Index

Note: Page numbers of article titles are in **boldface** type.

A

Advanced trauma life support (ATLS), in patients with facial trauma, 561–563
Airway, in systematic assessment of facial trauma, 538–539
management of, during anesthesia in patients with facial fractures, 561–572
Alloplastic reconstruction, of soft tissue defects, 711
Anatomy, for imaging of facial fractures, 547–553
dentoalveolar fractures, 552
frontal sinus and frontobasilar fractures, 547–549
laryngotracheal injuries, 552–553
mandibular fractures, 550–552
midfacial fractures, 550
temporal bone fractures, 549–550
traumatic vascular injuries, 553
in nasofrontal complex fractures, 638–642
cribriform plate, 640
ethmoid arteries, 641
ethmoid sinuses, 640–641
frontal sinus, 639–640
medial canthal tendon, 641–642
nasal root, 640
nasolacrimal duct, 641
trochlea and superior oblique muscle, 641
Anesthesia, in patients with facial fractures, 561–572
intubation methods in, 564–570
nasotracheal, 567–568
orotracheal, 565–567
retromolar, 569–570
submental, 568–569
surgeon’s need to establish occlusion, 564–565
tracheostomy, 570
safety of intubation in, 563–564
severity of trauma, 561–563
Ankylosis, as indication for late reconstruction after condyle fracture, 667
Antibiotics, in management of mandibular angle fractures, 597–598
Assessment, systematic, of facial trauma, 537–544
airway with cervical spine protection, 538–539
breathing and ventilation, 539
circulation with hemorrhage control, 539–540
disability (neurologic and functional evaluation), 541
exposure, 541
principles of, in trauma, 537–538
systematic clinical examination, 541–544
 correlating with radiographic findings, 544
ear, 542
eyes and orbit, 542–543
maxillo-mandibular structures, 543–544
naso-orbito-ethmoid region, 543
soft tissues, 541–542
zygomatico-maxillary complex, 543

B

Biomechanics, of mandibular angle fractures, 593–594
of mandibular body and symphysis fractures, 606–607
Bioresorbable plates, for mandibular angle fractures, 597
Blow-out fracture, late reconstruction of, 683–685
Bone grafting, in management of nasofrontal fractures, 644–645
Breathing, in systematic assessment of facial trauma, 539

C

Cervical spine protection, in systematic assessment of facial trauma, 538–539
Chemical peels, scar revision with, 703–704
Children. See Pediatrics.
Circulation, in systematic assessment of facial trauma, 539–540
Clinical examination. See Assessment.
Closed reduction, of condylar fractures, 579
of mandibular body and symphysis fractures, 607–608
in children, 612
of zygomatico-maxillary complex fractures, access for, 624–625
CO₂ laser revision, of scars, 702
Computed tomography (CT), imaging in diagnosis and management of facial fractures, 545–560
Computer-aided surgery, for facial fractures, 546–547
 assessment phase, 546–547
data acquisition phase, 546
presurgical planning phase, 546
surgical phase, 546
Condylar fractures, 573–590
anatomic considerations, 576–577
Index

Condylar (continued)
  cause and epidemiology, 577–578
  challenges, 574–575
  classification, 578
  functional and closed (nonsurgical) management, 579
  goals and functional importance of management, 575–576
  late reconstruction of condylar head and neck fractures, 661–681
  case presentations, 675–679
  complications and indications for reconstruction, 663–667
  alteration of facial growth, 665
  ankylosis, 667
  degeneration, 666–667
  facial pain, 665
  fixation failure, 666
  hypomobility, 665
  infection, 666
  malocclusion, 664–665
  malunion, 666
  incidence of reconstruction after, 661–662
  management guidelines, 670–672
  material options when reconstructing the mandibular condyle, 663–670
  minimizing incidence of reconstruction after trauma, 662–663
  procedure, 672–675
  operative management strategies, 579–585
  advances in internal fixation, 582–584
  approaches, 580–582
  complications, 584
  in children, 580
  soft tissue injuries, 579–580
  physiologic considerations, 576
  recent advances, 573–574
Condylar neck fractures. See Condylar fractures.
Coronoid process, fractures of, 584–585
Costochondral graft, in late reconstruction of condyle fracture, 661–681

