- Management of Pain 296
- Route of Administration 296
- Malignant Intestinal Obstruction 298
- Constipation 298
- Anorexia and Fatigue 299
- Dyspnea and Terminal Sedation 299
- Psychological Symptoms and their Management 299

Index303