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european society of
head and neck radiology



ESHNR 2013

FINAL PROGRAMME

26th Congress and Refresher Course

October 3–5, Izmir/Turkey

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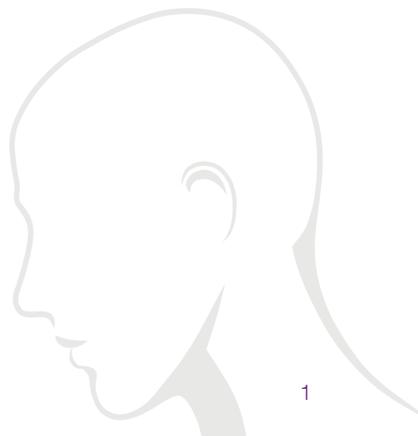


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ESHNR 2013

26th Congress and Refresher Course

Welcome Reception

Thursday, October 3, 2013
Punta Hall, Wyndham Izmir Özdilek

18:30 Punta Hall

We cordially invite you to the ESHNR 2013 Welcome Reception, which starts subsequently to the scientific programme. Snacks and drinks will be served in Punta Hall for participants of ESHNR 2013. Take the chance and get in touch with experts and colleagues from Europe and from all over the world.

We are looking forward to seeing you!

Dress code: casual elegant



Please note that any alcoholic beverages (except for wine) are not included and need to be paid by the attendee separately. The ECR GmbH may not accept liability for personal injury, loss/damage to property, personal or otherwise belongings of participants and/or accompanying persons, either during or as a result of the evening event.

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DEAR COLLEAGUES AND FRIENDS,



It is my great pleasure and honour to welcome you to the 26th congress and refresher course of European Society of Head and Neck Radiology in Izmir, Turkey.

For many years ESHNR meetings have provided an opportunity for radiologists and other relevant specialists to discuss the most current issues in the field of imaging of head and neck, and have attracted colleagues from Europe and beyond the limits of the continent.

This year we have met in Izmir known as the “Pearl of the Aegean”. With its geographical and natural characteristics Izmir has been an important city for 5000 years, a meeting-place for diverse civilizations, a cultural mosaic that connects Europe and Asia. Located at the beginning of an ancient road,

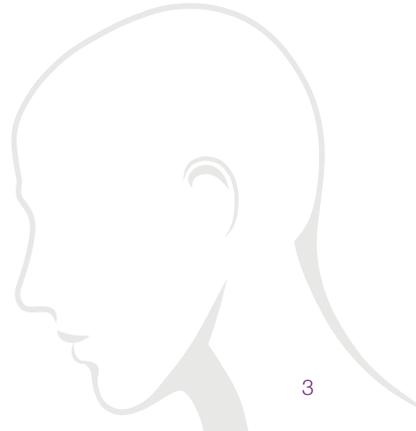
known as the King’s trail, Izmir hangs as a necklace around the largest gulf of Turkey’s Aegean coast. The original city acquired her name from an Amazon queen Smyrna, and was mentioned by famous historian Herodotus as “the city under the most sublime blue sky with the remarkable climate”. Dotted with idyllic fishing harbours, popular holiday villages and the remains of ancient civilizations, this region offers an exceptionally attractive venue for the meetings.

The congress of this year comprises 10 scientific sessions on different topics of head and neck radiology, 2 scientific sessions for short oral presentations, and 4 refresher courses. Furthermore there are 2 interactive sessions based on case discussion, where all participants will have the opportunity to witness the touch of the experts to certain cases, and contribute the process with electronic voting systems as well. Some abstract submitters have already attained the chance to share the podium with well-known lecturers and present their own studies. I would like to express my great appreciation to the Scientific Committee for their hard work as well as to all the speakers and participants of the conferences, of the courses, and the interactive sessions for kindly accepting to contribute to this outstanding meeting which will no doubt also encourage dialogue and friendship among all participants in the beautiful atmosphere of Izmir.

A fascinating activities programme has been organised to accompany the scientific programme to render ESHNR 2013 an unforgettable experience. I do hope that ESHNR 2013 will prove to be an exceptional experience for the participants both in terms of its scholarly programme and social activities.

I wish you a pleasant and memorable time in Izmir.

Prof. Dr. Can Zafer Karaman





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October 3–5, Izmir/Turkey

PRESIDENT, COMMITTEES

Congress President

Can Zafer Karaman, Aydin/TR

Local Organising Committee

N. Erdogan, Izmir/TR

A. Ünsal, Aydin/TR

F. Taskin, Aydin/TR

R. Savaş, Izmir/TR

Y. Pabusçu, Manisa/TR

Scientific Committee

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E. Aribal, Istanbul/TR

M. Becker, Geneva/CH

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J. Casselman, Brugge/BE

J. Castelijns, Amsterdam/NL

Ch. Czerny, Vienna/AT

M. Duce, Mersin/TR

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N. Erdogan, Izmir/TR

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M. Mack, Munich/DE

R. Maroldi, Brescia/IT

B. Mocan, Ankara/TR

J. Olliff, Birmingham/UK

T. Tali, Ankara/TR

A. Trojanowska, Lublin/PL

B. Verbist, Leiden/NL

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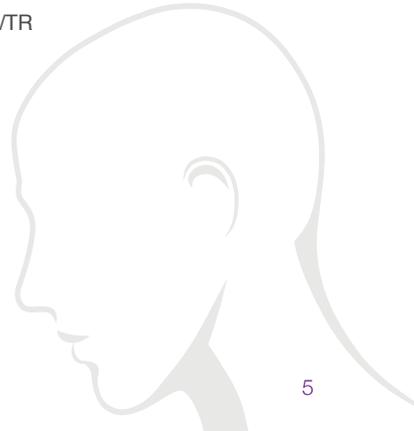


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FACULTY

- E. Ada, Izmir/TR
B. Adapinar, Eskişehir/TR
H. Alper, Izmir/TR
E. Aribal, Istanbul/TR
S. Bayraktaroğlu, Izmir/TR
T. Beal, London/UK
M. Becker, Geneva/CH
K. Bhatia, Hampton/UK
S. Bisdas, Tübingen/DE
G. Bodner, Vienna/AT
A. Borges, Lisboa/PT
N. Bulakbaşı, Mersin/TR
J. Casselman, Brugge/BE
J. Castelijns, Amsterdam/NL
I. Celebi, Istanbul/TR
V. Chong, Singapore/SG
Ch. Czerny, Vienna/AT
B. de Foer, Antwerp/BE
B.J. de Bondt, Zwolle/NL
F. Dubrulle, Lille/FR
M. Duce, Mersin/TR
H.B. Eggesbø, Oslo/NO
R. Evans, Swansea/UK
D. Farina, Brescia/IT
N. Freling, Amsterdam/NL
S. Gerevini, Milano/IT
H. Gülerüüz, Izmir/TR
T. Illica, Diyarbakır/TR
J. Kabala, Bristol/UK
S. Kara, Istanbul/TR
C.Z. Karaman, Aydın/TR
A. King, Hong Kong/CN
R. Kohler, Geneva/CH
S. Kösling, Halle/DE
S. Langner, Greifswald/DE
T. Larheim, Oslo/NO
M. Lemmerling, Beervelde/BE
M. Mack, Munich/DE
R. Maroldi, Brescia/IT
A. McQueen, Newcastle upon Tyne/UK
B. Mocan, Ankara/TR
G. Moulin, Strasbourg/FR
J. Olliff, Birmingham/UK
Y. Öner, Ankara/TR
Ş. Örgüç, Istanbul/TR
S. Özkan, Aydın/TR
M. Parlak, Bursa/TR
P. Richards, London/UK
S. Robinson, Vienna/AT
B. Schuknecht, Zurich/CH
L. Sennaroğlu, Ankara/TR
K. Surlan-Popovic, Ljubljana/SI
T. Tali, Ankara/TR
F. Taskin, Aydın/TR
A. Trojanowska, Lublin/PL
P. Trojanowska, Lublin/PL
A. Ünsal, Aydın/TR
V. Vandecaveye, Leuven/BE
A. Varoquaux, Geneva/CH
B. Verbist, Leiden/NL
H. Yerli, Izmir/TR

FACULTY





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Friday, October 4, 2013
Wyndham Izmir Özdilek

19:30 Dinner at Punta Hall

We cordially invite you to the ESHNR 2013 Gala Dinner.

Enjoy a splendid evening together with your colleagues and friends from all over the world accompanied with an exclusive menu, offering an exquisite variety of traditional Turkish dishes.

One ticket per person required. Please show your ticket when entering Punta Hall.

Dress code: casual elegant

*Gala
Dinner*

Please note that any alcoholic beverages (except for wine) are not included and need to be paid by the attendee separately. The ECR GmbH may not accept liability for personal injury, loss/damage to property, personal or otherwise belongings of participants and/or accompanying persons, either during or as a result of the evening event.

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LIST OF EXHIBITORS/SPONSORS

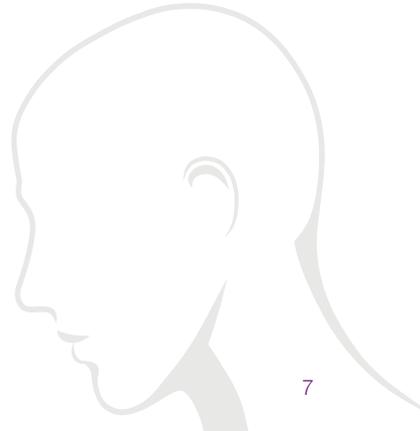


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LIST OF EXHIBITORS/SPONSORS





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GENERAL INFORMATION

Onsite Congress Office

In case of any questions staff members will be happy to assist you. Staff members are consequently at the registration desk.

Registration/Badge/Tickets

You receive your badge and the final programme at the registration counter. Pre-ordered Evening Event Tickets will be handed out additionally to the congress badges. Evening Event Tickets may be purchased onsite at the registration desk upon availability.

Onsite Registration Fees

ESHNR Member	€ 475.00
ESHNR Non-Member	€ 515.00
Residents*	€ 300.00
Single Day Ticket**	€ 250.00

Fee includes: admittance to scientific sessions and exhibition, final programme, refreshment during breaks, lunches, Welcome Reception

*requires confirmation of the institution's head by way of proof

**only available once per person/registration

Certificate of Attendance/CME Accreditation

The Certificate of Attendance/CME Accreditation can be viewed and printed after the congress upon entering your ESHNR MyUserArea at the ESHNR website (www.eshnr.eu). To enter your MyUserArea, please use your last name and your personal ID printed on your congress badge.

CME Credits

The 26th congress and refresher course of ESHNR is designated to a maximum of 15 CME credits by the European Accreditation Council for Continuing Medical Education (EACCME).

Conference Language

The meeting will be held in English and no simultaneous translation will be offered.

Payment

Onsite payment can only be made by credit card (Visa or Euro/Mastercard) or in cash (Euro). Please understand that no other payment methods like debit cards, cheques, etc. will be accepted.

Congress Venue

WYNDHAM IZMIR ÖZDILEK
İnciraltı Caddesi No 67
35340 Izmir, Turkey
tel +90 (232) 292 1300
fax +90 (232) 277 7042
www.cpizmir.com

Disclaimer/Liability

The ESHNR/ECR GmbH cannot accept any liability for the acts of the suppliers to this meeting or the attendees' safety while travelling to or from the congress. All participants and accompanying persons are strongly advised to carry adequate travel and health insurance, as ESHNR/ECR GmbH cannot accept liability for accidents or injuries that may occur. ESHNR/ECR GmbH is not liable for personal injury and loss or damage of private property.



Name Changes

Name changes will be treated like the cancellation of the registration and a new registration of the other participant.

Mobile phone(s)

Please do not forget to switch off your mobile phone(s) before entering any of the lecture rooms.

Organising Secretariat

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1010 Vienna, Austria
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office@eshnr.eu
www.eshnr.eu

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Neutorgasse 9
1010 Vienna, Austria
Phone: +43 1 533 40 64 0
Fax: +43 1 533 40 64 448

Media Centre

The Media Centre is located next to the registration area. Trained staff will be available to assist you with the equipment. The Media Centre should only be used for a test run of the presentations. Please note that the Media Centre should not be used to prepare your entire presentation and that due to the large number of speakers the workstations are only available for minor editing.

Registration Opening Hours

Wednesday, October 2	15:00 – 17:00
Thursday, October 3	07:00 – 18:00
Friday, October 4	07:00 – 18:00
Saturday, October 5	07:00 – 13:00

Poster Exhibition – EPOSTTM

ESHNR 2013 is using the EPOSTTM system, Electronic Presentation Online System, the electronic format of the scientific exhibition developed by the European Congress of Radiology (ECR). EPOSTTM offers a much greater flexibility than traditional scientific exhibits and provides better options for scientific communication.

EPOSTTM Area

Several working stations are available in the EPOSTTM Area at which the current electronic exhibits can be viewed by the congress participants during the congress. All ESHNR electronic posters will be accessible online after the congress via the ESHNR website.

The Exhibition Area is located on the first level in the dedicated EPOS Area.

Thursday, October 3	09:00 – 18:00
Friday, October 4	09:00 – 18:00
Saturday, October 5	09:00 – 13:00

Industry Exhibition

The Exhibition Area is located on the first level in front of the meeting rooms.

Thursday, October 3	09:00 – 18:00
Friday, October 4	09:00 – 18:00
Saturday, October 5	09:00 – 13:00

Breaks

Complimentary coffee, tea and refreshments will be served to all congress delegates during the official coffee breaks.

During lunch breaks, a complimentary buffet lunch will be served in Manzara Restaurant, ground floor.



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Welcome Reception

On behalf of congress president Prof. Can Zafer Karaman and the Executive Committee of ESHNR, we would like to cordially invite you to join the Welcome Reception on October 3, 2013.

Venue: Punta Hall and Terrace

Time: 18:30 – 19:30

Gala Dinner

Join the Gala Dinner on Friday, October 4, 2013.

Venue: Punta Hall and Terrace

Time: 19:30

Costs: € 50,00 per person

Guideline for Speakers

The Media Centre is located next to the registration desk on the first level.

You are kindly requested to upload your presentation at the latest two hours before your session starts (USB sticks are recommended).

All presentations have to be uploaded in the conference IT-system. No personal computer will be accepted for projection.

Please be at the lecture room at the latest five minutes prior to the start of your session and identify yourself to the chairs.

Kindly observe exactly your presentation time. Each session contains enough time for discussion. Exceeding the time limit will not be accepted and the chairpersons are requested to stop presentations in such cases.

Izmir Information

Izmir, the third most popular city in Turkey today, has been one of the principal mercantile cities of the Mediterranean Sea. More than 3,500 years of history combined with modernity of the new millennium offer a perfect location for the ESHNR 2013.

Izmir has a very long history, dating back more than 8,000 years and is one of the oldest cities in the world due to settlement.

Several districts are forming the city of Izmir. The inner city district Konak corresponds to the historical Izmir and forms also today's heart of the city.

Sights

The city offers various contrasts, and combines perfectly the advantages from the ancient and current Izmir. All districts have conserved their unique atmosphere.

Konak Square

This is one of the most vivid places in Izmir and definitely a highlight. Especially the clock tower, Izmir's most popular landmark, is a must to be seen during your stay in Izmir.

Agora

The Agora is a wonderful historical place, located directly in the city centre of Izmir. The ruins are still a fascinating testimony and living evidence of the history of the ancient Smyrna.

Kemeralti Market

The Kemeralti Market is one of the biggest markets in Turkey, an amazing bazaar, dedicated for trading, tasting, experiencing. Experience the unique atmosphere and immerse a little bit deeper into Turkish culture.

Ephesus

Foremost one of the biggest and most important cities, Ephesus is nowadays the biggest archaeological site in Turkey. The remains of one of the most popular temples in the ancient world, the Temple of Artemis (part of the Seven Wonders of the World) and the Library of Celsus are still a fascinating testimony of history.

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GENERAL INFORMATION

Currency

The official currency in Turkey is the Turkish Lira (TL).
1 TL = 100 kuruş

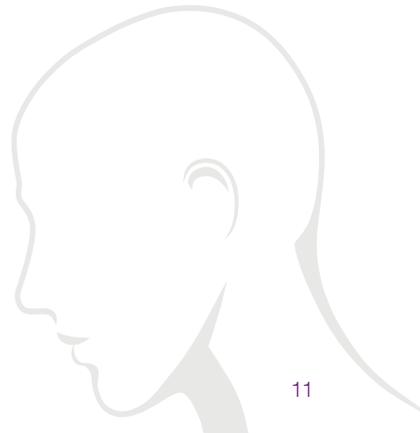
One Euro is approximately 2 Turkish Lira. However, please observe the respective exchange rate. The mentioned statements are just to be seen as a reference.

Transport

The public transportation system is well. The “Kent Card” (City Card) might be useful. You may also take a Taxi, which are not quite expensive.

Climate

The region around Izmir is dominated by a Mediterranean climate. The average temperature at the begin of October is about 24–30°C.



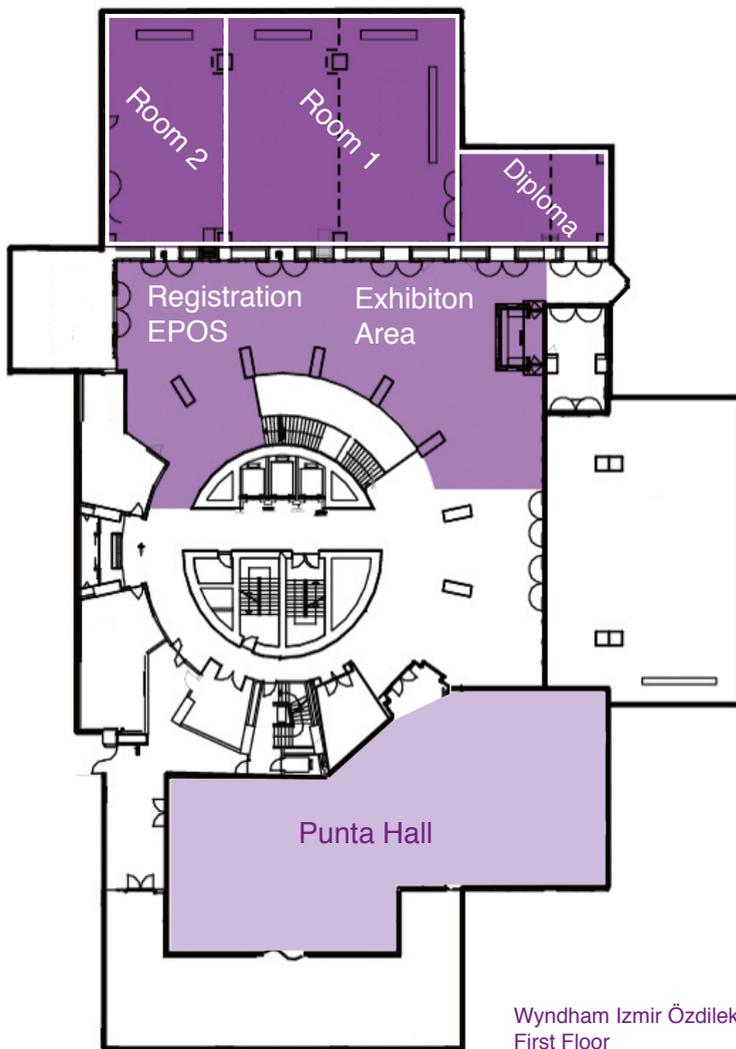


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FLOORPLAN



Wyndham Izmir Özdilek
First Floor

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SCIENTIFIC PROGRAMME

Thursday, October 3

	ROOM 1	ROOM 2
08:00–09:00		Refresher Course 1
08:50–09:20	Opening Ceremony	
09:20–10:30	Scientific Session 1	Scientific Session 2 Lymphatic system of the neck
10:30–11:00	<i>Coffee Break</i>	
11:00–12:30	Scientific Session 3 Emergency	Scientific Session 4 Oncology
12:30–13:30	<i>Lunch</i>	
13:30–15:00	Scientific Session 5 Peripheral nerves	Scientific Session 6 Inflammation/Infection
15:00–15:30	<i>Coffee Break</i>	
15:30–17:00	Interactive Session 1	
17:15–18:15		Refresher Course 2
18.30–19.30	Welcome Reception	



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SCIENTIFIC PROGRAMME

Friday, October 4

	ROOM 1	ROOM 2
08:00–09:00		Refresher Course 3
09:00–10:30	Scientific Session 7 Functional/Hybrid imaging	Scientific Session 8 Imaging of the jaw
10:30–11:00	<i>Coffee Break</i>	
11:00–12:30	Scientific Session 9 The neck	Scientific Session 10 Non-Oncology
12:30–13:30	<i>Lunch</i>	
13:30–15:00	Scientific Session 11 Thyroid-Parathyroid	Scientific Session 12 Salivary glands
15:00–15:30	<i>Coffee Break</i>	
15:30–17:00	Interactive Session 2	

17.15–18.30 **General Assembly**

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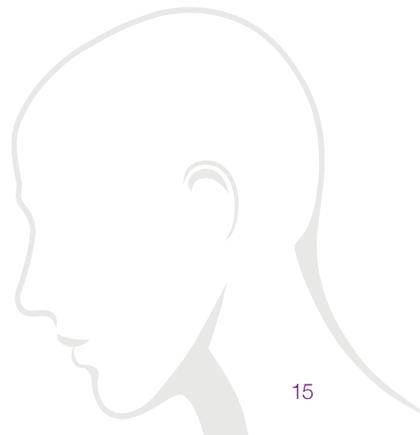


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Saturday, October 5

	ROOM 1	ROOM 2
08:00–09:00		Refresher Course 4
09:00–10:30	Scientific Session 13 Evaluation after surgery	Scientific Session 14 Larynx/hypopharynx
10:30–11:00	<i>Coffee Break</i>	
11:00–11:15	Closing Ceremony	
11:15–12:45	Scientific Session 15 Lymphomas	