D
Deformities, orbital and naso–orbital, late reconstruction of, 683–695
Degeneration, proximal segment, as indication for late reconstruction after condyle fracture, 666–667
Dentoalveolar fractures, imaging of, 552
Dermabrasion, scar revision with, 703–704

E
Ear, in systematic assessment of facial trauma, 542
Edentulous patients, mandibular body and symphysis fractures in, 610–611
Er:YAG laser revision, of scars, 702
Exposure, in systematic assessment of facial trauma, 541
Eyes, in systematic assessment of facial trauma, 542–543

F
Facial trauma. See also Fractures.
anesthesia in patients with facial fractures, 561–572
  intubation methods in, 564–567
  nasotracheal, 567–568
  orotracheal, 565–567
  retromolar, 569–570
  submental, 568–569
  surgeon’s need to establish occlusion, 564–565
  tracheostomy, 570
  safety of intubation in, 563–564
  severity of trauma, 561–563
imaging in diagnosis and management of fractures, 545–560
  by anatomic region, 547–553
  dentoalveolar fractures, 552
  frontal sinus and frontobasilar fractures, 547–549
  laryngotraheal injuries, 552–553
  mandibular fractures, 550–552
  midfacial fractures, 550
  temporal bone fractures, 549–550
  traumatic vascular injuries, 553
computer-aided surgery, 546–547
  assessment phase, 546–547
  data acquisition phase, 546
  presurgical planning phase, 546
  surgical phase, 546
  in children, 553–554
  frontal trauma, 554
  mandibular trauma, 554–555
  nasal trauma, 554
  orbital trauma, 554
  radiation, 554
  role of postoperative imaging, 555–556
  health care costs, 555
  in other settings, 555
  radiation exposure, 555–556
systematic assessment of, 537–544
  airway with cervical spine protection, 538–539
  assessment principles in trauma, 537–538
  breathing and ventilation, 539
  circulation with hemorrhage control, 539–540
  disability (neurologic and functional evaluation), 541
  exposure, 541
  systematic clinical examination, 541–544
  correlating with radiographic findings, 544
  ear, 542
eyes and orbit, 542–543
maxillo-mandibular structures, 543–544
naso-orbito-ethmoid region, 543
soft tissues, 541–542
zygomaticomaxillary complex, 543

Fixation. See also Internal fixation.
failure of, as indication for late reconstruction after
condyle fracture, 666
of nasofrontal complex fractures, 644

Fractional photothermolysis, for scar revision, 703

Fractures, 545–695
anesthesia in patients with facial, 561–572
intubation methods in, 564–570
nasotracheal, 567–568
orotracheal, 565–567
retromolar, 569–570
submental, 568–569
surgeon’s need to establish occlusion,
564–565
tracheostomy, 570
safety of intubation in, 563–564
severity of trauma, 561–563
condyle, condylar neck, and coronoid process,
573–590
imaging in diagnosis and management of facial,
545–560
by anatomic region, 547–553
dentoalveolar fractures, 552
frontal sinus and frontobasilar fractures,
547–549
laryngotracheal injuries, 552–553
mandibular fractures, 550–552
midfacial fractures, 550
temporal bone fractures, 549–550
traumatic vascular injuries, 553
computer-aided surgery, 546–547
assessment phase, 546–547
data acquisition phase, 546
presurgical planning phase, 546
surgical phase, 546
in children, 553–554
frontal trauma, 554
mandibular trauma, 554–555
nasal trauma, 554
orbital trauma, 554
radiation, 554
role of postoperative imaging, 555–556
health care costs, 555
in other settings, 555
radiation exposure, 555–556
mandibular angle, 591–600
mandibular body and symphysis, 601–616
nasofrontal complex, 637–648
orbital and naso-orbital deformities, 683–695
panfacial, 649–660
zygomaticomaxillary complex, 617–636
Free tissue transfer, for reconstruction, 708–711
full-thickness skin drafting, 708–709
soft tissue fillers, 709
structural fat transfer, 709
vascularized, 709–711
Frontal sinus fractures, 645–646
anterior table fractures, 645–646
imaging of, 547–549
in children, 554
posterior table fractures, 646
Frontobasilar skull fractures, imaging of, 547–549
Functional evaluation, in systematic assessment of
facial trauma, 541

