1. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

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2007

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2. Headache

Headache

Headache: Journal of Head and Face Pain is the official publication of the American Headache Society (AHS). The editorial board welcomes for consideration papers on head and face pain and all other aspects of pain concerned with clinical or basic research.

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3. International Headache Society International Classification ...

International Headache Society
International Classification of Headache Disorders II
(ICHDII)
Cephalalgia, 2004

14 CATEGORIES
• The Primary Headaches: 1-4
• The Secondary Headaches: 5-12
• Cranial Neuralgias, central and primary facial pain and other headache disorders: 13
• Others: 14

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4. The Primary Headaches (1-4)

The Primary Headaches (1-4)

1. Migraine
   *without aura
   *with aura
2. Tension-type headache
3. Cluster headache and other trigeminal autonomic cephalalgias
4. Other primary headaches

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5. The Secondary Headaches (5-12)

The Secondary Headaches (5-12)

5. Attributed to head and/or neck trauma
6. Attributed to cranial or cervical vascular disorder
7. Attributed to non-vascular intracranial disorder
8. Attributed to a substance or its withdrawal
9. Attributed to infection
10. Attributed to disorder of homeostasis
11. HA or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures
12. Attributed to psychiatric disorder

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6. Headache attributed to head and/or neck trauma (5.1-7)

Headache attributed to head and/or neck trauma (5.1-7)

5.1 – Acute post-traumatic HA

moderate or severe head injury

5.2 – Chronic post-traumatic HA

5.3 – Acute HA attributed to whiplash injury

5.4 – Chronic HA attributed to whiplash injury

5.5 – HA attributed to traumatic intracranial hematoma

5.6 – HA attributed to other head and/or neck trauma

5.7 – Post-craniotomy HA

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7. Headache attributed to cranial or cervical vascular disorder...

**Headache attributed to cranial or cervical vascular disorders (6.1-7)**

6.1 – Ischemic stroke or TIA  
6.2 – Non-traumatic intracranial hemorrhage  
6.3 – Unruptured vascular malformation  
6.4 – Arteritis  
6.5 – Carotid or vertebral artery disorder  
6.6 – Cerebral venous thrombosis  
6.7 – Other intracranial vascular disorders  
   (CADASIL, MELAS, pituitary apoplexy)

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8. Headache attributed to a substance or its withdrawal (8.1-4)...

**Headache attributed to a substance or its withdrawal (8.1-4)**

8.1 – HA-induced by acute substance use or exposure  
   NO donor-induced  
   PDE inhibitor-induced  
   Alcohol-induced  
   HA-induced by food components and additives  
   Cocaine-induced  
   Cannabis-induced  
8.2 – Medication overuse HA  
8.3 – HA as an adverse event attributed to chronic medication  
8.4 – HA attributed to substance withdrawal  
   Caffeine-withdrawal  
   Opioid-withdrawal  
   Estrogen withdrawal

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9. Headache or facial pain attributed to... (11.1-8)

Headache or facial pain attributed to disorders of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures (11.1-8)

11.1 – Cranial bones
11.2 – Neck
    Cervicogenic headache
11.3 – Eyes
11.4 – Ears
11.5 – Sinus disorders (“Sinus headache”)  
11.6 – Teeth, jaws or related structures
11.7 – TMJ disorders (TMD)

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10. Cranial neuralgias, central and primary facial pain and othe...

Cranial neuralgias, central and primary facial pain and other headaches (13.1-19)

13.1 – Trigeminal neuralgia
13.2 – Glossopharyngeal neuralgia
13.8 – Occipital neuralgia
13.9 – Neck-tongue syndrome
13.12 – Constant pain caused by compression, irritation, or distortion of cranial nerves or upper cervical roots by structural lesions

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11. Cranial neuralgias, central and primary facial pain and other...

Cranial neuralgias, central and primary facial pain and other headaches (13.1-19)

13.13 – Optic Neuritis
13.15 – Head or facial pain attributed to herpes zoster
post-herpetic neuralgia
13.16 – Tolosa-Hunt syndrome
13.18 – Central causes of facial pain
anesthesia dolorosa
central post-stroke pain
facial pain attributed to multiple sclerosis
persistent idiopathic facial pain
burning mouth syndrome

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12. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

“What is It Really??”

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13. Differential Diagnosis of Carniofacial Pain (SJS II)

**Differential Diagnosis of Carniofacial Pain (SJS II)**

*Neuralgiform (Neurogenic)*
- Trigeminal nerve involvement
  *Trigeminal Neuralgia (TN)*
    - Idiopathic
    - Symptomatic
  *Neuropathic Pain Disorder*
- Other cranial nerve involvement

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14. Differential Diagnosis of Craniofacial Pain

**Differential Diagnosis of Craniofacial Pain**

- Primary and secondary headache disorders
- Ophthalmologic
- Ear, nose, and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra-extra-cranial)
- Psychogenic (DSM-IVR)

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“Common Things Occur Commonly”

- Common presentation of a common disorder
- Unusual presentation of a common disorder
- Common presentation of an unusual disorder
- Unusual presentation of an unusual disorder
- Rare presentation of a rare disorder

