Opening Round Cases
Case 001

History: loss of consciousness and persistent headache after injury during football game in an adolescent male.

Legend:
Non-enhanced CT scan shows a right occipital condyle fracture describing an arc and extending to the foramen magnum (arrows). There is no evidence of displacement of fragments into the foramen. It is a type I fracture according to the Anderson and Montesano classification.

Differential diagnosis: skull base fracture, sutures.
Case 002

History: repetitive left serous otitis media in a young adult.

Legend:

B) Axial T2WI shows a mucous retention cyst emanating from the left fossa of Rosenmüller (arrow).

Differential diagnosis: Tornwaldt’s cyst, cephalocele, craniopharyngioma, teratoma, cystic minor salivary gland neoplasm, mucous retention cyst of the nasopharyngeal mucosa.
Case 003

History: middle-aged female with neck mass.

Legends:

A) Axial T1WI shows a heterogeneous infiltrative mass displacing the trachea (T) to the left.

B) On coronal post gad fat suppressed T1WI the extent of the mass and degree of tracheal (T) compromise in better appreciated.

Differential diagnosis: thyroid neoplasm, multinodular goiter, thyroiditis.
Case 004

History: young adult presenting with tonsillitis, fever, neck stiffness and odynophagia.

Legend:

A low density mass (arrow) is seen in the left tonsillar fossa.

Differential diagnosis: carcinoma, fistula from branchial cleft cyst, peritonsillar abscess.
History: long term history of proptosis in a young woman.

Legends:

A) Note the enlargement of the left inferior (long arrow) and medial rectus (short arrow) muscles on coronal CT.

D) Proptosis with enlarged inferior (I) and medial (M) rectus muscles is again shown.

Differential diagnosis: orbital pseudotumor, sarcoid, cellulitis, hematoma or swelling from trauma, rhabdomyosarcoma, metastasis, thyroid eye disease, myositis, lymphoma, leukemia, carotid-cavernous fistula, thrombosis, dural malformation, Wegener’s.
History: chronic sinusitis in a young adult.

Legends:

Sagittal pre gad T1WI (B), axial T2WI (A) and post gad T1WI (C) scans reveal a well defined mass occupying the left sphenoid sinus and expanding it (arrows). This lesion demonstrates a rim enhancement after contrast injection (arrows) and bright signal on T2WI (M). You can also notice the peripheral enhancement of the right sphenoid sinus due to inflammation. (arrows).

Differential diagnosis: mucocele, cholesterol granuloma, hemorrhagic cyst, melanoma metastasis, inspissated secretions.
History: young adult with trauma to the right eye.

Legend:

C) CT scan shows a fracture of the right orbit medial wall associated with periorbital edema. There is herniation of fat and part of the medial rectus muscle through the fracture (arrow).

Differential diagnosis: congenital dehiscence, orbital wall fracture, post-operative change for thyroid eye disease decompression.
History: slowly progressive respiratory distress.

Differential diagnosis: supraglottitis, neurogenic tumors, aryepiglottic fold squamous cell carcinoma, leiomyomas, lymphomas, minor salivary gland tumors, tuberculous laryngitis.
History: young woman with pain in the submandibular region after eating lemon pie.

Legend:

A) Non-enhanced CT scan shows a large stone with a dilated Wharton’s duct in the left sublingual space (small arrow). There are also stones in both submandibular glands (larger arrows).

Differential diagnosis: pleomorphic adenoma, venous vascular malformations, submandibular gland calculus, hemangioma with phleboliths, tonsilloliths.
Case 010

NO IMAGES AVAILABLE.

History: middle-aged woman with right pre auricular mass.

Differential diagnosis: pleomorphic adenoma, myoepithelioma, basal cell adenoma, low grade mucoepidermoid carcinoma.
Case 011

History: drug abuser with fever, neck stiffness and pain.

Legend:

B) Axial T2 image shows a bright ill-defined collection intrinsic to the levator scapulae and trapezius, displacing the right jugular vein laterally and surrounded by edema. (arrows)

Differential diagnosis: discitis, osteomyelitis in the perivertebral space, perivertebral abscess, retropharyngeal abscess, necrotizing lymphadenitis of the retropharyngeal space, peritonsilar collections.
History: man presenting with a mass on the left lower neck and breathing distress.

Legend:

Enhanced CT scan reveals an isodense mass invading the anterior aspect of the left thyroid cartilage (arrow), left cricoid cartilage, extending to the prevertebral space and displacing the vessels laterally.

