

Contents

- List of Contributors** xv
Foreword xvii
Preface xix
About the Companion Website xxi
- 1 The Skin** 1
M.S. Amarendhra Kumar
Cutaneous Immune Barrier 3
Pigmentation 5
The Normal Keratinization Process 11
The Abnormal Keratinization Process 12
Dermis 15
The Hypodermis (Subdermis or Subcutis or Superficial Fascia) 17
Connective Tissue and Fascia 23
Skeletal Muscle 26
Skeletal Muscle Trauma and Regeneration 28
References 30
- 2 Physiology of Wound Healing and Clinical Considerations** 37
Daniel J. Lopez
Stages of Wound Healing 37
Proliferative Stage 41
Inherent Detriments to Wound Healing 46
Conclusion 49
References 49
- 3 Postoperative Complications** 53
Ryan P. Cavanaugh
Introduction 53
Seromas 54
Wound Dehiscence (Indolent Pockets, Pseudo Healing) 57
Biofilms 65
References 68
- 4 Wound Types and Terminology** 73
Desiree D. Rosselli
Classifications of Veterinary Wounds 73
Wound Closure 80
References 82

5 Patient Presentation and Evaluation of Wound 85*Colin Chik*

Initial Stabilization of the Wound Patient 85

Acute Critical Wound Patients 85

Stable and/or Chronic Wound Patients 89

Evaluation of Patient Factors 90

Evaluation of Wound Factors 92

Initial Treatment 93

Decision-Making for Primary Closure 95

Debridement 95

Drain and Bandage Placement 98

References 101

6 Cleansing Solutions 103*Julia P. Sumner*

Cleansing Solutions 103

Tap Water 106

Isotonic Intravenous Crystalloid Fluid Preparations (e.g., 0.9% Saline, Lactated Ringer's Solution, Hartman's Solution, Plasmalyte, Normosol) 106

Antiseptic Solutions 106

References 109

7 Topicals 111*Nicole J. Buote*

Hydrogels 111

Zinc-Oxide Hydrophilic Pastes 113

Honey/Sugar 114

Antimicrobials (Nitrofurazone, Triple Antibiotic, Silver Sulfadiazine) 117

Triple Antibiotic (Neomycin, Polymixin B, and Bacitracin) 118

Silver Sulfasalazine 119

Oxygen 120

Nitrous Oxide 120

Miscellaneous Topicals 121

References 123

8 Wound Dressings 127*Nicole J. Buote*

Moist Wound Healing 127

Characterization of Dressings 127

Adherent Dressings – Woven Gauze and Lap Sponges 131

Non-adherent Semioclusive (Porous-Dry or Petrolatum-Impregnated) 132

Absorbent 133

Moisture Retentive Dressings 135

Antimicrobial 138

Bioelectric Dressings 141

Xenograft Dressings 143

Miscellaneous 149

References 150

9 Drains: How and When to Place Them 155*Angela C. Banz*

Passive Drains 155

Closed-Suction/Active Drains 158
References 163

10 Vacuum-Assisted Bandages (Negative Pressure Wound Therapy) 165

Kathryn A. Pitt and Bryden J. Stanley

Physiology 165
Increased Granulation Tissue 165
Reduced Bacterial Load 166
Increased Blood Flow 167
Decreased Hematoma and Seroma Formation 168
Increased Cytokines/Growth Factors 168
Microdeformation with *In-Vitro* Modeling 168
Indications of NPWT 168
Description of Technique 169
Postoperative Care 173
Outcomes/Complications 173
References 174

11 Biologic Treatments 177

Subsection A: Medicinal Leech Therapy 177

Celine S. Kermanian and Nicole J. Buote

Anatomy and Physiology 177
Indications 179
Description of Technique 181
Postoperative Care 185
Outcomes/Complications 186
References 188

Subsection B: Maggot Therapy 191

Megan Mickelson

Background/Physiology 191
Indications 192
Description of Technique 193
Post-Procedural Care 195
Outcomes/Complications 196
References 200

12 Bandages 205

Kristin A. Coleman and Nicole J. Buote

Introduction 205
Light or Modified Robert Jones Bandage 205
Wet-to-Dry or Dry-to-Dry Bandages 208
Tie-Over Bandages 210
References 214