G
Glasgow Coma Scale, in systematic assessment of
facial trauma, 541

Grafts, bone, in management of nasofrontal fractures,
644–645
costochondral, in late reconstruction of condyle
fracture, 661–681
Growth, facial, alteration of as indication for late
reconstruction after condyle fracture, 665

H
Health care costs, postoperative imaging in
management of facial trauma, 554
Hemorrhage control, in systematic assessment of
facial trauma, 539–540
Hypertrophic scars, treatment of, 699–701
Hypomobility, as indication for late reconstruction
after condyle fracture, 665

I
Imaging, in diagnosis and management of facial
fractures, 545–560
by anatomic region, 547–553
dentoalveolar fractures, 552
frontal sinus and frontobasilar fractures,
547–549
laryngotracheal injuries, 552–553
mandibular fractures, 550–552
midfacial fractures, 550
temporal bone fractures, 549–550
traumatic vascular injuries, 553
computer-aided surgery, 546–547
assessment phase, 546–547
data acquisition phase, 546
presurgical planning phase, 546
surgical phase, 546
in children, 553–554
frontal trauma, 554
mandibular trauma, 554–555
nasal trauma, 554
orbital trauma, 554
radiation, 554
role of postoperative imaging, 555–556
health care costs, 555
in other settings, 555
radiation exposure, 555–556
mandibular angle, 591–600
mandibular body and symphysis, 601–616
nasofrontal complex, 637–648
orbital and naso-orbital deformities, 683–695
panfacial, 649–660
zygomaticomaxillary complex, 617–636
Index

Imaging (continued)
  orbital trauma, 554
  radiation, 554
  role of postoperative imaging, 555–556
  health care costs, 555
  in other settings, 555
  radiation exposure, 555–556
Infection, as indication for late reconstruction after condyle fracture, 666
Internal fixation, of condylar fractures, advances in, 582–584
  of mandibular angle fractures, 595, 596
  of mandibular body and symphysis fractures, 525–527
Intracapsular fractures, condylar, operative management of, 580
Intubation, for anesthesia in patients with facial fractures, 561–572
  intubation methods in, 564–570
  methods of, nasotracheal, 567–568
  orotracheal, 565–567
  retromolar, 569–570
  submental, 568–569
  surgeon’s need to establish occlusion, 564–565
  tracheostomy, 570
  safety of, 563–564
K
Keloids, treatment of, 699–701
L
Laryngotracheal injuries, imaging of, 552–553
Laser revision, of scars, 701–703
  CO2 laser, 702
  Er:YAG lasers, 702
  fractional photothermolysis, 703
  nonablative lasers, 702–703
Late reconstruction, correction of facial trauma-related soft tissue deformities, 697–713
  of condylar neck and head fractures, 661–681
  of orbital and naso-orbital deformities, 683–695
M
Malocclusion, as indication for late reconstruction after condyle fracture, 664–665
Malunion, as indication for late reconstruction after condyle fracture, 666
Mandibular fractures, imaging of, 550–552
  in children, 554
  of mandibular angle, 591–600
    antibiotics for, 597–598
    biomechanical considerations, 593–594
    classification and patterns of, 591–593
  complications of, 598–599
  diagnosis, 594–595
  etiology, 591
  teeth in the line of fracture, 594
  treatment principles, 595–597
    3-D/matrix plate, 597
    approaches, 595
    bioreabsorbable plates, 597
    closed treatment with maxillomandibular fixation, 595
    internal fixation, 596
    lag screw fixation, 597
    open reduction and internal fixation, 595
    single plate, interior border, 597
    single plate, superior border, 596
    two-plate technique, 596–597
  of mandibular body and symphysis, 601–616
    complications, 612–613
    infection, 612–613
    neurosensory changes, 613
    nonunion, 613
    diagnosis, 602–605
    in children, 611–612
      closed reduction, 612
      open reduction, 612
    in the edentulous mandible, 610–611
      closed reduction options, 610
      open reduction options, 610–611
    incidence, 601–602
    treatment options, 607–610
      closed reduction, 607–608
      open reduction, 608–610
    treatment planning, 605–607
      biomechanics, 606–607
      sequence of repair, 605
  Maxillo-mandibular structures, in systematic assessment of facial trauma, 543–544
Midfacial fractures, imaging of, 550
Miniplates, for mandibular angle fractures, 596
Motor vehicle collisions, nasofrontal complex fractures due to, 637–638
N
Nasal skeleton, in systematic assessment of facial trauma, 543
Naso-orbito-ethmoid (NOE) region, fractures of. See also Nasofrontal complex fractures., late management of, 690–694
  in systematic assessment of facial trauma, 543
Nasofrontal complex fractures, 637–648
  diagnosis and imaging, 642–643
  neurologic injuries, 643
epidemiology, 637–638
  follow-up and complications, 646–647
  frontal sinus fractures, 645–646
    anterior table fractures, 645–646
Index

