Index

A

ABCD profiles 150–3, 173
abdominal sonography 74
abnormalities, perinatal 166–75
abortion 41, 50, 261, 269, 272
abscesses 316
absent end-diastolic flow (AEDF) 166–73, 252–4
  artifacts 168
  birthweight 253
  detection 20–2
  diagnosis 166–8
  fetal aorta 168–9
  fetal heart rate 170
  intracerebral hemorrhage 170–1
  intrauterine growth retardation 170
  labor 189
  neuromotor abnormalities 170
  neuromotor development 169
  perinatal abnormalities 169
  placental weight, gestational age 253
  positive end-diastolic flow 171
  pregnancy-induced hypertension 172
  reverse flow 171–2
  umbilical arteries, placental insufficiency 254
  umbilical arteries 167–9, 253
absent or reverse end-diastolic flow (ARED) 172–3
abscesses 86
absolute velocities 342
absorption 3
  coefficient 29
acetylcholine (ACh) 64
acoustic impedance 2
adenocarcinomas 325
adenofibromas, endometrial 270
adenomatous hyperplasia 282
adenomyosis 44, 271–2
  and uterine malignancy 271
  vascularization 269
adnexal tumors
  benign 304–9
  blood flow velocity 315–16
  color Doppler sonography 304–9
  corpus luteum 315–16
  diastolic notch 313
  malignant 310–18
  size 315
  vascular impedance 314
  vessels 315–16
AEDF *see* absent end-diastolic flow
AFI *see* amniotic fluid index
AGA fetuses 254
age
  abortion 50
  endometrial carcinoma 288
  endometrial function 46–7
  endometrial thickness 51
  oocyte quality 50
  ovarian artery 52
  ovarian cancer 335
  ovarian function 51
  pituitary-ovarian axis 51
  uterine artery 53
  uterine receptivity 50
alcohol abuse 157, 199
aliasing 13–15, 21
  color duplex imaging 17
  continuous-wave Doppler sonography 352
  power Doppler imaging 17
allergies 74
alpha-adrenergic receptors 51
amniocentesis 120–1
amniotic cavity 232
amniotic fluid index (AFI) 150, 158–9
  expanded (EFI) 159
amniotic-type inflammations 245
amplitude 15, 29–30
αNA *see* norepinephrine
analysis 18–20
anemia 142–3
aneurysms 242
angiogenesis 64
  breast carcinomas 376
  Doppler sonography, color 312
  inhibitors 326
  menstrual cycle 36
  neoangiogenesis 312
  ovarian tumors 322–6
  three-dimensional imaging 320–6
angiography 350
angiotensin 176
angle
  continuous-wave Doppler sonography 352
  dependence 13, 15
  insonation 16
anovulatory cycles 38
anteflexed uterus 58
antiphospholipid antibody syndrome 244
aorta, fetal 176–7, 203
aortic arch 179–80, 204
aortic coarctation 207
aortic stenosis 224
Apgar score 170, 173, 251–2, 255
appropriate for gestational age *see* AGA
AR *see* autoregression
arcuate arteries 121
ARED *see* absent or reverse end-diastolic flow
arterial vasculopathy, acute 244
arteries
  abdominal, stenoses 21
  D-transposition 213–14, 217–18, 224, 226
  dilation, pregnancy 117
  femoral 177–9
  intracranial 178
  L-transposition 213–14, 224
  uterine fertility 45–6
arteriovenous anastomoses 143
arteriovenous fistulae 20
arteriovenous malformations 278
artifacts
  absent end-diastolic flow 168
  B-mode ultrasound 7–8
  color Doppler sonography 22–3
  diagnosis 20–3
  mirror-image 8, 23
  motion 23
  shadowing 23
  vibration 22
Aschoff-Tawara node *see* still-refractory AV node
ASD *see* atrial septal defects
Asherman syndrome 44–5
assisted reproduction
  Doppler sonography 62–4
    color 57–68
  endometrium 59
  follicular aspiration 83–4
  uterine blood flow 59–61, 67
  see also in-vitro fertilization
asymmetrical vascular foci 339
atherosclerosis 242
atherosis, acute 243–4
atresia 41
atria 200–1, 203–4
atrial septal defects 205–7
  ASD-dependent 218
  postnatal defects 217
atrioventricular anomalies 223
atrioventricular canal defects *see* atrioventricular septal defects
atrioventricular fistular vibration artifacts 22
atrioventricular septal defects 206, 225
  fetal heart 206, 225
atrioventricular valves 204, 206–7, 221
attenuation 3
autocorrelation 11
autoregression (AR) 12
AV valve *see* atrioventricular valves
axial resolution 5

B

B-mode sonography 2–8, 13
  breast cancer diagnosis 353
  breast tumors 340
  corpus luteum 80
  ductus venosus 137
  endometrial carcinoma 291
  fibroadenoma 341
  insonation angle 16
  line density 18
  normal ovaries 304
  safety 33
  septate uterus 261–2
  tubal patency 70, 73–4
  see also color Duplex sonography; duplex sonography
balance index (BI) 179
balloon atrioseptostomy 218
basal plate 230
  vessels 236–7
basal pseudoinfarcts 242
baseline 14, 18
beam 5–6, 16
beta-mimetics 120–1
BI *see* balance index
bicornuate uterus 41, 260
bigeminal extrasystoles 142
biophysical profile *see* ABCD profile
birthweight 253, 255
blastocytes 230
blood flow velocity
  adnexal tumors 315–16
  breast tumors 342
  corpus luteum 98
  hormone stimulation 63
  radial arteries 37–8
  spiral arteries 37–8
  spontaneous cycles 63
  tumors 315, 342
  uterine arteries 63
blood supply
  leiomyomas 43
  pregnancy 117
  uterine 98
  uteroplacental 116
Bourneville-Pringle disease 198, 216
bradycardia 142, 189–94

breast 366–7
  menopause 365–7
  panoramic images 27
  resistance index 361–2, 365, 373–5
breast cancer diagnosis
  aliasing 352
  angiography 350
  B-mode sonography 353
  blood flow 354–5
  Doppler sonography
    color 280, 351–8, 371–2
    continuous wave 350–1
    pulsed 351
  frequency 352
  gain 352
  histology 372
  magnetic resonance imaging 350
  mammography 348–9
  menopause 372–5
  patients 353
  power output 353
  pulse repetition frequency 352
  resistance indices 372–7
  thermography 349
  transducers 352
  tumor vascularity 349
  tumor vessels 353–4
  ultrasonography 348
  wall filters 352
breast carcinomas
  angiogenesis 376
  color Doppler sonography 301, 342, 356, 358
  duplex sonography 356
  resistance index 342, 361–3
    postmenopausal 373, 376
  ultrasound 348
breast tumors 343–5
  absolute velocities 342
  B-mode sonography 340
  benign 350
  benign-malignant discrimination 360–3, 371–8
  blood flow 339–47, 360, 364–71
  chemotherapy 350
  color pixels 343–5
  diastolic notch 345
  Doppler sonography
    color 48–59, 302, 340, 343, 348–59, 371–8
    continuous-wave 350
    power 340, 343
  Doppler waveforms 344–5
  hormone replacement therapy 364–70
  malignant 360, 372, 375
  menopause 302, 364–70
  mirror image areas 345
  prognosis 371
  resistance index 342, 361–3
    blood vessels 361–3
    hormone replacement therapy 368–9
    malignant 372, 375
    menopause 365–7
  tumor vessels 341, 360–2
  vascular impedance 342
Brenner tumor 308
broadband technique 7