Differential diagnosis: cartilaginous invasion by laryngeal carcinoma, radiation chondronecrosis, thyroid carcinoma invasion into the larynx.

Inflammatory conditions that can cause laryngeal cartilage erosion: granulomatous infections (Tb, leprosy, sarcoidosis, Wegener’s granulomatosis, syphilis), radiation chondronecrosis, rheumatoid arthritis, trauma, foreign body reaction, ingested toxins, relapsing polychondritis.
Case 013

NO IMAGES AVAILABLE.

History: elderly male with headache and sinus pain.

Differential diagnosis: squamous cell carcinoma, sinonasal undifferentiated carcinoma (SNUC), lymphoma, metastasis, olfactory neuroblastoma, sarcoma, sinonasal polyposis, inverted papilloma.
History: chronic otitis media in a young adult.

Legend:

Non-enhanced CT scan shows bilateral opacification of the middle ear (small arrows) and right mastoid air cells (big arrow).

Differential diagnosis: opacification of the middle ear and mastoid air cells in patients being instrumented in the intensive care units, post radiation therapy, obstructing nasopharyngeal carcinoma, otomastoiditis, carbon monoxide poisoning.
Case 015

NO IMAGES AVAILABLE.

History: middle-aged man with long history of headache, VI cranial nerve palsy.

Differential diagnosis: aneurysm, chordoma, chondrosarcoma of skull base, craniopharyngioma, epidermoid, granuloma, meningioma, teratoma.
Case 016

NO IMAGES AVAILABLE.

History: older gardener, presenting with a mass on the right maxillary region.

Differential diagnosis: basal cell carcinoma, lymphoma, melanoma.
History: middle-aged obese man with sleeping apnea.

Legends:

A) Enhanced CT scan shows a well-defined fatty mass (L) occupying the retropharyngeal space and compressing the airway anteriorly.

B) Sagittal T1WI shows a well-demarcated hyperintense retropharyngeal mass (L) extending from C1 to T2, bigger in the C2-C4 portion where it anteriorly displaces the airway.

Differential diagnosis: liposarcoma, resolving hematoma, lipoma.
Case 018

NO IMAGES AVAILABLE.

History: young woman with left-sided diplopia.

Differential diagnosis: orbital hemangioma, varix, schwannoma/neurogenic tumor, leiomyoma, metastasis, optic nerve glioma, lymphoma.
Case 019

NO IMAGES AVAILABLE.

History: CT scans show the paranasal sinuses development.

Differential diagnosis: hypoplasia, silent sinus syndrome.
Case 020

History: middle-aged woman with right-sided hearing loss.

Legend:
   Axial (A) and coronal (B) post gad T1WI show an enhancing right intracanalicular mass (arrows).

Differential diagnosis: meningioma, epidermoid, vestibular schwannoma, facial nerve schwannoma, aneurysm, arachnoid cyst, paraganglioma.
Case 021

History: young drug user with pre auricular masses and discomfort.

Legend:

Enhanced CT scans show bilateral parotid enlargement with multiple low-density lesions (cysts) (arrows, figures A and B).

Differential diagnosis: Warthin’s tumor, multiple intraparotid lymph nodes, lymphoma, sarcoidosis, granulomatous infections, mucous retention cyst, HIV- related cyst, sialoceles.
Case 022

NO IMAGES AVAILABLE.

History: young adult with nasal obstruction.

Differential diagnosis: sarcomas, adenoid cystic carcinomas, sinonasal polyposis, minor salivary gland neoplasms, allergic fungal sinusitis, aspirin intolerance, inverted papilloma.
Case 023

NO IMAGES AVAILABLE.

History: enlarged nodes on the right anterior neck in a middle-aged woman.

Differential diagnosis: branchial cleft cysts, lymphangioma, abscess, cystic nodal metastases.
Case 024

NO IMAGES AVAILABLE.

History: young adult presenting with right-sided nasal obstruction and recurrent otitis.

Differential diagnosis: nasopharyngeal lymphoma, rhabdomyosarcoma, juvenile angiofibroma, minor salivary gland tumors.
Case 025

History: young trumpet player with voice changes.

Legend:

A) Enhanced CT scan shows an air filled lesion. The external component of the lesion protrudes through the thyrohyoid membrane (black arrow) and the internal component remains confined by the thyrohyoid membrane (white arrow).

Differential diagnosis: pharyngocoele, Zencker’s, laryngocoele, tracking of pneumomediastinum.
Case 026

History: young woman with chronic facial pain.

