Standard vs. Specialized Anatomical Survey (76805 vs. 76811)

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Outline

- Discuss guidelines for basic anatomic survey (76805) - AIUM
- Review appropriate indications for specialized anatomic survey (76811)
- Define the additional imaging and reporting components for 76811
- Outline physician training requirements to interpret 76811 exam

No Disclosures

2013
OBSTERICAL GUIDELINES

- Collaboration ACOG, AIUM, ACR
- AIUM 2013 (latest version)
- Valid indication
- Lowest exposure - ALARA
- Adhering to criteria maximizes detection of anomalies but does not detect all anomalies
- Used in malpractice cases

INDICATIONS- 2nd/3rd trimester evaluation

- Estimate gestational age
- Fetal growth
- Vaginal bleeding
- Pelvic pain
- Incompetent cervix
- Fetal presentation
- Multiple gestations
- Adjunct to amniocentesis
- Size/dates discrepancy
- Pelvic mass
- Suspected hydatidiform mole

INDICATIONS- 2nd/3rd trimester

- Cervical cerclage placement
- Ectopic pregnancy
- Fetal death
- Uterine abnormality
- Fetal well-being
- Amniotic fluid abnormalities
- Placental abruption
- External cephalic version
- PROM or preterm labor
- Abnormal biochemical markers
- Many…!

INDICATIONS: 2nd/3rd trimester

- Assess for findings that may increase risk for aneuploidy
- Screening for fetal anomalies
Members of the Task Force

- AIUM
- SMFM
- ACOG
- ACOOG
- ACR
- SDMS
- SRU

Purpose of the Task Force

- Develop appropriate indications for performing a detailed fetal anatomic examination (CPT 76811)
- Define the components of the examination
- Identify the training required to interpret the exam

SPECIALIZED EXAM (76811)

- Indication driven exam
- Suspect anomaly based on biochemistry, prior study, history
- One exam per pregnancy
- Subsequent exams coded as follow up 76816
- Performed in facilities with special expertise in identifying fetal anomalies
**INDICATIONS- 76811**
(NOT AN ALL INCLUSIVE LIST)

- **History:** Previous child w/ chromosomal, genetic, structural anomaly
- **Known or suspected fetal anomaly or growth anomaly** in current pregnancy
- **Fetus at risk for congenital anomaly:**
  - Pregestational or gestational diabetes diagnosed <24 weeks
  - Assisted reproduction
  - High maternal body mass index (35 or greater)
  - Multiple gestations
  - Abnormal serum analytes
  - Teratogen exposure
  - Nuchal translucency 3.0 mm or greater

**76805 Imaging/Reporting Requirements**
- Spine (cervical, thoracic, lumbar, sacral)
- Extremities (Arms/Legs)

**Standard evaluation:**
- Fetal number, presentation
- Qualitative or semi-qualitative estimation of amniotic fluid
- Placenta location, relationship to internal os, appearance
- Placental cord insertion (if feasible)

**Maternal anatomy:**
- Cervix (transvaginal when indicated)
- Uterus/adenexa (as appropriate)

**Biometry:**
- Biparietal Diameter
- Head Circumference
- Femur Length
- Abdominal Circumference
- Fetal Weight Estimate

**CPT 76811 Imaging/Reporting Requirements**
(In addition to 76805 Basic requirements)
- **Anatomy:**
  - Integrity and shape of the cranial vault
  - Brain parenchyma
  - Neck
  - Profile
  - Coronal face (nose/lip)
  - Mandible
  - Aortic Arch
  - Superior and Inferior Vena Cava
  - 3VV
  - 3VV/Tracheal view
  - Lungs
  - Integrity of diaphragm
  - Liver
  - Integrity of abdominal wall
  - Integrity of spine and overlying tissue

- **Standard evaluation:**
  - Placental Masses (presence or absence)
  - Placental cord insertion
  - Accessory/succenturiate lobe with location of connecting vascular supply to primary placenta