Where do we start??
17. Differential Diagnosis of Craniofacial Pain: Slide 17

“It is more important to know what sort of person has a disease than to know what disease a person has.”
Sir William Osler

or

“When in doubt, talk to your patient.”
SJ Scrivani

18. Diagnostic Evaluation

Diagnostic Evaluation

• Chief complaint
• History of present illness
• Past medical history
• Review of systems
• Physical examination
• Diagnostic studies
• Assessment/Differential diagnosis
• Plan

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19. Pain History

Pain History

- Location
- Radiation
- Duration
- Quality
- Intensity
- Timing
- Exacerbates ??
- Alleviates ??
- Neurosensory deficit
- Motor deficit
- Autonomic findings

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20. Psychological Assessment

Psychological Assessment

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21. Physical Examination

**Physical Examination**

**“20 foot” Examination**

- Vital signs
- Mental Status
- Skin
- HEENT
- Neck
- Metabolic
- Hernatologic
- Cardiac
- Respiratory
- GI/GU
- Musculoskeletal
- Neurological
- Psychological

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22. Craniofacial Examination

**Craniofacial Examination**

- General appearance
- Head examination
- Neck examination (Carotid)
- Oral cavity examination
- Dentition examination
- Occlusal examination
- Salivary gland examination

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23. Craniofacial Examination, cont.

Craniofacial Examination, cont.

- Mandibular function examination
- TM Joint noise
- TM Joint palpation
- Masticatory muscle examination
- Cervical muscle examination
- Neurological examination (cranial nerves)

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24. Diagnostic Studies

Diagnostic Studies

- Imaging Techniques
- Blood Studies
- Lumbar Puncture
- EMG/NCV/QST
- Psychological Testing
- Biopsy
- Diagnostic Injections
- Intravenous Drugs

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25. Diagnostic Evaluation

Diagnostic Evaluation

- Differential Diagnosis/Problem List
- Plan/Treatment

26. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

*Neuralgiform (Neurogenic)
  - Trigeminal nerve involvement
    *Trigeminal Neuralgia (TN)
      - Idiopathic
      - Symptomatic
  *Neuropathic Pain Disorder
  - Other cranial nerve involvement
27. Trigeminal Neuralgia & “Trigeminal Neuralgia Equivalents”

- Paroxysmal pain
- Trigger areas
- Unilateral
- No sensory deficit
- Restricted to the distribution of the trigeminal nerve
- No obvious source of pathology

28. Characteristics of Patients

**Characteristics of Patients**

_Scrivani SJ, Mathews ES, Keith DA, Kaban LB: 1997_

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<td>V-2, V-3</td>
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<td>40%</td>
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<tr>
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<td>4%</td>
<td>13%</td>
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**Text JM, van Loveren H, 1995**
Classification of TN

- “Classical” or Primary TN – Idiopathic
- “Symptomatic” or Secondary TN – Associated with another disease process
- Pre-trigeminal neuralgia
- Atypical TN

Etiology??

- Peripheral vs. Central ??
- Ectopic afferent activity ??
- Chronic irritation / inflammation ??
- Demyelination ??
- Vascular compression ??
- Seizure activity / epilepsy ??
31. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

*Neuralgiform (Neurogenic)
  * Trigeminal nerve involvement
  * Trigeminal Neuralgia (TN)
    - Idiopathic
    - Symptomatic
  * Neuropathic Pain Disorder
  * Other cranial nerve involvement

32. Neuropathic Facial Pain

Neuropathic Facial Pain

“Old & New Names”

* Atypical Facial Pain (AFP)
* Atypical TN
* Atypical Odontalgia ("Persistent toothache")
* Deafferentation Pain Syndrome
* Phantom Tooth Syndrome
* Sympathetically Maintained Pain

Persistent Idiopathic Facial Pain
Chronic Regional Pain Syndrome I & II

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33. Persistent Idiopathic Facial Pain (ICHD II)

**Persistent Idiopathic Facial Pain (ICHD II)**

- Pain (constant, diffuse, burning, deep pain possible paroxysms of sharp)
- Unrelated to associated tissue damage
- Disproportionate to the stimulation of nociceptors
- Often not associated with neuroanatomical distributions
- Second and third division
- Cutaneous hypersensitivity
- Associated psychopathology
- Multiple associated signs and symptoms or dysfunction

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34. Chronic Neuropathic Facial Pain

**Chronic Neuropathic Facial Pain**

*“Trigeminal Neuropathic Pain Disorder”  
IHS – “Idiopathic Persistent Facial Pain”*

- Complex, multi-factorial process
- Regional
- Pain is the primary symptom
- Additional symptoms which occur together; the sum of signs of any morbid state - a Syndrome
- “CRPS type I and II”

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35. CRPS of the Head and Neck

CRPS of the Head and Neck

Does it exist ???
    YES !
What is the pathophysiologic mechanism ?
    Not known !
What do we call it ?
    Neuropathic facial pain !
How should we treat it ?
    In any way possible ! .....BUT

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36. Burning Mouth/Tongue (Oral Burning)

Burning Mouth/Tongue
(Oral Burning)

Neuropathic Pain Syndrome
+
Taste Abnormality??