SCIENTIFIC PROGRAMME





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THURSDAY, OCTOBER 3

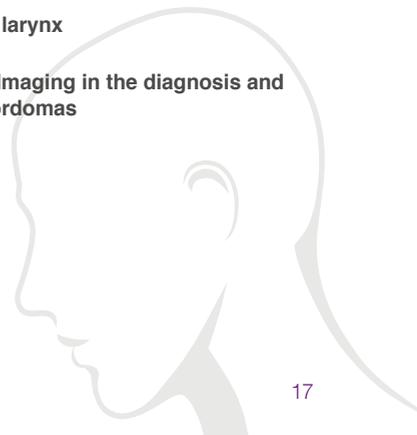
SCIENTIFIC PROGRAMME

THURSDAY, OCTOBER 3, 2013

08:00–09:00	Refresher Course 1 <i>M. Parlak, Bursa/TR, T. Illica, Diyarbakir/TR</i>	Room 2
08:00	RC 1.1 - Anatomy of the skull base R. Maroldi, Brescia/IT	
08:40	RC 1.2 - Temporal bone pathology B. de Foer, Antwerpen/BE	
08:50–09:20	Opening Ceremony <i>C.Z. Karaman, Aydin/TR, M. Mack, Munich/DE</i>	Room 1
09:20–10:30	Scientific Session 1 <i>M. Mack, Munich/DE, T. Tali, Ankara/TR</i>	Room 1
09:20	SS 1.1 - Imaging for strabismology S. Özkan, Aydin/TR, E. Aribal, Istanbul/TR	
10:00	SS 1.2 - What 3 Tesla MRI brought to head and neck imaging? Y. Öner, Ankara/TR	
09:20–10:30	Scientific Session 2 - Lymphatic system of the neck <i>Ch. Czerny, Vienna/AT, B. Adapınar, Eskişehir/TR</i>	Room 2
09:20	SS 2.1 - Grouping the lymph nodes; the old and new R. Kohler, Geneva/CH	
09:40	SS 2.2 - Imaging the lymph nodes; findings for differential of each method B. de Bondt, Zwolle/BE	
10:00	SS 2.3 - How to manage clinical N0 neck? R. Kohler, Geneva/CH	



11:00–12:30	Scientific Session 3 - Emergency <i>A. Trojanowska, Lublin/PL, D. Farina, Brescia/IT</i>	Room 1
11:00	SS 3.1 - Orbit S. Kara, Istanbul/TR	
11:20	SS 3.2 - Trauma of midface S. Bayraktaroğlu, Izmir/TR	
11:40	SS 3.3 - Temporal bone and skull base N. Bulakbasi, Nicosia/TR	
12:00	SS 3.4 - Usage of cone beam computed tomography (CBCT) from the point of an otolaryngologist Ch. Gueldner, Marburg/DE	
12:10	SS 3.5 - Evaluation of the effect of a local shimming protocol on quality of diffusion weighted imaging of the neck: a prospective study A. Roy, London/UK	
11:00–12:30	Scientific Session 4 - Oncology <i>S. Bisdas, Tübingen/DE, M. Duce, Mersin/TR</i>	Room 2
11:00	SS 4.1 - Comparison of PET-CT, MRI and histological findings on the initial staging of head neck squamous cell carcinomas regarding distant metastasis and secondary carcinoma M. Larson, Frankfurt/DE	
11:10	SS 4.2 - Diagnostic performance of MRI with diffusion weighted images for the detection of recurrent squamous cell carcinoma after radio(chemo)therapy A. Ailianou, Geneva/CH	
11:20	SS 4.3 - The role of real-time elastography in the differential of salivary gland tumors C.Z. Karaman, Aydin/TR	
11:30	SS 4.4 - Role of sonoelastography in differentiating benign and malignant salivary gland tumors: a systematic review and meta analysis M. Mohammadifar, Tehran/IR	
11:40	SS 4.5 - Malignant melanoma metastatic to larynx H. Svirydenka, Pisa/IT	
11:50	SS 4.6 - The role of diffusion weighted MR Imaging in the diagnosis and post-operative evaluation of skull base chordomas E. Güler, Ankara/TR	





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THURSDAY, OCTOBER 3

- 12:00 **SS 4.7 - Polyostotic Fibrous Dysplasia: severe craniofacial form; CT and MRI features**
E. Iordanishvili, Tbilisi/GE
- 12:10 **SS 4.8 - The importance of semi-quantitative diastolic sonoelastographic evaluation in the management of solid and semi-solid thyroid nodules**
H. Yerli, Izmir /TR
-
- 13:30–15:00 **Scientific Session 5 - Peripheral nerves** **Room 1**
J. Casselman, Brugge/BE, S. Kara, Istanbul/TR
- 13:30 **SS 5.1 - Brachial plexus**
S. Gerevini, Milano/IT
- 13:50 **SS 5.2 - Function and dysfunction of cranial nerves 9–12**
M. Lemmerling, Beervelde/BE
- 14:10 **SS 5.3 - Therapy for neuralgia in head&neck**
G. Bodner, Gibraltar/UK
- 14:30 **SS 5.4 - Imaging findings on swallowing studies in patients with Huntington's disease**
A. Heemsker, Leiden/NL
- 14:40 **SS 5.5 - MRI 3 tesla of the utricle, saccule and perilymphatic fluid in 30 schwannomas of the cochleovestibular nerve**
F. Veillon, Strasbourg/FR
-
- 13:30 – 15.00 **Scientific Session 6 - Inflammation/Infection** **Room 2**
B. Verbist, Leiden/NL, I. Celebi, Istanbul/TR
- 13:30 - **SS 6.1 - Sinusal cavity**
M. Mack, Munich/DE
- 13:50 **SS 6.2 - Inflammatory and infectious lesions of the paryngo-larynx**
F. Dubrulle, Lille/FR
- 14:10 **SS 6.3 - Temporal bone&skull base**
B. Verbist, Leiden/NL
- 14:30 **SS 6.4 - Orbit**
S. Langner, Greifswald/DE



15:30–17:00	Interactive Session 1 <i>T. Beal, London/UK, R. Maroldi, Brescia/IT</i>	Room 1
15:30	IS 1.1 - Skull base, temporal bone, cranial nerves T. Beal, London/UK	
16:10	IS 1.2 - Skull base, temporal bone, cranial nerves R. Maroldi, Brescia/IT	
17:15–18:15	Refresher Course 2 <i>M. Lemmerling, Beervelde/BE, Y. Öner, Ankara/TR</i>	Room 2
17:15	RC 2.1 - Cranial nerves I-VI J. Casselman, Brugge/BE	
17:40	RC 2.2 - Cranial nerves VII-XII V. Chong, Singapore/SG	

FRIDAY, OCTOBER 4, 2013

08:00–09:00	Refresher Course 3 <i>A. Varoquaux, Geneve/CH, F. Taskin, Aydin/TR</i>	Room 2
08:00	RC 3.1 - Oropharynx and oral cavity M. Duce, Mersin/TR	
08:25	RC 3.2 - Parapharyngeal space and masticator space D. Farina, Brescia/IT	
09:00–10:30	Scientific Session 7 - Functional/Hybrid imaging <i>M. Becker, Geneva/CH, B. Mocan, Ankara/TR</i>	Room 1
09:00	SS 7.1 - Perfusion imaging in head and neck tumors K. Surlan-Popovic, Ljubljana/SI	
09:20	SS 7.2 - Diffusion MR imaging in head and neck V. Vandecaveye, Leuven/BE	
09:40	SS 7.3 - Hybrid and metabolic imaging in head and neck tumors S. Bisdas, Tübingen/DE	
10:00	SS 7.4 - Simultaneous MR/PET head-neck cancer imaging: preliminary clinical experience and multiparametric evaluation M. Covello, Naples/IT	
10:10	SS 7.5 - MRI of hypopharyngeal cancer: capability of delineating the anterior tumor extent to the larynx with different sequences M. Ravanelli, Brescia/IT	



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FRIDAY, OCTOBER 4

09:00–10:30	Scientific Session 8 - Imaging of the jaw <i>H. Eggesbø, Oslo/NO, H. Alper, Izmir/TR</i>	Room 2
09:00	SS 8.1 - TMJ imaging S. Örgüç, Manisa/TR	
09:20	SS 8.2 - Differential diagnosis in odontogenic tumors S. Robinson, Vienna/AT	
09:40	SS 8.3 - Dental imaging T. Larheim, Oslo/NO	
10:00	SS 8.4 - Accessory mental foramina detection by CBCT in indian population P. Jaju, Bhopal/IN	
10:10	SS 8.5 - CBCT in the diagnosis of osteonecrosis of the jaws A. Lo Casto, Palermo/IT	
11:00–12:30	Scientific Session 9 - The neck <i>N. Fréling, Amsterdam/NL, E. Ada, Izmir/TR</i>	Room 1
11:00	SS 9.1 - Lumbs and bumps in children H. Gülerüz, Izmir/TR	
11:40	SS 9.2 - Tuberculosis and other specific infections of the neck H. Alper, Izmir/TR	
11:00–12:30	Scientific Session 10 - Non-Oncology <i>R. Maroldi, Brescia/IT, N. Bulakbasi, Nycosia/TR</i>	Room 2
11:00	SS 10.1 - What imaging quality does the ENT specialist need? Ch. Gueldner, Marburg/DE	
11:10	SS 10.2 - HRCT findings of coclear otosclerosis: Comparison with the clinical features C. Oztunali, Eskisehir/TR	
11:20	SS 10.3 - MSCT-criteria for assessment of the temporal bone structures for successful stapes surgery I. Bodrova, Moscow/RU	
11:30	SS 10.4 - The accuracy of temporal bone computed tomography for the evaluation of congenital conductive hearing loss G. Yildirim, Ankara/TR	
11:40	SS 10.5 - Electrode migration in patients with a cochlear implant K. van der Marel, Leiden/NL	



- 11:50 **SS 10.6 - Gallium imaging for the evaluation of necrotising otitis externa**
L. Armstrong, Bristol/UK
- 12:00 **SS 10.7 - Evaluation of hashimoto thyroiditis with sono-elastography**
A. Ünsal Aydın/TR,
- 12:10 **SS 10.8 - Revisit of plunging ranulas: Emphasis of defect of mylohyoid muscle as the primary route of fluid transmission on CT scans**
J.Y. Lee, Seoul/KR

13:30–15:00 Scientific Session 11 - Thyroid-Parathyroid Room 1

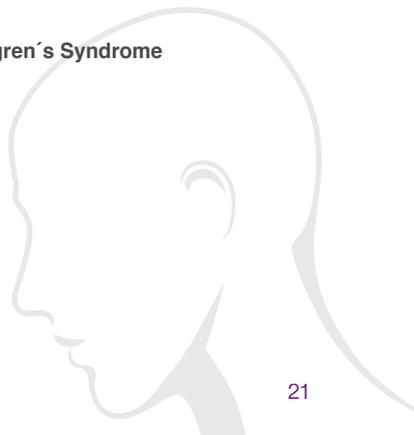
A. King, Hong Kong/CN, E. Aribal, Istanbul/TR

- 13:30 **SS 11.1 - Diagnostic approach to thyroid nodules**
R. Evans, London/UK
- 13:55 **SS 11.2 - Fine needle aspiration biopsy for thyroid and beyond**
T. Beal, London/UK
- 14:10 **SS 11.3 - Advanced imaging for thyroid disease**
A. McQueen, Newcastle upon Tyne/UK
- 14:30 **SS 11.4 - Parathyroid imaging**
P. Richards, London/UK

13:30–15:00 Scientific Session 12 - Salivary glands Room 2

J. Olliff, Brimingham/UK, H. Yerli, Izmir/TR

- 13:30 **SS 12.1 - Infection/Inflammation of salivary glands**
M. Becker, Geneva/CH
- 13:50 **SS 12.2 - Advanced imaging in salivary gland diseases**
K. Bhatia, Hampton/UK
- 14:10 **SS 12.3 - Differential diagnosis in salivary gland tumors**
N. Freling, Amsterdam/NL
- 14:30 **SS 12.4 - Parotid gland tumors shear-wave elastography: correlation with diffusion weighted MR Imaging**
S. Espinoza, Paris/FR
- 14:40 **SS 12.5 - Sonoelastography in primary Sjögren's Syndrome**
E. Kismali, Izmir/TR





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15:30–17:00	Interactive Session 2 <i>A. Borges, Lisboa/PT, C. Karaman, Aydin/TR</i>	Room 1
15:30	IS 2.1 - Oropharynx and oral cavity, paranasal sinuses, parapharyngeal space and masticator space <i>A. Borges, Lisboa/PT</i>	
16:10	IS 2.2 - Oropharynx and oral cavity, paranasal sinuses, parapharyngeal space and masticator space <i>C.Z. Karaman, Aydin/TR</i>	

SATURDAY, OCTOBER 5, 2013

08:00–09:00	Refresher Course 4 <i>F. Dubrulle, Lille/FR, A. Ünsal, Aydin/TR</i>	Room 2
08:00	RC 4.1 - Paranasal sinus: Normal anatomy and variants <i>H.B. Eggesbø, Oslo/NO</i>	
08:25	RC 4.2 - Paranasal sinus: Pathology <i>S. Kösling, Halle/DE</i>	
09:00–10:30	Scientific Session 13 - Evaluation after surgery <i>S. Bisdas, Tübingen/DE, M. Duce, Mersin/TR</i>	Room 1
09:00	SS 13.1 - Temporal bone <i>B. Mocan, Ankara/TR, L. Sennaroğlu, Ankara/TR</i>	
09:40	SS 13.2 - Oral cavity/Pharynx <i>A. Trojanowska, Lublin/PL, P. Trojanowska, Lublin/PL</i>	

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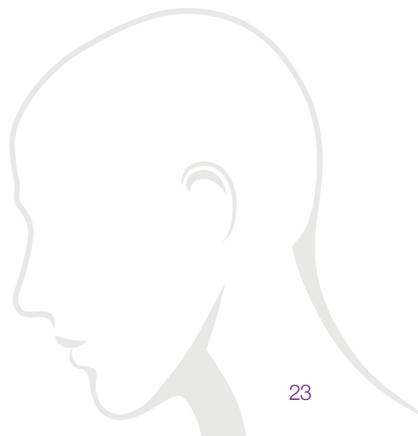
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09:00–10:30	Scientific Session 14 - Larynx/hypopharynx <i>J. Kabala, Bristol/UK, S. Bayraktaroğlu, Izmir/TR</i>	Room 2
09:00	SS 14.1 - Imaging for Larynx/hypopharynx and sectional anatomy Ch. Czerny, Vienna/AT	
09:20	SS 14.2 - Imaging findings that influence treatment for laryngeal/hypopharyngeal cancer M. Becker, Geneva/CH	
09:50	SS 14.3 - Larynx/hypopharyngeal cancer: evaluation after treatment A. Varoquaux, Geneva/CH	
11:00–11:15	Closing Ceremony <i>C.Z. Karaman, Aydin/TR, M. Mack/DE</i>	Room 1
11:15–12:45	Scientific Session 15 - Lymphomas <i>C.Z. Karaman, Aydin/TR, G. Moulin, Marseille/FR</i>	Room 1
11:15	SS 15.1 - Nodal involvement J. Olliff, Birmingham/UK	
11:45	SS 15.2 - Extranodal involvement A. King, Hong Kong/CN	
12:15	SS 15.3 - Pseudotumors and related pathologies B. Schuknecht, Zurich/CH	

SATURDAY, OCTOBER 5





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ORAL PRESENTATIONS

Thursday, October 3, 2013

RC 1.1

Anatomy of the skull base

R. Maroldi; Brescia/IT

Short Summary: In the last decade, significant advances in endoscopic endonasal techniques have been achieved with the result that the nose and paranasal sinuses have become not only a site of lesions to treat but also a **surgical corridor to reach** deeper anatomical structures. Therefore, trans-nasal corridors have expanded beyond the well-established anterior skull base floor and sellar area to include lateral areas of the skull base through the trans-maxillary window or the lateral cavernous sinus via the trans-orbital window. Imaging plays a key role. Beyond a differential diagnosis list, the key information include: the precise location and extent of the lesion; its relationship with surrounding structures; the patient's specific anatomy of the "window", comprising **surgical landmarks and danger structures**. To address these issues, proper imaging techniques have to be used. The integration between CT (or CBCT) and MR demonstrates more than the patient's peculiar bone anatomy. Some surgical "windows" require that danger structures like the internal carotid artery have to be identified along the parapharyngeal, intratemporal and intra-extra cavernous course. Equally the CSF or intra-cavernous path of cranial nerves, and their course through skull base foramina. Surgical landmarks, as the cartilaginous eustachian tube, are essential to safely reach the far-lateral skull base. Its topographical relationship with V3, the middle meningeal artery, and the parapharyngeal internal carotid artery can be adequately demonstrated by MR.

Take home points:

- To learn how to **integrate** CT and MR of the skull base
- To understand the **potential** of High-Res Cone Beam CT
- To learn the **corridors** to different skull base areas and their surgical/radiological landmarks

Keywords: Surgical landmarks, skull base, MR, CT, Cone beam CT, anatomy

RC 1.2

Temporal bone pathology

B. De Foer¹, J.W. Casselman²; ¹Antwerp/BE, ²Brugge/BE

Short Summary: In this lecture, an overview of the most frequently encountered temporal bone pathology in routine daily practice will be given. After a short introduction on different imaging techniques and protocols, pathologic entities in external, middle and inner ear will be discussed and illustrated. Amongst others, the entity of middle ear cholesteatoma, otospongiosis, vestibulocochlear schwannoma (internal auditory canal and/or membranous labyrinth) and labyrinthitis will be highlighted together with its most important differential diagnosis.

**Take home points:**

- Adapted CT and MRI technique/protocols need to be used.
- The role of MRI in cholesteatoma imaging is growing and is becoming as important as CT.
- CBCT is superior to CT for otospongiosis imaging.
- Differentiation of vestibulocochlear schwannoma and labyrinthitis can be made on heavily T2-weighted images and post gadolinium T1-weighted images.

Keywords: Temporal bone pathology, cholesteatoma, otospongiosis, vestibulocochlear schwannoma, Labyrinthitis

SS 1.1**Imaging for strabismology**

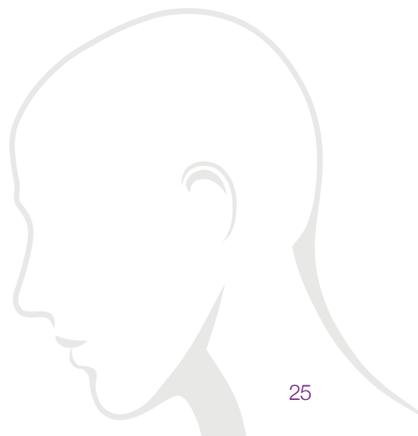
S.B. Özkan; Aydın/TR

Short Summary: Recent imaging methods provided a significant contribution in understanding the underlying pathology in different types of complex strabismus problems. By the use of this new information new treatment modalities are described in some group of disorders. In clinical practice imaging methods are required for differential diagnosis in certain types of strabismus. However the needs of the ophthalmologist may not be covered by routine scanning methods. Therefore coordination between the ophthalmologist and the radiologist is mandatory. During this presentation the clinical use of imaging methods in complex strabismus problems will be highlighted by case examples.

Take home points:

- In order to obtain useful information the radiologist must be informed about the clinical examination of the patients and the radiologist needs to be familiar about the imaging methods of extraocular muscles in a strabismus patient.

Keywords: Congenital cranial dysinnervation disorders, restrictive strabismus, lost muscle, extraocular muscle imaging, strabismus, paralytic strabismus





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SS 1.1

Imaging for strabismology

E. Aribal; Istanbul/TR

Short Summary: Orbita and the optic pathways are an important component of the central nervous system. In daily life while interpreting CNS examinations, most orbital pathologies are ignored or missed or not reported. Gaze disorders are one of the less known pathologies of the orbit. Gaze disorders can be caused by different pathologies including the brain stem and extraocular muscles. The CNS including the orbit should be scrutinized carefully in order to understand these pathologies. Examples of different patterns of gaze disorders will be given and the source of the pathology will be sought. Diverse pathologies involving the brain stem or the extraocular muscles and their effect on gaze will be given.

Take home points:

- Orbits should be examined with the CNS including the optic pathways and brain stem Gaze disorders can be caused by different pathologies including the extraocular muscles and brain stem.

Keywords: Extraocular muscles, MRI, orbita, gaze disorders

SS 1.2

What 3 Tesla MRI brought to head and neck imaging?

Y. Öner; Ankara/TR

Short Summary: The main advantage of 3T systems is the boost in image quality and consistency that are achieved through higher resolution and higher net signal-to-noise ratio (SNR). Apart its inherent advantages over more commonly used 1.5T systems, 3T MR imaging has also some challenges that must be met for higher field MR imaging to be clinically practical. Concerns over radiofrequency (RF) deposition limits and higher ambient noise have to be addressed. Challenges with respect to system homogeneity, increased sensitivity to magnetic susceptibility and chemical shift effects, and reduced tissue contrast need to be overcome. When these challenges are adequately addressed, higher net SNR provided by a 3T MR scanner can easily be translated not only to higher spatial resolution but also increased temporal resolution and acquisition of functional information of different head and neck pathologies. Diffusion imaging (DWI) is the most widely used functional imaging technique, which proved to be efficient in various pathologies, but especially lymph node characterization. Apart from DWI, dynamic contrast enhanced and ASL perfusion imaging, diffusion tensor imaging together with MR tractography and MR spectroscopy or other functional MR techniques that are being exploited in different head and neck lesions with the implementation of 3T scanners. This lecture will address advantages and disadvantages of head and neck imaging at higher field systems, and discuss usage of functional imaging techniques at 3T.

Take home points:

- With the increasing availability of 3T systems, implementation of functional MRI techniques has a fast growing importance in the evaluation of head and neck pathologies.

Keywords: 3T, functional MRI, Head and neck

**SS 2.1****Grouping the lymph nodes; the old and new**B. Kohler; Geneva/CH

Short Summary: In the 1930's, Rouvière established a topographic classification of lymph nodes of the neck and their drainage areas based on clinical anatomical landmarks which was broadly used up to the advent of cross-sectional imaging. As CT and MRI have become of first importance in the diagnosis and management of patients with head and neck cancer during the last thirty years, a new classification integrating imaging was developed in the late 1990's. It defines with precise radiological landmarks seven lymph node groups (submandibular, superior jugular, middle jugular, inferior jugular, spinal, visceral and superior mediastinal). Owing to its simplicity of utilization, it is now widely used not only by radiologists but also by all specialists involved in the diagnosis and treatment of head and neck cancer. For surgeons, it contributes to the standardization of neck dissection terminology and it is a reliable tool for topographic planning before radiation therapy. However it should be kept in mind that some lymph node groups are not included in the classification (retropharyngeal, parotid and other superficial groups) and are referred to by their anatomic location.

Take home points:

- The current topographic classification of neck lymph nodes based on cross-sectional imaging is accepted and used by all physicians involved in the diagnosis and treatment of head and neck cancer. It is a diagnostic tool which contributes to determine the stage, treatment and prognosis of neoplasms. Some lymph node groups are not included in the current classification and are referred to by their anatomic location.