- **Biometry:**
  - Nuchal Thickness (16-20 weeks)
  - Nasal Bone Measurement

**Fetus at risk for a genetic or chromosomal disorder:**
- Parental carrier of a genetic disorder
- Maternal age of 35 or older at delivery
- Increased risk for aneuploidy on serum screening (includes NIPT)
- Soft marker noted on ultrasound
- First trimester nuchal translucency of 3.0 mm or greater

**Other conditions affecting the fetus:**
- Infection
- Maternal drug dependence
- Isoimmunization
- Oligohydramnios
- Polyhydramnios
CPT 76811 Imaging/Reporting Requirements: AS MEDICALLY INDICATED

- **Anatomy:**
  - 3rd/4th ventricle of the brain
  - Corpus callosum
  - Lens of the eye
  - Tongue
  - Ear position and size
  - Orbits
  - Ribs
  - Small and Large bowel
  - Adrenal glands
  - Gallbladder
  - Renal arteries
  - Spleen
  - Digits: number and position
  - Gender

- **Biometry:**
  - Cerebellum
  - Humerus
  - Ulna/radius
  - Tibia/fibula

**Timing/Limitations**
**Fetal Anatomic Survey**
- May adequately assess after 18 weeks
- Document technical limitations
- Follow-up may be helpful with focused assessment (76816)

**Important for Cardiac Views**
We document BMI often

**STANDARD EXAMINATION (76805)**
**Basic Imaging Parameters:**
- Fetal number
- Multiples: chorionicity, amnionicity, gender
- Fetal presentation
- Cardiac activity
- Fetal biometry
- Anatomic survey
- Amniotic fluid volume
- Placental position- TV if needed
- Maternal cervix and anatomy, *if feasible*
BASIC IMAGING PARAMETERS
Fetal presentation

BASIC IMAGING PARAMETERS
AMNIOTIC FLUID INDEX:
Sum largest vertical pocket in all four quadrants
- Normal: 5 – 20 cm
- Oligo: < 5 cm
- Poly: > 20 cm
  (Some use 25 cm)

BASIC IMAGING PARAMETERS
Amniotic fluid volume:
- qualitative, AFI, Max vertical pocket

BASIC: MATERNAL ANATOMY
As appropriate: uterus, cervix, adnexa
- When cervix not well seen → TV
- Adnexal masses that require follow up
- Uterine fibroids
- TV cervix: multiples, cx incompetence, cx biopsy
MATERNAL ANATOMY: ADNEXA

Normal transabdominal cervix

TRANSVAG CERVIX

Short cervix w/ funnel = 2.2 cm

BASIC: MATERNAL ANATOMY-CERVIX

BASIC: PLACENTA, UMBILICAL CORD

- Location and appearance
- Relationship to internal cx os
- Position early in pregnancy may not correlate well with it at delivery
- Number of vessels in cord
- Assess short cervix w/ TV
- Placental cord insertion site – 2013 when technically feasible
BASIC IMAGING PARAMETERS

PLACENTA

**EXTRA:** Cine sweeps give the interpreter a better “feel” for placental echotexture

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Document placental location

Low lying placenta

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**Placental Cord Insertion:**

Document location in uterus

76805 - *when feasible*

76811 - REQUIRED

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**VELAMENTOUS PCI**

Document location in uterus

Assess for vasa previa

* EXTRA: Document PCI in sag and trv
VELAMENTOUS PCI
Evaluate w/ TV for VASA PREVIA

Make sure the head is not up against the cervix!

VELAMENTOUS PCI
Evaluate w/ TV for VASA PREVIA

Use color/ pulse Doppler to confirm
Rate consistent w/ FHR

BASIC IMAGING PARAMETERS

GESTATIONAL AGE ASSESSMENT:
- First trimester CRL most accurate
- NEVER redate after initial quality US
- Variability increases with gestational age

BASIC IMAGING PARAMETERS:
GESTATIONAL AGE ASSESSMENT
Biparietal diameter
Head circumference
Abdominal circumference
Femoral diaphysis length
Estimated fetal weight – composite of above
GESTATIONAL AGE ASSESSMENT