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37. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

- **Primary & secondary headache disorders**
- Ophthalmologic
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra-extra-cranial)
- Psychogenic (DSM-IVR)

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38. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

- **Primary & secondary headache disorders**
- **Ophthalmologic**
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra-extra-cranial)
- Psychogenic (DSM-IVR)

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39. Headache or facial pain attributed to... (11.1-8)

Headache or facial pain attributed to disorders of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures (11.1-8)

11.3 – HA attributed to disorder of eyes

- Acute glaucoma
- Refractory errors
- Latent or manifest squint
- Ocular inflammatory disorder

40. Headache and Facial Pain Syndromes with Eye Pain

Headache and Facial Pain Syndromes with Eye Pain

- Cluster headache and cluster-tic syndrome
- Paroxysmal hemicrania
- SUNCT syndrome
- Trigeminal neuralgia
- Sphenopalatine neuralgia (Sluder’s neuralgia)
- Ice-pick headache
- Ice cream headache
- Hypnic headache
- Eye pain, headache, and lung cancer
- Nonorganic pain and headache (psychosomatic and psychiatric disorders)
Red Flags for a Patient with Eye Pain

- New visual acuity defect, color vision defect, or visual field loss
- Relative afferent pupillary defect
- Extraocular muscle abnormality, ocular misalignment, or diplopia
- Proptosis
- Lid retraction or ptosis
- Conjunctival chemosis, injection, or redness
- Corneal opacity
- Hyphema or hypopyon
- Iris irregularity
- Nonreactive pupil
- Fundus abnormality
- Recent ocular surgery (< 3 months)
- Recent ocular trauma

Facial Pain Syndromes with Predominant Ophthalmologic Findings

- Ocular motor nerve palsy
- Carotid artery disease
- Orbital inflammatory pseudotumor
- Increased ICP and pseudotumor cerebri
- Intracranial hemorrhage and stroke
- Intracranial A-V malformation
- Trigeminal neuropathies
- Tolosa-Hunt syndrome
- Raeder’s paratrigeminal syndrome
- Gradenigo’s syndrome
- Postherpetic neuralgia
43. Headache Patterns: Carotid Dissection

**Headache Patterns: Carotid Dissection**

- H/A as initial symptom 47%
  - 15% thunderclap
  - 85% gradual
- Severity
  - 75% severe
  - 25% mild/moderate
- H/A present at any time 68-92%
- Neck pain only 19%
- Orbital pain alone 10-17%

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44. Orbital Inflammatory Pseudotumor

**Orbital Inflammatory Pseudotumor**

- Idiopathic orbital inflammation
- Eye pain typically with other orbital findings (proptosis, injection, chemosis, or ophthalmoplegia)
- The inflammatory process may be confined to one or multiple extraocular muscles (orbital myositis), the trochlea (trophleitis), the lacrimal gland (dacryo adenitis), or nonspecifically affect the entire orbit – OIP
- May be unilateral or bilateral
- Imaging (CT or MRI) typically shows inflammation, enlargement, and pathological contrast enhancement involving orbital structures
- Orbital biopsy may be required to exclude other causes

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45. Idiopathic Intracranial Hypertension & Pseudotumor Cerebri

**Idiopathic Intracranial Hypertension**  
“Pseudotumor Cerebri”

- Primarily in young, obese women of childbearing age
- Headache (CDH), transient visual obscurations (seconds), pulsatile intracranial noises, double vision
- Typically visual acuity and color are preserved, but optic nerve-related visual field defects are present in > 90% of patients (e.g., enlarged blind spots, generalized constriction, and inferior nasal field loss)
- Several predisposing factors have been identified, including the use of oral contraceptives, anabolic steroids, tetracycline, and vitamin A

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46. Tolosa-Hunt Syndrome

**Tolosa-Hunt Syndrome**

- Episodic unilateral orbital or retro-orbital pain (average of 8 weeks, if untreated)
- Ophthalmoplegia (CN II, IV, VI) simultaneously or within the first 2 weeks
- Prompt (within 72 h) to treatment with steroids
- Other pathological conditions excluded with examination and neuroimaging
- Thought to be due to a nonspecific granulomatous inflammatory infiltrative process with no obvious specific pathological trigger in the region of the posterior superior orbital fissure, orbital apex, or cavernous sinus

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47. **Raeder’s Paratrigeminal Syndrome**

*Paratrigeminal oculo-sympathetic syndrome (POSS)*

- Sympathetic dysfunction (miosis, ptosis, or both), but with normal forehead sweating (compared to Horner’s syndrome)
- First division trigeminal neuropathic pain or sensory loss
- Anatomical localization points to the middle cranial fossa medial to the trigeminal ganglion and lateral to the anterior clinoid process
- Neuroimaging is necessary and important, and if negative, should be repeated over a period of time to determine if an underlying abnormality had been missed
- This syndrome is not specific to any pathological entity

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48. **Gradenigo’s Syndrome**

*Acute Apical Petrositis*

- Suppurative otitis media (ear pain?)
- Pain in the orbit or behind the eye (trigeminal ganglionitis)
- Abducens (CN VI) palsy (lateral rectus)
- Often CN II, III, VII, VIII, IX and X may also be involved
- Extension of infection from the middle ear and mastoid air cells into the pneumatized petrous apex via the perilabarynthine air tracts

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Differential Diagnosis of Craniofacial Pain

- Primary & secondary headache disorders
- Ophthalmologic
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra/extra-cranial)
- Psychogenic (DSM-IVR)