Keywords: CT, MRI, grouping, lymph nodes, classification

SS 2.2**Imaging the lymph nodes; findings for differential of each method**B. De Bondt; Hattem/NL

Short Summary: Imaging of cervical lymph nodes in H&N cancer is of utmost importance regarding therapy and prognosis. In the last decennium there has been made progress in detection and assessment to better differentiate benign from metastatic lymph nodes. This presentation is mainly focused on imaging of the clinical positive neck. Accuracy of radiological modalities US, CT(-PET) and MR imaging will be reviewed. For each modality – or combination - diagnostic criteria will be provided to be used in daily practice. Latest developments to detect metastasis or extra nodal spread will be discussed.

Take home points:

- MR imaging is the accurate modality for detection of lymph node metastases in H&N cancer.
- Use of combination of imaging modalities will improve detection.

Keywords: H&N cancer, imaging modalities, diagnostic criteria, benign versus metastatic lymph nodes, extra nodal spread



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SS 3.2

Trauma of midface

S. Bayraktaroğlu; İzmir/TR

Short Summary: Computed Tomography is the primary imaging modality of choice in midface trauma. The aim of surgical treatment in midface trauma is to stabilise the major facial skeletal support. The facial skeleton is composed of vertical and transverse buttresses. Facial vertical buttresses are; Nasomaxillary, Zygomaticomaxillary, Pterygomaxillary Buttresses. Facial Transverse Buttresses are; Superior orbital rim, Inferior orbital rim, Maxillary alveolar rim. **Nasoorbitoethmoid (NOE) fractures** disrupt the integrity of the inferior orbital rim and nasomaxillary buttress. **Zygomaticomaxillary complex (ZMC) Fractures:** The vertical zygomaticomaxillary buttress and the transverse buttress that run through inferior orbital rim pass through the zygomatic bone. Zygomatic bone is linked to frontal, maxillary, temporal and sphenoid bone via sutures. Traumatic fracture of these links lead to quadripod fracture. The radiologist should determine the displacement and comminution of the ZMC fracture. **Le Fort classification** describes various complex facial fracture types that lead separation of the maxilla from the skull base. Disruption of pterygoid processes is common to all types of Le Fort fractures. Le Fort I fractures involve the anterolateral margin of the nasal fossa, Le Fort II fractures involve the inferior orbital rim, Le Fort III fractures involve the zygomatic arch.

Take home points:

- Computed Tomography, is the primary imaging modality of choice in acute midface trauma.
- The facial skeleton is composed of vertical and transverse buttresses.
- The aim of surgical treatment in midface trauma is to stabilise the significant buttress injuries after trauma.
- Radiologist needs to know these buttresses and should point out surgeon about the important fractures.

Keywords: Trauma, maxillofacial injury, computed tomography, trauma, computed tomography

SS 3.3

Temporal bone and skull base

N. Bulakbasi; Nicosia/TR

Short Summary: Temporal bone and skull base traumas actually are not common but have very serious consequences. Trauma patients having suspicious clinical findings immediately have to be examined by MDCT using high resolution bone algorithm. MDCT usually provides detailed information about bony labyrinth but not about the membranous labyrinth. In such cases MRI should be performed. Multiplanar MDCT reformations are mandatory to evaluate temporal bone and skull base in trauma patients. One should be aware of anatomical structures mimicking fractures. Anatomically external ear, fascial, jugular and carotic canals, bony chain and labyrinth, tympanic roof, ear drum, and mastoid air cells should be separately evaluated for fractures and also its complications. Radiological involvement of otic capsule is the most important prognostic factor. Complications such as facial paralysis, perilymphatic or CSF fistulas, otomeningitis, bony or sensorineural hearing loss, vascular impairment or cranial nerve palsy can occur after trauma. In a such case, origin of the complications should be evaluated by MDCT/CTA, MRI/MRA.

**Take home points:**

- Always use MDCT with high resolution bony algorithm to evaluate trauma patients with suspicious clinical findings.
- Multiplanar reformation is mandatory for radiological evaluation.
- Be aware of fracture mimickers and complications. Always talk to clinicians for final decision.

Keywords: Temporal bone, skull base, trauma, MDCT

SS 3.4**Usage of cone beam computed tomography (CBCT) from the point of an otolaryngologist**

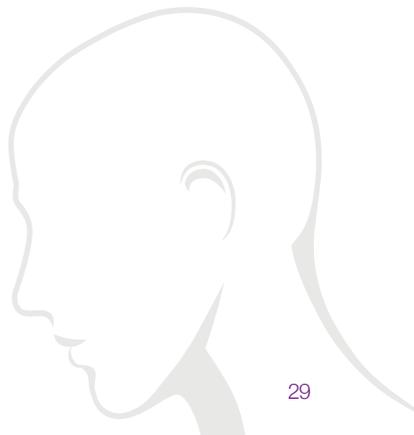
Ch. Gueldner, I. Diogo, J. Heinrichs, R. Leppek, J. Werner; Marburg/DE

Short Summary: Indications of Cone beam CT from the point of an ENT specialist will be presented.

Purpose/Objectives: Cone beam CT (CBCT) has been introduced in imaging of head and neck region about ten years ago. There is still no clarity about the indications and the differences to conventional computed tomography (CT). When to use what is still the question. Especially in Germany, the otolaryngologists are allowed to perform CBCT by themself.

Methods and Materials: Our department has experience with CBCT of 10 years. We are performing about 1400 examination per year and have now reviewed the data base of the last 5 years to look for indications and difficulties of this type of imaging.

Results: Main indications were chronic rhinosinusitis, chronic middle ear diseases, simple midfacial traumatology and postoperative control after cochlear implantation and implantation of active and passive middle ear prostheses. Typical images will be shown in presentation or poster. Limitations could be detected in very young and elderly patients. Due to the performing time of about 9s, up to an age of seven, too many moving artefacts resulted in impossibility of visualization of middle ear or paranasal sinuses. In some patients CBCT exist as well as CT. These cases will be presented to compare both imaging devices and to get an impression of differences.





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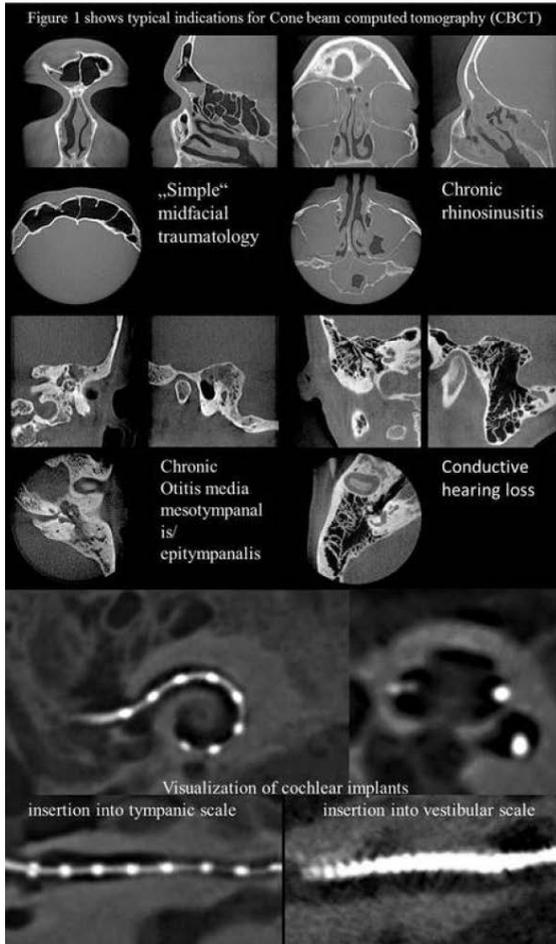
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Conclusion: CBCT has a variety of indications in imaging of head and neck. One great advantage is the possibility of doing it as otolaryngologist alone. This results in better cooperation with the radiologists/ neuroradiologists and a more intensive discussion of the needs of us clinician and the chances of different methods of visualization. In consequence of this, better devices can be developed.

Keywords: Imaging chronic otitis media, Cone beam CT, Imaging chronic rhinosinusitis



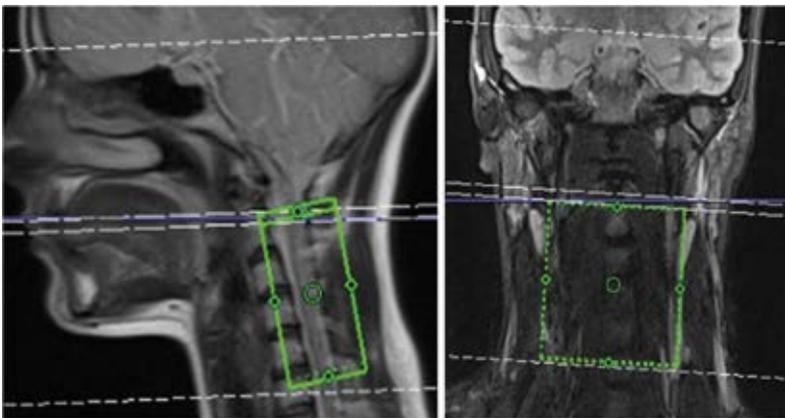
**SS 3.5****Evaluation of the effect of a local shimming protocol on quality of diffusion weighted imaging of the neck: a prospective study**

A. Roy, G. Charles-Edwards, S. Connor; London/UK

Short Summary: A short prospective study assessing the hypothesis that image quality and diagnostic utility of diffusion-weighted MR studies may be improved through the use of a local shimming protocol.

Purpose/Objectives: To objectively determine the effect on DWI image quality of a manually-applied local shimming protocol to MRI studies of the neck.

Methods and Materials: Patients undergoing neck MRI (12/12-2/13) were recruited following informed consent and ethical approval. Imaging was performed on a 1.5 T system with DWI acquired using a spin echo EPI sequence. Prior to acquisition an automated global shim was performed over the imaging volume. This was then repeated with a local shim over a smaller user-defined region (Fig 1). The DWI series for each patient were randomised with readers blinded as to whether there was a global or local shim. 2 radiologists viewed all images in a single sitting and independently scored both sets for each patient according to a number of criteria including perceived distortion, adequacy of fat suppression and diagnostic utility. Scores assigned by the 2 readers were averaged. Statistical analyses were performed using SPSS (v 20.0). Assessment of comparison utilised the Wilcoxon signed-rank test (significance value of $p < 0.05$). Interobserver variability was assessed with k -statistics.



(Fig 1)



Results: Table 2 demonstrates mean scores in the respective categories for the global and local shim images, with statistical analyses. 6/21 patients were excluded either due to incorrect placement of the shim box or incorrect image acquisition, leaving 15 for analysis.

Conclusion: Our findings suggest that degrees of fat suppression and geometric distortion are significantly worse in locally-shimmed studies, and overall diagnostic utility may be lower than in studies preceded by a global shim.

Keywords: Image Quality, Comparative prospective study, Clinical Utility, DWI, Magnetic Resonance Imaging, Shimming

	Global shim	Local shim	p-value
Geometrical distortion	2.3 ± 0.6 (0.13)	1.4 ± 1.0 (0.47)	0.005
Fat suppression			
anterior superficial face (malar/buccal)	1.8 ± 0.4 (0.11)	0.7 ± 0.8 (0.67)	0.002
anterior deep face (oral cavity fat planes)	2.2 ± 0.5 (*)	1.5 ± 0.7 (-0.34)	0.004
parapharyngeal/perispinal	2.6 ± 0.5 (0.77)	2.0 ± 0.8 (0.22)	0.011
posterior superficial fat upper neck	1.9 ± 0.4 (0.46)	1.4 ± 0.7 (0.43)	0.012
supraclavicular	1.1 ± 0.6 (*)	1.0 ± 0.9 (0.45)	0.468
posterior inferior neck/upper back	1.2 ± 0.5 (-0.2)	1.1 ± 0.5 (0.51)	0.509
Diagnostic utility			
upper aerodigestive tract	2.1 ± 0.7 (0.65)	1.4 ± 0.8 (0.58)	0.006
deep cervical nodal chain	2.4 ± 0.6 (0.65)	2.0 ± 1.0 (0.80)	0.048
major salivary glands	2.5 ± 0.5 (0.14)	1.8 ± 0.9 (0.61)	0.009

(Table 2)

**SS 4.1****Comparison of PET-CT, MRI and histological findings on the initial staging of head neck squamous cell carcinomas regarding distant metastasis and secondary carcinoma**

M.C. Larson¹, S. Höfer¹, M. Harth¹, R. Hammerstingl¹, O. Seitz¹, T.J. Vogl¹, M. Mack²;

¹Frankfurt/DE, ²Munich/DE

Short Summary: The initial staging with the evaluation of the primary tumor and metastases in patients with squamous cell tumors of the oropharyngeal and oral cavity is of high interest for the further therapeutic pathway. A staging procedure including a PET-CT scan proves to be in good accordance to the histological findings after surgery and is therefore to be recommended.

Purpose/Objectives: Patients with oropharyngeal tumors have an elevated incidence (20%) for metastasis or secondary carcinoma because of generally increased risk factors. The aim of this study was to determine the diagnostic value of PET-CT scans and MRI examinations in relation to histological findings in order to improve the efficiency of initial staging for patients with primary or recurrent tumors before therapy.

Methods and Materials: 93 PET-CT scans for tumor staging were performed on 83 Patients with histologically confirmed squamous cell carcinoma. 27 patients underwent PET-CT scans followed by surgery, 42 patients had a supplementary MRI scan. 24 patients had PET-CT and MRI examinations without surgical treatment. Clinical findings and radiological TNM classification (performed by two experienced radiologists) were compared to histological TNM results.

Results: Distant metastases (M) were detected on 12 patients (15%). A 93% agreement regarding the primary tumor manifestation (T) and an 88% agreement in nodal metastasis (N) between the radiological estimation and the histological findings could be observed.

Conclusion: Performing a PET-CT scan in addition to a MRI scan on the initial staging procedure of squamous cell carcinoma of the oropharyngeal and oral cavity proved to be efficient in the detection of distance metastasis, the evaluation of the primary tumour manifestation and the differentiation of nodal metastasis.

Keywords: Staging, PET-CT, Squamous cell carcinoma





SS 4.2

Diagnostic performance of MRI with diffusion weighted images for the detection of recurrent squamous cell carcinoma after radio(chemo)therapy

A. Ailianou, A. Varoquaux, S. Patsoura, R. Kohler, P. Dulguerov, M. Becker; Geneva/CH

Short Summary: Imaging of the head and neck after radio(chemo)therapy is challenging due to treatment induced soft tissue alterations mimicking recurrent disease. Nevertheless, MRI with DWI enables accurate detection of recurrent tumours in the head and neck.

Purpose/Objectives: To evaluate the diagnostic value of MRI with diffusion-weighted EPI sequences (DWI) for the differentiation of recurrent head and neck squamous cell carcinoma (rHNSCC) from post-therapeutic changes.

Methods and Materials: MRI examinations at 1.5T were carried out in 62 consecutive patients (8 females, 54 males, mean age = 58 years, range: 43 – 80y) with suspicion of rHNSCC. The MRI protocol included routine turbo spin echo sequences ± iv Gadolinium and DWI sequences with b-values of 0 mm²/s - 1000 mm²/s. Apparent diffusion coefficient (ADC) maps were calculated. Biopsy ± surgery and follow-up of > 12 months after the MRI served as standard of reference. Images and ADC measurements were analysed separately by experienced readers, who were blinded to the histological (n=46) and clinical / radiological follow - up (n=16).

Results: Forty-eight recurrent tumors were present in 45 patients, while the remaining 17 patients showed post-therapeutic changes. The mean size of rHNSCC according to RECIST criteria was 26.4 mm (range: 3 – 50 mm). The mean size of post-irradiation scar tissue was 24.8 mm (range: 8 – 30 mm). The mean ADC value of rHNSCC ($1.14 \pm 0.56 \times 10^{-3}$ mm²/s) was significantly lower than that of post-therapeutic changes ($1.56 \pm 0.52 \times 10^{-3}$ mm²/s), (p<.01). Sensitivity, specificity and accuracy for MRI with DWI and with a threshold ADC value of 1.15×10^{-3} mm²/s for differentiation, were 95%, 79% and 91%, respectively.

Conclusion: MRI with DWI and ADC measurements allows accurate differentiation of rHNSCC from post-therapeutic changes in most cases.

Keywords: Radiotherapy, Diffusion, carcinoma

SS 4.3

The role of real-time elastography in the differential of salivary gland tumors

C.Z. Karaman, E. Kaya, F. Taşkın, A. Ünsal, S. Başak; Aydın/TR

Short Summary: The aim of the study was to scrutinize the value of qualitative elastography in the diagnosis of salivary gland masses. 44 benign, 16 malignant, were scored into 4 types in elastography. Sensitivity was 100%, specificity 66%, PPV 52%, NPV 100%. Elastography cannot be used to discriminate malignant from benign solely.

Purpose/Objectives: The aim of the study was to scrutinize the value of qualitative elastography in the diagnosis of salivary gland masses.

Methods and Materials: Sixty patients were enrolled in this prospective study. Patients aging between 1-91 years, mean age 48,8± with salivary gland mass were studied with real-time elastography. All patients were examined by one examiner, blinded to all relevant data. On



elastography masses were scored into 4 types according to their stiffness compared to normal tissue. Score 3 and 4 were accepted as signs of malignancy. Sensitivity, specificity, positive and negative predictive value were calculated for elastography in verifying malignancy.

Results: Forty-two (42%) of the masses were located in the parotid, and the rest in submandibular gland. The diameter of the lesions varied between 12-60 mm (mean: 24,36±11,98mm). Forty-four masses were benign (73%), and inflammatory lesions were in the majority (n:31/60, 51,7%). There were 16 malignant lesions (27%). In elastography not only all malignant lesions but 15 benign were scored as 3-4. All masses scored as 1-2 were benign. Sensitivity was 100%, specificity 66%, PPV 52%, NPV 100%. When only score 4 lesions were accepted to be malignant these values became 75%, 77%, 55%, 90%, respectively.

Conclusion: Elastography cannot be used to discriminate malignant from benign solely. However it may be used as an adjunct tool to increase the diagnostic value of ultrasonography with its high negative predictive value.

Keywords: Salivary gland, tumor, elastography

SS 4.4

Role of sonoelastography in differentiating benign and malignant salivary gland tumors: a systematic review and meta analysis

M. Mohammadfazl, M. Ghajarzadeh; Tehran/IR

Short Summary: Sono-elastography had moderate accuracy in differentiating benign from malignant salivary gland tumours.

Purpose/Objectives: This systematic review is to determine the diagnostic accuracy of sonoelastography in evaluating salivary gland tumours

Methods and Materials: Data Sources: A highly sensitive search for sono-elastography and salivary gland tumors was performed through MEDLINE, Cochrane Library, ACP Journal Club, EMBASE, Health Technology assessment, and ISI web of knowledge for studies published prior to January 2013. A manual search was performed to include additional studies from references of the retrieved articles. **Review Methods:** Two independent reviewers evaluated articles for eligibility. They extracted data from included studies. The quality of included studies was evaluated by means of quality assessment of diagnostic accuracy studies (QUADAS) questionnaire which consists of 14, four option questions (yes, no, unclear, not applicable (N/A)). Forest plots for pooled estimates and summary of ROC plots for different cut-offs were produced.

Results: The literature review and manual search yielded 15 articles, 6 of which eligible to be included. A total of 348 individuals with total number of 366 salivary gland masses were evaluated. Eighty seven were malignant while, 269 were benign. Three hundred and twenty two were located in parotid gland and forty four were in sub-mandibular gland. The summary sensitivity and specificity for the differentiation of benign and malignant salivary gland masses were 0.63 and 0.59. The summary diagnostic OR (D OR), positive and negative LRs were 3.18, 1.63 and 0.61. The Area Under the Curve (AUC) was 0.68 (SE=0.03).

Conclusion: Sono-elastography had moderate accuracy in differentiating benign from malignant salivary gland tumors.

Keywords: Parotid gland, Sonoelastography, diagnostic accuracy



SS 4.5

Malignant melanoma metastatic to larynx

H. Sviriydenka; Pisa/IT

Short Summary: Clinical History The 75-years patient had previously undergone a localized surgical excision for cutaneous melanoma of the trunk with negative sentinel lymph node biopsy (stage IIB). One year later, the patient underwent laryngoscopy for recurrent dysphonia revealing a larynx lesion.

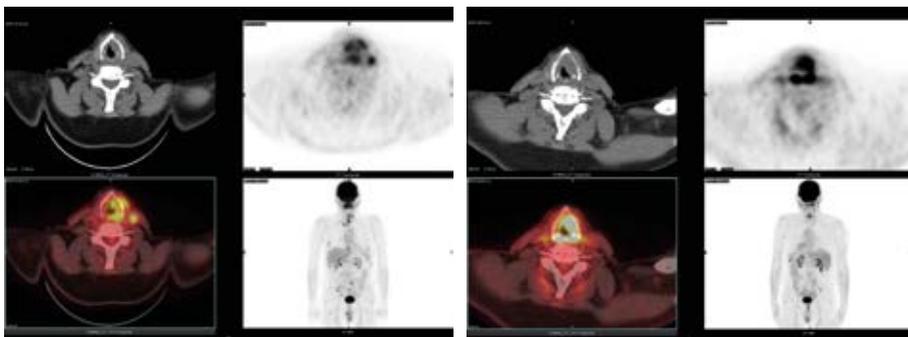
Purpose/Objectives: IMAGING FINDINGS [18F] FDG PET/CT showed a single parenchymatous, ill-defined, FDG-avid lesion (max SUV 5) in left paraglottic space with a trans-glottic extension [Fig1]. Endoscopic biopsy revealed metastasis from cutaneous melanoma. Two months after chemo-radiotherapy, a follow-up [18F] FDG PET-CT examination was performed. Scattered foci of FDG uptake were detected in the site of the laryngeal neoplasm (max SUV 2.5) and were interpreted as an almost complete response to the therapy. [18F] FDG PET/CT performed 6 months later revealed a hypermetabolic lesion of the left emi-larynx (max SUV 6) [Fig2]. Pleural, skeletal, as well as subcutaneous and lymph nodal metastases were also found.

Methods and Materials: Discussion Staging of melanoma is based on the primary tumour thickness, ulceration, lymph nodal and distant metastases.