**BIPARIETAL DIAMETER**
- Measure at level thalami/cavum septum pellucidum
- Leading edge to leading edge
- Variations in shape: dolicocephaly, brachycephaly
- BPD/OFD, HC averages out but beware
  Tri 21 tends to be brachycephalic

**HEAD CIRCUMFERENCE:**
- Measure at same level as BPD
- Not affected by head shape
- Useful when combined with AC to assess for IUGR, microcephaly
GESTATIONAL AGE ASSESSMENT

ABDOMINAL CIRCUMFERENCE:
- Measure at the skin line
- “Hockey stick” Junction of umbilical vein and portal sinus
- Stomach visible
- Helps estimate fetal weight, IUGR, macrosomia

Beam is perpendicular to rib bones and skin edge is visible
Appearance of lower ribs are symmetric
Plane of section through the junction of UV, LPV and RPV “the hockey stick”
Ellipse is fit to SKIN EDGE!

FEMORAL DIAPHYSIS LENGTH:
- Measure after 14 weeks
- Exclude distal femoral epiphysis!

Align transducer to long axis of the diaphysis demonstrating the junction of bone with cartilage
No ossified “point” exists!
Only ossified portion
GESTATIONAL AGE ASSESSMENT

FETAL WEIGHT ASSESSMENT
- Composite of parameters based on prediction model
- Intrinsic measurement error +/- 15%
- Compare to prior scans for growth trend
- Need 2-4 weeks between scans due to statistical variation in measurement

GA ASSESSMENT

<table>
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<tr>
<th>LMP</th>
<th>DOB</th>
<th>GA</th>
<th>EDD</th>
<th>EFW</th>
<th>GA</th>
<th>EDF</th>
<th>EFW</th>
<th>GA</th>
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<td>7/28w5d</td>
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<td>± 54g</td>
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<th>Value</th>
<th>Range</th>
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<th>AUC</th>
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<th>m2</th>
<th>m3</th>
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<th>Age</th>
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<td>✔</td>
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<td>✔</td>
<td></td>
<td>✔</td>
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<td>HC (Hadduck)</td>
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<td>AC (Hadduck)</td>
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<td>✔</td>
<td></td>
<td>✔</td>
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<td>✔</td>
<td></td>
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<td>HL (Hadduck)</td>
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<table>
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<tr>
<th>3D Calculations</th>
<th>Gc (BPD/OFD)</th>
<th>FL/BPD</th>
<th>FL/AC</th>
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<tr>
<td>70% (70.86%)</td>
<td>60% (GA: 00%)</td>
<td>21% (20.24%)</td>
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<table>
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<tr>
<th>HC/AC (Campbell)</th>
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<tbody>
<tr>
<td>FL/HIC (Hadduck)</td>
<td>1:18 (1.06 - 2.21)</td>
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ESTIMATING DATING

Table 1. Guidelines for Redating Based on Ultrasonography

<table>
<thead>
<tr>
<th>Gestational Age Range*</th>
<th>Method of Measurement</th>
<th>Discrepancy Between Ultrasound Dating and LMP Dating That Supports Redating</th>
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<tr>
<td>≤ 13 6/7 wk</td>
<td>0</td>
<td>More than 5 d</td>
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<tr>
<td>≤ 8 6/7 wk</td>
<td>0</td>
<td>More than 7 d</td>
</tr>
<tr>
<td>≤ 14 0/7 wk to 13 6/7 wk</td>
<td>13 6/7 wk</td>
<td>More than 7 d</td>
</tr>
<tr>
<td>14 0/7 wk to 15 0/7 wk</td>
<td>BPD, HC, AC, FL</td>
<td>More than 7 d</td>
</tr>
<tr>
<td>16 0/7 wk to 21 6/7 wk</td>
<td>20 6/7 wk</td>
<td>More than 10 d</td>
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<tr>
<td>22 0/7 wk</td>
<td>BPD, HC, AC, FL</td>
<td>More than 14 d</td>
</tr>
<tr>
<td>≥ 28 0/7 wk</td>
<td>BPD, HC, AC, FL</td>
<td>More than 21 d</td>
</tr>
</tbody>
</table>