Legend:

B) Sagittal T2WI shows small effusion (white arrowhead), anterior and inferior meniscal dislocation (small white arrow) and high signal intensity in the bilaminar zone (large thin arrow).

Differential diagnosis: collagen vascular diseases, septic arthritis, rheumatoid arthritis, gout, pseudogout.
History: persistent halitosis in an older man.

Legend:

A) Sagittal T1WI shows a bright well-defined lesion in the midline of the high nasopharynx (arrow).

Differential diagnosis: nasopharyngeal cystic craniopharyngioma, Tornwaldt’s cyst, mucous retention cysts.
Case 028

NO IMAGES AVAILABLE.

History: elderly man with voice change after smoking 2 packs of cigarettes.

CASE NOT AVAILABLE.
History: retinopathy of prematurity.

Legend:

Non-enhanced axial CT scan shows bilateral small shrunken calcified globes (arrows).

Causes of this pathology: orbital trauma, globe rupture with extensive hemorrhage that could not be reinflated, severe perforation with non-functioning retinal tissue, retinopathy of prematurity, retinopathy of diabetes mellitus with extensive recurrent retinal detachment or choroidal detachment and ischemic retinopathy, radiation damage to the globes, intra-uterus TORCH infection.
History: sinus CT scan in a young adult with nasal congestion.

Legend:

Non-enhanced coronal CT scan with bone windowing demonstrates bilateral concha bullosa (C).

Differential diagnosis: lamellar cell.
History: painful enlarged lesion in the right pre auricular region in a young man.

Legend:

Enhanced CT scan shows a well-delimited heterogeneous lesion (arrows), predominantly cystic and with a nodular component within the right parotid gland. Peripheral enhancement can be seen around the lesion.

Case 033

History: patient with leukemia presenting with palpable mass on the right supraclavicular fossa after catheter placement.

Legend:

Enhanced CT scan shows hypodense intraluminal material in the right jugular vein (J), (Mid A and lower B).

Differential diagnosis: jugular venous thrombosis, pitfall due to early scan after contrast injection, lymphadenopathy, schwannoma.
History: fall from 15-foot height by a young worker.

Legends:

A) Non-enhanced CT scan with bone windowing demonstrates fractures in the tympanic (medium arrow) and mastoid (big arrow) portions of the left temporal bone. A tiny bone fragment (small arrow) is seen next to the semicircular canal. Some mastoid cells are opacified.

B) Non-enhanced CT scan with bone windowing demonstrates a depressed fragment (big arrow) with adjacent air bubbles and a floating fragment (small arrow).

Diagnosis: temporal bone fracture.
History: young adult with dysphagia.

Legend:

A) Enhanced CT scan shows a hypodense lesion with peripheral enhancement in the right vallecula (arrow).

Differential diagnosis: mucous retention cyst, cystic pleomorphic adenoma, thyroglossal duct cyst, dermoid, vallecular cyst, teratoma, and lymphatic vascular malformation.
Case 036

NO IMAGES AVAILABLE.

History: male with funny head shape.

History: child with a pit in the middle of the forehead.

Legends:

A) Sagittal T1WI shows brain parenchyma protruding through the frontal region (arrows).

B) Axial T2WI shows the presence of brain tissue (arrow) superiorly to the nasal cavity. Note that this “lesion” typically has the signal intensity of normal brain.

Differential diagnosis: dermoid, nasal glioma, venous vascular malformation, frontal encephalocele, teratoma, rhabdomyosarcoma, cephalhematoma.
Case 038

History: lump in the neck of a young woman.

Legends:

A) Enhanced CT scan shows a hypodense rounded lesion adjacent to the anterior aspect of the hyoid (big arrow). A small component is also seen posterior to the hyoid bone (small arrow).

B) Enhanced CT scan shows a larger hypodense component adjacent to the posterior aspect of the hyoid bone further superiorly (arrows).

Differential diagnosis: thyroglossal duct cyst, dermoid, abscess, necrotic node, sebaceous cyst, ranula.
Case 039

History: young woman presenting with forehead soft tissue swelling, fever and headache.

Legends:

A) Enhanced CT scan shows a lesion in the frontal sinus that violates the inner table of the sinus (big arrow) and causes a subperiosteal abscess in the outer table (small arrow).

B) Sagittal post gad T1WI demonstrates the subperiosteal abscess, the meningeal enhancement (short arrow) and the frontal sinus involvement (big arrow).

Differential diagnosis: mucocele, abscess, lytic metastasis, Pott’s Puffy tumor.
CASE NOT AVAILABLE.
Histories: A) young man with meningitis after FESS.  
             B) woman presenting left-sided amaurosis after FESS.