C

calcitonin gene-related polypeptide (CGRP) 51, 64
cancers
  estrogen 284
  myometrial vessels 286
  progestin 284
  subendometrial vessels 286
  tamoxifen 284
  see also individual types of cancers
Candida albicans 245–6
capillaries 234–5
carcinoma, endothelial 294–5
carcinomas
  adenocarcinomas 325
  color Doppler sonography 358
  endometrial *see* endometrial carcinomas
  endothelial 294–5
cardiac defects
  septa 225–6
  see also CATCH-22
cardiac tumors, fetus 216–17
cardiac valves 221–2
cardiac position 217
cardiotocography 33
  see also fetal heart rate monitoring
carotid sinus 21
CATCH-22 (cardiac defects, abnormal facies, thymic hyperplasia, cleft palate, hypocalcemia, and chromosome 22) 198, 210
catheterization 85
cavitation 29–32
CDS *see* color duplex sonography
cerebral arteries
  (MCA), middle 177, 195
  pregnancy 133
  reference curves 131–2
  term effect 177–9
cerebroplacental ratio 132
cervical carcinoma
  chemotherapy 299–303
  cisplatin 299
  Doppler sonography
    color 297
    pulsed color 299–303
  intratumoral vascularity 300–1
  tumor volume 299
cervix
  cerclage 120–1
  lesions 301–2
  mucus 47–8
CGRP *see* calcitonin gene-related peptide
chemotherapy
  breast tumors 350
  cervical carcinoma 299–303
  endometrial carcinoma 294
  intra-arterial 299
chorangiomas 246
chorangiosis 239–40
  Vogel type I 239–40
chorion frondosum 231–2
chorion laeve 231
chorionic plate 230, 232
chromopertubation 73–4, 91
chromosomes
  22 *see* CATCH-22
  abnormalities 238
CIN 331
cisplatin 299
cleft palate *see* CATCH-22
clomiphene 64–5, 78–9
  citrate 39, 46
  endometrium dysfunction 57
color Doppler echocardiography 219
  fetal heart 227–8
  growth-retarded fetus 220
  imaging jets 220
  prenatal diagnosis 219
  pulse repetition frequency 219
  and two-dimensional echocardiography 227–8
  variance mode 219–20
color Doppler hysterosalpingography 88–91
color Doppler sonography 2–28, 116
  ABCD profiles 151
  adnexal tumors 304–9
  angiogenesis 312
  angle dependence 13
  artifacts 22–3
  assisted reproduction 57–68
  breast cancer 280, 301, 342, 351–8, 371–2
  breast tumors 48–59, 302, 340, 343, 348–59, 371–8
  Brenner tumor 308
  carcinoma 358
  cervical carcinoma 297
  cervical lesions 301–2
  corpus luteum 80, 304–5
  cystadenomas 305–6, 308
  cystic teratomas 306–7
  cysts 308
  echocardiography 198–229
  ectopic pregnancy 111–15
  endometrial carcinoma 281, 291–2
  endometrioma 306
  endometriosis 308
  endometrium 57, 280–7
  fallopian tube 72
  fetal heart 199, 226–8
  fetal vena cava 139
  fibroadenomas 341, 358
  fibrocystic breasts 301
  fibromas 307–8
  intracystic papilloma 357
  leiomyoma 43
  mastitis 301
  normal ovaries 304
  nuchal cord 148–54
  ovarian 58, 66
  ovarian cancer 280
  ovarian cysts 86, 304
  parovarian cysts 306
  pelvic congestion syndrome 278
  pelvic inflammatory disease 307–8
  pelvic vascular diseases 278
  polycystic ovaries 304–5
  power output 16
  pregnancy 124
  receiver gain 16
  safety 29–35
  scars 357
  septate uterus 264
  system settings 18
  theca-granulosa cell tumor 308
  and transvaginal sonography 113
  triplex mode imaging 115
  trophoblastic tumors 301
  tubal patency 75
  tumors 280, 302, 312–13
  uterine arteries 58, 61, 66, 124–8, 281
  uterine sarcoma 296
  uterus 89–90
  velocity scale 16
color duplex sonography (CDS) 9, 11–12
  aliasing 17
  limitations 13–15
  stenoses 21
  tubal patency 69–76
  turbulence 17
  see also B-mode sonography; duplex sonography
color imaging
  analysis 20
  box information 16
  encoding 12
  line density 18
  pixels 343–5
  priority 18
color velocity imaging (CVI) 31
comet-tail artifacts 8
congenital abnormalities 41
congenital heart disease 143, 198–9, 205–18
conotruncal facial anomaly syndrome 210
continuous-wave (CW) Doppler sonography 355, 364
  aliasing 352
  angle 352
  angle dependence 13
  breast tumors 350–1
  duplex mode 352–3
  high frequency 350, 352, 360
  sampling beam 220
  system settings 18
  techniques 9–10
continuous-wave (CW) transducers 116
convex array transducers 4
corpus luteum
  adnexal tumors 315–16
  B-mode ultrasound 80
  cysts 304, 316
  development 97–8
  Doppler sonography
    3-D power 323
    color 80, 304–5
    transvaginal color 315–16
  formation 77
  function 77–82
  hormones 79
  luteal phase defect 77–81
  mature 97
  ovarian carcinomas 315–16
  pregnancy 81–2
  resistance index 79–80
  size 79
  transvaginal sonography 80
  vascularization 97
correlation 18
cortical impedance (EEG) 151

cross-correlation technique 12
crown-rump length (CRL) 103
CTG *see* fetal heart monitoring
cul-de-sac 86, 332
CVI *see* color velocity imaging; time-domain of correlation
CW *see* continuous wave
cystadenomas 305–6, 308
cystic teratomas 306–7
cysts
  adenomyosis 44
  corpus luteum 304–5, 316
  dermoid 324
  Doppler sonography
    3-D power 325
    color 304–5, 308, 357
    transvaginal color 316
  echo enhancement 7
  harmonic imaging 26
  inspissated 349
  ovarian 86, 306
  parovarian 306
  and vascular lesions 278
cytology 289
cytomegalovirus *see* TORCH
cytotrophoblasts 234, 236–7