ACOG/AIUM/ACR Committee Opinion #611, 10/2014
BASIC HEAD/FACE/NECK (76805)

Lateral cerebral ventricles
Choroid plexus
Cerebellum
Cisterna magna
Midline falx
Cavum septum pellucidum
Upper lip

HEAD/FACE/NECK (76811)

76805
Lateral cerebral ventricles
Choroid plexus
Cerebellum
Cisterna magna
Midline falx
Cavum septum pellucidum
Upper lip

Neck
Profile w/mandible, maxilla
Coronal Face (nose/lip)
Nasal bone measurement
Nuchal fold measurement

CHOROID PLEXUS AND LATERAL VENTRICLES

Choroid plexus cyst marker for T18:
Check open hands, feet, heart, palate, growth

10 mm max size
Choroid fills the ventricle
Evaluate cerebellum, cisterna magna and nuchal fold

**CEREBELLUM**
- Peanut or dumbbell shape
- Hemispheres, vermis
- Width approximates gestational age
- Do not angle far inferiorly, creates appearance of agenesis of the vermis

**CISTERNA MAGNA**
- Posterior to cerebellum
- Less than 10mm but present

**MIDLINE FALX**
**Cavum Septum Pellucidum**

 Fluid filled triangular or rectangular fluid filled space without a central line

 3 linear reflections on same plane

 Parallel line in the center

**Cavum Septum Pellucidum, Frontal Horns**

Extra: 3D of the cavum and assessment of frontal horns in abnormal/difficult cases

**UPPER LIP**

- Coronal view
- "Smooshing face into a window"
- Clefts on either anterior side
- Bilateral clefts may give masslike appearance
- Midline clefts → holoprosencephaly

Columns of Fornix may simulate the appearance of CSP

Agenesis of corpus callosum, septo-optic dysplasia, holoprosencephaly, schizencephaly, severe hydrocephalus, chiari II malformation and aqueductal stenosis

Callen et al JUM 2008
76811: Nose and Lips

Tip of Nose

Nostril

Upper Lip

Lower Lip

Chin

76811: NUCHAL FOLD

Posterior to the cerebellum
Measure 16-22 weeks
Less than 6mm
Trisomy 21 association

76811: Profile/NB/Maxilla/Mandible

Midline

Look for echogenic line under skin - nasal bone

Nasal bone measurement

Hypoplastic or delayed ossification of nasal bone associated w/ T21!!

2.5 mm cutoff for NB for fetuses 15-22 wks
50 fold LR
Cicero et al UOG 2003; 21:15

Absent Nasal Bone
50 fold LR - meta analysis
Moreno-Cid et al UOG 2014; 43: 247

EXTRA: Palate and Orbits
BASIC CARDIAC/CHEST - 76805

Document heart motion (M mode)
Four chamber view
LVOT – parasternal long axis view (added 2013)
RVOT- short axis view- (added 2013)

Detailed Cardiac/Chest 76811

Document heart motion (M mode)
Four chamber view
LVOT – parasternal long axis view
RVOT- short axis view
Aortic arch view
Superior/Inferior vena cava
Three vessel view
Three vessel/ Trachea view
Integrity of diaphragm

HEART MOTION
Document w/ M-Mode

Document and report rate and rhythm abnormalities
Capture both atria/ventricular rates simultaneously
**4 CHAMBER VIEW**

- Symmetry
- Moderator band
- TV offset apically from MV
- Descending Aorta behind LA (nothing b/w LA and DAO)
- Foramen Ovale Flap R>L
- Mitral and tricuspid valves move normally

---

**Left ventricular outflow tract**

**LVOT: What to look for:**

- Left ventricle gives rise to aorta
- Continuity of the ventricular septum with the anterior wall of the aorta
- Aortic valve thin, moving freely
RVOT:
What to look for:

- PA/AO approximately equal in size
- Pulmonary artery branches
- Pulmonary valve is moving normally (thin, mobile leaflets)