Results: Cutaneous melanoma metastatic to the upper aerodigestive tract had been found in 0.6%-9.3% of patients with cutaneous melanoma, and of those metastatic sites, 12% will be laryngeal. In AJCC stages III and IV PET/CT can be useful for detecting deep soft-tissue, as well as lymph nodal and visceral metastases. The high sensitivity of FDG PET/CT to detect melanoma metastases is most likely due to the uniquely high glycolytic activity of melanoma cells, resulting into high FDG uptake. FDG PET/CT in metastatic melanoma has an overall accuracy for N and M staging of 97% compared with 93% for PET and 79% for CT.

Conclusion: It is imperative to be aware of appearances of melanoma.

Keywords: [18F] FDG PET/CT, metastasis, upper aerodigestive tract, staging of melanoma, melanoma, larynx



SS 4.6**The role of diffusion weighted MR imaging in the diagnosis and post-operative evaluation of skull base chordomas**E. Güler, B. Özgen, M. Mut, K. Karlı Oğuz; Ankara/TR

Short Summary: In our study, pre- and post-operative MR imaging including DWI of patients with skull base chordoma were evaluated.

Purpose/Objectives: Chordoma is a locally aggressive and relatively rare tumour of the skull base. Due to its histological features, it is thought that chordoma may be distinguished by DWI findings. Our aim was to determine the effect of DWI in the pre- and post-operative evaluation of chordomas.

Methods and Materials: We retrospectively reviewed 17 patients with pathologically confirmed chordoma and who had conventional MRI and DWI. Three ADC values were measured for each lesion with identical ROI sizes, from the areas with highest ADC signal (ADC_{max}), with lowest ADC signal (ADC_{min}) and from a homogenous solid component of the mass (ADC_{solid}). For each patient, ADC ratios were also calculated using ADC value from pons. The ADC values and ratios of the two histopathological subtypes (classical and chondroid chordomas) were compared. For fifteen patients who had post-operative scans, the use of DWI to evaluate the residual tumour was compared with the other MRI sequences.

Results: 10/17 tumors had increased signal in DWI compared to brain. Mean ADC values and the mean tumor ADC/pons ADC ratios of the tumors were $1.21\text{mm}^2/\text{s}$ & 1.55 for the solid component, $0.96\text{mm}^2/\text{s}$ & 1.24 for the ADC_{min} , $1.56\text{mm}^2/\text{s}$ & 1.99 for ADC_{max} respectively. There were 13 classical and 3 chondroid type chordomas. Although the ADC values and ratios of classical subtype were higher than chondroid subtype, there was no statistically significant difference ($p=0.3$) with Mann-Whitney U test. In the post-operative evaluation, DWI enabled detection residual tumor better than T2 sequences in 8 cases.

Conclusion: DWI is useful for the characterization of chordomas, helpful in its diagnosis and post-operative evaluation.

Keywords: Chordoma, skull base, diffusion weighted MR imaging

SS 4.7**Polyostotic fibrous dysplasia: severe craniofacial form; CT and MRI features**E. Iordanishvili, S. Mikiashvili, N. Sainishvili, S. Tskhvaradze, M. Tsirekidze, M. Apriamashvili, M. Kutateladze; Tbilisi/GE

Short Summary: Fibrous Dysplasia is an uncommon developmental abnormality of bone. It accounts for 5-10% of all benign bone lesions. FB is caused by somatic activating mutation of GNAS gene, which encodes for a subunit of stimulatory G protein. This results in ceasing of normal bone development and replacement with fibrous tissue. We report an unusual case of 22 years old male with polyostotic fibrous dysplasia with severely involved craniofacial manifestation. He was admitted in our department due to bony enlargement and deformation of his head. There was no history of bone pain. CT and MRI were performed which revealed involvement of craniofacial



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bones, right humer, sacrum and ishium bone. We discuss radiological findings, clinical features and possible treatment.

Purpose/Objectives: Our purpose is to present a rare case of craniofacial FD. Usually there is a 100% involvement of craniofacial bones in polyostotic form of FD but maxillary and mandibular lesions are relatively manifested than skull bone damage. In this case situation is vice versa.

Methods and Materials: MRI scans of brain with T1se, T1flair, T2se, T2spir, epw-b500, MIPVEN_3D_PCA, MIP3diMC sequences of saggital, coronal and axial views were performed. Also 3D CT images of head, shoulders and pelvis were done.

Results: MRI revealed fibrous dysplasia of all skull bones except right frontopolar, left temporal and left parietal bones. CT showed envovement of right humer, sacrum and right ishium bone.

Conclusion: We reported a patient with a rare manifestation of craniofacial fibrous dysplasia. MRI and CT scans were provided. Although preferred sites of FD is long hollow bones, especially femur in 36%, and calvaria in 10%, in this case only right shoulder from hollow bones was involved. Skull bones were relatively more damaged than maxilla or mandible.

Keywords: Craniofacial Dysplasia, Polyostotic, Monostotic, Fibrous Dysplasia, McCune-Albright Syndrome

SS 4.8

The importance of semi-quantitative diastolic sonoelastographic evaluation in the management of solid and semi-solid thyroid nodules

H. Yerli, T. Yilmaz, B. Ural, E. Aydin, A.M. Agildere; Izmir/TR

Short Summary: We determined that strain index method using external manual compression method synchronized with diastolic period of carotid artery by sonoelastography can be useful in the management of thyroid nodules.

Purpose/Objectives: Our aim was to determine whether the application of strain index method using manual compression synchronized with diastolic period of carotid artery by sonoelastography was useful in the management of thyroid nodules.

Methods and Materials: 176 lesions in 155 consecutive patients with solid or semi-solid thyroid nodules (163 benign, 13 malignant) were prospectively included in this study. For each lesion, B-mode sonography and sonoelastography images were obtained. Strain indexes of the nodules were calculated using the same-level and normal-appearing thyroid region as an internal reference by means of the method of strain ratio measurement. The findings were compared with histopathology or fine-needle aspiration biopsy and follow-up. The diagnostic performances for B-mode sonography and the strain index methods were determined.

Results: The mean strain index values were 1.53 ± 2.55 for benign nodules and 4.95 ± 3.95 for malignant nodules. Sensitivity and specificity for B-mode sonography were 83% and 75%, respectively; and 82% and 90% for strain index method when a cutoff point of 3.40 was used.



Conclusion: Strain index method using external manual compression method synchronized with diastolic period of carotid artery by sonoelastography can be useful in the management of thyroid nodules.

Keywords: Thyroid, Ultrasonography, Indexes, Sonoelastography

SS 5.1

Brachial plexus

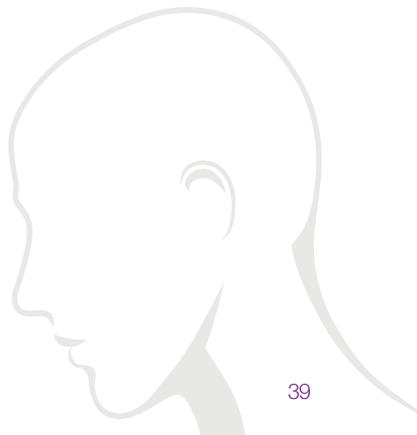
S. Gerevini; Milan/IT

Short Summary: The BP originates from the ventral branches of the cervical nerve roots from C5 to T1. It is composed of roots, trunks, divisions, cords, and branches, topographically divided into supraclavicular (roots and trunks), retroclavicular (divisions), and infraclavicular sections (cords and branches). The various divisions of the brachial plexus appear as linear structures with low signal intensity on MR images obtained with all sequences and in all planes (especially sagittal and coronal). The general abnormal findings include: -loss of fat planes around part or all BP components -diffuse or focal enlargement of the nerves -nerve signal abnormalities with mild or marked hyperintensity on T2 weighted images -focal or extensive enhancement of the nerves after Gadolinium injection on T1 fat saturated images We will explore non traumatic and traumatic brachial plexopathies. Among non-traumatic brachial plexopathies radiation fibrosis has been reported the most common cause of brachial plexopathy, accounting for about 30% of cases. Metastatic breast cancer (20%) and primary or metastatic lung cancer (20%) are the next two most common causes. These three processes together accounted for almost 70% of the explainable causes of brachial plexopathies. The remaining one-fourth of the cases are caused by a wide variety of situation that vary from benign and malignant tumors and inflammatory disease or Thoracic Outlet Disease.

Take home points:

- Understand brachial plexus' anatomy as demonstrated with MRI
- Learn the range of pathology of this region
- Manage brachial plexus pathology MRI findings

Keywords: Pathology, brachial plexus, MRI, anatomy





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SS 5.2

Function and dysfunction of cranial nerves 9-12

M. Lemmerling; Gent/BE

Short Summary: The lower cranial nerves innervate the pharynx and larynx by the glossopharyngeal (N. IX) and vagus (N. X) nerves, and provide motor innervation of the muscles of the neck by the accessory nerve (N. XI), and of the muscles of the tongue by the hypoglossal nerve (N. XII). Patients with nerve paralysis are best imaged with MRI, using T2WI of the brain and T1WI of the skull base. After intravenous injection of gadolinium T1WI are repeated. In the work-out of such patients the use of a segmental approach helps to narrow down the differential diagnosis or even come to a final conclusion. Anomalies can be seen in the medulla (ischemia, MS, neoplasia, ...), along the cisternal segment of the nerves (vascular anomalies, neoplasia, meningeal disease, ...), in the skull base (paraganglioma, schwannoma, meningioma, metastasis, ...), or in the extracranial nerve segment.

Take home points:

- The lower cranial nerves are best imaged with MRI.
- The interpretation of the scans is best done using a segmental approach.

Keywords: Lower cranial nerves, MRI, segmental approach

SS 5.3

Therapy for neuralgia in head&neck

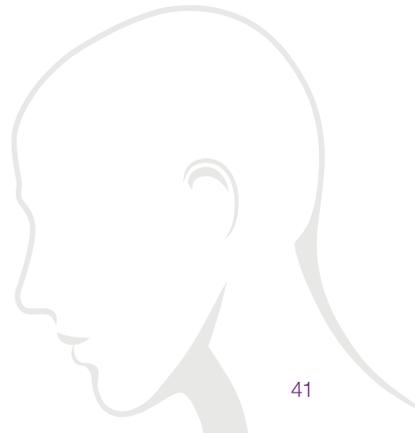
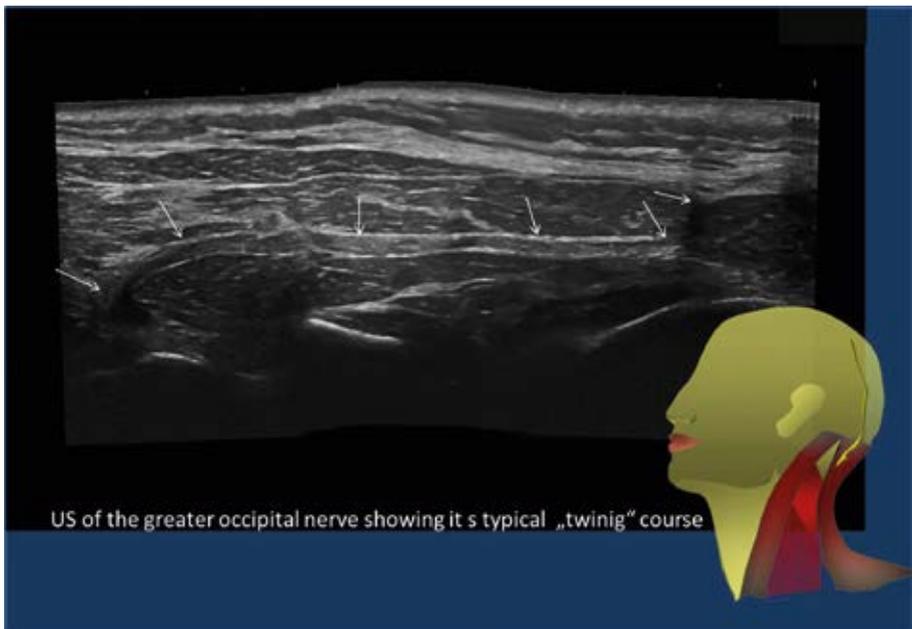
G. Bodner; Vienna/AT

Short Summary: Head and neck pain is a common clinical disorder, heavily affecting normal working and social life. Cluster headache, migraine, tension headache and cervicogenic headache are not usually attributable to a clear underlying cause and are therefore difficult to treat. Neck trauma (whiplash injury), iatrogenic nerve injury, arthrosis of the cervical spine, inflammation may also lead to cervicogenic pain. Associated with head and neck pain muscle stiffness, shoulder pain, jaw pain is frequently found. The brachial and cervical plexus are networks of fibers innervating the skin of the neck and muscles of the neck and shoulder. In addition the greater and third occipital nerve innervates most of the occipital skin. Treatment of chronic head and neck pain, besides conservative, medical treatment also includes minimally invasive nerve and muscle blocks, frequently performed in a blind fashion. In recent years development of ultrasound equipment, including higher frequency probes, has greatly improved superficial tissue differentiation, enabling visualization of smaller nerves. This also resulted in a better controlled needle positioning and smaller dosage of therapeutic agents for treatment in neuropathic head and neck pain. We demonstrate the possibilities and outcome of ultrasound guided nerve blocks in patients suffering chronic head and neck pain.

**Take home points:**

- High resolution ultrasound can clearly demonstrate the greater occipital nerve, the occipital cervical and brachial plexus allowing for controlled minimally invasive diagnostic and therapeutic interventions in patients with chronic head and neck pain.

Keywords: Head and neck pain, High resolution ultrasound, diagnostic and therapeutic intervention





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SS 5.4

Imaging findings on swallowing studies in patients with huntington's disease

A. Heemsker, R.A. Roos, B. Verbist; Leiden/NL

Short Summary: Huntington's disease patients suffer from dysphagia. Little is known about the specific dysphagia features during the disease. Fortyfive HD patients underwent videofluoroscopy. The video's were judged on the oral, oropharyngeal and oesophageal phase. Disturbances in the oral and oropharyngeal phase were found in 80%.

Purpose/Objectives: Huntington's disease (HD) is a progressive neurodegenerative disease. A significant number of patients suffer from dysphagia. This bears a great risk for aspiration pneumonia, which is the leading cause of death in HD. Little is known about the specific dysphagia features and progression of symptoms during the three different stages of the disease. Goal of the study To identify dysphagia features in the different stages of HD.

Methods and Materials: Forty-five HD patients in the three clinical stages of HD underwent a videofluoroscopy. Most patients (81,6%) complained of swallowing difficulties. The video's were analysed judging the oral, oropharyngeal and oesophageal phase. Further, duration measures were calculated.

Results: Oropharyngeal disturbances were found in 80% and consisted of involuntary movements of the tongue and soft palate, delayed onset of swallowing, residue in the valleculae and piriform sinus. This was also reflected in disturbed transit times. Swallowing abnormalities were seen in all stages of the disease (stage I: 9/14, stage II: 10/14, stage III: 16/17 patients). Aspiration was seen in 36,4% of the patients.

Conclusion: Swallowing abnormalities are a frequent finding in HD patients. Aspiration is seen in more than 1/3 of the patients. Dysphagia features are present in all stages of HD. Given the high rate of dysphagia and the early onset in the course of HD timely dysphagia management should be considered to prevent secondary complications.

Keywords: Aspiration, Huntington's disease, Dysphagia, Videofluoroscopy, imaging findings

SS 5.5

MRI 3 tesla of the utricle, saccule and perilymphatic fluid in 30 schwannomas of the cochleovestibular nerve

F. Veillon, J. Matern, M. Abu Eid, A. Gentine, S. Riehm, C. Debry, A. Charpiot; Strasbourg/FR

Short Summary: To show the changements of the perilymphatic fluid compared with the endolymphatic content of the saccule and utricle in a population of 30 cochleovestibular schwannomas.

Purpose/Objectives: To show the changements of the perilymphatic fluid compared with the endolymphatic content of the saccule and utricle in a population of 30 cochleovestibular schwannomas.



Methods and Materials: The saccule, utricle, perilymphatic system are studied in a population of 30 schwannomas of the cochleovestibular nerve in high resolution T2, 3D gradient echo (General Electric HDX3T) are evaluated: the signal of the endolymphatic fluid (saccule and utricle), the perilymphatic cistern and the cochlear space. The following measurements have been performed: saccule (height in sagittal planes, height and width in coronal planes) width of the perilymphatic cistern, of the saccule and the cistern in coronal plane. These results are compared with the normal casuistic (utricle, saccule and perilymphatic cistern) in a population of 40 healthy volunteers.

Results: Saccule: sagittal height 1.3 mm, coronal height 1.3 mm, width in coronal 1.3 mm, width in coronal of the cistern and saccule 2.5 mm, width of the cistern in coronal 1.2. mm. Key point: The signal of the perilymphatic cistern and fluid surrounding the cochlear duct is very much reduced in all the 30 patients due to the drop of the venous drainage in the internal auditory meatus related to the compression by the schwannoma. The endolymphatic fluid drained in the endolymphatic sac is not involved in this pathology.

Conclusion: The signal of the perilymphatic fluids is highly reduced in all the 30 cases of the 8th nerve schwannomas related to the high protein content due to the drop of the perilymphatic drainage in the internal auditory meatus.

Keywords: Schwannoma, VIIIth nerve, utricle, saccule, endolymph, perilymph

SS 6.1

Sinusal cavity

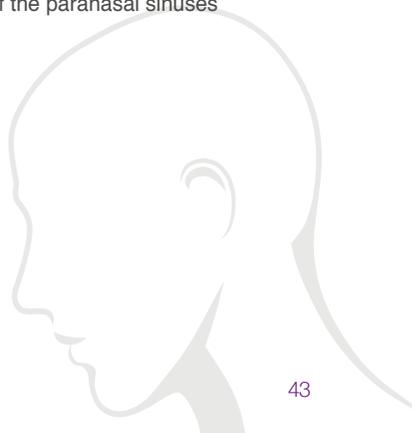
M. Mack; Munich/DE

Short Summary: The goal of imaging in inflammatory disease of the paranasal sinus is the approval of the diagnosis, the evaluation of the extension of the disease and the description of the different anatomic variants which can be a predisposition for inflammatory disease in order to select the patients who would have benefits from surgical treatment of paranasal sinus disease. The most common inflammatory changes of the paranasal sinus, the complication of inflammatory disease and the optimal imaging strategy will be presented.

Take home points:

- CT is helpful in the understanding of inflammatory disease of the paranasal sinuses
- Low dose imaging is sufficient in almost all cases

Keywords: Paranasal sinuses, Inflammatory disease, CT





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SS 6.2

Inflammatory and infectious lesions of the paryngo-larynx

E. Dubrulle; Lille/FR

Short Summary: Inflammatory or infectious diseases of the larynx and hypopharynx are various. The supraglottic airway inflammation in adults is a potentially serious infrequent impairment, affecting the entire supraglottic larynx and sometimes the adjacent structures that can be complicated by abscess. In children, the classic acute epiglottitis is less and less common but still a diagnostic and therapeutic emergency. Some more specific affections as laryngeal tuberculosis are rare, difficult to evoke in first hypothesis because they often take pseudo-tumoral forms. We also illustrate a classical inflammation of the larynx such as the laryngeal papillomatosis. Some common disorders of the larynx or adjacent structures are often revealed during inflammatory episodes as laryngoceles or thyroglossal duct cysts. We conclude with laryngeal trauma, externally or by ingestion of foreign bodies, often severe, life-threatening and rapidly complicated by hematoma and inflammation.

Take home points:

- CT Scan is the most appropriate examination to quickly explore these potentially serious diseases.

Keywords: Supraglottic inflammation, epiglottitis, laryngeal tuberculosis, traumas

SS 6.3

Temporal bone&skull base

B.M. Verbist; Leiden/NL

Short Summary: Infectious or inflammatory diseases of the temporal bone and skull base may be caused by a variety of organisms or can be due to auto-immune disease. It may be localized to an anatomical subsite of the temporal bone, such as the mastoid, inner ear or petrous apex or it may have spread along the petrosal bone and skull base by the time of diagnosis. Some infections rapidly progress causing a range of complications with possible functional alterations, including cranial neuropathies or intracranial infarctions, and even become potentially lifethreatening. This lecture will focus on acute infections of the external auditory canal, middle ear and mastoid, inner ear and petrous apex: pathogenesis, imaging appearance at several stages of the disease and the implications of these findings for treatment will be discussed. Skull base osteomyelitis other than related to otologic disease (eg necrotizing otitis externa) will also be reviewed.

Take home points:

- Which imaging modality should be chosen for evaluation of infectious/inflammatory disease and possible complications.
- What the imaging features of acute infectious or non-infectious inflammatory disease of the temporal bone or skull base are.
- How to identify acute complications putting the patient at risk for functional losses or even death.

Keywords: Temporal bone, skullbase, infection/inflammation



SS 6.4

Orbit

S. Langner; Greifswald/DE

Short Summary: Infections and Inflammation of the orbit can be a life threatening process. They can be caused by various entities. Imaging findings of CT and MRI examinations for the different entities are demonstrated. Typical complications of intraorbital inflammation are described.

Take home points:

- Inflammation or Infection of the orbit can be a life threatening process.
- Imaging findings on the CT can be subtle - MRI is the preferred imaging modality.
- Care should be taken not to miss intracranial complications.

Keywords: Orbit, inflammation, infection, intracranial complications, MRI, computed tomography

IS 1.2

Skull base, temporal bone, cranial nerves

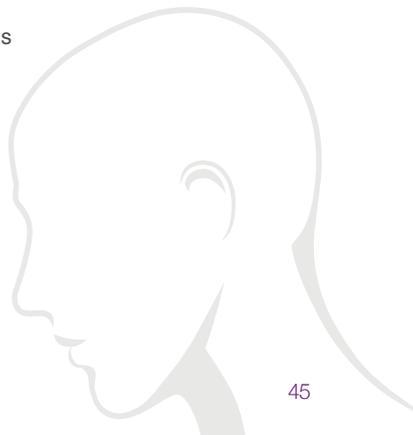
R. Maroldi; Brescia/IT

Short Summary: **How to build the wall**, all together! This interactive session has not the objective of showing up who is/are the best to score the correct diagnosis in less than 5 secs! The goal is to detect and choose the **bricks** (means imaging findings) that eventually build up a narrow list of differential diagnosis. Or those bricks that provide key information for treatment planning. How to achieve this objective? Cases are presented as in the real every-day-life: brief history, symptoms, and clinical issues. Images are shown like on a PACS. Findings should be detected and discussed. Who will discuss the cases? Opinions and comments will be requested – on a voluntary basis - to the colleagues (experts & non-experts) attending the session. Of course, additional questions from the radiologists attending the session will be welcome. Step by step we will learn how to approach the diagnosis of frequent/less frequent lesions affecting the skull base, the cranial nerves and the temporal bone. And to share the methodology.