D

D *see* end-diastolic velocity
DA *see* ductus arteriosus
decidua 232, 272
demodulation 10
dermoid cysts 324
desquamation phase 262
diabetes 199, 238, 288
diastolic notch 186, 313, 345
diffraction artifacts 8
DiGeorge syndrome 210
Doppler effect 9, 116
Doppler flowmetry 122
Doppler indices
  beta-mimetics 120
  cerebral artery 133
  ductus venosus 138
  endometrial carcinoma 293
  fetal descending aorta 133
  surgery 120
  umbilical artery 133
  uterine artery 133–4
  venous vascular system 138
Doppler sonography
  analysis 18–20
  assisted reproduction 62–4
  data 345–6
  endometrial carcinoma 293–4
  endometrial receptivity 66–7
  fallopian tube 71–3
  fetal diseases 166
  in-vitro fertilization 58
  infertility evaluation 62–4
  intrapartum fetal heart rate 182–97
  nuchal chord 151–2
  parameters 15
  pregnancy-induced hypertension, uterine arteries 127
  principles 9
  receiver gain 16
  safety 29–35
  septate uterus 261–2
  tissue effects 29–30
  tubal patency 74–5
  tumor neoangiogenesis 346
  tumor neovascularity 346
  umbilical arteries 254–5
  uterine abnormalities 260–5
  uterine arteries 127
  uterine blood flow 66–7
  uteroplacental insufficiency 127
  venous 135–45
  see also individual types
Doppler spectra 10–11
  chronic placental insufficiency 138
  ductus venosus 138
  fibroadenoma 341
  parameters 19–20
  see also pulsality index; resistance index; S/D ratio
  pregnancy 125, 136
  resistance 19
  twins 143
  umbilical vein 136
  uterine artery 125–6
Doppler ultrasound
  abnormalities 166–75
  embryos 103–10
  endometrium 266–72
  fallopian tubal patency 70–1
  hysterosalpingography 73
  luteal phase defect 81
  placenta 249–58
  placentation, early 103–10
  power output 16
  pregnancy 96–102, 126–8
  see also color Doppler sonography; continuous-wave Doppler sonography; power Doppler sonography; pulsed-wave Doppler sonography
Doppler velocimetry
  fetoplacental unit 170–3
  nuchal cord 149–50
  pregnancy 120
Doppler waveforms 345
  breast tumors 344
  fetal vessels 120
  quantile curves 129–30
  uterine perfusion 120
double-expansion-chamber model 191
Down syndrome 198
drug abuse 157
ductal carcinoma 349
ductus arteriosus (DA) 203–4, 206, 217
ductus venosus 135–40, 143, 202
duplex sonography 9–28, 30–3, 352–6
dynamic focusing 6
dynamic frequency filtering 7
dynamic range 7
dysmaturity *see* intrauterine growth retardation

E

Ebstein anomaly 213, 223
echo 2–9
echocardiography, color Doppler 198–229
echogenicity 59, 289
eclampsia 159
ectopic pregnancy (EP) 111–15
edge enhancement 7
EDRF *see* endothelial-derived relaxing factor
Edwards syndrome 198
EEG *see* cortical impedance
EFI *see* amniotic fluid index; expanded amniotic fluid index
EFSUMB clinical safety 33
electrocautery 278
electronic beam steering 4
embryo transfer 39, 85
  intratubal (TET) 57
embryonic circulation 107–9
end-diastolic flow
  high-risk pregnancy 173
  infertility 38
  postnatal development 173
  umbilical arteries 252–4
  velocity (D) 19, 36–8, 98, 252–4
  see also absent end-diastolic flow; positive end-diastolic flow; reverse end-diastolic flow
endarteritis obliterans 241
endarteropathy obliterans 240–1
endocardial cushion defect *see* atrioventricular septal defect
endocardial fibroelastosis 143, 223
endometrial carcinomas 288–90
  age 288
  B-mode sonography 291
    transvaginal 292–3
  chemotherapy 294
  cytology 289
  diabetes 288
  Doppler indices 293
  Doppler sonography 293–4
    color 281, 291–2
    transvaginal color 290–1
    transvaginal pulsed 290–1
  echogenicity 289
  and endometrial hyperplasia 270–1
  endometrial thickness 289–92
  estrogen 288
  genetic factors 288
  intrauterine fluid 292
  myometrial invasion 292
  obesity 288
  screening 288–9
  spiral arteries 294
  tumor vessels 290–2
  ultrasound
    transabdominal 289–90
    transvaginal 290
  uterine arteries 290, 294
  uterine bleeding 289
  uterine vascularity 294
endometrioma 306
endometriosis 86, 272
  Doppler sonography
    color 308
    three-dimensional power 324
    transvaginal color 316
  vascularization 269
endometritis 44
endometrium 45–7, 58, 61–2
  abortive secretion 60
  adenofibromas 270
  adenomyosis 44
  assisted reproduction 59
  benign changes 266–72
  carcinoma 280, 282–3, 288–98
  desquamation phase 262
  Doppler sonography, color 57
  Doppler ultrasound 266–72
    pulsed 57
  dysfunction, clomiphene 57
  echogenicity 59
  endometritis 44
  examination 266–72
  fertility 46
  follicular phase, early 266
  functional status 57
  histology 57–9, 61–2
  human chorionic gonadotropin (hCG) 45
  hyperplasia 270–1
  implantation 45, 61–2
  in-vitro fertilization 39
  infertility 45–8, 59
  leiomyomas 43
  luteal phase defect 78, 81
  menstrual cycle 45, 61, 266–7
  midluteal phase 266
  normal 60
  ovulation 266
  perfusion 40, 266–7, 270
  peristalsis 47
  placental development 231
  polyps 41–2, 269–70
  receptivity 66–7, 99
  secretion 60, 266
  sonography, transvaginal 113
  sonomorphology 57
  spiral arteries 38
  structure 45
  Swiss cheese 44
  thickness 45–6, 51, 60–1, 99, 289–92
  vessels 284
endothelial relaxing factor (ERF) 51
endothelial-derived relaxing factor (EDRF) 100
energy mode imaging *see* power Doppler imaging
enlarged atrium 217
EP *see* ectopic pregnancy
epithelial plates 255
ERF *see* endothelial relaxing factor
erythrocyte sedimentation rate (ESR) 69
estrogen 284, 288
European GRIT study 163

F

facies, abnormal *see* CATCH-22
fallopian tubal patency 69–76
  abdominal sonography 74
  B-mode analysis 70
  Doppler analysis 70–1, 73
    color 75
  Doppler hysterosalpingography, color 87–91
  Doppler sonography 74–5
  examination 69–70
  infertility 69