Ear Throat

**Ear**
- Ext/middle ear
- TMD (joint or muscle)
- Ramsey-Hunt syn.
- Parotid gland
- Myogenous
- Carotid

**Throat**
- Carotid dissection
- Laryngeal N.
- Myogenous
- Parotid gland
- TMD
- Submandibular gland
- Lymphadenopathy

_Geniculate N._
_Glossopharyngeal N._
_Eagle’s syndrome_

_Glossopharyngeal N._
_Eagle’s syndrome_
_Carotidynia_
51. Headache and Facial Pain Due to Nasal and Paranasal Sinus Disease

Headache and Facial Pain Due to Nasal and Paranasal Sinus Disease

“Sinus Headache”

52. IHS Criteria for Acute Sinus Headache

IHS Criteria for Acute Sinus Headache

• Diagnostic criteria: pain in one or more regions of the head, face, ears, or teeth.
• Clinical, laboratory, or imaging evidence of acute rhinosinusitis (e.g., purulence in the nasal cavity, nasal obstruction, fever, CT, MRI or fiberoptic nasal endoscopy findings).
• Simultaneous onset of headache and rhinosinusitis.
• Headache lasts < 7 d after remission or successful treatment of acute rhinosinusitis.

It is necessary, therefore, to differentiate headaches caused by rhinosinusitis from so-called “sinus headaches,” which are chrome headache attacks fulfilling the criteria for migraine without aura with prominent autonomic symptoms in the nose or migraine without aura triggered by nasal changes.
“Sinus/Facial Headache”

- Episodes of pain over the sinus area of the face or around the eyes and forehead.
- Often associated with nasal congestion, rhinorrhea, facial pressure, lacrimation, nausea, and sensory sensitivity.
- Onset often associated with weather changes.
- Often associated with a history of allergies.
- Often self-diagnosed and self-treated with OTC remedies.
- When medically evaluated, it is frequently misdiagnosed and subsequently ineffectively treated.

Sinus Headache

- Over 90% of self-diagnosed and doctor-diagnosed sinus headaches meet the IHS criteria for migraines, and those migraines misdiagnosed as sinus headaches respond to sumatriptan better than placebo because migraines respond to triptans.
- Sinus headaches are usually severely disabling migraines, misdiagnosed and mistreated, with 61% of patients receiving antibiotic prescriptions for noninfectious causes, thus failing the patients and, in addition, contributing to a serious public health problem.

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55. Otolaryngology, Neurology, Allergy and Primary Care Consensus... 

**An Otolaryngology, Neurology, Allergy and Primary Care Consensus on Diagnosis and Treatment of Sinus Headache**

**Diagnostic Recommendations:**
- Stable pattern of recurrent, self-limiting HA associated with rhinogenic symptoms are most likely migraine
- Prominent rhinogenic symptoms associated with fever, purulent discharge with headache as one of several complaints (pain) is likely rhinogenic in origin
- MRI or CT as appropriate based on headache history, patterns, changes, and physical signs
- Referral to HA specialist for new onset, frequent HA, HA associated with neurological symptoms or signs, or HA that does not respond to appropriate therapy (migraine or rhinogenic)


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56. Differential Diagnosis of Craniofacial Pain: Slide 56

**Therapeutic Recommendations**

- Migraine with no evidence of infection should be given a trial of migraine-specific medication and scheduled for follow-up evaluation
- Noninfectious rhinogenic symptoms with HA as a minor complaint should be provided with a trial of nasal steroids and/or selective antihistamines and/or oral decongestants

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57. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

- Primary & secondary headache disorders
- Ophthalmologic
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra/extra-cranial)
- Psychogenic (DSM-IVR)

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58. Dental and Oral Surgical Conditions

Dental and Oral Surgical Conditions

- Dentoalveolar Pathology
  * pulpal
  * periodontal
- Odontogenic and Non-odontogenic Pathology
- Trigeminal Neuralgia and “Equivalents”
- Headache and Neck pain
- Temporomandibular Disorders
- Oral Mucous Membrane Disease
- Oral Manifestations of Systemic Disease
- Neuropathic Pain (Persistent Idiopathic Facial Pain)
- “Burning Mouth/Tongue Disorder”

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59. Features of Odontogenic Pain

Features of Odontogenic Pain
Adapted from Hargreaves

- Presence of etiologic factors for an odontogenic origin of pain
- Unilateral pain
- Localized pain (diagnosis-specific)
- Pain qualities (sharp, dull, aching, throbbing)
- Sensitivity to temperature
- Sensitivity to pressure, palpation, percussion
- Pain reduction by local anesthetic injection??

60. Odontogenic and Nonodontogenic Disorders

Odontogenic and Nonodontogenic Disorders

- Odontogenic Cysts and Tumors
- Nonodontogenic Cysts and Tumors
- Metabolic Bone Disease
- Metastatic Bone Disease
- Neurogenic Tumors
- Vascular Lesions – Hemangiomas and Vascular malformations

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Temporomandibular Disorders

A subgroup of craniofacial pain disorders that involve:

1. The temporomandibular joint
2. The masticatory muscles
3. Associated head and neck musculature


Temporomandibular Disorders

- Masticatory muscle disorders
- TM Joint articular disorders
- Congenital and developmental disorders
- Chronic mandibular hypomobility
- Hypermobility (subluxation/dislocation)
Myofascial Pain Disorders

“Muscle Disorders
Or Are They??”