Legends:

A) Coronal CT scan demonstrates dehiscent areas in the right fovea ethmoidalis (small arrow) and in the right lamina papyracea (big arrow) of the orbit leaving it exposed.

B) Coronal CT scan demonstrates dehiscent area in the left sphenoid sinus (arrow), near the left optic nerve with partial sinus opacification.

Differential diagnosis: congenital areas of dehiscent bone, fractures, complications of endoscopic sinus surgery.
Case 042

History: patient with severe sinus pain while flying in an airplane.

Legend:

A) Enhanced CT scan shows a hyperdense lesion (arrow) in a left anterior ethmoid cell.

Differential diagnosis: osteoma, osteochondroma, osteoid osteoma, osteoblastoma, ossifying fibroma.
Case 043

History: teenager with pain in the right preauricular region exacerbated when chewing gum.

Legend:

C) On this enhanced CT scan a tiny calculus (arrow) can be seen in the distal right Stenson’s duct.

Differential diagnosis: calcifications in lymph nodes, parotid duct stone, vessels.
Case 044

NO IMAGES AVAILABLE.

History: skating accident in a young novice.

Differential diagnosis: facial fractures, sutures.
History: incidental mass found in a young woman with neck pain.

Legend:

C) Axial post gad fat suppressed T1WI shows an enhancing lesion located in the deep lobe of the right parotid gland or parapharyngeal space that displaces the parapharyngeal fat antero-medially.

Differential diagnosis: schwannoma, minor salivary gland malignancy, lymph node, venous vascular malformation, pleomorphic adenoma, paragangioma, sarcoma, nasopharyngeal carcinoma, branchial cleft cyst.
History: sinusitis progressing with pain, swelling, proptosis and decreasing visual acuity of the left eye in a young adult.

Legend:

Enhanced CT scan shows proptosis, preseptal swelling (big arrow), ill-defined orbital tissue planes of the left globe and infiltration of the intraconal fat (arrow). Note the staphyloma with thinned posterior sclera of the left globe.

Differential diagnosis of common sources of those image findings: sinusitis, trauma/iatrogenic (foreign bodies), facial cellulitis, bacteremia.
History: voice change in a middle-aged man.

Legends:

A) Enhanced CT scan shows dilatation of the right piriform sinus (P) as the right aryepiglottic fold deviates medially.

B) Enhanced CT scan shows medial orientation of the right arytenoid (arrow) and adduction of the vocal cord.

C) Enhanced CT scan shows enlargement of the right laryngeal ventricle (arrow).

D) Enhanced CT scan through the upper thorax shows a mediastinal mass (arrow) that encases the brachiocephalic trunk, superior vena cava. The right recurrent laryngeal nerve is involved at this site.

Differential diagnosis of causes of vocal cord paralysis: above the hyoid - metastases to the jugular foramen, glomus tumors, schwannoma, nasopharyngeal carcinomas,
chordomas, below the hyoid- squamous cell carcinoma, thyroid masses, glomus vagale tumors, schwannoma, posttraumatic dissections, pseudoaneurysm, intraoperative injury, lymphadenopathy, in the mediastinum- lymphoma, bronchogenic carcinoma, lymphadenopathy, patent ductus arteriosus, mitral stenosis, aneurysms, arterial dissections. Also lesions at the parathyroid tissue and esophagus.
History: male after craniofacial trauma presenting with trismus.

Legends:

Non-enhanced CT scans (A, B) demonstrate bilateral anteriorly dislocation on both mandibles (big arrows) and an “empty” glenoid fossa bilaterally (small arrows).

Differential diagnosis: pitfall due to open mouth during the CT scan. (bilateral dislocation), hypermobile joints, dislocated mandible due to trauma.
History: postoperative routine scan in a middle-aged woman.

Legend:

B) Axial T2WI shows small rounded bright lesions (arrows) in the left parotid location, representing seeding of the operative site.

Differential diagnosis: myoepithelioma, basal cell adenoma, low-grade mucoepidermoid carcinoma, pleomorphic adenoma seeding.

Other potential complications of surgery: facial nerve permanent paralysis and Frey’s (auriculotemporal/Baillarger’s) syndrome.
Case 050

NO IMAGES AVAILABLE.

History: caucasian, blue eyes, older Floridian presenting with left-sided head lesion and headache.

Differential diagnosis: basal cell carcinoma, melanoma, poorly differentiated squamous cell carcinoma of the scalp, lymphoma, metastasis.