laparoscopic chromopertubation 73–4
patients 69
radiographic hysterosalpingography 73–4
transvaginal hysterocontrast sonography 74
ultrasound 88
uterus 70
fallopian tubes
catheterization 85
disease 69
Doppler sonography 71–3
color 72
Doppler ultrasound hysterosalpingography 73
hysteroscopy 87
infertility 87–91
laparoscopy 86–7
obstructed 72
radiographic hysterosalpingography 87
transvaginal sonography 88
ultrasound side effects 74
unobstructed 71
false-negative flow detection *see* absent flow detection
false-positive flow 22–3
fast Fourier transform (FFT) 10–11
fat metabolism 242
femoral arteries 177–9
fertility 46–8, 50–1
fetal aorta 176–7
absent end-diastolic flow 168–9
descending 133
intrapartum blood flow 194–5
intrapartum fetal heart rate 194–5
labor 196
normal flow velocity waveform 167
reference curves 131
reverse flow 167–9
S/D ratio 131, 167
term effect 178–9
fetal diseases 166–8
chronic *see* intrauterine growth retardation
fetal heart
aorta *see* fetal aorta
aortic arch 204
aortic coarctation 207
aortic stenosis 207–8, 224
arrhythmias 226–8
atria 200–1, 203–4
septal defects 205–7
atrioventricular septal defect 206, 225
atrioventricular valve 204
cardiac position anomalies 217–18
cardiac septal anomalies 225–6
cardiac tumors 216–17
cardiac valve regurgitation 221–2
cardiac position 217
common truncus arteriosus 213, 215
congenital heart disease 205–18
critical pulmonary stenosis 209–10
Doppler echocardiography, color 227–8
Doppler sonography, color 199
ductus arteriosus 203–4, 206
ductus venosus 202
Ebstein anomaly 213, 223
echocardiography, two dimensional 227–8
endocardial fibroelastosis 223
enlarged atrium 217
fetal echocardiography 199, 226–8
foramen ovale 135, 201, 204, 208
great arteries transposition 213–14
great vessel transposition 224–5
hemangiomas 216–17
heterotaxy syndrome 216
hypoplasia 207–9, 223–4
mitral valve 200, 222–3
myocardial diseases 221
normal 200, 219–21
postnatal defects 217–18
pulmonary arteries 203
pulmonary atresia 209–10
pulmonary stenosis 209, 224
pulmonary veins 200–1, 222–3
rhabdomyomas 216
tachyarrhythmias 221
tachycardia 142, 188
supraventricular 222
tachycardia-induced cardiomyopathy 226
teratomas 216–17
tetralogy of Fallot 210
tricuspid valves 135, 200, 210–11, 213–15, 221–3
vena cava 135, 202, 222–3
ventricles 200–1, 203–4, 211–12, 217
septal defects 206, 225–6
fetal heart rate (FHR) 129, 141, 148, 184, 190–6, 249
absent end-diastolic flow 170
chronic placental insufficiency 159
intrapartum deceleration 187, 191–3
monitoring 33, 149, 160–1, 186
trace 151, 170, 182, 188–91, 194
fetofetal transfusion syndrome 141
fetomaternal perfusion 129–35
fetoplacental
perfusion 158, 178, 249–50
unit 170–3
vascular tree 250, 252
villous architecture 250
fetus
AGA 254
anemia 142–3, 160
aorta *see* fetal aorta
aortic arch 179–80
arrhythmias 141–2, 226
arteriovenous anastomoses 143
atrioventricular valve 222–3
bradycardia 142, 189–93
cerebral vessels 177–9, 195–6
chorionic plate 230
circulation 107–9
congenital heart disease 143, 199
death 198
delivery 194
development 232
ductus venosus 139–40, 143
echocardiography 198–218, 226–8
endocardial fibroelastosis 143
femoral arteries 177–9
great arteries 213–15
growth 121, 140
restriction *see* intrauterine growth retardation
heart *see* fetal heart
hepatic vein 140
heterotaxy syndromes 216
hydrops fetalis 142–3
hypoxemia 196
intracranial arteries 178
intrauterine growth retardation 155
labor 195
late pregnancy 176–82
liver 35, 135
malnutrition *see* intrauterine growth retardation
neck 149, 152
umbilical cord *see* nuchal cord
obliterative vascular disease 240–2
outcome 150
parvovirus B19 143
placental perfusion 178–9, 188–9
pulmonic stenosis 139
renal arteries 177–9
risk 199
supraventricular bigeminal extrasystoles 142
term effect 178–9
thrombi 241–2
umbilical arteries 249–58
umbilical cord 178
complications *see* nuchal cord
vascular circulation 140–1
ventriculoarterial anomalies 224–5
vessels 120, 149
visceroatrial anomalies 222–3
weight 250
wrist 152
FFT *see* fast Fourier transform
FHR *see* fetal heart rate
fibroadenomas 349
B-mode sonography 341
diastolic notch 345
Doppler sonography
color 341, 355, 358
duplex color 355
power 341
Doppler spectrum 341
premenopausal 374
fibrocystic breasts 301
fibrocystic endometrial polyps 285
fibroelastosis, endocardial 143, 223
fibroids *see* leiomyomas
fibromas 307–8
field-of-view width 5
FIGO classification 290, 299, 302, 331, 334
filtering techniques 24
filters 16, 18
fine needle aspiration biopsy (FNA) 349
Fischer's exact test 252
flash-artifact filters 18
flow *see* blood flow
FNA *see* fine needle aspiration biopsy
focusing 6
Foley catheter 69, 84
follicle-stimulating hormone (FSH) 51, 77–9
follicles 77, 96–7
aspiration 83–4
hCG induction 97
mature 97
preovulation 96
stimulation 79
three-dimensional power Doppler sonography 323
transvaginal scan 96
follicular phase 53
early 266
fertility 46
folliculogenesis 96–102
foramen ovale, fetal heart 135, 201, 204, 208
FP *see* follicular phase
frequency 15, 352
shift 9
FSH *see* follicle-stimulating hormone

G

gallbladder 26
gamete intrafallopian transfer (GIFT) 57–8, 69, 85
Gartner duct 306
genetic factors
endometrial carcinoma 288
ovarian cancer 336
gestational age 198, 253, 255
gitterinfarcts 242
glandular-cystic polyps 282
GnRH *see* gonadotropin-releasing hormone
gonadotropin 78
gonadotropin-releasing hormone (GnRH) 78, 269
agonists 277
great arteries transposition 213–14, 224–5
growth 141, 220
Growth Restriction Intervention Trial *see* European GRIT study

H

harmonic imaging 2, 24–6
Hartmann solution 83
hCG *see* human chorionic gonadotropin
heat 29–31
hemangiomas 216–17
hemorrhage, intracerebral 170–1
hepatic veins 135, 139–40
herpes simplex virus *see* TORCH
5-HETE *see* hydroxyeicosatetraenoic acid
heterotaxy syndromes 216
histology
breast cancer 372
endometrial carcinoma 289
HIV-associated vasculopathy 241
hMG *see* human menopausal gonadotropin

Hofbauer cells 233
hormone replacement therapy (HRT) 51–4
  breast tumors 364–70
  menopause 52, 364–70
hormone-stimulated cycles 39, 62–4
hormones
  luteal phase defect 81
  ovarian blood flow 66
  uterine blood flow 66
HRT *see* hormone replacement therapy
HSG *see* hysterosalpingography
human chorionic gonadotropin (hCG) 39, 50, 58, 64–5, 79, 83, 97, 100, 267
  β-hCG 111, 301
  endometrium 45
  transvaginal sonography 111
human immunodeficiency virus *see* HIV
human menopausal gonadotropin (hMG) 39, 46, 58, 64–5, 79
Huygen point emitters 4
Hy-Co-Sy *see* hysterosonosalpingography
hydatiform moles 282
hydrops fetalis 141–3
hydroxyeicosatetraenoic acid (5-HETE) 77
17-hydroxyprogesterone 79
hyperplasia 270–1, 282–3
hyperthermia 29
hypocalcemia *see* CATCH-22
hypoplasia 223–4
  left heart syndrome 207–9
  thymic *see* CATCH-22
hypothalamic-pituatory axis 77
hypoxia 157
hysterosalpingography (HSG) 261
  color Doppler 91
  radiographic 74, 87, 90–1, 263
  septate uterus 261
  ultrasound 90–1
hysteroscopy 87, 263
hysterosonography 261–3

I

ICSI *see* intracytoplasmic sperm injection
images
  panoramic 25
  postprocessing 7
  programmable processors 25
imaging jets 220
impedance (Z), acoustic 2
implantation 45, 61, 63–6, 103
  luteal phase defect 80
in-vitro fertilization (IVF) 69
  Doppler sonographic examination 58
  and embryo transfer (IVF-ET) 57–8
  endometrial imaging 39
  ovarian capacity test 50–1
  sonographic examination 58
  uterine blood flow 39, 64
  see also assisted reproduction
infections 199
infertility 62–4
  endometrial 45–8, 59
  leiomyomas 268, 275
  tubal imaging 87–91
  tubal patency 69
  uterine 38–9, 41–4, 59–61, 100
inhibitors, angiogenesis 326
insonation angle 16
intermediate villi 240, 252
interpartum 161
intervillous
  circulation 103–5
  space 124, 230
  thrombosis 243
intracytoplasmic sperm injection (ICSI) 57
intrapartum
  fetal heart rate 182–97
  fetal hypoxemia 193–4
  fetal hypoxia 193–4
intrauterine
  embryo transfer 85, 155
  fetal death 172
  fluid 292
  growth retardation (IUGR) 140–1, 155–9, 162, 170, 172, 199, 252
  insemination (IUI) 57
  synechiae 44–5
intravillous blood volume 251–2
  reduced 251
ISPTA *see* spatial peak time average intensity
IUGR *see* intrauterine growth retardation
IUI *see* intrauterine insemination
IVF *see* in-vitro fertilization
IVF-ET *see* in-vitro fertilization and embryo transfer