Take home points:

- To learn how to approach skull base, cranial nerves and temporal bone lesion diagnosis
- To share a methodology.

Keywords: Skull base, cranial nerves, temporal bone, diagnosis





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RC 2.1

Cranial nerves I-VI

J.W. Casselman; Brugge/BE

Short Summary: The cranial nerves I to VI have a predominant anteroposterior course and are therefore best imaged in the coronal plane. The anatomy must be known in detail and MR is the imaging technique of choice. Different sequences are used for the different segments. Lesions in the brainstem nuclei or along the fascicular segment of these nerves are best seen on FLAIR, T2 TSE, Proton Density or multi-echo GE (m-FFE, medic, merge) images. The cisternal segment can be visualised on heavily T2-weighted images (T2 GE or T2 TSE) but around the brainstem T2 GE (e.g. balanced-FFE) is preferred as it allows imaging of all the nerves in an acceptable time. A T2-TSE sequence is preferred when the examined nerves are located further away from the brainstem, e.g. the olfactory bulbs/tracts. A gadolinium enhanced high resolution T1-weighted sequence in the coronal plane is needed to see the nerves in the cavernous sinus and a gadolinium-enhanced T0F sequences with axial images through the venous basilar plexus is needed to see the VIth nerve posterior to the clivus. The surrounding enhancing venous structures make the nerves visible on these sequences. Finally, the extracranial branches are best seen on Gd-enhanced high resolution T1-weighted images in the coronal and axial plane, with or without FatSat. Imaging of the optic nerve should always include a coronal Inversion Recovery sequence as ischemic and demyelinating lesions of this nerve are sometimes only detectable on with this sequence. The above anatomy and technique will be discussed as well as the most frequent pathology involving cranial nerves I to VI.

Take home points:

- Know the anatomy of CN I to VI
- Use the right MR sequences to visualise the different nerve segments
- Recognize the most frequent pathology of CN I-VI

Keywords: Cranial nerves anatomy, Cranial nerves pathology, Magnetic Resonance imaging techniques

RC 2.2

Cranial nerves VII-XII

V. Chong; Singapore/SG

Short Summary: Facial Nerve (CN VII) CN VII has two important branches: the greater superficial petrosal nerve (GSPN) and the motor division. The GSPN forms the Vidian nerve. The most common abnormalities affecting CN VII include viral infection, trauma, hemifacial spasm, schwannomas and perineural infiltration. These nerves are also vulnerable to erosion by tumours and cholesteatomas. Vestibulocochlear Nerves (CN VIII) The vestibular and cochlear nerves travel in internal auditory canal (IAC). The most common cerebello-pontine (CPA) mass is schwannoma arising from the vestibular nerve. Vestibular schwannomas in the young should prompt the possibility of neurofibromatosis type 2. Schwannomas must be differentiated from meningiomas. Glossopharyngeal, Vagus and Accessory Nerves (CN IX, X, XI) These nerves course toward the jugular foramen. Within the jugular foramen, glomus tumours, neural tumours and meningiomas



are the primary benign tumours of concern. Skull base lesions such as metastases may also involve these nerves. Hypoglossal Nerve (CN XII) CN XII exits the skull through the hypoglossal canal to supply the muscles of the tongue. Primary lesions of the hypoglossal nerve are rare. Secondary involvement such as malignant infiltration is more commonly encountered. Denervation changes in the tongue muscles can often be observed.

Take home points:

- When examining the CN VII, both the GSPN and motor division should be scrutinised.
- In the jugular foramen, apart from neural lesions, meningiomas and glomus tumours must also be considered.
- Apart from examining CN XII, changes in the tongue muscles, if any, should also be described.

Keywords: Glomus tumours, cranial nerves, schwannomas, jugular foramen, hypoglossal canal, denervation atrophy

FRIDAY, OCTOBER 4, 2013

RC 3.1

Oropharynx and oral cavity

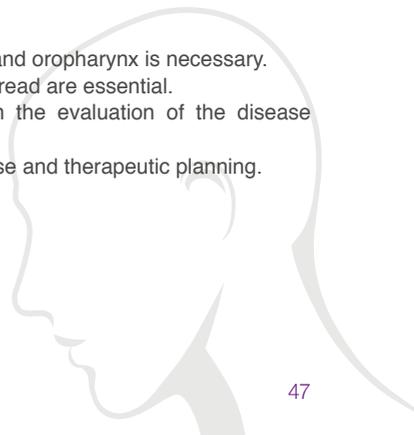
M. Nass Duce; Mersin/TR

Short Summary: Oral cavity and oropharynx are challenging areas for imaging. Since diseases of the oral cavity and oropharynx are usually visible with clinical inspection, the radiologist only plays a minor role in the disease detection. However, imaging helps to determine the precise origin and location, define the exact extent of the lesion, delineate the involvement of the adjacent structures and thus play an important role in the therapeutic planning. Cross-sectional imaging has become an essential tool in the evaluation of the disease processes of this region. The choice of imaging modality depends on the specific diagnostic strength of the technique and the suspected disease. A good knowledge of the normal anatomy is necessary to be able to describe and interpret the findings, which sometimes can be very subtle. Also, understanding of the pathology and pathways of disease spread are essential. Sometimes, imaging protocols can be tailored according to the pathology imaged or to avoid artifacts.

Take home points:

- A good knowledge of the normal anatomy of the oral cavity and oropharynx is necessary.
- Understanding of the pathology and pathways of disease spread are essential.
- Cross-sectional imaging has become an essential tool in the evaluation of the disease processes.
- Imaging has a crucial role in defining the extent of the disease and therapeutic planning.

Keywords: CT, MRI, oral cavity, oropharynx, imaging





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RC 3.2

Parapharyngeal space and masticator space

D. Farina; Brescia/IT

Short Summary: Located just lateral to the pharyngeal space and in close relationships with all other deep spaces of the suprahyoid neck, the parapharyngeal space (PPS) is, in itself, an anatomic region of relatively small relevance. Its content mainly consists of fat tissue, some vessels (the pterygoid plexus) and minor salivary glands. Consequently, primary PPS tumors are extremely uncommon. Much more commonly this space is secondarily involved by expansile lesions or tumors arising from any of the surrounding spaces, as the different layers of the deep cervical fascia that act as a borderline between PPS and other spaces are quite easily transgressed. In these cases the PPS often offers a precious help to the radiologist, as the analysis of the pattern of compression/dislocation of its fat tissue may clarify the space of origin of a deep neck lesion, and consequently, to understand its nature. The masticator space (MS) lies anterolateral to the PPS, its main content are masticator muscles and the vertical branch of the mandible. Close to the medial surface of the internal pterygoid muscle runs the inferior alveolar nerve (V3), anteriorly the MS is in close relationships with the maxillary sinus and pterygopalatine fossa. Primary MS tumours may be of muscular, osseous or neurogenic origin; in addition extranodal NHL or congenital benign lesions (such as hemangioma and lymphangioma) may be seen. Secondary involvement may occur in advanced maxillary sinus or oropharyngeal tumors. More commonly, MS is involved by inflammatory processes of odontogenic or tonsillar origin.

Take home points:

- To learn basic anatomy and space specific differential diagnoses of PPS and MS lesions.

Keywords: Masticator, parapharyngeal, malignant tumours, benign tumours

SS 7.1

Perfusion imaging in head and neck tumors

K. Surlan-Popovic; Ljubljana/SL

Short Summary: Background: The purpose of this lecture is to describe the role of functional radiological imaging modality—CT perfusion in the evaluation of head and neck tumours. **Methods:** Perfusion CT provides a rapid evaluation of tissue perfusion and can be easily implemented in every head and neck CT protocol. The determination of tissue perfusion using CT is based on examining the relationships between the arterial, tissue and potentially the venous enhancement after the introduction of a bolus of contrast material. The quantification of the perfusion values allows us to determinate the processes of neovascularization, also known as angiogenesis, essential for the growth of head and neck tumours. **Conclusions:** Perfusion CT is a robust, accessible and promising method for the assessment of functional parameters on the tissue level. Therefore it helps outlining the malignant tissue as well as differentiating recurrent disease from nonspecific post-therapeutic changes and can be used as a therapeutic monitoring tool during and after tumour therapy.

**Take home points:**

- CT perfusion imaging is clinically feasible and can be easily implemented in every head and neck CT protocol.
- Perfusion imaging is an adjunct for tumour staging, recurrent lesions and treatment monitoring.
- More studies will provide answers to standardisation and robustness of perfusion parameters and their use in the clinical environment.

Keywords: Perfusion parameters, CT perfusion, head and neck tumour

SS 7.2**Diffusion MR imaging in head and neck**

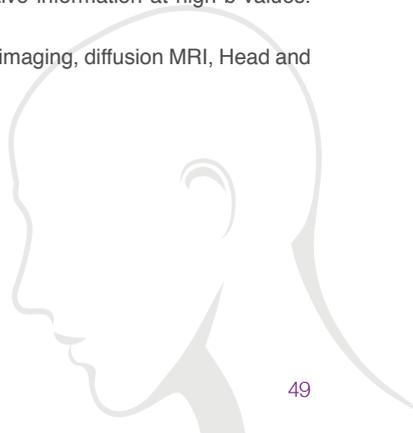
V. Vandecaveye; Leuven/BE

Short Summary: Imaging fulfils a crucial role in the work-up of head and neck cancer and its main tasks include lesion characterization, staging, facilitating treatment planning and prognostication as well as treatment follow-up. Diffusion-weighted magnetic resonance imaging (DWI) measures differences in water mobility in the different tissue microstructures in correlation to cell size, density and cellular membrane integrity, and is quantified by means of the apparent diffusion coefficient (ADC). As such, the technique has the potential to differentiate tumoral tissue from normal tissue, inflammatory tissue and necrosis. Although DWI has not reached sufficient standardization, the technique is rapidly developing and slowly progressing into clinical practice. Major potential fields of clinical application include imaging of the post-radiotherapeutic head and neck, nodal staging, (early) treatment assessment and whole body imaging.

Take home points:

- Diffusion MRI has a different target for tumor imaging than metabolic imaging and has subsequently a different way of interpretation.
- Imaging of potential tumor recurrence after chemoradiation is currently possibly the most important clinical indication.
- While Diffusion MRI facilitates nodal staging further development of tissue quantification by means of the ADC is warranted to improve its performance.
- Whole body imaging is feasible and may complement metabolic imaging.
- Don't forget that diffusion MRI also holds important qualitative information at high b-values. ADC is not the single key to diagnosis.

Keywords: Post-treatment imaging, nodal staging, whole body imaging, diffusion MRI, Head and neck cancer





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SS 7.3

Hybrid and metabolic imaging in head and neck tumours

S. Bisdas; Tübingen/DE

Short Summary: Contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI) is performed for pre- and post-therapeutic staging of head and neck malignancies. Both techniques can supply the information needed by the clinician for adequate treatment planning. Positron emission tomography (PET) is the most sensitive and specific technique for in vivo imaging of metabolic pathways in the tissues. PET alone is not able to reliably assess organ involvement and tumour invasion patterns. However, state-of-the-art PET-CT or PET-MRI hybrid exams provide a thorough evaluation of the head and neck disease including detection of any distant metastases. Furthermore, perfusion-CT or -MRI as well as diffusion MRI rely on quantitative measurements of physiologic hemodynamic or with the water diffusion related cellular parameters and are powerful adjunct imaging modalities for assessing head and neck malignancies. Physiologic CT- and MRI have shown potential for efficient therapeutic monitoring. Furthermore, metabolic imaging by means of MR spectroscopy is currently investigated for its potential to characterize lymph nodes or detect tumour relapses. Lymph nodes may be also assessed for their tumour burden by means of ultra-small super-paramagnetic iron oxide particles, though large-scale clinical evaluation is missing at the time.

Take home points:

- Hybrid CT/MR/PET modalities in diagnosis and surveillance of head and neck malignancies are currently substantial part of the imaging work-up.
- Radiologists should be aware of the advantages and shortcomings of metabolic and hybrid imaging.
- Radiologists should be able to select the appropriate modality for staging of head and neck cancer according to the needs of the clinician and treatment planning.

Keywords: CT, MRI, PET, hybrid imaging

SS 7.4

Simultaneous MR/PET head-neck cancer imaging: preliminary clinical experience and multiparametric evaluation

M. Covello, S.M. Cianelli, M. Aiello, E. Nicolai; Naples/IT

Short Summary: This study reports our preliminary results in 33 patients with Head Neck Cancer (HNC) examined with CT/PET ed hybrid MR/PET

Purpose/Objectives: The aims of the study were to evaluate the role and to assess relative benefits and difficulties of simultaneous hybrid MR/PET and CT/PET imaging in patients with HNC, and to correlate metabolic data obtained by PET and morphological and functional data (DWI, DCE) obtained by MRI with clinical findings and outcome of these patients.

Methods and Materials: All patients underwent CT/PET (GeminiTF, Philips) and MR/PET (BiographMMR, Siemens Healthcare) with FDG In 31/33 post contrast MRI examinations were obtained PET and MRI data sets were evaluated into a single, unified measurements framework



customized into Syngo via workstation. Two groups (both including one radiologist and one nuclear physician) evaluated separately the studies to define the presence or absence of lesions/recurrences. Tumor extension was defined by manually drawing ROIs, on T2-w and T1post contrast MR images by two independent radiologists, yielding a lesion mask. After verification of suitable coregistration among each imaging modality, lesion mask was superimposed to each modality carrying out peak and mean values for PET-FDG uptake, DWI and DCE.

Results: MR/PET was successfully performed in all 33 patients. In all cases MRIPET correctly identified the presence of lesions. Our protocol has allowed the simultaneous acquisition of functional and metabolic information including metabolism and vascularization. Overall mean SUV values obtained from MR/PET was slightly superior compared to corresponding values SUV of CT/PET.

Conclusion: MR/PET is suitable for the staging and follows up of HNC Further studies are needed to evaluate the efficacy and possible clinical application.

Keywords: Head and neck cancer, DCE, DWI, HIBRID PET MRI

SS 7.5

MRI of hypopharyngeal cancer: capability of delineating the anterior tumor extent to the larynx with different sequences

M. Ravanelli, U. Navarro, D. Farina, E. Botturi, A. Marconi, R. Maroldi; Brescia/IT,

Short Summary: EPI-DW and delayed VIBE seq allow differentiating tumor from peritumoral flogosis, leading to a better delineation of tumor margins.

Purpose/Objectives: to assess the peritumoral MR signal of pyriform sinus neoplasms in order to compare the ability of different MR sequences to depict tumor margins and separate tumor from peritumoral edema.

Methods and Materials: 23 consecutive patients with pyriform sinus cancer were studied by MRI. The study protocol included TSE-T2, echo-planar DWI (EPI-DW), VIBE after Gd seq. In 10/23 patients, VIBE seq in a delayed phase (delay > 5 minutes) was also acquired. MR signal was measured on MR images (TSE-T2 and VIBE) and ADC maps (EPI-DW), drawing two ROIs for each tumor in its solid center and at the anterior border. The contrast percentage (C%) of the two ROIs was calculated. The presence of peritumoral rim was also assessed.

Results: in VIBE seq and ADC maps, peritumoral signal was generally higher than tumor signal. C% between peritumoral and tumor signals was maximum for EPI-DW (+42%±16% in ADC), followed by delayed VIBE and earlier VIBE (+36%±7% and +24%±11%, respectively). Peritumoral signal on TSE-T2 was very variable, ranging among hypo-, iso- and hyperintensity compared to tumor. All differences of C% among seq were significant, except between delayed vibe and ADC. Different grades of rim enhancement were observed in VIBE images (18/21, partial in 7/18). It persisted or increased in all delayed VIBE.



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Conclusion: EPI-DW seq allow to maximize contrast between peritumoral and tumor signal, leading to a more precise delineation of anterior tumor extent toward the larynx and into the paralaryngeal space. VIBE seq, especially in the delayed phase, enhance tumor limits by peritumoral rim enhancement. TSE-T2 should be used as morphological reference for EPI-DW interpretation.

Keywords: Hypopharyngeal cancer, MR imaging, diffusion-weighted imaging, delayed phase, contrast enhancement

SS 8.1

TMJ imaging

S. Örgüç; Manisa/TR

Short Summary: Temporomandibular joint (TMJ) has a genuine anatomy and unique biomechanical features, which may lead to particular internal derangement. It is also effected by several osseous and soft tissue abnormalities, like other synovial joints. Conventional radiography is the initial method of displaying osseous anatomy. However because of its complex anatomy and soft tissue components x-ray imaging is usually insufficient. Computed tomography (CT) is useful in evaluating osseous anatomy, tumors, arthritic changes and fractures. Magnetic resonance imaging (MRI) has replaced arthrography and CT in evaluating internal derangement of the TMJ, with its ability to directly visualize the joint disc. Kinematic imaging sequences also enable to evaluate the dynamic features of the joint.

Take home points:

- TMJ has unique anatomy and biomechanical features.
- TMJ is effected by several osseous and soft tissue pathologies.
- Meticulous technique of imaging is required for the imaging of TMJ.
- MRI is the imaging modality of choice for internal derangement of TMJ.

Keywords: Magnetic Resonance Imaging, Internal derangement, Temporomandibular Joint

SS 8.2

Differential diagnosis in odontogenic tumours

S. Robinson; Vienna/AT

Short Summary: Odontogenic tumours arise from tooth derivatives. Abnormal proliferation of tissues and cells may give rise to lesions with various histologic forms. The appearance is mixed radiolucent or radiopaque, depending on the predominant tissue: odontogenic epithelium or mesenchyme, mature fibrous stroma, with or without hard tissue formation. Even though the imaging patterns are uncharacteristic, they can help to decide, whether the lesion in question is more likely to be benign and just expansive or rather aggressive and locally invasive. The constellation of clinical findings, the location within the jaw, its borders and internal architecture have to be taken into account. Special emphasis should be laid on the relationship of a lesion to adjacent teeth (crown, apex, cemento-enamel junction), the state of dentition (supernumerary/missing/impacted teeth?), the mandibular canal and other landmarks. The information of CT and

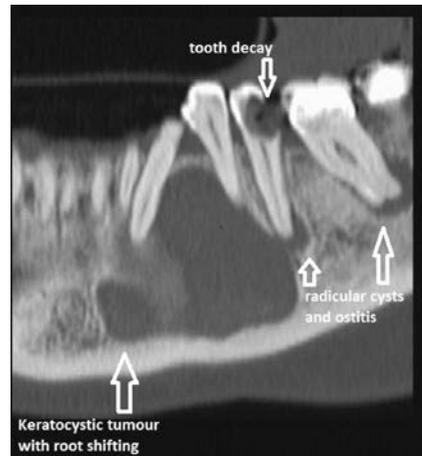
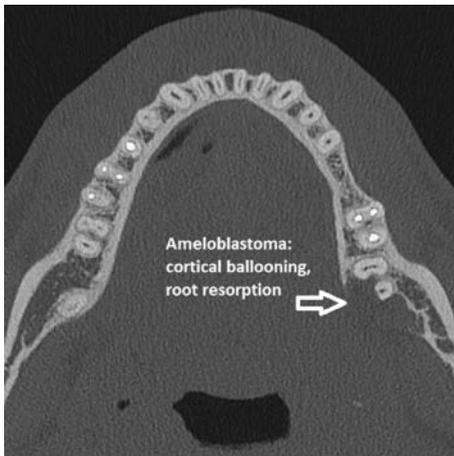


MRI is basically seen to be complimentary. Odontogenic tumours, such as keratocystic tumours, ameloblastoma, myxoma and odontoma should be separated from those of fibro-osseous origin (cemental lesions, fibrous dysplasia, ossifying fibroma), malignant tumours (type of osteolysis, periosteal reaction, soft tissue component), osteomyelitis, biphosphonate induced osteonecrosis, postsurgical findings after sinuslift and pseudolesions (Stafne, Torus).

Take home points:

- Odontogenic tumours derive from tooth derivatives and comprise a range of different lesions, giving rise to a whole array of mixed radiolucent or radiopaque lesions. Histologically benign variants are more common, grow slowly and are expansive. More aggressive entities grow locally invasive and have a much higher recurrence rate.

Keywords: Odontogenic tumours, jaw tumours, myxoma, odontoma, keratocystic odontogenic tumour, ameloblastoma





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SS 8.3

Dental imaging

T.A. Larheim; Oslo/NO

Short Summary: The term “Dental Imaging” may be interpreted in different ways. This lecture will focus on the most frequent pathological conditions that may occur in the joint skeleton closely related to the teeth (periapical or pericoronal); the jaw cysts. These are usually radiolucencies and may represent differential diagnostic challenges to cystic tumors or tumor-like conditions. Other aspects of dental imaging of interest for general and head and neck radiologists interpreting jaw images will also be reviewed.

Take home points:

- You should suspect jaw cysts when you see evident radiolucencies around crown or around root of teeth. Such radiolucencies may represent cystic tumors or tumor-like conditions.

Keywords: Cyst, tumor, jaw, radiolucency

SS 8.4

Accessory mental foramina detection by cbct in indian population

P. Jaju, S. Jaju, M. Jain, A. Singh; Bhopal/IN

Short Summary: Oral implantology is one of the most growing discipline of dentistry. Utilization of third dimension in assessment of implant sites has tremendously improved the success rate of implant treatment. Prior to implant placement assessment by Cone Beam CT, helps in understanding the three dimensional anatomy of jaw along with the variation in the anatomy. This study was aimed to assess the accessory mental foramina in Indian population with CBCT.

Purpose/Objectives: The purpose of the present study was to assess the accessory mental foramen using cone-beam computed tomography (CBCT) images in Indian population.

Methods and Materials: Study Design: A total of 100 patients were enrolled in this retrospective study at 3D Facial Imaging Centre, Nashik, India. The mental and accessory mental foramina, which show continuity with the mandibular canal, were assessed using axial and cross-sectional, 2-dimensional CBCT images. The sizes of the mental and accessory mental foramina were measured and statistically analyzed. Also, the distance between the mental and accessory mental foramina was measured.

Results: The accessory mental foramen was observed in 8.4% of patients. There was no significant difference regarding the sizes of the mental foramen between accessory mental foramen presence and absence. Also, the mean distance between the mental and accessory mental foramina was 5.3 mm.