13 Hyperbaric Oxygen Therapy 215

Cheryl Braswell

Introduction 215
Physiology 215
References 224

14 Low Level Laser, Photobiomodulation and Electromagnetics for Wound Therapy 225

Nicole J. Buote

Low Level Laser Therapy 225

Photobiomodulation 226

Pulsed Electromagnetic Field Therapy 228

References 231

15 Platelet Rich Plasma and Stem Cell Therapy 233

Aarthi Rajesh, Rebecca M. Harman, and Gerlinde R. Van de Walle

Platelet Rich Plasma (PRP) Therapy 233

Stem Cell Therapy 241

Combinational Therapy Using PRP and Stem Cell Therapy 246

References 247

16 Reconstructive Techniques for Wounds 253

Jill K. Luther and Nicole J. Buote

Equipment 253

Basic Tissue Handling Tenants 256

Skin Tension 257

Tension-Relieving Techniques 258

Triangular, Square, Rectangle Wounds 264

Circular and Crescentic Wounds 266

Skin Flaps 267

Specific Axial Pattern Flaps 272

Skin Grafting 281

References 285

17 Specific Wounds 289

Subsection A: Bite Wounds – A Case Study 289

Nicole J. Buote

Presenting Signs 289

Examination and Initial Wound Characteristics 289

Diagnostics 289

Initial Therapy and Procedure 289

Follow-up Bandage Care 290

Surgical Procedure 292

Outcome 292

Prognosis 292

Clinical Lessons 293

Subsection B: Penetrating Wounds 295

Galina Hayes

Clinical Presentation 295

Triage and Imaging 297

Management Plans 298

Prognosis 301

References 301

Subsection C: Abscess Case Study 303

James D. Crowley and Julia P. Sumner

Presenting Signs 303

Outcome 305

Prognosis 305

Subsection D: Burns 309*Galina Hayes*

- Clinical Presentation 309
- Anatomy and Physiology of Burns 309
- Comparative Aspects of Burn Physiology 309
- Acute Management Plan 310
- Bandage Management 312
- Split Thickness Grafts 312
- Possible Complications 313
- Future Directions 313
- Prognosis 313
- References 314

Subsection E: Wounds Over Joints 315*Galina Hayes*

- Clinical Presentation 315
- Specific Challenges 315
- Management Plans 316
- Prognosis 317
- References 319

Subsection F: Shearing Wounds – Case Study 321*James D. Crowley*

- Presenting Signs 321
- Outcome 323
- Prognosis 323

Subsection G: Necrotizing Fasciitis (Necrotizing Soft Tissue Infections) 327*Nathan Peterson*

- Presenting Signs 327
- Wound Characteristics 327
- Physiologic Effects 328
- Shock/Sepsis 329
- Prognosis 332
- References 332

Subsection H: Snakebites 335*Nathan Peterson*

- Presenting Signs 335
- Wound Characteristics 335
- Physiologic Effects 337
- Treatment 339
- Possible Complications 340
- Prognosis 340
- References 342

Subsection I: Pythiosis 343*Kristin A. Coleman*

- Introduction 343
- Presenting Signs 343
- Diagnosis 344
- Wound Characteristics 344

Physiologic Effects 345
Treatment 345
Possible Complications 349
Prognosis 349
References 349

Subsection J: Eyelid Wounds 351

Brian Marchione

Introduction 351
Presenting Signs 352
Physiologic Effects 354
Treatment 354
Possible Complications 356
Prognosis 359
References 359

Subsection K: Lip Wounds 361

Nicole J. Buote

Introduction 361
Anatomic Considerations 361
Wound Characteristics 362
Surgical Treatments 362
Avulsion Injuries 365
Primary Repair 365
Wedge Resection Techniques 365
Full-Thickness Advancement Flaps Full-Thickness 365
Postoperative Care 367
Complications 369
Prognosis 369
References 369

Subsection L: Pinna Wounds 371

Nicole J. Buote

Anatomic Considerations 371
Wound Characteristics 371
Surgical Treatments 372
Postoperative Care 374
Complications 376
Prognosis 377
References 377

Subsection M: Circumferential Wounds – A Case Study 379

Nicole J. Buote

Introduction 379
Case 1 379
Other Examples of Circumferential Injuries 383
Case 2 383
Case 3 383
Clinical Lessons 384
References 385

Subsection N: Preputial Reconstruction – Hypospadias Case Study 387*Galina Hayes*

Presenting Signs 387

Examination and Wound Characteristics 387

Diagnostics 387

Surgical Procedure 387

Outcome 388

Prognosis 388

Clinical Lessons 388

Index 393