K

K cells 77
Keith-Flack node *see* sinus node
kinetocardiotocography (KCTG) 150, 162

L

labor 188–90
  fetal aorta 196
  fetal brachycardia 189–91
  fetal cerebral vessels 195–6
  fetal head compression 195
  fetal hypoxemia 196
  fetal tachycardia 188
  oxytocin 183–4
  premature 184
  radial arteries 186
  umbilical cord 187–92
  uterine arteries 183–7, 196
  uteroplacental perfusion 186
Langhans-type giant cells 245
laparoscopy 73, 83, 86–7
laser therapy 277
lateral resolution 5–6
leiomyomas
  blood supply 43
  color Doppler imaging 43
  electrocautery 278
  endometrium 43
  infertility 268, 275
  laser therapy 277
  leuprolide acetate 269, 277
  and ovarian tumors 276
  postmenopause 275–6
  pregnancy 276
  premenopause 275
  RU-486 269, 277
  submucous 42–3, 268–9
  three-dimensional ultrasound 43
  uterine 269, 274, 277–8
  uterine arteries 268
  vascularization 268–9, 275–6
leuprolide acetate 269, 277
LH *see* luteinizing hormone
light micrographs, normal endometrium 60
line density 16, 18
linear array transducer 3
listeriosis 245
LMP *see* last menstrual period
LPD *see* luteal phase defect
LUF syndrome *see* luteinized but unruptured follicle syndrome
lupus erythematosus 244
luteal blood flow 100
luteal conversion 80
luteal insufficiency *see* luteal phase defect
luteal phase 77
  corpus luteum 80–1
  defect (LPD) 47, 77–81, 267
  fertility 46
  inadequate *see* luteal phase defect
  intraovarian 80
  progesterone 80
  short *see* luteal phase defect
luteal phase deficiency *see* luteal phase defect
luteal regression phase 98
luteinized but unruptured follicle (LUF) syndrome 79–80
luteinizing hormone (LH) 37, 51, 54, 77–80, 96

M

M-mode imaging 33
McNemer test 252
magnetic resonance imaging (MRI) 350
MAGS *see* microscopic angiogenesis grading system
mainstem villi 233
malnutrition 157
mammography 348
Mann-Whitney *U* test 364
Manning biophysical profile 160–1
Marfan syndrome 198
mastitis 301
mature intermediate villi 233
Maulik 19
maximum entropy method (MEM) 12
maximum intensity projection (MIP) 27
MCA *see* middle cerebral artery
menopause
  breast cancer diagnosis 372–5
  breast tumors 302, 364–70
  cancers 284–6
  Doppler sonography
    color 302
    pulsed 50–6
    transvaginal color 50–6
  estrogen 284
  hormone replacement therapy 52, 364–70
  lesions 282
  ovarian arteries 52
  ovarian perfusion 50–6
  progestin 284
  spiral artery 53–4
  tamoxifen 284
  treatment 50–6
  uterine arteries 53
  uterine perfusion 50–6
  see also postmenopause; premenopause
menorrhagia 281
menstrual cycle 36
  angiogenesis 36
  endometrium 45, 266–7
  luteal insufficiency 267
  ovarian blood flow 54
  preovulatory phase 267
  pulsality index 64–5
  radial arteries 266
  spiral arteries 267
  spontaneous 62–3
  uterine blood flow 51–2
menstrual period (LMP), last 157
metastases 26
microscopic angiogenesis grading system (MAGS) 346, 377
mifepristone *see* RU-486
minimum frequency shift (D) 116
minimum resistance index 360–3
MIP *see* maximum intensity projection
mirror-image artifacts 8, 23, 345
mitral valves 200, 222–3
mother
  adaptation 176
  alcohol abuse 199
  aneurysms 242
  atherosclerosis 242
  basal-plate vessels 236–7
  blood vessels 116–23
  Doppler flow physiology 116–23
  fat metabolism 242
  materoplacental blood flow 242–3
  spiral artery thrombosis 242
  weight 157
motion artifacts 23
  filters 16
motion detection 9
  one-dimensional techniques 9–11, 13
  see also continuous wave (CW) Doppler; pulsed-wave (PW) Doppler
  two-dimensional techniques 11–13
  see also color duplex sonography; power Doppler sonography
motion detectors 12
MRI *see* magnetic resonance imaging
mucinous cystadenomas 305–6

multi-dimensional transducer arrays 23–4
multifrequency technique 7
multiple pregnancies 141, 159–60
  quadruplets 27
  twins 143, 160
muscle fibers 264
myocardial diseases 221
myomas *see* leiomyomas, uterine
myometrium
  adenomyosis 44
  cancers 286
  echogenicity 59
  endometrial carcinoma 292
  endometrial peristalsis 47
  placenta 230

N

N/P ratio *see* notch/peak ratio
NC *see* nuchal cord
neck 21
neoangiogenesis 312
neonatal morbidity 169
neoplasia of the cervix, intraepithelial *see* CIN
neuromotors 151–2, 160, 169–70
neuropeptides 64
neurotransmitters 64
nicotine abuse 172
NO donors 128
norepinephrine (aNA) 64
notch/peak (N/P) ratio 125–6
nuchal cord (NC) 152
  ABCD profiles 150
  Doppler sonography 151–2
    color 148–54
  Doppler velocimetry 149–50
  fetal heart rate monitoring 149
  fetal vessels 149
  kinetocardiotocography 150
  neuromotor defects 151–2
  perinatal findings 151
  umbilical cord length 149, 151
  see also fetal neck, umbilical cord
Nyquist limit 14

O

OAPR *see* overall predictive ratio
obesity 288
OCT-negative cases 187
ODS *see* Output Display Standard
oocytes 50, 83–5
oral contraceptives 336
Output Display Standard (ODS) 32
ovarian arteries 51–4
ovarian cancer
  age 335
  bimanual pelvic examination 332
  carcinoma 332–3
  cul-de-sac washings 332
  Doppler sonography, color 280
  genetic factors 336
  life expectancy 335
  oral contraceptives 336
  postmenopausal palpable ovaries syndrome 332
  radiological studies 332
  screening 330–8
    groups 335–6
    programs 330–1
    tests 332–5
  survival 330
  tumor markers 332–3
  ultrasound
    transabdominal 333–4
    transvaginal 334
ovarian carcinomas, corpus luteum 315–16
ovarian cysts 86, 304
ovarian endometriomas 323
ovarian tumors
  angiogenesis 319–29
  Doppler sonography
    power 319
    three-dimensional power 319–29
    transvaginal color 319
  imaging, three dimensional 320–1
  and leiomyomas 276
  size 319
  ultrasound technology 321–6
ovaries 96
  B-mode sonography 304
  capacity 50–1
  color Doppler sonography 58, 304
  fertility 51
  late luteal phase 98
  luteal phase defect 78
  luteal regression phase 98
  menopause 50–6
  menstrual cycle 64–5
  normal 304
  stimulation 39, 78
overall predictive ratio (OAPR) 331, 333
ovulation 77, 99, 266
oxytocin 183–5