Conclusion: The accessory mental foramen, which shows continuity with the mandibular canal, could be observed in 8.4% of the subjects using CBCT.

Keywords: CBCT, mental foramina, dental implants, accessory mental foramina, anatomic variations

**SS 8.5****CBCT in the diagnosis of osteonecrosis of the jaws**

A. Lo Casto, P. Purpura, F. Di Naro, O. Di Fede, G. Campisi, G. La Tona; Palermo/IT

Short Summary: ONJ is associated with bisphosphonates, and recently with antiangiogenic drugs. Another cause is radiotherapy. Few papers have previously investigated the value of CBCT in the diagnosis of ONJ.

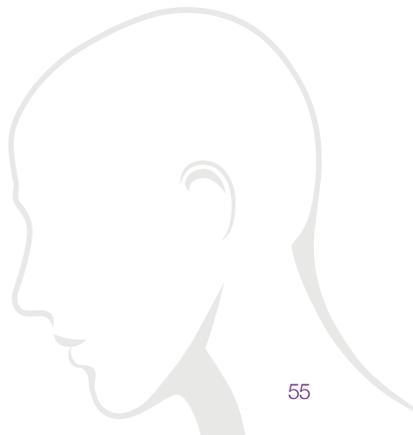
Purpose/Objectives: To describe the CBCT findings in the diagnosis of osteonecrosis of the jaws (ONJ) according to a new staging system of ONJ.

Methods and Materials: 9 patients (5 women, 4 men, 54-76 yrs.) affected by ONJ were studied with a CBCT device (90 kV, 12.5 mA, 0.25 mm voxel size) in 2012-2013. 7/9 patients were treated with bisphosphonates (5 for bone metastasis, 2 for osteoporosis), 1/9 patient was treated with an antiangiogenic drug, 1/9 patient received radiotherapy. Patients were divided in 3 stages, according to a new clinical-radiologic classification of ONJ, made by SICMF (Italian Society of Maxillo-Facial Surgery) and SIPMO (Italian Society of Oral Medicine), that gives more prominence to the radiologic findings and includes 3 stages: stage 1 focal ONJ, a) symptomatic, b) asymptomatic; stage 2 diffuse ONJ, a) symptomatic, b) asymptomatic; stage 3 complicated ONJ. Axial, panoramic, cross sectional, multiplanar and 3D reformations were analysed.

Results: Radiologic findings of ONJ were found in maxilla (7/9 patients) and mandible (7/9 patients). Patients were staged as follows: 1/9 stage 1b), 1/9 stage 2a), 4/9 stage 2b), and 3/9 stage 3. CBCT findings varied from simple osteosclerosis in stage 1b), to multifragmentary fracture, extraoral fistula, and fistula between oral cavity and maxillary sinus or nasal cavity in stage 3 patients, passing through osteonecrosis and bone sequestrum in 7 patients in stage 2-3.

Conclusion: CBCT is a valuable tool in the radiologic assessment of ONJ and proved useful in this new SICMF-SIPMO staging system.

Keywords: Staging, jaws, osteonecrosis, CBCT





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SS 9.1

Lumps and bumps in children

H.Ç. Gülerüz; Izmir/TR

Short Summary: Lumps and bumps of the neck are a common presenting complaint in children and often pose a diagnostic dilemma. A meticulous clinical history with physical examination usually provides a reasonable clinical diagnosis. Imaging is necessary for accurate diagnosis and assessment of the extent of a lesion's involvement prior to treatment. Ultrasound plays a major role in the diagnosis of subcutaneous head and neck swellings in the paediatric population and is the first line investigation of choice. Cross-sectional imaging such as magnetic resonance imaging and computed tomography serve a supplementary role. In young children MRI may require anaesthesia or sedation. The differential diagnosis of a neck mass depends on a patient's age, the anatomic location of the lesion, and its appearance on ultrasound. Lesions in the head and neck are site-specific, and radiologists should familiarize themselves with the locations of common lesions and their imaging characteristics. This lecture demonstrates, imaging findings of congenital, inflammatory and neoplastic neck lesions such as branchial cyst, cystic hygroma, neck abscess, fibromatosis coli, thyroglossal cyst, vascular malformations and neuroblastoma of the neck region.

Take home points:

- Head and neck swellings in paediatric age are frequently encountered by radiologists and they are mostly benign. Ultrasound plays a major role in the diagnosis of subcutaneous head and neck swellings in the paediatric population and is the first line investigation of choice.

Keywords: Paediatric, neck, imaging, mass

SS 10.1

What imaging quality does the ENT specialist need?

Ch. Gueldner, I. Diogo, L. Bitterwolf, K. Luenzner, J. Werner; Marburg/DE

Short Summary: Point of necessary imaging quality in imaging of paranasal sinus from point of ENT specialist will be discussed.

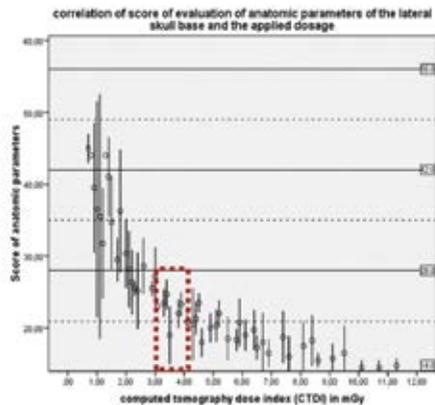
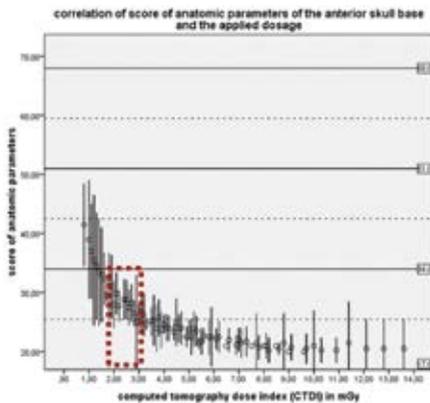
Purpose/Objectives: Usage of different imaging devices (Ultrasound, Cone beam CT, MRI, CT) in visualization of head and neck have started an ongoing discussion of radiation exposure. Especially in comparison of Cone beam CT (CBCT) and computed tomography (CT) different statements with unclear evidence exist. In general, the question of the required imaging quality can reduce irradiation.

Methods and Materials: Imaging of temporal bones and paranasal sinuses was performed at four fresh human heads. 70 examinations were performed per head by varying tube-voltage (72kV, 76kV, 80kV, 84kV, 86kV, 88kV, 90kV), tube current (2mA, 4mA, 6mA, 8mA, 10mA) and rotation angle of the tube (180°, 360°) at one CBCT device (Accu-I-tomo F17, Morita, Kyoto, Japan). A predefined list of anatomical structures was evaluated from 1 (very well) up to 4 (not visible). A sum-score was calculated for temporal bone as well as for paranasal sinus and correlated to applied dosage.

Results: As well for paranasal sinuses as for temporal bone imaging, a constant excellent imaging quality could be seen in maximum and high dosages. Certainly, in low dosages a significant reduction of quality was detected. The possible range of reduction (all single parameters visualized well as average) could be evaluated for paranasal sinuses between 2.0 and 3.0 mGy (computed tomography dosage index – CTDI) and between 3.0 and 4.0 mGy for temporal bones. So a reduction of about 70% in comparison the maximal applicable dosage is realistic.

Conclusion: Discussion of necessary imaging quality by clinicians and radiologists can realize a significant reduction of applied dosage and result in more patient safety.

Keywords: Cone beam CT, reduction of dosage, imaging paranasal sinuses, Imaging quality ENT





SS 10.2

HRCT findings of coclear otosclerosis: comparison with the clinical features

C. Oztunali, S. Saylisoy, E. Kaya, A. Incesulu, B. Adapinar; Eskisehir/TR

Short Summary: We evaluated the CT scans of patients with cochlear otosclerosis and their clinical data to see whether a relationship between the clinical features and cochlear involvement exists.

Purpose/Objectives: To assess the role of high-resolution CT scan (HRCT) in evaluation of cochlear otosclerosis and to investigate the relationship between the clinical features and cochlear involvement.

Methods and Materials: Eighteen ears of ten patients (M/F: 7/3, ranging in age from 21 to 81 years; mean, 47.2 ± 5.27 years) with cochlear otosclerosis diagnosed by temporal bone HRCT in our hospital from June 2009 to April 2013 were reviewed. Two ears were excluded due to associated chronic otitis media. HRCT findings were classified according to Symons and Fanning CT grading system and were compared with the clinical findings.

Results: The involvement areas were: the anterior fenestram (15 ears), the posterior fenestram (12 ears), the round window niche (7 ears) and the perivestibular area (12 ears). The cochlear involvement was interpreted as: grade 2B in 2 ears, grade 2C in 8 ears, grade 3 in 6 ears. Grade 2A type was not detected in our study population. Fourteen ears with cochlear otosclerosis presented with mixed hearing loss (MHL), ranging from mild to severe, while only 2 ears presented with conductive hearing loss (CHL). The main presenting symptom was hearing loss in 7 patients and tinnitus in 3 patients. Vestibular tests were positive in 2 patients.

Conclusion: Cochlear otosclerosis may present with different clinical pictures including CHL, MHL, tinnitus or vertigo. The cochlear involvement type did not correlate with the audiological and vestibular findings in this study.

Keywords: Coclear otosclerosis, high resolution computed tomography, temporal bone

SS 10.3

MSCT-criteria for assessment of the temporal bone structures for successful stapes surgery

I. Bodrova, L. Kulakova, S. Ternovoy, A. Lopatin; Moscow/RU

Short Summary: The temporal bone's structure is rather complicated and the results of surgery considerably depend on the anatomy peculiarities of this region.

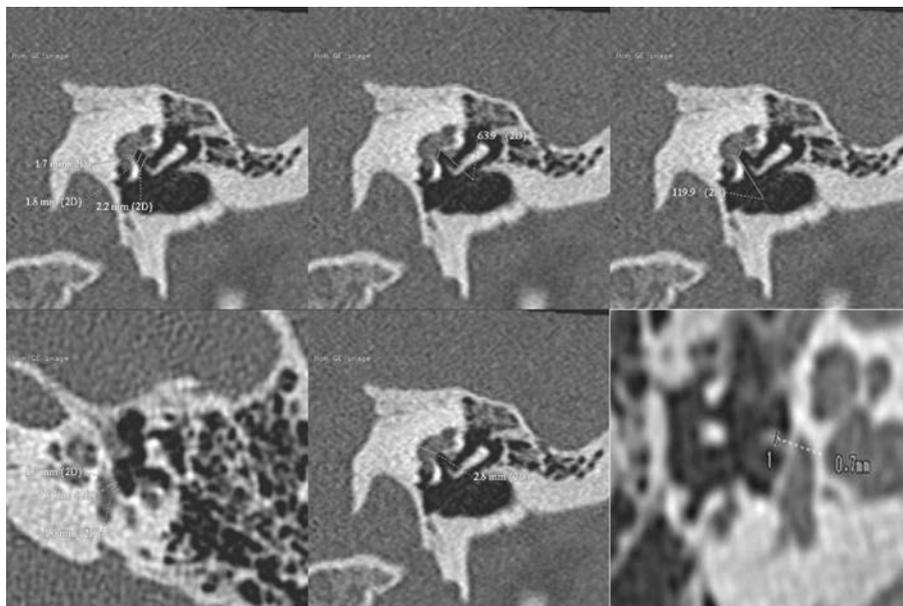
Purpose/Objectives: to determine MSCT capabilities in detection of anatomical and topographical characteristics of the oval window region before stapes surgery

Methods and Materials: 37 persons (63 ears) with otosclerosis participated in the study. Average age was $37,3 \pm 1,2$ years. 11 patients had unilateral disease, 26-bilateral. The CT study was conducted using a program of bone reconstruction with slice thickness of 0.5mm. All 63 ears underwent stapes surgery.

Results: In 63 ears noted the otosclerosis foci in a capsule of a labyrinth. Presence of overhanging of facial nerve canal over the vestibular window noted in 14 ears, protrusion of facial nerve canal noted-6 ears, presence of overhanging of a promontorium over vestibular window noted-in 9 ears. Wide niche of vestibular window noted in 45 ears, narrow-in 18. The rectangular shape of vestibular window niche was noted in 18 ears, trapezoid-in 32, triangular-in 13. Thickening of a stapes footplate noted in all 63 ears. Thickening of stapes crurae noted in 11 ears. Distance to the internal wall of a vestibule less 2mm noted in 5 ears, distance more 2mm-in 58. The stapedoplasty was performed to all patients. In 14 ears with presence of overhanging of facial nerve canal the “aim” piston stapedoplasty was performed . In 5 ears was the presence of overhanging of facial nerve canal, promontorium, the vestibular window niche occlusive by otosclerosis focus, therefore the stapedoplasty was performed with stapedectomy. Sensitivity of MSCT was 96,8%, specificity–98,4%.

Conclusion: The proposed MSCT-criteria allows to estimate the complexity of the surgery, thoroughly plan for the surgery and to predict the outcome.

Keywords: CT, MSCT, otosclerosis, stapes surgery





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SS 10.4

The accuracy of temporal bone computed tomography for the evaluation of congenital conductive hearing loss

G. Yildirim, B. Özgen, G. Atay, D. Bajin, L. Sennaroglu; Ankara/TR

Short Summary: This study demonstrated that temporal bone CT has high accuracy for the depiction of congenital ossicular anomalies.

Purpose/Objectives: CT is a very useful technique for the evaluation of the middle ear. It is currently an important tool for the evaluation of conductive hearing loss (CHL), as a noninvasive alternative to exploratory tympanotomy. Its use for the evaluation of congenital CHL has been however more limited. The aim of this study was to determine the accuracy of CT for the evaluation of the patients with congenital CHL.

Methods and Materials: CT scans of 13 patients who underwent exploratory tympanotomy were retrospectively evaluated and compared with the surgical results (accepted as gold standard).

Results: CT revealed developmental ossicular anomalies in all patients with malleal anomaly in one, incus anomaly in six and stapedial anomaly in seven patients. The most common anomaly was stapedial aplasia (in four cases) and shortened long process of the incus (in three cases). There was aberrant course of the facial nerve in five cases, located within the oval window in four cases. Oval window was atretic/stenotic in six cases. The surgical findings had complete correlation with the CT findings in 11 (84.62%) and partial correlation in two cases (15.38%), which resulted in a sensitivity of 84.62%. Malleal fixation (two cases) that was found surgically could not be detected preoperatively. There was evidence of contralateral ossicular anomaly in all but one case (not verified by surgery) and in 11 cases the contralateral anomaly mirrored the findings in the operated ear.

Conclusion: This study demonstrated that temporal bone CT has high accuracy for the depiction of congenital ossicular anomalies and can demonstrate accompanying oval window atresia/stenosis and aberrant facial course in all cases.

Keywords: Conductive hearing loss, middle ear, computed tomography

SS 10.5

Electrode migration in patients with a cochlear implant

K.S. Van Der Marel, B. Verbist, J.J. Briaire, J.H.M. Frijns; Leiden/NL

Short Summary: The position of the electrode array affects the performance of patients with a cochlear implant (CI). How stable the position of the electrode array is after insertion, has never been studied before.

Purpose/Objectives: This study investigates the occurrence of electrode migration in CI-patients.

Methods and Materials: Electrode position was evaluated in the 35 CI-patients from our clinic of whom two postoperative CT-scans were available. The study population consisted of 16 patients with a CII HiFocus1 and 19 patients with a HiRes90K HiFocus1J implant. The CT-scans were evaluated using an in-house developed MatLab-based script for measurement of angular insertion depth. In 5 patients a second CT-scan was obtained to evaluate complaints.



Displacements of more than 1mm were considered a migration. Possible correlations with implant type and insertion depth were investigated.

Results: Migrations were detected in 10 patients (29%). There was a significant effect of the implant type in favour of the HiFocus1, but no relation with the insertion depth was found. In the 5 patients who were scanned a second time because of complaints, two migrations were detected (both over 4mm).

Conclusion: In our patient population electrode migration was not uncommon and occurred in patients with and without complaints.

Keywords: Electrode Position, Migration, CT-scan, Cochlear Implantation

SS 10.6

Gallium imaging for the evaluation of necrotising otitis externa

L. Armstrong, D. Hall, A. Demmery, A. Sweed, F. Khoyratty, G. Porter, J. Kabala; Bristol/UK

Short Summary: Necrotising otitis externa (NOE) is a tenacious infection involving the external auditory canal and temporal bone. Monitoring response to therapy has proved to be difficult. We have devised a protocol using region of interest measurements to reduce inter-observer variation when interpreting Gallium imaging in NOE.

Purpose/Objectives: Gallium 67 binds to dividing cells and acts as a very sensitive but non-specific marker of inflammation. It has been used in recent times for assessing response to antibiotic therapy, although standardising such analysis has proved problematic. The aim of our study was to devise a protocol to analyse disease activity in NOE which would be accurate and reproducible between independent observers.

Methods and Materials: 8 Patients underwent gallium scanning for necrotising otitis externa. 2 patients had sequential scans to monitor response to treatment. Using Siemens Syngo software, a region of interest was drawn around the area of maximum intensity at the skull base by two radiologists (LA & JK). 4 volume sizes were selected - 100, 50, 15 & 3.5mls. A further area was selected at the unaffected side & thoracocervical (TC) junction to act as an internal controls.

Results: There was very close correlation on all 8 initial diagnostic scans; correlation was better when comparison was made with the unaffected side rather than TC junction (Pearson correlation 0.98 vs 0.64 respectively). We also had excellent correlation on the 2 patients who had end treatment scans (Pearson 0.99). Using just the 15 ml volume was found to be extremely simple, rapid and reliable.

Conclusion: We have demonstrated a method of measuring NOE activity which is reproducible with excellent correlation between observers. Work is ongoing to assess how these measurements may be correlated with disease activity.

Keywords: Gallium scintigraphy, Necrotising otitis externa, protocol, Treatment response



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SS 10.7

Evaluation of hashimoto thyroiditis with sono-elastography

A. Ünsal, F. Taşkin, E.S. Ata, M. Ünübol, E. Güney, C.Z. Karaman; Aydın/TR

Short Summary: Hashimoto Thyroiditis is the most common auto-immune disorder of thyroid. Diagnosis depends on biochemical analysis of thyroid hormones and antibodies. Current imaging studies can only reflect the chronic alterations related with the disease, instead of early findings. Sono-elastography is a novel technique which can detect the tissue stiffness. In this study, our aim was to examine the Hashimoto thyroiditis patients with sono-elastography and to evaluate if it has an adjunctive role in diagnosis.

Purpose/Objectives: To evaluate the contribution of Sono-Elastography (SE) in the Hashimoto thyroiditis (HT) patients.

Methods and Materials: 80 cases directed for thyroid ultrasound (US) were evaluated. Real-time SE was performed on a transverse frame demonstrating the gland and periphery. Pulsation/breathing was used for encoding. Images were compared to those derived from healthy volunteers as: 1) Normal, 2) Intermediate, 3) Hard-fibrotic patterns.

Results: 24 (30%) were in "subclinical hypothyroidism", remaining cases were in "overt hypothyroidism" sub-groups. 11 cases in the first sub-group were heterogeneous on US (46%); however, 19 cases (19/24, 79%) were classified as abnormal on SE. Similarly, 39 cases from the second sub-group were heterogeneous on US (70%); 53 of them (95%) were classified as abnormal on SE. From another viewpoint, 23 cases (77%) with homogeneous thyroid and 49 cases (98%) with heterogeneous thyroid on US, were classified as abnormal with SE. Overall evaluation revealed diagnostic accuracy of 80% in subclinical and 95% in overt hypothyroidism sub-groups.

Conclusion: Positive SE findings seen in patients, who are otherwise normal on US, reveal that the parenchymal alterations maybe detected before the classical US findings.

Keywords: Elastography, Hashimoto thyroiditis, Ultrasonography, Thyroid gland

SS 10.8

Revisit of plunging ranulas: emphasis of defect of mylohyoid muscle as the primary route of fluid transmission on CT scans

J.Y. Lee, H. Kim, H.Y. Lee, S.T. Kim; Seoul/KR

Short Summary: The majority of plunging ranulas may not take a traditional long course which extend from the sublingual space posteriorly into the submandibular space through the free edge of the mylohyoid muscle, but take a short cut through mylohyoid defect located anteriorly near the sublingual gland.

Purpose/Objectives: The traditional idea is that plunging ranulas occur through communication between the sublingual and submandibular spaces behind the posterior free edge of the mylohyoid muscle. Our experience, however, is that they frequently occur in the submandibular space through anteriorly located mylohyoid muscle defect. The purpose of this study is to verify this issue on the pathogenesis of plunging ranulas by using CT scans.

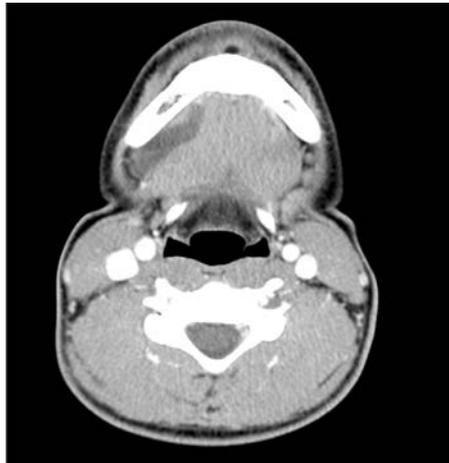
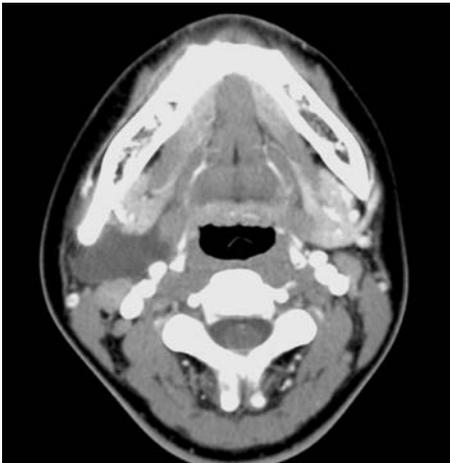


Methods and Materials: We retrospectively reviewed CT scans of 47 patients (26 males, 21 females; age range, 3-71 years; mean age, 26 years) with histologically proved plunging ranula. Based on CT findings, we classified plunging ranulas as follows: type 1, those with mylohyoid muscle defect; type 2, those with traditional posterior route; and type 3, those with indeterminate route. We further divided type 1 ranulas into type 1A and 1B, according to the presence or absence of tail sign that is seen at the mylohyoid muscle defect.