“Muscle-Related Disorders”

- Myofascial pain disorder
  - Craniocervical (Head, neck, shoulder)
  - Masticatory (Temporomandibular Disorder)
  - Facial
- Episodic tension-type headache
- Chronic tension-type headache
- Chronic daily headache
  - Fibromyalgia
65. Differential Diagnosis of Craniofacial Pain: Slide 65

“It ain’t what people don’t know that hurts them; it’s what they know that ain’t so.”

Mark Twain

66. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

- Primary & secondary headache disorders
- Ophthalmologic
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra/extra-cranial)
- Psychogenic (DSM-IVR)
67. Common Painful Mucosal Conditions

Common Painful Mucosal Conditions

Infections
- Herpetic stomatitis
- Varicella zoster
- Candidiasis
- Acute necrotizing gingivostomatitis

Immune/Autoimmune
- Allergic reactions (toothpaste, mouthwash, topical medications)
- Eruptive lichen planus
- Benign mucous membrane pemphigoid
- Aphthous stomatitis and sphincter lesions
- Erythema multiform
- Graft versus host disease

Traumatic and Iatrogenic Injuries
- Facial, accidental (burns: chemical, solar, thermal)
- Self destructive (rituals, obsessive behaviors)
- Iatrogenic (chemotherapy, radiation)

Neoplasm
- Squamous cell carcinoma
- Mucoepidermoid carcinoma
- Adenocystic carcinoma
- Brain tumors

Neurological
- Burning mouth syndrome and glossodynia
- Neurolgia
- Postherpetic neuralgia
- Post-traumatic neuropathies
- Dyskinesias and dystonias

Nutritional and Metabolic
- Vitamin deficiencies (B-12, folate)
- Mineral deficiencies (iron)
- Diabetic neuropathy
- Malabsorption syndromes

Miscellaneous
- Xerostomia, secondary to intrinsic or extrinsic conditions
- Referred pain from esophageal or oropharyngeal malignancy
- Mucosal secondary to esophageal reflex
- Angioedema

68. Salivary Gland Disease

Salivary Gland Disease

- Inflammatory
- Non-inflammatoty
- Infectious
- Obstructive
- Immunologic (Sjogren’s Syndrome)
- Tumors
- Others (Red herrings)
Differential Diagnosis of Craniofacial Pain

- Primary & secondary headache disorders
- Ophthalmologic
- Ear, nose, and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- **Craniocervical**
- Neoplasia (intra-extra-cranial)
- Psychogenic (DSM-IVR)
71. Cervical Spine Pain Syndromes

Cervical Spine Pain Syndromes

- Strain/sprain
- Myofascial pain syndrome
- Facet syndrome
- Stenosis
- Degenerative arthritis
- IVD disorders

72. Differential Diagnosis of Craniofacial Pain: Slide 72

<table>
<thead>
<tr>
<th>Symptom</th>
<th>#Patients</th>
<th>#Improved</th>
<th># Same</th>
<th># Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earache</td>
<td>270</td>
<td>235</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>Earstuff</td>
<td>246</td>
<td>208</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>TMJ Pain</td>
<td>454</td>
<td>403</td>
<td>23</td>
<td>28</td>
</tr>
<tr>
<td>TMJ Click</td>
<td>384</td>
<td>332</td>
<td>21</td>
<td>31</td>
</tr>
<tr>
<td>Face Pain</td>
<td>372</td>
<td>322</td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td>Head Pain</td>
<td>391</td>
<td>337</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>Arm Pain/Ting</td>
<td>168</td>
<td>140</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>Neck Pain/Stiff</td>
<td>399</td>
<td>347</td>
<td>19</td>
<td>33</td>
</tr>
<tr>
<td>Upper Back</td>
<td>299</td>
<td>247</td>
<td>19</td>
<td>33</td>
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<tr>
<td>Lower Back</td>
<td>245</td>
<td>209</td>
<td>17</td>
<td>19</td>
</tr>
</tbody>
</table>
73. Differential Diagnosis of Craniofacial Pain: Slide 73

Treatment Effectiveness of a multidisciplinary pain center. 524 out of 5000 patients. A Retrospective outcomes study

Mark. O., Mehta N., Forgione A. Self Reported TMD Symptoms in 200 American Dental Students. IADR Abs #826 1997

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74. Differential Diagnosis of Craniofacial Pain

Differential Diagnosis of Craniofacial Pain

- Primary & secondary headache disorders
- Ophthalmologic
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra-extra-cranial)
- Psychogenic (DSM-IVR)

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Evidence-Based Guidelines in the Primary Care Setting

Evidence-Based Guidelines in the Primary Care Setting: Neuroimaging in Patients with Nonacute Headache

Headache Consortium Guidelines
American Academy of Family Physicians
American Academy of Neurology
American Headache Society
American College of Emergency Physicians
American College of Physicians
American Osteopathic Association
National Headache Foundation

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Differential Diagnosis of Craniofacial Pain: Slide 76

Table 3: Rates of significant intracranial abnormalities in patients with migraine or tension-type headache and normal neurological examination.