P

panoramic imaging 25, 27
papillomas, intracystic 357
parallel processing 24
parameters
  Doppler spectra 19–20
  ultrasound safety 32
paraovarian cysts 306
parenchymal placentitis 245–6
partial zone dissection (PZD) 57
parvovirus B19 143
Pätau syndrome 198
PCO *see* polycystic ovary
PCO_2 151
peak systolic velocity (S) 19
pelvic congestion syndrome 278
pelvic inflammatory disease (PID) 84, 86, 88, 307–8
pelvis
  arteriovenous malformations 278
  cul-de-sac 86, 332
  ovarian cancer screening 332
  varicose veins 278
  vascular diseases 278
penetration depth 5
perimenopausal period 50–1
perinatal abnormalities 151, 166–75
periovulatory phase 96, 99
perivillitis 245
persistence *see* correlation
$PGF_{2\alpha}$ *see* prostaglandin $F_{2\alpha}$
phase-inversion techniques 25
phased array transducers 4
PI *see* pulsatility index
PID *see* pelvic inflammatory disease
PIH *see* pregnancy-induced hypertension
pituitary-ovarian axis, age 51
placenta 101
  abruption 244
  amniotic cavity 232
  attachment 253
  basal plate 230, 236–7
  blood flow 117, 176
  chorion frondosum 231–2
  chorion laeve 231
  chorionic plate 230, 232
  decidua 232
  early development 230–1
  endometrium 231
  fetal chorionic plate 230
  fetal umbilical arteries 249–58
  function 250–1
  hematoma 243
  insufficiency *see* placental insufficiency
  intervillous space 230
  mature 230, 235
  myometrium 230
  placental weight 176, 250, 253, 255
  placentone 236
  reserve capacity 250–1
  septum 230
  spiral arteries 230
  term effect 178–9
  tumors 246–7
  umbilical cord 230
  villous tree 230, 232–6
placental insufficiency
  abruption 244
  absent end-diastolic flow 254
  accelerated villous maturation 240
  acute arterial vasculopathy 244
  acute atherosis 243–4
  amniotic-type inflammations 245
  antiphospholipid antibody syndrome 244
  arrested villous maturation 238
  basal pseudoinfarcts 242
  chorangiomas 246
  chorangiosis 239–40
  chromosome abnormalities 238
  chronic 138, 140–1, 155–62, 166
  compensation 237
  definition 237–8
  diabetes mellitus 238
  diagnosis 249
  epithelial plates 255
  etiology 237
  fetal obliterative vascular disease 240–2
  fetal thrombi 241–2
  fetal weight 250, 255
  fetoplacental blood flow 249–50
  fetoplacental vascular tree 250, 252, 255
  fetoplacental villous architecture 250, 255
  functional competence 250–1
  hematoma 243
  HIV-associated vasculopathy 241
  hypertensive disorders of pregnancy 243–4
  infarctions 242–3
  inflammation 244–6
  intermediate villi 240, 252
  intervillous thrombosis 243
  intravillous blood volume 251
  listeriosis 245
  lupus erythematosus 244
  materoplacental blood flow 242–3
  obliterative foci 242
  parenchymal placentitis 246
  parenchymal type placentitis 245
  pathomorphology 250–1
  pathophysiology 230–49
  perivillitis 245
  placental weight 250, 252
  pregnancy 124
  reserve capacity 250–1
  reticular infarctions 242–3
  rhesus incompatibility 238–9
  sequelae 241
  subchorionic pseudoinfarcts 243
  Tenney-Parker changes 244
  terminal villi 250–2
  thromboangiitis 245
  tumors 246–7
  umbilical arteries 250–1, 254–5
  villitis 245
  villous tree maturation 238–40, 250, 253
placental protein 78
placentation, early 103–10
placentone 236
polycystic ovary (PCO) 304–5
  syndrome 304
polyps 41–2, 269–70, 282, 285
portal vein 35
positive end-diastolic flow 171
postmenopause 54
  bleeding 281
  breast carcinomas 373, 376
  leiomyomas 275–6
  palpable ovaries (PPO) 332
postsystolic notch 121
power Doppler sonography 12–13
  aliasing 17
  breast tumors 340, 343
  fibroadenomas 341
  limitations 15
  ovarian tumors 319
  risks 31
  turbulence 17
  uterine cavity 89
power output 16, 352
PPO *see* postmenopausal palpable ovaries
preeclampsia 124–8
  intrauterine growth retardation 157, 159
pregnancy
  alcohol abuse 199
  amniocentesis 120–1
  arterial dilation 117
  beta-mimetics 121
  blood supply 117

cerebral artery 133
cervical cerclage 120–1
corpus luteum 81–2
diabetes mellitus 199
Doppler sonography
  color 124
  transvaginal 124–5
  transvaginal pulsed 118–19
Doppler spectra, umbilical vein 136
Doppler velocimetry 120
  uterine artery 118
early 96–102, 118, 124–8
fetal aorta 176–7
fetal descending aorta 133
fetal risks 199
fetomaternal Doppler indices 129–34
intervillous space 124
late 176–82
leiomyomas 276
luteal perfusion 100
maternal adaptation 176
maternal vessels 116–23
multiple 86–7
myomas 269
placenta *see* placenta
placental insufficiency *see* placental insufficiency
postsystolic notch 121
postterm 178–80
preeclampsia 124
pulsatility index 119
S/D index 119
spiral arteries 117, 124, 127
term 178–80
ultrasound safety 33
umbilical artery 133
uterine artery 117, 133–4
uterine enlargement 117
uterine perfusion 118–19, 121–2, 128
uteroplacental blood flow 127
pregnancy-induced hypertension (PIH)
  absent end-diastolic flow 172
  early diastolic notch 186
  intrauterine growth retardation 159
  uterine arteries 127
  uterine perfusion 121
preimplantation 230
premenopause
  fibroadenomas 374
  leiomyomas 275
prenatal diagnosis 219
preovulatory phase 267
PRF *see* pulse repetition frequency
progesterone 52, 77–80
progestin 284
pronucleus stage transfer (PROST) 57
prostaglandins 77, 217
  E_2 51, 55, 77, 79
  $F_{2\alpha}$ ($PGF_{2\alpha}$) 77, 100
pseudojets *see* flow acceleration
pseudoprematurity *see* intrauterine growth retardation
pulmonary arteries 203
pulmonary atresia 209–10, 221
pulmonary stenosis 139, 209–10, 224
pulmonary veins 200–1, 222–3
pulsatility index (PI) 19–20
  cerebral arteries 132
  fetal aorta 131
  implantation 63–4
  menstrual cycle 64–5
  reference curves 131–2
  umbilical arteries 131–2
  uterine arteries 51, 62–3, 126
pulse repetition frequency (PRF) 10–11, 14, 18, 321
  breast cancer diagnosis 352
  color Doppler echocardiography 219–20
pulse-inversion techniques 25
pulsed-wave (PW) Doppler sonography 9, 13–14, 18, 32
  breast cancer 351
  color, cervical carcinoma 299–303
  endometrium 57
  menopause 50–6
  tumors 313
  umbilical cord 152
  uterine myometrium 274–9
  uterine perfusion 39
pulsed-wave (PW) transducers 116
PZD *see* partial zone dissection