Results: Type 1A was the most common form, seen in 30 patients (64%), followed by type 2 (9 patients, 19%), type 3 (5 patients, 11%), and type 1B (3 patients, 6%). In the submandibular space, type 1 tended to be located more anteriorly in comparison with type 2.

Conclusion: Unlike the traditional description, our results suggest that the majority of plunging ranulas occur in the submandibular space more anteriorly through the mylohyoid muscle defect.

Keywords: Plunging ranula, mylohyoid muscle defect, CT, Salivary gland disease





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SS 11.1

Diagnostic approach to thyroid nodules

R. Evans; Swansea/UK

Short Summary: The incidence of thyroid nodules on Ultrasound examination ranges from 30 - 70%, depending on the age of the patient. Thyroid cancer is however rare. Ultrasound can, if used properly, provide a valuable tool in differentiating benign from malignant nodules. It should provide the stimulus for a decision as to whether to biopsy the nodule or adopt a “leave alone” policy. This presentation will outline the many Ultrasound signs that can be used and those that should be used in the assessment of thyroid nodules. A simple graphic classification system (U1-U5) will be presented. Various biopsy techniques will be discussed. A series of cases will be presented demonstrating how the classification system works.

Take home points:

- Thyroid nodules are the norm on Ultrasound assessment.
- Thyroid cancer is rare.
- Use Ultrasound appropriately to select which nodule to biopsy.
- Ultrasound classification system (U1 -U5) allows an appropriate management of the patient, in conjunction with the clinical picture and cytology/histology results following biopsy

Keywords: Ultrasound, Nodules, Thyroid

SS 11.2

Fine needle aspiration biopsy for thyroid and beyond

T. Beal; London/UK

Short Summary: The lecture will cover different fine needle aspiration techniques used to assess thyroid pathology. Emphasis will be given on ways how to optimise the needle visibility, increase adequacy rates and when to vary the aspiration technique depending on nodule type and location. The role of a “tru-cut” biopsy in the thyroid will be covered. The relationship of radiologist with cytologist/ cytopathologist, the need for audit and the advantages of a one-stop service will be discussed.

SS 11.3

Advanced imaging for thyroid disease

A. McQueen; Newcastle upon Tyne/UK

Short Summary: Thyroid disease (particularly thyroid nodule management) represents a major challenge for modern radiology. High resolution ultrasonography offers superb visualisation and anatomic characterisation of focal and diffuse thyroid abnormalities, but a significant minority of thyroid lesions remain indeterminate (even after US guided FNAC). Advances in thyroid imaging that offer more accurate, non-invasive thyroid characterisation would be highly attractive, particularly if unnecessary biopsy and surgery could be safely avoided in a large number of patients with thyroid nodules. In this session, recent advances across a variety of imaging modalities will be discussed with a concise overview of the recent literature. Topics will include thyroid ultrasonography (B mode, elastography, 3D, CEUS), MRI (DWI, DCE, MRS), dual energy CT and PET-CT.

**Take home points:**

- Technological advances in B mode ultrasonography allow high spatial and contrast resolution anatomic characterisation with increased information density.
- The current literature on ultrasound thyroid elastography involves different techniques, patient/nodule selection and assessment methods. The overall theme is that thyroid malignancies are typically stiffer than benign lesions and that a 'soft' cut off value with high NPV is feasible.
- ¹⁸F-FDG PET-CT thyroid incidentalomas occur in 2.2% of patients and are usually benign. The absence of ¹⁸F-FDG uptake accurately predicts benignity in indeterminate thyroid nodules.
- Pilot studies of DWI MRI indicate lower ADC values (i.e. restricted diffusion) in thyroid malignancy.
- Small studies of DCE-MRI suggest different enhancement patterns can differentiate benign from malignant nodules.

Keywords: Thyroid, elastography, Nodule, PET-CT, DWI MRI, DCE MRI

SS 11.4**Parathyroid imaging**

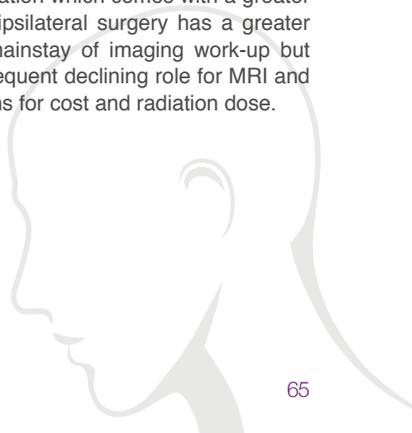
P. Richards; London/UK

Short Summary: This talk will provide a practical approach to the imaging of hyperparathyroidism. It will encompass all imaging modalities and incorporate a review of current literature. The talk is influenced by working in a busy tertiary referral centre which inevitably means exposure to a disproportionate amount of ectopic and multigland disease and to previously failed surgery. It will include discussion of how our imaging protocols have evolved over the last 5 years, particularly with the impact of Multidetector CT. A significant proportion of the talk will be dedicated to US as this is the most operator dependent investigation and will include practical tips and a review of common false positive and false negative results.

Take home points:

- The main reason for failed parathyroid surgery is the presence of ectopic glands, second adenomas and small hyperplastic parathyroid glands. These are all less conspicuous on imaging than the more typical single adenoma. There is an increasing trend for minimally invasive parathyroidectomy with limited ipsilateral neck exploration which comes with a greater requirement for accurate pre-operative localisation. Repeat ipsilateral surgery has a greater risk of morbidity. Ultrasound and scintigraphy remain the mainstay of imaging work-up but there is a rising trend in the use of dynamic MDCT, and consequent declining role for MRI and percutaneous venous sampling. With this there are implications for cost and radiation dose.

Keywords: Parathyroid, imaging, hyperparathyroidism





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SS 12.2

Advanced imaging in salivary gland diseases

K. Bhatia; Hong Kong/CN

Short Summary: Routine imaging evaluation of salivary disease includes conventional US, MRI, CT and sialography. For tumour detection and localization, conventional US and MRI are the primary imaging techniques and although several morphologic features are suggestive of specific histologies there is still appreciable overlap, including between benign and malignant pathologies. As such, diagnostic biopsy is usually required to determine or confirm the diagnosis, which also has limitations. Similarly, appreciable overlap in glucose metabolism of benign and malignant tumours limits the role of FDG-PET-CT. In recent years, functional MRI including proton MR spectroscopy, dynamic contrast enhanced MRI (DCE) and diffusion weighted imaging (DWI) have been explored for predicting salivary malignancy, while these and other novel MRI sequences have also been evaluated for other indications such as assessment of xerostomia and intra-parotid facial nerve mapping. It should be noted that MR sialography is already an accepted alternative technique for evaluating ductal disease, sialolithiasis and Sjogren's disease. Limited data is emerging on advanced ultrasound techniques for salivary disease including contrast-enhanced US and elastography. An overview of the salient evidence for these advanced techniques will be presented.

Take home points:

- Functional MRI including proton MRS, DCE and DWI reveal differences between benign and malignant salivary tumours although their accuracies are not established and roles remain unclear at present. Early data on US elastography suggests that this technique is suboptimal for differentiating salivary tumours. A few reports document improved visualisation of the normal intraparotid facial nerve using 3D-MRI sequences.

Keywords: Salivary neoplasms, proton magnetic resonance spectroscopy, diffusion weighted MR imaging, facial nerve, dynamic contrast enhanced MRI, ultrasound elastography

SS 12.3

Differential diagnosis in salivary gland tumours

N. Freling; Amsterdam/NL

Short Summary: Salivary gland tumours are rare, accounting for about 3% of all head and neck tumours. Most of the tumours are epithelial and occur in the adolescent and adult population; non-epithelial tumours may be seen in all age groups. About 70% of epithelial salivary gland tumours originate within the parotid gland, 10% arise in the submandibular glands and about 15% originate in the sublingual / minor salivary glands. 70-80% of all epithelial parotid tumours are benign; 50% of submandibular tumours are benign; sublingual tumours are considered malignant until proved otherwise. 40% of the minor salivary gland tumours are benign. The most common salivary tumour is pleomorphic adenoma, representing about 70% of all parotid gland tumours. Adenolymphoma accounts for 15%; it has a high association with smoking. Multiple and/or bilateral parotid lesions may represent benign cystic disease, adenolymphoma, lymphadenopathy or metastases. A neurogenic tumour of the intraparotid facial nerve may show direct extension into



the mastoid portion. Enlarged lymph nodes and tumours of the floor of the mouth may present as a submandibular mass. Solid tumours cannot reliably be diagnosed on imaging alone. Perineural tumour spread indicates a malignant nature.

Take home points:

- In patients clinically considered having a salivary tumour, imaging provides accurate information on uni- or bilateral location, multifocality and - clinically occult - extension of a tumour beyond the parotid or submandibular space. In combination with epidemiologic and clinical data a (differential) diagnosis can be suggested in some patients with a solid salivary gland tumour. However, a histological diagnosis is - at this time - still beyond the possibilities of imaging in most patients.

Keywords: Epidemiology, differential diagnosis, salivary gland tumor, imaging

SS 12.4

Parotid gland tumors shear-wave elastography: correlation with diffusion weighted mr imaging

S. Espinoza, I. Khettab, A. Lacan Melki, J. Silvera, N. Siauve, P. Halimi, Paris/FR

Short Summary: Shear-wave elastography is a new technique. Its diagnostic value for the distinction between benign and malignant tumours is controversial. Diffusion Weighted MR imaging is a functional technique which diagnostic value is well established: low apparent diffusion coefficient values are correlated with malignant lesions, excepted in Warthin's tumours.

Purpose/Objectives: To assess the correlation between elasticity values measured with shear-wave elastography and apparent diffusion coefficient (ADC) values of parotid gland tumours.

Methods and Materials: Prospective study including 31 consecutive patients with parotid gland tumour. They all underwent shear-wave elastography in order to measure the tumour elasticity and MR imaging with a Diffusion weighted sequence. On the ADC map, we calculate the ratio between the lesion ADC and the normal contralateral gland ADC (ADCr). We calculated the Pearson's correlation between the ADCr and the mean elasticity value of the tumours.

Results: Elasticity values:

Benign tumours mean elasticity was 13.7 +/- 6.7 kPa (n=26)

Malignant tumours mean elasticity was 27.2 +/- 8.4 kPa (n=5)

Pleomorphic adenomas mean elasticity was 11.8 +/- 5.5 kPa (n=17)

Warthin tumors mean elasticity was 17.4 +/- 7.6 kPa (n=9) ADCr. For Benign tumours mean

ADCr was: 1.38 (+/- 0.4). For Pleomorphic Adenomas, mean ADCr was: 1.60 +/- 0.27. For

Warthin's tumours, mean ADCr was: 0.85 +/- 0.17. For malignant tumours, mean ADCr was:

0.79 +/- 0.28. There was a negative correlation between ADCr values and elasticity values:

-0.52 (p<0.05).

Conclusion: There seems to be a significant negative correlation between ADCr and elasticity measured by shear-wave elastography, in parotid gland tumours.

Keywords: Parotid, tumour, Shear wave echography, elasticity, Diffusion MR



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SS 12.5

Sonoelastography in primary Sjögren's syndrome

E. Kismali, G. Karabulut, Y. Kabasakal, G. Kavukcu; Izmir/TR

Short Summary: The purpose of this study is to compare the sonoelastographic findings of salivary glands of the patients with primary Sjögren's syndrome and control group as a noninvasive method for making diagnosis and monitoring the clinical progression.

Purpose/Objectives: To compare the sonoelastographic findings of salivary glands of the patients with primary Sjögren's syndrome and control group as a noninvasive method for making diagnosis and monitoring the clinical progression.

Methods and Materials: Siemens Acuson S2000 and Hitachi Avius ultrasound devices were used. 21 female patients diagnosed primary Sjögren's syndrome were performed neck ultrasound between November of 2011 and April of 2013. The control group consists of 30 healthy female volunteers. Gray scale, color Doppler ultrasound and sonoelastographic techniques were used by same operator without any clinical information. The left parotid gland, left submandibular gland, left lobe of thyroid gland and left sternocleidomastoid muscle were evaluated. The gray scale findings, colour Doppler measurements as well as sonoelastographic measurements were compared and analysed with the control group.

Results: In control group, the colour Doppler spectral RI values of salivary glands were between 0.61 and 0.68 while the Vs values at 0.8cm were between 2.05 and 2.41. In primary Sjögren's syndrome, the color Doppler spectral RI values were between 0.64 and 0.71 while Vs values at 0.8cm were between 1.26 and 2.12.

Conclusion: In this study, sonoelastography of salivary glands in primary Sjögren's syndrome is promising as a noninvasive method to support the clinical findings for the diagnose.

Keywords: Elastography, primary sjögren's syndrome, salivary glands

IS 2.1

Oropharynx and oral cavity, Paranasal sinuses, Parapharyngeal space and masticator space

A. Borges; Lisbon/PT

Short Summary: This interactive course will focus on pathology of the PNS, oral cavity and oropharynx, parapharyngeal and masticator spaces in the format of representative clinical cases. Attendees are meant to participate in the interpretation and discussion of the cases by the use of an electronic voting system. The course will highlight the most pertinent differential diagnosis in each case and provide important clues leading to the most likely final diagnosis. In the paranasal sinus differentiating inflammatory from neoplastic disease is one of the most important imaging issues with major impact on further patient's management. Staging sinonasal malignancies is another fundamental role of imaging and this course will review the most relevant radiological signs of invasion of crucial anatomical areas such as the orbit, skull base, intracranial compartment and adjacent soft tissues. Pathology of the oral cavity and oropharynx will also be covered with main emphasis given to the intricate anatomy and proximity between these two contiguous but



distinct anatomic areas. A wide gamut of mucosal and submucosal pathologies will be presented including infectious, inflammatory, vascular and benign and malignant neoplastic disease. The parapharyngeal space is a central space in the suprahyoid neck, mainly composed by fatty tissue making it easily recognizable on cross sectional imaging. Location, site of origin and pattern of growth are the most important factors behind the differential diagnosis allowing the distinction between intrinsic (pre- and post-styloid) and extrinsic pathology originating from the surrounding spaces mainly the parotid, masticator and mucosal pharyngeal spaces. Potential perineural routes of spread along the branches of the trigeminal nerve and ascending shafts through the skull base will also be covered.

Take home points: To be able to:

- Identify pathologic processes in the supra-hyoid neck
- Provide a pertinent list of differential diagnosis
- Define the full extent of disease spread and its impact on further patient's management

Keywords: Oropharynx, masticator space, paranasal sinuses, Parapharyngeal space, oral cavity

SATURDAY, OCTOBER 5, 2013

RC 4.1

Paranasal sinus: Normal anatomy and variants

H.B. Eggesbø; Oslo/NO

Short Summary: The **ethmoid sinuses** is developed by birth as fluid filled evaginations, and air-filled during the first year. The adult ethmoid sinuses consist of 3-18 sinuses (termed cells) on each side. The **maxillary sinuses** are present as evaginations from the nasal cavities at birth, and show a biphasic growth with a rapid growth from birth till the age of six years. Then a second accelerated growth from the age of seven years takes place. The **sphenoid sinus** also develops from birth. First, as mucosal evaginations, by the age of six years the presphenoid is pneumatized and by the age of twelve years also the basisphenoid located below the sella turcica is pneumatized. Finally, pneumatization also of the anterior clinoid and pterygoid processes may occur. The **frontal sinus** is the last sinus to develop and termed frontal sinus first when the ethmoid recess (sinus) passes the superior orbital rim. This usually occurs by the age of six years. In healthy persons without mucosal disease, the ethmoid cells may expand to the surrounding bone and form extra cells, referred to as pneumatization variants. The most common pneumatization variants from the anterior ethmoid cells are **concha bullosa** (pneumatization of the middle turbinate), **infraorbital cells or Haller cells** (pneumatization below the orbital floor and adjacent to the maxillary ostium), and **agger nasi cells** (pneumatization of the most the anterior part of the maxillary bone).



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Take home points:

- To be familiar with the normal anatomy of the paranasal sinuses.
- To recognise anatomic and pneumatization variants that may predispose to inflammatory rhinosinusitis.
- To recognise anatomic and pneumatization variants that the surgeon must be aware of prior to endoscopic surgery.

Keywords: Anatomic variants, pneumatization variants, mucociliary clearance, paranasal sinuses

RC 4.2

Paranasal sinus: Pathology

S. Kösling; Halle/DE

Short Summary: In this refresher course, basic knowledge of paranasal sinus inflammations and tumours will be presented. Thereby, main concern is set on tasks of imaging. By means of selected examples possible radiological statements will be demonstrated. Sinusitis is one of the most common diseases. Whereas the diagnosis of acute rhinosinusitis is based on typical symptoms and clinical findings imaging is included in the diagnostics of chronic sinusitis: for preoperative planning including data set for navigation, contribution to the diagnosis, rarely for monitoring of the disease's course. The detection of complications and/or estimation of their stage are further aspects of imaging in inflammations. Tumours arising in the paranasal sinuses are rare (polyps are inflammatory lesions). There is a great variety of histologic types. Histology is one important point in therapeutic planning. Only in a few benign bony lesions the diagnosis can be confidently predict by CT or Cone Beam CT. Apart from those it is delivered by pathologists. Another important point in therapeutic planning is the tumour spread. Its exact assessment can only be done by radiologists. Major points which shall be considered in the analysis of tumour spread will be shown in the second part of the course. At the end possibilities and limitations in the estimation of a lesion's dignity are shortly summarised.

Take home points:

- CT plays the major role in imaging diagnostics of chronic inflammations and local complications.
- MRI is superior in the estimation of tumour spread and in the detection of intracranial complications.
- Bony lesions can be better characterised by CT.
- Diagnosis of malignant lesions has to be confirmed by histology.

Keywords: MRI, inflammation, tumour, paranasal sinus, CT

**SS 13.1****Temporal bone**B.Ö. Mocan, L. Sennaroglu; Ankara/TR

Short Summary: Because of its extensive visualization of anatomical detail, imaging is frequently used in patients who have had temporal bone surgery. However, the already complex anatomy of the temporal bone is distorted by the combination of surgical procedures and preexisting abnormalities, making proper identification of the postoperative imaging studies difficult. The purpose of this talk is to familiarize radiologists with the more common neurootologic surgical procedures (such as tympanoplasty stapedectomy and prosthesis placement as well as cochlear implantation) and to discuss the expected postoperative findings. The radiological images after initial surgery will be reviewed in selected cases with the corresponding surgical findings during the revision surgery.

Take home points:

- Familiarize yourself with the types of temporal bone surgery. Have knowledge of the expected postoperative findings in order to detect postoperative complications and residual/recurrent disease.

Keywords: Postoperative imaging, temporal bone, tympanoplasty, cochlear implant

SS 13.2**Oral cavity/Pharynx**A. Trojanowska, P. Trojanowski; Lublin/PL

Short Summary: The use of microvascular free flaps for reconstructions allowed for development of extensive resections of head and neck tumours. Radiological evaluation of patients subjected to reconstructive operations using free flaps, requires the in-depth knowledge of flap structure and anatomy. Imaging allows delineation of the tumour and plan extent of resection. Availability of reconstructive surgery extends the scope of surgical intervention, but requires meticulous consideration of the choice of flaps. It is necessary to investigate with imaging the donor site and prove flap adequate size, shape and vasculature. At the same time it is of paramount importance to assure that flap harvesting does not endanger functionality and blood supply to the donor site. Imaging studies of the donor site can reveal vascular abnormalities and therefore prevent acute and chronic donor site ischemia. In the follow up of patients with transplanted tissues specific difficulties in detecting recurrence exist because there is an altered anatomy. This lecture is based on the interpretation of CT and MR cases illustrating follow-up of microvascular free flaps used for the reconstruction of defects resulting from head and neck cancer surgery, with particular attention to the role of radiologic-clinical cooperation for the appropriate interpretation of imaging findings.

Take home points:

- Radiologist need to be familiar with reconstruction techniques and with flap anatomy and structures harvested from distal sites. This allows critical assessment of images of the reconstructed site and in differential diagnosis of possible recurrence. Imaging studies of the donor site can reveal vascular abnormalities and are crucial in shaping a suitable flap and avoiding extremity ischemia.

Keywords: Reconstruction, free flap, microvascular



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SS 14.1

Imaging for Larynx/hypopharynx and sectional anatomy

Ch. Czerny; Vienna/AT

Short Summary: The larynx and hypopharynx are two important anatomic regions of the neck. These structures have a close relationship, but clear borders. Also they have a completely different function.

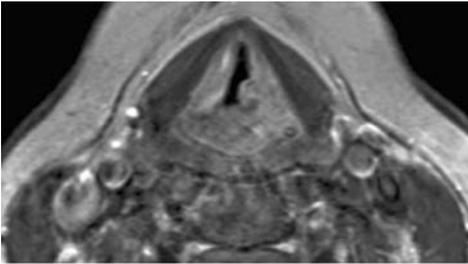
In this lecture, the imaging techniques, the different normal anatomic sections and the sectional images of CT and MRI will be demonstrated. Keystructures important for the diagnosis of tumor-spread will be highlighted.

The spread of lymphatic disease in the head and neck region caused by laryngeal and hypopharyngeal carcinomas will be explained.