<table>
<thead>
<tr>
<th>Study</th>
<th>Number of patients</th>
<th>Significant abnormality detected</th>
<th>Rate</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIGRAINE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caia, 1976</td>
<td>32</td>
<td>1</td>
<td>0.031</td>
<td>0.141</td>
</tr>
<tr>
<td>Custer, 1983</td>
<td>435</td>
<td>1</td>
<td>0.002</td>
<td>0.011</td>
</tr>
<tr>
<td>Cull, 1991</td>
<td>69</td>
<td>0</td>
<td>0.000</td>
<td>0.043</td>
</tr>
<tr>
<td>De Benedittis, 1985</td>
<td>28</td>
<td>0</td>
<td>0.000</td>
<td>0.160</td>
</tr>
<tr>
<td>Hungerford, 1976</td>
<td>53</td>
<td>0</td>
<td>0.000</td>
<td>0.055</td>
</tr>
<tr>
<td>Igarashi, 1991</td>
<td>91</td>
<td>0</td>
<td>0.000</td>
<td>0.033</td>
</tr>
<tr>
<td>Kuhn, 1990</td>
<td>74</td>
<td>0</td>
<td>0.000</td>
<td>0.040</td>
</tr>
<tr>
<td>Osborn, 1991</td>
<td>41</td>
<td>0</td>
<td>0.000</td>
<td>0.071</td>
</tr>
<tr>
<td>Robina, 1992</td>
<td>46</td>
<td>0</td>
<td>0.000</td>
<td>0.064</td>
</tr>
<tr>
<td>Sargent, 1979</td>
<td>129</td>
<td>0</td>
<td>0.000</td>
<td>0.023</td>
</tr>
<tr>
<td>Sargent, 1983</td>
<td>88</td>
<td>0</td>
<td>0.000</td>
<td>0.034</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
<td></td>
<td>0.0018</td>
<td>0.0059</td>
</tr>
</tbody>
</table>

Test for homogeneity: \( \chi^2 = 6.1; \text{d.f.}=16; p=0.81 \)

TENSION-TYPE HEADACHE

<table>
<thead>
<tr>
<th>Study</th>
<th>Number of patients</th>
<th>Significant abnormality detected</th>
<th>Rate</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Benedittis, 1991</td>
<td>35</td>
<td>0</td>
<td>0.000</td>
<td>0.083</td>
</tr>
<tr>
<td>Sargent, 1979</td>
<td>48</td>
<td>0</td>
<td>0.000</td>
<td>0.061</td>
</tr>
</tbody>
</table>

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77. Structural Lesions and Facial Pain

**Structural Lesions and Facial Pain**

- MS Plaques
- CP Angle Tumors
- Schwannomas
- Chiari Malformations
- Midbrain Lesions
- Pontine Hemorrhage
- Vascular Malformations
- Skull Base Tumors
- SC Carcinomas
- Salivary Gland Tumors
- Oral Cancers
- Carotid/Vertebral Disease

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78. Facial Pain and Cerebellopontine Angle Tumors

**Facial Pain and Cerebellopontine Angle Tumors**

1. Meningiomas: variable pattern of cranial nerve V, VII, VIII deficits
2. Acoustic neuromas: cranial nerve VII deficits
3. Epidermoid tumors: few signs or symptoms other than facial pain


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79. Comprehensive Study of Diagnosis and Treatment of Trigeminal...

Comprehensive Study of Diagnosis and Treatment of Trigeminal Neuralgia Secondary to Tumors
1976-1990: 5,058 patients
TN= 2,972
• Tumors in 296/2,972 (9.95%)
  > Meningioma
  > Schwannoma
  > Pituitary tumors
  > Others: glioma, lymphoma, arachnoid cyst, SCC
• Only 2% had classical TN findings
• 47% developed neurological deficits (avg. 6.3 yrs)

80. Chronic Neurogenic Facial Pain & Tumors

Chronic Neurogenic Facial Pain & Tumors
1992-1996
575 patients with chronic neurogenic facial pain
360 (63%) - initial diagnosis of TN
8.4% had structural pathology on MRI

Srivani SJ, Maclewech RJ, Keith DA, Mathews ES; JOMS, 1997
81. Differential Diagnosis of Craniofacial Pain

**Differential Diagnosis of Craniofacial Pain**

- Primary & secondary headache disorders
- Ophthalmologic
- Ear, nose and throat
- Sinus disorders
- Teeth and jaw (TMDs)
- Oral cavity and salivary glands
- Craniocervical
- Neoplasia (intra/extra-cranial)
- Psychogenic *(DSM-IVR)*

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82. Pain and Mental Illness

**PAIN AND MENTAL ILLNESS**

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Mental Disorders

1/3 of individuals in the U.S.A. will have at least one psychiatric disorder during their lifetime.
20% of adults will suffer from one or more psychiatric disorder during a 6 month period
6% suffer affective or mood disorders
   *Anxiety / Depression
7% substance abuse

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Psychological Disorders and Chronic Pain

Psychological Disorders and Chronic Pain

1. High prevalence of psychological comorbidities among patients with chronic pain
2. Presence of chronic pain may cause emotional distress and exacerbate premorbid psychological disorders
3. Emotional problems may increase perceived pain intensity, disability and perpetuate dysfunction
4. Unrecognized and untreated psychological distress may interfere with successful treatment of chronic pain

Adapted from Turk, D.