Q

quadruplet gestation 27
quantile curves 129–30

R

radial arteries
  anatomy 116
  blood flow 37–8, 98–9
  fertility 45–6
  hormone replacement therapy 53
  labor 186
  menstrual cycle 266
  postmenopausal hormone replacement therapy 54
radiographic hysterosalpingography (HSG) 90
  septate uterus 263
  tubal imaging 87
  tubal patency 73–4
Rashkind maneuver *see* balloon atrioseptostomy
receive focusing 6
receivers
  gain 16, 18
  operating characteristic (ROC) curves 133
reference curves
  cutoff values 133
  pulsatility index
    cerebral arteries 132
    fetal aorta 131
    umbilical arteries 131
    uterine arteries 132
  resistance index
    cerebral arteries 132
    cerebroplacental ratio 132
    fetal aorta 131
    umbilical artery 131
    uterine arteries 132
  S/D ratio
    cerebral artery 131
    fetal aorta 131
    umbilical arteries 130
    uterine arteries 132
reflection 2–3
refraction 3
  artifacts 8
region of interest box *see* ROI box
renal arteries 177–9
reproduction, assisted 57–68
RES *see* reticuloendothelial system
resistance, Doppler spectrum 19
resistance index (RI) 19–20, 36, 52, 62, 64, 99
  breast cancer 372–7
  breast carcinomas 342, 361–3
  breast tumors 342, 361–70, 372, 375
  breasts 361–2, 365
  cancers 284–6
  cerebral artery 132
  cerebroplacental ratio 132
  corpus luteum 79–80
  early pregnancy 126
  fetal aorta 131
  hormone replacement therapy 368–9
  implantation 63–4
  menopause 284–6, 365–7, 372–5
  menstrual cycles 62
  ovarian luteal regression phase 98
  placental insufficiency 251, 254–5
  postmenopausal 373, 376
  of Pourcelot (RI) 116
  premenopausal 374
  reference curves 131–2
  umbilical arteries 251–2
  uterine arteries 62
resolution 5–6, 18, 23–4
respiration 140
reticuloendothelial system (RES) 26
reverberations 8
reverse end-diastolic flow 171–2
  birthweight 253
  components 20–1
  diagnosis 166–8
  fetal aorta 167–9
  fetal placenta perfusion 188–9
  gestational age 253
  intrauterine fetal death 172
  labor 188–90
  neonatal morbidity 169
  nicotine abuse 172
  placental attachment 253
  smoking 172
  umbilical arteries 167–9
rhabdomyomas 216
RI *see* resistance index
ROC curves *see* receiver operating characteristic curves
ROI (region of interest) box 219
Rokitansky protuberance 306
RU-486 269, 277
rubella *see* TORCH

S

S *see* peak systolic velocity
S/D ratio 19, 116
  cerebral arteries 131
  early pregnancy 126
  fetal aorta 131
  pregnancy 119
  reference curves 130–2
  umbilical arteries 130, 250
  uterine arteries 132
safety
  transducer heating 33
  ultrasound field parameters 32
scan frequency *see* velocity scale
scanners 3–4
  high-speed digital technology 24
scanning electron micrographs 60
scanning techniques 3–7
scars 357
scattering 3
SCC tumor marker 300
sclerosis, tuberous *see* Bourneville-Pringle disease
screening
  endometrial carcinoma 288–9
  ovarian cancer 330–8
second trimester 129–34
secretory phase 266
Seldinger technique 299
septal blood flow 264
septal defects
  atrial 205–7, 218
  atrioventricular 206, 225
  ventricular 206–7, 228
septate uterus 41, 260–4
septum
  endometrium 264
  placenta 230
sequelae 241
serous cystadenomas 305–6
SGA baby 158
SGA fetuses 251–2, 254–5
shadowing 8, 23
side-lobe artifacts 8
SieScape technology 25
sinus node 142
slice-thickness artifacts 8
small-for-date baby *see* intrauterine growth retardation
small-for-date infant *see* intrauterine growth retardation
small-for-gestational-age *see* SGA
smoking 157, 172
sonography
  abdominal 74
  in-vitro fertilization 58
  uterine abnormalities 260–5
  see also individual types
sonohysterography 41
Sonoline Elegra system 25
sonomorphology, endometrium 57
SP *see* substance P
spatial averaging 18
spatial peak time average intensity (ISPTA) 29–31
spatial resolution *see* line density
spectral analysis 19–20
  Doppler parameters, *see also* pulsatility index; resistance index; S/D ratio
  fast Fourier transform (FFT) 10

spectral imaging 15–17
sperm 48
spiral arteries 40, 99
  anatomy 116
  blood flow velocity 37–8, 40
  endometrial carcinoma 294
  hormone replacement therapy 53–4
  luteal phase defect 81
  menopause 53–4
  menstrual cycle 267
  placenta 230
  placentone 236
  pregnancy 117, 124, 127
  thrombosis 242
stenoses 20–2, 139
still-refractory AV node 142
Stuart index *see* S/D ratio
subchorionic pseudoinfarcts 243
subendometrial vessels 286
substance P (SP) 64
subzonal insemination (SUZI) 57
supraventricular tachycardia, fetus 222
Swiss cheese endometrium 44
sympathetic vasoconstrictor nerves 51–2
syncytiotrophoblasts 234, 236–7
synthetic aperture scanning 24
systolic modulation 339

T

T4 helper cells 241
tachyarrhythmias 221
tachycardia 142, 188
tachycardia-induced cardiomyopathy 226
tamoxifen 270, 284–5
Tav *see* time-average peak velocity
TEM *see* transparent energy mode
temporal average of spatial average velocity (TASAV) 176
temporal resolution 18
Tenney-Parker changes 244
  placental insufficiency 244
teratomas 216–17, 306–7
term effect 178–80
TET *see* intratubal embryo transfer
tetralogy of Fallot 210
TGC *see* time gain compensation
theca interna 97
theca-granulosa cell tumor 308
thermography 349
THI *see* tissue harmonic imaging
third trimester 129–34
three-dimensional imaging 27, 320–1
three-dimensional power Doppler sonography 322–6
three-dimensional sonography 294–5
three-dimensional ultrasound 43, 45, 262–4
thromboangiitis 245
thromboses 20
time averaging 12
  sensitivity 16
time gain compensation (TGC) 6–7, 32
time-average peak velocity (Tav) 19
time-domain of correlation (CVI) 9
time-varying frequency spectrum *see* Doppler spectrum
tissue harmonic imaging (THI) 2, 24–6
tissues, ultrasound safety 33
tocodynamometry (TKD) 183
tocolysis 186
TORCH 157
toxoplasmosis *see* TORCH
transabdominal Doppler velocimetry 118
transabdominal ultrasound 289–90, 333–4
transducers 3–7, 23–4, 33, 64
transit time of the pulses (T) 10–11
transmission frequency 5, 16
transmit focusing 6
transmit power 18
transparent energy mode (TEM) 12
transvaginal B-mode ultrasound 262
transvaginal color Doppler sonography (TVCD) 124–5, 334
  abscess 316
  adnexal tumors 314–16
  corpus luteum 315–16
  cyst 316
  ectopic pregnancy 112–15
  endometrial carcinoma 290–1
  endometriosis 316
  menopause 50–6
  ovarian tumors, size 319
  septate uterus 262–3
  uterine 36, 39, 41–9, 274–9
transvaginal hysterocontrast sonography 74
transvaginal hysterosalpingo-contrast sonography *see* hysterosonosalpingography
transvaginal pulsed-wave Doppler flowmetry 117
transvaginal pulsed-wave Doppler sonography 118–19, 262–3, 290–1, 334
transvaginal sonography 290, 334
  anteflexed uterus 58
  and color Doppler sonography 113
  corpus luteum 80
  endometrium 113
  fallopian tubes 88
  human chorionic gonadotropin 111
  risk 31
  septate uterus 261
transvaginal sonosalpingography *see* hysterosonosalpingography
trapezoid scan transducers 4, 23
tricuspid valves 135, 200, 210–11, 213–15, 221–3
trophoblasts 101, 127, 230, 237, 301
  cytotrophoblasts 234, 236–7
  extravillous 236–7
  tumors 246
truncus arteriosus, common 213, 215
tubal patency *see* fallopian tubal patency
tumor vessels 312, 325
  adnexal tumors 315–16
  breast tumors 341, 360–2
  endometrial carcinoma 290–1
tumors
  adnexal 310–18
  analysis 20
  angiogenesis 319–29
  benign 356
  blood vessels 312, 341
  breast 339–47, 360–78
  cardiac 216–17
  diagnosis 316–17
  Doppler flow, pulsed 313
  Doppler sonography
    3-D power 319–29
    color 302, 312–13
  growth 315–16
  markers 332–3
  mathematical models 321–2
  morphology 321
  neoangiogenesis 312, 346
  neovascularity 280, 346
  ovarian 320–1
  perfusion 315
  placental insufficiency 246–7
  size 312, 315
  uterine 288–98
  vascular patterns 312–14, 321–2
  vascularity 302, 312, 349
  vessels *see* tumor vessels
  volume 299
turbulence 17
Turner syndrome 198
TVCD *see* transvaginal color Doppler sonography
twins 160
two-dimensional Doppler echocardiography *see* color Doppler echocardiography
two-dimensional echocardiography 227–8
two-dimensional transducer arrays 23