O

Occlusion, surgeon’s need to establish, impact on intubation method, 564–565
Open reduction and internal fixation, of mandibular angle fractures, 595–597
of mandibular body and symphysis fractures, 608–610
in children, 612
of zygomaticomaxillary complex fractures, 623–624
access for, 625–628
Orbit, in systematic assessment of facial trauma, 542–543
trauma to, imaging in children, 554
Orbital floor fractures, 632–633
Orbital fractures, late reconstruction of, 683–695
additive manufactured orbital floor implants, 685–690
blow-out fracture, 683–685
orbital telorism and NOE fractures, 690–694
Orotracheal intubation, in patients with facial fractures, 565–567

P

Pain, facial, as indication for late reconstruction after condyle fracture, 665
Panfacial fractures, 649–660
common challenges and complications, 656
epidemiology, 649
hard tissue considerations, 656–657
initial evaluation, 650–651
reconstruction principles, 651
sequencing principles, 651–656
soft tissue augmentation, 659
soft tissue considerations, 657–659
support structure of the facial skeleton, 649–650
Pediatrics, condylar fractures in children, 580
imaging of facial fractures in children, 553–554
frontal trauma, 554
mandibular trauma, 554–555
nasal trauma, 554
orbital trauma, 554
radiation, 554
mandibular body and symphysis fractures in, 611–612
Photothermolysis, fractional, for scar revision, 703
Postoperative imaging, role in management of facial trauma, 555–556
health care costs, 555
in other settings, 555
radiation exposure, 555–556
Prosthetic reconstruction, of soft tissue defects, 711

R

Radiation exposure, with imaging, concerns in children, 554
Reconstruction, of facial trauma, 537–713
anesthesia considerations for, 561–572
condyle, condylar neck, and coronoid process fractures, 573–590
imaging in diagnosis and management of, 545–560
late, 661–713
of condylar head and neck fractures, 661–681
of orbital and naso-orbital deformities, 683–695
revision or correction of soft-tissue deformities related to, 697–713
mandibular angle fractures, 591–600
mandibular body and symphysis fractures, 601–616
nasofrontal complex fractures, 637–648
panfacial fractures, 649–660
systematic assessment of, 537–544
zygomaticomaxillary complex fractures, 617–636
Retromolar intubation, in patients with facial fractures, 569–570