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Psychological Conditions

- Mood Disorders
- Anxiety Disorders
- Somatoform Disorders
- Personality Disorders
- Other Conditions

Major Depression and Pain

- 15%-100% (mean=65%) of depressed patients complain of pain [13 prevalence studies in psychiatric settings]
- 41 studies on prevalence of depression and chronic pain:
  - 23% in OB-GYN clinics, 27% in PC, 35% in psych clinics, 38% in pain clinics, 52% in rheumatology clinics and 78% in dental/facial clinics

87. Chronic Pain and Abuse

**Chronic Pain and Abuse**

- Domino and Haber – 66% of headache patients reported a history of physical or sexual abuse
- Drossman, et al – 44% of females referred to a GI clinic
- Toomey, et al – 53% of pelvic pain patients
- Taylor, et al – 65% of their fibromyalgia group

88. Chronic Facial Pain: Traumatic Events in Childhood

**Chronic Facial Pain**

**Traumatic Events in Childhood**

<table>
<thead>
<tr>
<th>Event</th>
<th>Pain</th>
<th>No Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Alcohol Abuse</td>
<td>49%</td>
<td>14%</td>
</tr>
<tr>
<td>Parental Illness</td>
<td>23%</td>
<td>4%</td>
</tr>
<tr>
<td>Separated from Parent</td>
<td>27%</td>
<td>24%</td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Multiple Events</td>
<td>51%</td>
<td>20%</td>
</tr>
</tbody>
</table>

89. Childhood Abuse, Depression and Chronic Pain

Childhood Abuse, Depression and Chronic Pain

- 201 consecutive patients with chronic pain
- 68% female, mean age 38 years
- 26% low back pain
  - 19% craniofacial pain
  - 25% pain in other regions
  - 28% pain in more than 3 sites

*Patients with a history of both physical and sexual abuse in childhood had more depression.
*The influence of type of pain on depression was not significant

Goldberg RT, 1994

90. Pain Associated with Past Abuse

Pain Associated with Past Abuse

- Childhood abuse is associated with five types of pain
  - Back Pain
  - Headaches & Facial Pain
  - Pelvic Pain
  - Irritable Bowel Syndrome
  - Fibromyalgia

- Many of these types co-occur

91. Don’t Forget! Systemic Disorders

**Don’t Forget!!!!!
Systemic Disorders**

- Cardiac pain
- Herpes zoster
- Lyme disease (Borrelia and Babesiosis)
- Sickle cell anemia
- Multiple sclerosis
- Temporal arteritis (Vasculitides)
- Trigeminal neuropathy associated with connective tissue disease, diabetes mellitus, HIV disease, and cancer chemotherapeutic agents
- Vascular lesions

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92. Dr. Jose Ochoa (1992)

**Dr. Jose Ochoa (1992)**

“As long as an idea does not become a way of life for the clinician or the basic researcher, there is room for progress. Progress is arrested the moment a scientific theory becomes religion”

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93. "Myths/Beliefs"

- Many = cult or religion
- Two = love
- One = psychosis

94. Doctors and Guns

- Number of doctors in the US: 800,000
- Accidental deaths caused by doctor per year: 120,000
- Accidental deaths per doctor: 0.15

- Number of gun owners in the US: 80,000,000
- Number of accidental gun deaths per year (all age groups): 1,500
- Accidental deaths per gun owner: 0.0000188

US Department of Health & Human Services 2002
95. The Spectrum of Pain in Herpes Zoster

PHN: Clinical Presentation

- Constant baseline pain (burning, aching)
- Spontaneous, intermittent pain (lancinating, jabbing)
- Allodynia (mechanical, cold/warm)
- Sensory abnormalities (itching, numbness, tingling)
- Sensory deficits (absent or diminished thermal, tactile)
- Skin pigmentation changes and/or scarring
97. Vasculitides with Headache & Facial Pain

Vasculitides with Headache & Facial Pain

- Polyarteritis nodosa group
- Hypersensitivity angitis group
  - Drug-induced angitis
  - Cryoglobulinemic vasculitis
  - Infection-related vasculitis
  - Paraneoplastic vasculitis
- Granulomatoses
  - Wegener's granulomatosis
  - Lymphomatoid granulomatosis
  - Lethal midline granuloma
  - Sarcoidosis
- Giant cell arteritis
  - Temporal arteritis
  - Takayasu arteritis
- Connective tissue disorders
  - SLE
  - RA
  - Scleroderma
  - SS
  - Bechet's syndrome
  - Cogan syndrome
  - Mixed CT disease

98. Temporal Arteritis

Temporal Arteritis

- Age > 50 years
- Headache, neck pain, jaw claudication, scalp tenderness, facial pain, visual loss
- Thickened, nodular, pulseless superficial temporal artery
- Headache is mild to severe, and of acute or gradual onset; the patient is typically without a history of HA or deviation from his or her chronic HA pattern (New)
- Associated with polymyalgia rheumatica, especially in elderly patients
Temporal Arteritis

- Untreated or inadequately treated may result in unilateral or bilateral blindness (up to 50%)
- Oculomotor disturbances
- Vertigo and hearing impairment
- Cervical myelopathy
- Unilateral or bilateral limb bruises and claudication
- Brainstem strokes and TIAs

Temporal Arteritis

- Blood studies – elevated ESR, CRP
- Others
- Temporal artery biopsy – false negatives due to skipped lesions (bilateral biopsies)
- Treatment with corticosteroids

CD4+ T-cell mediated?