U

ultrasound
  artifacts 7–8
  breast carcinoma 348
  contrast agents 31–3
  hysterosalpingography 90–1
  images 2
  interventional 83–93
  lines 24
  parameters 32
  propagation 25
  risk 32
  safety 32–3
  scanners 24
  settings 16–18
  side effects 74
  technology 321–6
umbilical arteries
  absent end-diastolic flow 167–9
  birthweight 253
  Doppler indices 133
  Doppler sonography 254–5
  fetal bradycardia 192–3
  fetal growth restriction 254
  fetal tachycardia 188
  gestational age 253
  histology 251–5
  intrapartum fetal hypoxemia 193–4
  intrapartum fetal hypoxia 193–4
  intravillous blood volume 251–2
  labor 188
  normal flow velocity waveform 167
  placental attachment 253
  placental insufficiency 254
  pulsatility index 131
  resistance index 250–1
    reference curves 131
  reverse flow 167–9
  S/D ratio 167, 250
    reference curves 130
  term effect 178–9
umbilical cord
  complications *see* nuchal cord
  fetal neck 149
  fetal wrist 152
  intrapartum deceleration 192–3
  labor 187–92
  length 149, 151
  perfusion, fetus 178
  placenta 230
  prolapse 152–3
  pulsed Doppler sonography 152
  vascular architecture 235
umbilical veins 135–7, 193–4
unicornuate uterus 41, 260
unidirectional blood flow 339
uterine arteries
  anatomy 116
  Doppler flow 51
  Doppler indices, pregnancy 133–4
  Doppler sonography 127
    color 58, 61, 124–8, 281
    transvaginal pulsed 118–19
  Doppler spectra 125
  Doppler velocimetry 118
  early pregnancy 124–8
  endometrial carcinoma 290, 294
  fertility 45–6
  hormone replacement therapy (HRT) 51–2
  hormone-stimulated cycles 63
  impedance 196
  infertility 100
  labor 183–7, 196
  menstrual cycle 62–3
  normal 125–6
  oxytocin 185
  perfusion *see* uterine perfusion
  pulsatility index 126
  reference curves
    pulsatility index 132
    resistance index 132
    S/D ratio 132
  resistance index 126
  S/D ratio 126
uterine cavity 89
uterine fundus 58–9, 70–2
uterine perfusion 36–40, 98–9, 117–19, 121–2, 128, 176
  acetylcholine 64
  age 53
  amniocentesis 120–1
  arcuate arteries 121
  assisted reproduction 59–61, 67
  beta-mimetics 120–1
  cervical cerclage 120–1

Doppler sonography 59–61, 66–7
Doppler waveform 120
early pregnancy 118
ectopic pregnancy 113
embryo transfer 39
endometrial receptivity 66–7
estrogen effect 51–2
fertility 38
fetal growth 121
fibroids 268
hormones 39, 53–4, 64, 66
implantation 63–6
in-vitro fertilization 39, 64
infertility 38–9, 59–61
leiomyomas 268
manipulation 120, 122
medication 120, 122
menopause 50–6
menstrual cycle 51–2, 64–5
neuropeptides 64
neurotransmitters 64
norepinephrine 64
normal menstrual cycle 39
ovarian stimulation 39
oxytocin 183
placentation 107
postmenopausal 55
postsystolic notch 121
pregnancy-induced hypertension 121
progesterone 52
spiral arteries, pregnancy 124, 127
surgery 120
sympathetic vasoconstrictor nerves 51–2
uteroplacental insufficiency 124–8
uteroplacental perfusion 116
abnormal pregnancy 126–8
chronic placental insufficiency 155–6
labor 186
trophoblastic invasion 127
uterus
abnormalities 41–4
bicornuate 41, 260
bleeding, endometrial carcinoma 289
blood supply 36–7, 98
congenital abnormalities 41
didelphys 41, 260
Doppler sonography 260–5
color 89–90, 296
pulsed-wave 274–9
transvaginal color 274–9
enlargement 117
fibroids 268
infertility 41–4
leiomyomas 274
malignancy, and adenomyosis 271
manipulation 120, 122
mucosal polyps 282
myometrium 274–9
polyps 42
receptivity 50, 99
sarcoma 296
septate 41, 260–4
tubal patency 70
tumors 288–98
unicornuate 41, 260
vascularity 294

V

valvular aortic stenosis 207–8
valvular pulmonary stenosis 209
variance mode 219–20
varicella zoster 245
varicose veins 278
vasovagal reactions 74
vascular
architecture 235
circulation 140–1
impedance 314, 342
patterns 312–13, 320–2
resistance 37, 51–2
system 138, 321
vascularization 97
adenomyosis 269
cervical carcinoma 300–1
corpus luteum 97
endometrial polyps 269
endometriosis 269
incomplete abortion 269
leiomyomas 268–9, 275–6
tumors 312
viteline duct 106
yolk sac 106
vasoactive intestinal polypeptide (VIP) 64
velocardiofacial syndrome 210
velocity scale 16, 18
vena cava 135, 139, 202, 222–3
venous Doppler sonography 135–45
ventricles 200–1, 203–4
dilation 217
hypoplasia 217
single 211–12
ventricular septal defect *see* VSD
ventriculoarterial anomalies, fetus 224–5
vibration artifacts 22
villi
ghost 242
immature intermediate 232–3
mainstem 233
mature intermediate 233
mesenchymal 232–3
primary 230–1
secondary 230–1
terminal 233–5
tertiary 230–1
villitis 245
villous tree 230, 232–6, 238–40, 250, 253
VIP *see* vasoactive intestinal polypeptide
visceroatrial anomalies 222–3
viteline duct 106
Vogel type I chorangiosis 239–40
VSD 206–7, 225–6, 228

W

wall filters 16–18, 352
waveform analysis 19
Wertheim-Meigs operation 299
WFUMB clinical safety 33
Wilcoxon test 63, 252
Williams-Beuren syndrome 198
Willis arteries 177
windkessel model *see* double-expansion-chamber model
World Health Organization (WHO) criteria 330

Y

yolk sac 106

Z

Z *see* acoustic impedance
zygote intrafallopian transfer (ZIFT) 57, 85