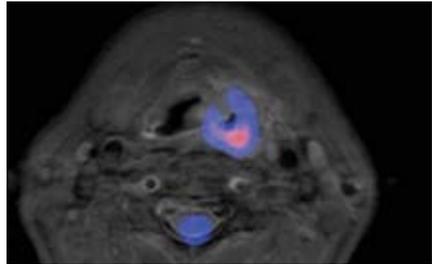
Take home points:

- To learn about the normal anatomy
- To learn about the relations and strict borders
- To learn the keystructures for staging

Keywords: Anatomy, larynx, Hypopharynx



PET-CT of hypopharyneal carcinoma



MRI showing laryngeal carcinoma left side

**SS 15.1****Nodal involvement**

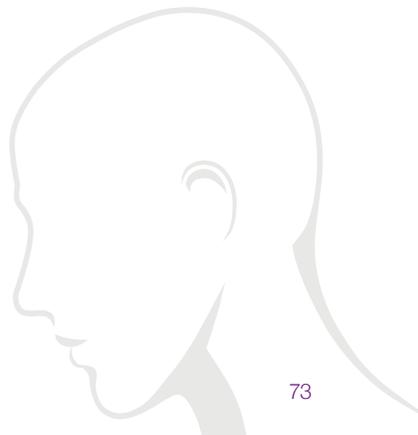
J. Olliff; Birmingham/UK

Short Summary: Pathological neck lymph nodes are identified on imaging by size, shape, morphology, blood flow, abnormal metabolism. None of the above methods are foolproof. The differentiation of a lymphomatous node from other pathologies can be difficult. Some US features may be suggestive. The use of the Apparent Diffusion Coefficient (ADC) has been suggested to differentiate between squamous cell carcinoma nodal disease and Non Hodgkin's lymphoma using MRI. There is a greater cellularity in lymphoma(NHL), which leads to a greater restriction of diffusion and hence a lower ADC. ADC for lymphoma (NHL) is fairly consistent, in the range of 0.64 to 0.66 x 10⁻³ mms²/sec PET-CT is very sensitive and specific and ideally should be used for staging of Hodgkin's and high-grade NHL. There is evidence that PET-CT can be used for early interval assessment of Hodgkin's and high-grade NHL during therapy to predict outcome. It is also useful in the assessment of residual masses. Its value in low-grade NHL is less clear. The role of fine needle aspiration cytology (FNAC), core biopsy and nodal excision is a subject of debate. Many institutions prefer to have a complete node to examine nodal architecture. The addition of flow cytometry in FNA can be helpful in the differentiation of reactive nodes from lymphomatous nodes. There is increasing use of core biopsy with 80-90% diagnostic accuracy.

Take home points:

- Recognition of an abnormal node is dependant upon size criteria, abnormal morphology or metabolism.
- There are some features that allow differentiation of a lymphomatous node with a pathological node from other causes but substantial overlap exists.
- Excision biopsy is usually preferred to make a full diagnosis with subclassification but core biopsy can be used in some circumstances.

Keywords: Lymphoma, neck nodes, biopsy, imaging





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SS 15.2

Extranodal involvement

A.D. King; Hong Kong/CN

Short Summary: Non-Hodgkin's extranodal lymphoma (ENL) is a heterogeneous disease of B, T or NK-cell origin with variable clinical behaviour (indolent to highly aggressive), which arises in many lymphatic or extralymphatic sites of the head and neck. Therefore, imaging appearances mimic a wide range of pathologies. Most ENLs are B-cell lymphomas, especially aggressive DLBC (predilection for Waldeyer's ring & sinonasal region), or indolent MALT lymphomas (predilection for orbits & glands and associated with Hashimoto's thyroiditis and Sjogren's). Most patients have ENL without (IE) or with neck nodes (IIE). However, disease below the hemidiaphragm (IIIE) or disseminated disease (IVE) is not infrequent at initial staging or relapse.

Take home points:

Imaging features of B and T-cell lymphoma

- Homogeneous well defined masses, may grow to a large size (bulky mass or extensive contiguous aerodigestive tract sites), without deep invasion. However, some are poorly defined, more aggressive subtypes show invasive features including bone invasion to cross (leaving bone relatively intact) or destroy bone.
- Multifocal sites are common within Waldeyer's ring and glands (thyroid, salivary or lacrimal).
- Accompanying neck nodes- expected and unexpected patterns of spread; numerous nodes; homogeneous nodes (but extracapsular spread, matting or necrosis are not infrequent).
- Very restricted diffusion (low ADCs).

Imaging features of NK-cell lymphoma

- Predilection for the nasal cavity.
- Subtle bands of mucosal thickening (easily overlooked), or masses.
- Propensity to be necrotic, erosion of the nasal septum and palate.

FDG-PET

- Uptake aggressive > indolent lymphomas.
- Staging more valuable in early stage aggressive NHL than indolent/low grade NHL.

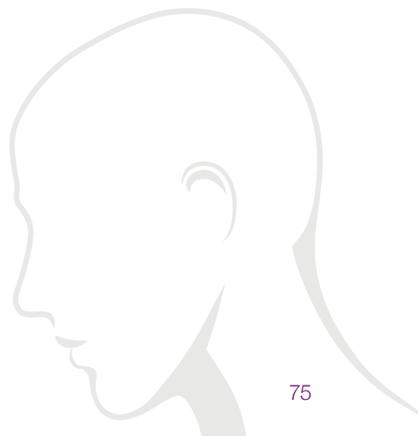
Keywords: Lymphoma, Extranodal, imaging

**SS15.3****Pseudotumors and related pathologies**B. Schuknech; Zurich/CH

Short Summary: Definition: tumefactive or diffuse process in the H&N by polymorphous inflammatory cells and myofibroblastic proliferation. The diverse often descriptive nomenclature reflects uncertainty regarding the pathogenesis. **Objective:** to present manifestations of IPT in the H&N, to introduce recently described differential new entities and to provide distinguishing features **Manifestations:** Orbital IPT- with a myositic, lacrimal, anterior, apical predilection, Tolosa Hunt syndrome; Skull base IPT with meningeal, orbital, central skull base, maxillofacial involvement Eosinophilic allergic fibrosis, IgG4 related pseudotumors as recently described novel entities; Head and neck fibromatosis constitute ill-defined or well delineated lesions of fibroblast proliferation with transspatial extension. DD: focal IPT (nodular fasciitis), amyloid deposition and fibrosarcoma. Proliferative myositis is a rare benign pseudotumor of skeletal muscle. DD myotendinitis, chondrocalcinosis and posttreatment changes. Carotidynia is increasingly recognized to harbor self-limiting inflammation within the carotid sheath as an imaging correlate with predilection for the carotid bifurcation.

Take home points:

- Inflammatory pseudotumors occur at various head and neck sites and affect different connective tissues with a variety of locations and imaging appearances A common preferentially MR imaging finding is transspatial extension, T2 hypointensity and DWi restriction avid contrast uptake and a propensity for perineural and vascular extension Knowledge of this heterogenous entities may define the site for histologic confirmation, prevent misdiagnosis as a sarcoma and unnecessary, excessive therapy.

Keywords: Pseudotumor, head and neck



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POSTER

Educational Poster

EP-01 Imaging overview of MRI in the local staging of nasopharyngeal carcinoma in the head and neck

B.S. Purohit, P. Mundada, E. Ting; Singapore/SG

EP-02 Perineural tumour spread in head and neck cancers: A case based pictorial review

B.S. Purohit, P. Mundada, E. Ting; Singapore/SG

EP-03 Odontogenic Versus Nonodontogenic Mandibular Lesions: A Pictorial Review

A. Ozgür¹, E. Kara¹, R. Arpacı¹, T. Arpacı², M. Nass Duce¹, D. Apaydin¹; ¹Mersin/TR, ²Adana/TR

EP-04 Orbital implants and surgical devices – A pictorial review

R. Vaidhyanath, S. Suresh Babu; Leicester/UK

EP-05 What should be considered in the evaluation of cochlear implantation: preoperative key points for radiologists

Y. Pekcevik, T. Ozturk, H.C. Guleryuz, G. Kirkim, B. Serbetcioglu, E.A. Guneri; Izmir/TR

EP-06 Imaging retropharyngeal edema: differential diagnosis in the pediatric and adult population.

P. Gillardin, M. Lemmerling; Gent/BE

EP-07 Diffusion-Weighted Echo-Planar MRI for the Evaluation of Laryngeal Lesion

Y. Pekcevik, I. Cukurova; Izmir/TR

EP-08 Vascular pitfalls simulating lesions in head and neck imaging

D.V. Sumi, M.R.T. Garcia, J.F. Guimarães, R.L.E. Gomes, C.R. Soares, M.M. Daniel, M.B.D.G. Funari; Sao Paulo/BR

EP-09 Tumors and tumorlike lesions of the orbit: Check your knowledge!

G. Cabuk, A. Ozgür, R. Arpacı, M. Nass Cuce, E. Kara; Mersin/TR

EP-10 ‘An eye for an eye’: Imaging of surgically implanted devices within the globe and orbit

A. Adams, C. Poitelea, K. Mankad, D. Verity, I. Davagnanam; London/UK

EP-11 Imaging Cholesteatoma with Non - Echoplanar (HASTE) Diffusion Weighted Imaging - Current status

J. Siddiqui, P. Khatri, A. Singh, R.K. Lingam; London/UK

EP-12 Pictorial review of trigeminal neuralgia

S. Pina, C.G. Ramos; Porto/PT

EP-13 Imaging the Anterior Ocular Adnexal Structures

R. Patel, V. Lee, R.K. Lingam; London/UK

EP-14 Incomplete Partitions: Similarities And Differences

S. Saylisoy, C. Oztunali, E. Kaya, A. İncesulu, B. Adapinar; Eskisehir/TR

**EP-15 Imaging features of minor salivary gland neoplasms**

S. Vaidyanathan¹, M. Igra¹, D. Oswal², N. Spencer², B. Carey¹, S. Karthik¹; ¹Leeds/UK, ²Wakefield/UK

EP-16 Practical Approach to the urgencies of the head and neck

C. Corbella, G. Solana, J.Á. De Marcos, J.L. Dolz; Terrassa/ES

Scientific Poster**SP-01 Diffuses plexiformes neurofibroma infiltrating the supra- and infrahyoid neck spaces in neurofibromatosis type 1**

F. Wagner, M. Caversaccio, V. Kölzer, C. Ozdoba; Bern/CH

SP-02 atypical localization and unusually age for diagnosis of an atypical teratoid rhabdoid tumor

F. Wagner, A. Raabe, V. Kölzer, A. Pirwitz-Biedermann, C. Ozdoba; Bern/CH

SP-03 US initial guess on suspicious or malignant cytologies of thyroid nodules – right or wrong?

L. Fernandes, I. Leite, D. Antunes, M.M. Almeida, I. Távora; Lisbon/PT

SP-04 Can 99mTc-Sestamibi SPECT/CT prevent intraoperative parathyroid hormone measurement during minimally invasive radioguided parathyroidectomy?

H. Svirvydenka, G. Manca, D. Volterrani, G. Mariani; Pisa/IT

SP-05 Ortner's Syndrome: Two Case Reports

S. Saylısoy, E. Kaya, C. Oztunali, H. Vural, B. Adapinar; Eskisehir/TR

SP-06 Embryotic carotid basilar anastomoses: MRA study

J.L. Dolz, C. Corbella, J.Á. De Marcos, L. Goiburú; Terrassa/ES

SP-07 Nasopharyngeal neuroendocrine carcinoma metastasising to the thyroid gland: diagnosis by close imaging and pathological correlation

J. Siddiqui, P.-Y. Wong, R. Farrell, P. Khatri, R.K. Lingam, T. Levine; London/UK

SP-08 Pleomorphic adenoma in children

E.S. Sanverdi, M.A. Gurses, E. Turan; Ankara/TR

SP-09 Radiographic diagnosis of osteochondritis dissecans of Temporomandibular Joint: Two case reports

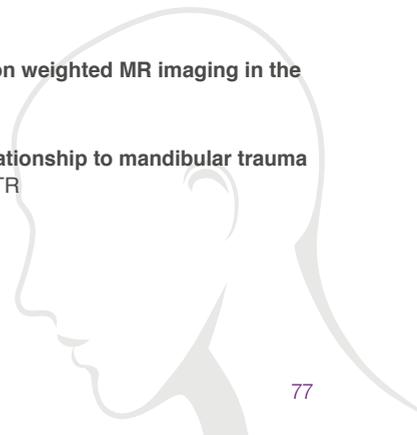
S. Yılmaz, M.Z. Adışen, M. Mısırlıoğlu; Kırıkkale/TR

SP-10 Comparison of Conventional sequences and Diffusion weighted MR imaging in the Diagnosis of Temporomandibular Joints

K. Orhan, S. Aksoy; Lefkosa/TR

SP-11 Isolated tympanic plate fracture frequency and its relationship to mandibular trauma

C. Altay, N. Erdoğan, E. Eren, O. Batki, S. Altay, E. Uluç; Izmir/TR





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SP-12 Case of a woman with simultaneous sphenoid and left frontal sinus aplasia, right frontal sinus hypoplasia, bilateral maxillary and ethmoid sinus hypoplasia

E. Psycharakis, G. Gavridakis, I. Baroudas, L. Triantafyllou; Heraklion/GR

SP-13 Cortical Representation of Parafunctional Tooth Clenching: an fMRI experiment

S. Yilmaz¹, M. Mısırlıoğlu¹, A. Örs Gevrekçi², C. Aşkın³, M.Z. Adışen¹; ¹Kırıkkale/TR, ²Bilecik/TR, ³Istanbul/TR

SP-14 Absence of the Common Carotid Artery: A Rare Vascular Anomaly

B. Akdal Dölek, L. Altın; Ankara/TR

SP-15 CT findings of a case with congenital nasal pyriform aperture stenosis accompanied by solitary median maxillary central incisor

E. Gökçe, A. Eyibilen, F. Aktaş, Z. Özmen; Tokat/TR

SP-16 Radiological Imaging Findings of Acquired Dacryocystoceles

E. Gökçe¹, M. Beyhan¹, B. Acu², H. Deniz Demir¹; ¹Tokat/TR, ²Eskişehir/TR

SP-17 Computerized Tomography Findings of a Patient with Diffuse Amyloid Goiter Accompanied by Fatty Infiltration

E. Gökçe, E. Yenidogan, R.D. Koseoglu, S. Tali; Tokat/TR

SP-18 CT and MRI Findings of a Transitional Cell Carcinoma Case Located at Sinonasopharyngeal Junction Level

E. Gökçe, A. Eyibilen, F. Markoc, Z. Özmen, F. Aktaş; Tokat/TR

SP-19 Venous hemangioma of tongue and neck with multiple phleboliths: 2 case reports

S. Yilmaz¹, M.Z. Adışen², M. Mısırlıoğlu²; ¹Kırıkkale/TR, ²Kırıkkale/TR

SP-20 Superior cervical ganglion: A Retropharyngeal node mimic

A. Karandikar, S.C. Loke, J.P.N. Goh, M.L.-C. Khoo, E.A. Ling, T.Y. Tan; Singapore/SG

SP-21 Radiologic diagnosis in case of pain syndrome in the parotid-masticatory region as the result of dental treatment complication

N. Solonskaya; Moscow/RU

SP-22 Radiodiagnosis of odontogenic osteomyelitis

I. Zorina, E. Egorova; Moscow/RU

SP-23 Comparison of Cone Beam Computed Tomography and Standart Sinus-Protocol in Computed Tomography Examinations of Paranasal Sinuses

F. Namdar Pekiner, A. Dumlu, M.O. Borahan; İstanbul/TR

SP-24 Imaging of Perilymph Fistulae of the Round and Oval Windows in the Absence of a Fracture

Z. Aloraini, F. Veillon, S. Riehm, A. Charpoit, C. Debry, P. Hemar, J.-F. Matern, B. Rock; Strasbourg/FR

SP-25 3DGEHRT2 versus T1WSE in the Evaluation of Peripheral Facial Palsy in Facial Neuritis

A. Alnajdi, F. Veillon, J.-F. Matern, M. Abu Eid, S. Moliere, B. Rock; Strasbourg/FR

SP-26 Can a paratracheal cyst (tracheal diverticula) be a cause of vocal cord paralysis ?

N. Erdoğan, L. Karakaş, Ş. Karasu, C. Altay, B. Dirim Mete, E. Uluç, E. Eren; Izmir/TR

**SP-27 Esthesioneuroblastoma: 2 cases**

R.P. Demir, D. Gökharman, E. Ergün, K. Temiz, E. Yurduseven, P. Koşar; Ankara/TR

SP-28 Extraaxial choroma of the cerebellopontine angle

R.P. Demir, P.S. Öztekin, H. Yiğit, P. Koşar, B. Karataş, B. Akhan; Ankara/TR

SP-29 Epidermoid tumor in frontal sinus

T.L. Stavic, I.D. Jovanovic-Stavic, A.T. Medan; Belgrade/RS

SP-30 Sonographic Review of Different Parathyroid Pathologies with Histopathologic Correlation

T.Acar, G. Kavukcu, S. Tamsel, S.S. Ozbek; Izmir/TR

SP-31 Barotraumatic blowout fracture of the orbit after sneezing: Cone beam CT demonstration.

A. Lo Casto, P. Purpura, L. Galbo, F. Barreca, G. La Tona; Palermo/IT

SP-32 Hemorrhagic Labyrinthitis with MRI Findings

C. Oztunali, S. Saylisoy, A. İncesulu, L. Celik, B. Adapinar; Eskisehir/TR

SP-33 Cone beam CT compared to 64- and 320-multidetector row CT: measurements of radiation dose

D.V. Sumi, M.R.T. Garcia, E.F. Silva, M.C. Silva, R.L.E. Gomes, M.M. Daniel, M.B.D.G. Funari; Sao Paulo/BR

SP-34 Giant salivary gland calculi: diagnostic imaging

H.T. Bulut; Adiyaman/TR

SP-35 Monostotic Fibrous Dysplasia of the Clivus: Imaging Findings

H.T. Bulut; Adiyaman/TR

SP- 36 Diffuse cervical muscle and soft tissue infiltration – a rare pattern of spread in head and neck carcinoma.

R. Saat, J. Tarkkanen, L. Bäck, A. Markkola; Helsinki/FI

SP-37 Combined B-Mode Ultrasound and Real-time Qualitative Elastography for the Preoperative Diagnosis of Cervical Metastatic Lymph Nodes in Papillary Thyroid Carcinoma

Y.-J. Lee¹, S.L. Jung²; ¹Sosa, Wonmi, Buchoen, Gyeonggi/KR, ²Seoul/KR

SP-38 The Role of Imaging in TMJ Implantation- Our 5 year Experience.

E. Loney, K. Partington, S. Worrall; Bradford/UK

SP-39 Osteoradionecrosis After Radiation Therapy For Tongue Cancer; A Case Report

B. Çağlı¹, S.A. Tuncel¹, M.Y. Kırıcı¹, V. Ermiş¹, E. Yılmaz², M.E. Ünlü¹; ¹Edirne/TR, ²Şanlıurfa Suruç/TR

SP-40 Virtually-tracked US-guided Radiofrequency Ablation(RFA) of Benign Thyroid Nodules: Preliminary Results

G. Turtulici, A. Corazza, R. Sartoris, A. Arcidiacono, F. Nosenzo, S. Perugin Bernardi, E. Silvestri; Genoa/IT



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SP-41 Apocrin papillary cystadenoma: A rare tumor of the parotid gland

V. Ermiş¹, S.A. Tuncel¹, B. Çağlı¹, S.Ç. Mıdık¹, E. Yılmaz², M.E. Ünlü¹; ¹Edirne/TR, ²Şanlıurfa Suruç/TR

SP-42 Bing-Neel syndrome: A case report

B. Çağlı¹, S.A. Tuncel¹, V. Ermiş¹, F. Sivri¹, A. Esenkaya², M.E. Ünlü¹; ¹Edirne/TR, ²Düzce/TR

SP-43 MRI Findings Of Two Cases With Sternberg Canal Encephalocele

B. Çağlı¹, S.A. Tuncel¹, M.Y. Kırıcı¹, V. Ermiş¹, A. Esenkaya², M.E. Ünlü¹; ¹Edirne/TR, ²Düzce/TR

SP-44 Computerised Tomography And Magnetic Resonance Imaging Findings in Moyamoya Disease

M.Y. Kırıcı¹, H. Gençhellaç¹, B. Çağlı¹, S.A. Tuncel¹, E. Yılmaz², M.E. Ünlü¹; ¹Edirne/TR, ²Şanlıurfa Suruç/TR

SP-45 Atypically Localised Chronic Osteomyelitis and Imaging Findings

S.Ç. Mıdık¹, H. Gençhellaç¹, F. Sivri¹, B. Çağlı¹, E. Yılmaz², M.E. Ünlü¹; ¹Edirne/TR, ²Düzce/TR

SP-46 Aneurysmal bone cyst of the ethmoid secondary to fibrous dysplasia

S. Gönülcü, G.A. Ocak, M. Akyuz, K. Karaali; Antalya/TR

SP-47 A rare cause of proptosis in children: Orbital lymphangioma

M.A. Oztek, İ.C. Başsorgun, D.İ. Geçilmez, K. Karaali; Antalya/TR

SP-48 A Thyroid Follicular Carcinoma Presented With Calvarial Metastases; A Case Report

M.Y. Kırıcı¹, B. Çağlı¹, S.A. Tuncel¹, S.Ç. Mıdık¹, A. Esenkaya², M.E. Ünlü¹; ¹Edirne/TR, ²Şanlıurfa Suruç/TR

SP-49 Nasoalveolar cyst: A case report

F. Sivri¹, S.A. Tuncel¹, B. Çağlı¹, E. Yılmaz², M.E. Ünlü¹; ¹Edirne/TR, ²Şanlıurfa Suruç/TR

SP-50 Parapharyngeal space schwannoma: a case report

F. Sivri¹, B. Çağlı¹, S.A. Tuncel¹, M.Y. Kırıcı¹, A. Esenkaya², M.E. Ünlü¹; ¹Edirne/TR, ²Düzce/TR

SP-51 Subglottic Hemangioma as a Rare Cause of Stridor in Infants

S. Gönülcü, A.G. Arslan, C. Boneval; Antalya/TR

SP-52 Cholesterol granuloma of the frontal sinus; a case report

N. Erdoğan¹, A. Sarsilmaz², C. Altay¹, Ş. Karasu¹, B. Dirim Mete¹, E. Uluç¹; ¹Izmir/TR, ²Istanbul/TR

SP-53 CBCT Findings of an Incidentally Revealed Rhinolith

A. Sinanoğlu, B. Kan, K. İla, K. Yıldız; Kocaeli/TR

SP-54 Branchial cleft cyst at an unusual location; a rare case

N. Erdoğan¹, A. Sarsilmaz², C. Altay¹, Ş. Karasu¹, B. Dirim Mete¹, E. Uluç¹; ¹Izmir/TR, ²Istanbul/TR

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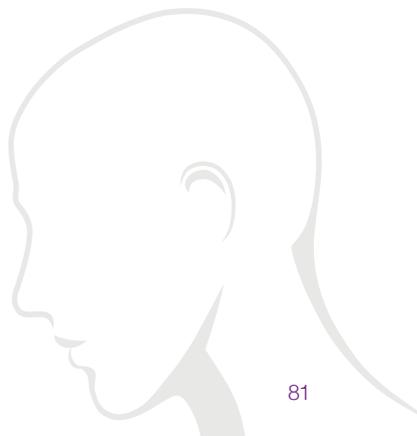
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None of the local organising/scientific committee members disclosed any relationships.

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