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101. Common Things

Common Things

- Dentoalveolar Pathology
  * pulpal
  * periodontal
- Odontogenic and Non-odontogenic Pathology
- Trigeminal Neuralgia and “Equivalents”
- Headache and Neck pain
- Temporomandibular Disorders
- Oral Mucous Membrane Disease
- Oral Manifestations of Systemic Disease
- Neuropathic Pain (Persistent Idiopathic Facial Pain)

“Burning Mouth/Tongue Syndrome”

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102. The Primary Headaches (1-4)

The Primary Headaches (1-4)

1. Migraine
   * without aura
   * with aura
2. Tension-type headache
3. Cluster headache and other trigeminal autonomic cephalalgias
4. Other primary headaches

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103. Migraine without Aura

**Migraine without Aura**

**Diagnostic criteria:**

A. At least 5 attacks fulfilling criteria B–D
B. Headache attacks lasting 4–72 hours (untreated or unsuccessfully treated)
C. Headache has at least two of the following characteristics:
   1. unilateral location  
   2. pulsating quality  
   3. moderate or severe pain intensity  
   4. aggravation by or causing avoidance of routine physical activity (e.g., walking or climbing stairs)
D. During headache at least one of the following:
   1. nausea and/or vomiting  
   2. photophobia and phonophobia  
E. Not attributed to another disorder

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104. Migraine with Aura

**Migraine with Aura**

**Diagnostic criteria:**

A. At least 2 attacks fulfilling criterion B
B. Migraine aura fulfilling criteria B and C for one of the subforms 1.2.1–1.2.6
C. Not attributed to another disorder

**The aura is the complex of neurological symptoms that occurs just before or at the onset of migraine headache.**

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105. Tension-Type Headache

Tension-Type Headache

A. Frequency – days to weeks to daily (< or > 15 d/month × 3 months or more)
B. Headache lasts hours or may be continuous
C. Headache has at least two of the following characteristics:
   1. bilateral location
   2. pressing/tightening (non-pulsating) quality
   3. mild or moderate intensity
   4. not aggravated by routine physical activity such as walking or climbing stairs
   ** Pericranial tenderness

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106. Cluster HA and Other TACs

Cluster HA and Other TACs

Cluster headache
   Episodic cluster headache
   Chronic cluster headache

Paroxysmal hemicrania
   Episodic paroxysmal hemicrania
   Chronic paroxysmal hemicrania (CPIH)

Short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing (SUNCT)

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107. The Secondary Headaches (5-12)

The Secondary Headaches (5-12)

5. Attributed to head and/or neck trauma
6. Attributed to cranial or cervical vascular disorder
7. Attributed to non-vascular intracranial disorder
8. Attributed to a substance or its withdrawal
9. Attributed to infection
10. Attributed to disorder of homeostasis
11. HA or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures
12. Attributed to psychiatric disorder

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108. Unusual Causes of Headache

Unusual Causes of Headache

“Headache is a symptom of many disorders and diseases-systemic and cerebral. It is the manifestation of any pathologic process that leads to:

(1) activation of nociceptors on the cranial and dural vessels;
(2) dysmodulation of central pain pathways;
(3) stimulation of meningeal nociceptors; or
(4) stretching/distortion of craniocervical muscles, joints, or fascia.”


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![Diagram of Differential Diagnosis of Craniofacial Pain]

110. Quote

“In order to catch a running horse, sometimes you need to run with the horse for a little while”

Old Chinese proverb
D. Bana, MD
111. Differential Diagnosis of Craniofacial Pain: Slide 111

**Appliance Therapy on Symptom Sites**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>1st Visit</th>
<th>4th visit</th>
<th>reduction</th>
<th>N of 55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>39.65</td>
<td>13.79</td>
<td>65%</td>
<td>29</td>
</tr>
<tr>
<td>Neck</td>
<td>66.07</td>
<td>30.35</td>
<td>57%</td>
<td>28</td>
</tr>
<tr>
<td>TMJ pain</td>
<td>73.21</td>
<td>21.42</td>
<td>71%</td>
<td>28</td>
</tr>
<tr>
<td>TMJ sound</td>
<td>70.83</td>
<td>18.75</td>
<td>74%</td>
<td>24</td>
</tr>
</tbody>
</table>

112. Appliance Therapy on Symptom Sites

**Appliance Therapy on Symptom Sites**

Effect of Appliance therapy on Specific Symptom sites on TMD: E. Abdallah, A. Aboushata, N. Mehta and A. Forgione.

International Association of Dental Research. Abst.# 1688, March 1995

Retrospective study of 55 patients of the Craniofacial Pain Center

Only flat plane bite appliance therapy in three dimensions V.A.S. score over 8 weeks. First and fourth visit

Symptom Sites were weighted by number of areas.

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113. Differential Diagnosis of Craniofacial Pain: Slide 113

**Symptom Sites**


- **Headaches** (28 of 55 subjects.)
  - Frontal 25%, temporal left / right 50%, occipital 25%
- **Neck Symptoms** (24 of 55 subjects)
  - Stiffness / tightness 50%, Pain 50%
- **T.M.Joint Pain** (28 of 55 subjects)
  - Right Joint 50%, Left Joint 50%
- **T.M.Joint Sounds** (24 of 55 subjects)
  - Right Joint 50%, Left Joint 50%

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114. Differential Diagnosis of Craniofacial Pain: Slide 114

“The efficient physician is the man that successfully amuses his patients while nature effects a cure.”

Voltaire; Francois Marie Arouet (1694-1778)

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