76811 - 3 VESSEL/TRACHEA VIEW

3VV
- Main Pulmonary artery
- Ascending aorta
- Superior vena cava
- Ductus arteriosus

3VT - a few mm cephalad from 3VV
- PA
- Ao
- Thymus
- Isthmus
- Visualization of both arches - detection of ductal dependent lesions
- Abnormal in most CHD involving the outflow tracts

76811: Aortic Arch

- Aortic arch
- Asc aorta (AAO)
- Aortic arch
  - Innominate (InA) (Brachiocephalic)
- Left common carotid artery (LCC)
- Left subclavian artery (LSA)
- Aortic isthmus
- Distal end of ductus arteriosus (*)

76811: Bicaval View
- Vena cava sizes should be similar

✓ proximal portion of IVC enlarges slightly where umbilical and hepatic veins drain

Cine and color of all views, including ventricular septum, pulmonary veins, crossing
Sonographers take average 10-15 heart clips

- Some prefer to use a cine clips
- Be careful - many CDH can look normal during 2nd trimester studies
BASIC ABDOMEN-76805

- Stomach (presence and situs)
- Kidneys
- Bladder
- Umbilical cord insertion site
- Umbilical cord vessel number

STOMACH

KIDNEYS

- Hypoechoic
- Pyelectasis if renal pelvis 4mm or more, or 7mm or more after 28 weeks
- Amniotic fluid from kidneys after 16 weeks
KIDNEYS - Long views

Abnormal pelvis measurement (look for caliectasis)
Difficult imaging

URINARY BLADDER

UMBILICAL CORD INSERTION
Axial image, midline
Exclude gastroschisis and omphalocele

UMBILICAL CORD VESSELS
3 vessels: 2 arteries, 1 vein
Transverse “Mickey Mouse” view - hard to see early in gestation
UMBILICAL CORD VESSELS

Umbilical arteries around bladder alternative way to see 2 vessel cords associated with other anomalies including cardiac

SPINE

Axial and sagittal views
Cervical
Thoracic
Lumbar
Sacrum
Avoid off axis views

SPINE AXIAL
**BASIC EXTREMITIES- 76805**

Legs and arms  
Presence or absence

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**EXTREMITIES- 76811**

Legs and arms  
Number and position  
Hands  
Feet

---

**EXTREMITIES**

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**76811- ANKLES**
As Medically Indicated - GENDER

Multiple gestations
History of XLR disorders

UCSD - we document on every patient to look for ambiguous genitalia

SMFM statement on 76811
"The level of expertise required to perform this examination can generally only be obtained through the extended education beyond residency that is acquired in Maternal-Fetal Medicine or Radiology... Use of this code by general obstetricians should be the exception rather than the rule"

Base RVU assignments:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>RVU</th>
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<tbody>
<tr>
<td>76805</td>
<td>Basic</td>
<td>1.0</td>
</tr>
<tr>
<td>76811</td>
<td>Detailed</td>
<td>1.9</td>
</tr>
</tbody>
</table>

SMFM statement on 76811
"Because this new code will be assigned more RVUs than the basic obstetrical sonogram (76805), the SMFM believes that the new code describes an examination significantly more work, and requiring greater expertise than that required for 76805. Additionally, sophisticated equipment, rather than typical office level ultrasound machines will be required to obtain the necessary imaging detail"

CPT 76811
Physician interpretation requirements

- Obstetricians, MFM, radiologists with specialized expertise in fetal imaging
- Physicians in other areas of specialty who have satisfactorily demonstrated specialized expertise in fetal imaging
- Performance of 100 detailed examinations /year
- Completion of *30 AMA PRA Category 1 credits/ 3 years in fetal ultrasound imaging

*30 credits/ 3 years as required to maintain OB AIUM accreditation
http://www.aium.org/officialStatements/26
CONCLUSIONS

- **76811 is an indication driven exam**
  
- Imaging/reporting all of the components does not mean you can bill for it w/out an indication!

- Addition of cine clips and color will aid in detection of significant CHD

- Additional information is available at [aium.org](http://aium.org)

THANK YOU!