S

Scars, atrophic, 701
dermabrasion and chemical peels, 703–704
hypertrophic scars, treatment of keloids and, 699–701
compressive therapy, 701
intralesional steroids, 700–701
radiation and chemotherapy, 701
silicone gel sheeting, 701
Scars (continued)
surgery, 700
laser revision of, 701–703
CO2 laser, 702
Er:YAG lasers, 702
fractional photothermolysis, 703
nonablative lasers, 702–703
surgical techniques for revision of, 704–707
simple excision and serial excision, 705
subcision, 706–707
W-plasty and geometric broken-line closure, 705–706
Z-plasty, 705
Soft tissue, augmentation of, in panfacial fractures, 657–659
injuries of, in operative management of condylar fractures, 579–580
in systematic assessment of facial trauma, 541–542
late revision of facial trauma-related deformities of, 697–713
alloplastic and prosthetic reconstruction of deficits, 711
atrophic scars, 701
dermabrasion and chemical peels, 703–704
free tissue transfer, 708–711
hypertrophic scars and keloids, 699–701
local rotational and advancement flaps, 708
optimizing wound healing, 699
phases of wound healing, 697–699
posttraumatic volume deficiency of, 707–708
scar revision by laser, 701–703
surgical techniques for scar revision, 704–707
suspension of, in treatment of zygomaticomaxillary complex fractures, 633
Sports, nasofrontal complex fractures due to interpersonal, 638
Submental intubation, in patients with facial fractures, 568–569
Surgery, computer-aided, for facial fractures, 546–547
assessment phase, 546–547
data acquisition phase, 546
presurgical planning phase, 546
surgical phase, 546
Symphysis. See Mandibular fractures, of the mandibular body and symphysis.
Systematic assessment. See Assessment.

T
Teeth, in the line of mandibular angle fractures, 594
in the line of mandibular body and symphysis fractures, 594, 605–606
Temporal bone fractures, imaging of, 547–549, 549–550
Tracheostomy, in patients with facial fractures, 570
Trauma, 537–713
facial, 537–572, 697–713
helping anesthesiologists understand facial fractures, 561–572
imaging in diagnosis and management of fractures, 545–560
late revision or correction of soft-tissue deformities related to, 697–713
systematic assessment of, 537–544
fractures, 545–695
condyle, condylar neck, and coronoid process, 573–590
late reconstruction of, 661–681
facial, helping anesthesiologists understand, 561–572
facial, imaging in diagnosis and management of, 545–560
mandibular angle, 591–600
mandibular body and symphysis, 601–616
nasofrontal complex, 637–648
orbital and naso-orbital deformities, 683–695
panfacial, 649–660
zygomaticomaxillary complex, 617–636

V
Vascular injuries, imaging of traumatic, 553
Ventilation, in systematic assessment of facial trauma, 539
Violence, nasofrontal complex fractures due to interpersonal, 638
Volume deficiency, posttraumatic facial soft-tissue, timing of large or composite defects, 708
timing of repair and revision, 707–708
types of abnormalities, 707

W
Wound healing, optimizing, 699
phases of, 697–699
immediate response, 698
inflammatory phase, 698
proliferative phase, 698
remodeling and maturation, 698–699

Z
Zygomaticomaxillary complex, in systematic assessment of facial trauma, 543
Zygomaticomaxillary complex fractures, 617–636
classification, 618
complications, 634
diagnosis, 618–620
history, 618
imaging, 618–620
physical examination, 618–619
follow-up, 633
general management, 618
indications for treatment, 620–621
  - aesthetics, 620
  - functional impairment, 620–621
  - protection, 620
initial treatment, 621–622
orbital floor fractures, 632–633
principles of treatment, 623–624
  - conservative, 623
  - surgical, 623–624
open reduction and internal fixation, 623–624
  - reduction without fixation, 623
soft tissue suspension, 633
surgical access, 624–628
  - for closed reduction, 624–625
  - for open reduction and internal fixation, 625–628
treatment options by fracture type, 629–632