Prof.dr Simon Nikolić
stomatologija

Ekstraoralne radiografske metode



MMXV

Stomatološka radiografska tehnika

- Intraoralne metode

  retroalveolarni, retrokoronarni, okluzalni, aksialni
- Ekstraoralne metode

  kraniogram, poluaksijalni i aksijalni snimci glave, PNŠ, orbite i optičkih kanala, zigomatičnih kostiju, snimci kostiju lica, nosnih kostiju, maxile, mandibule, TM zgloba, pluvačnih žlezda.
- Specijalne metode

  tomografija, teleradiografija, makrografija, stereoradiografija
- Kontrastne metode

  sinusografija, sijalografija, artrografija, angiografija, cistografija, fistulografija
- Nove tehnologije

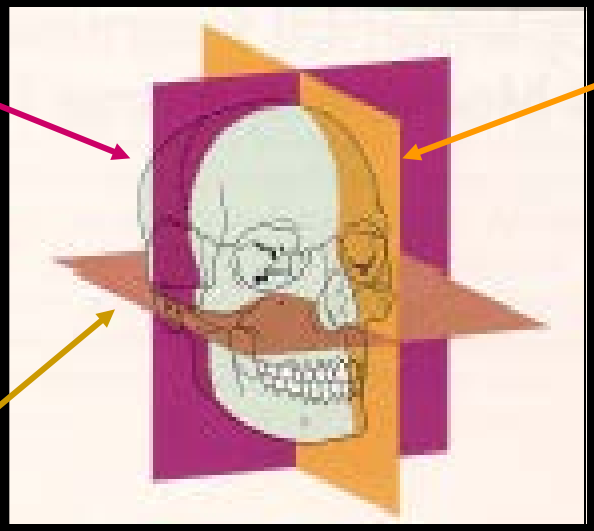
  digitalna radiografija, DSA, UZ, MR



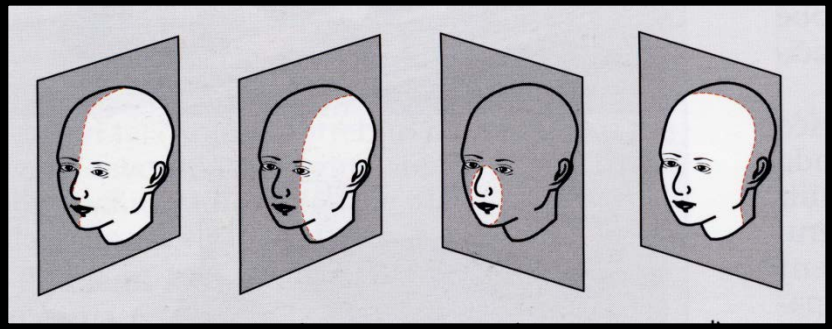
Osnovne ravni čovekovog tela

Coronal
frontal project.

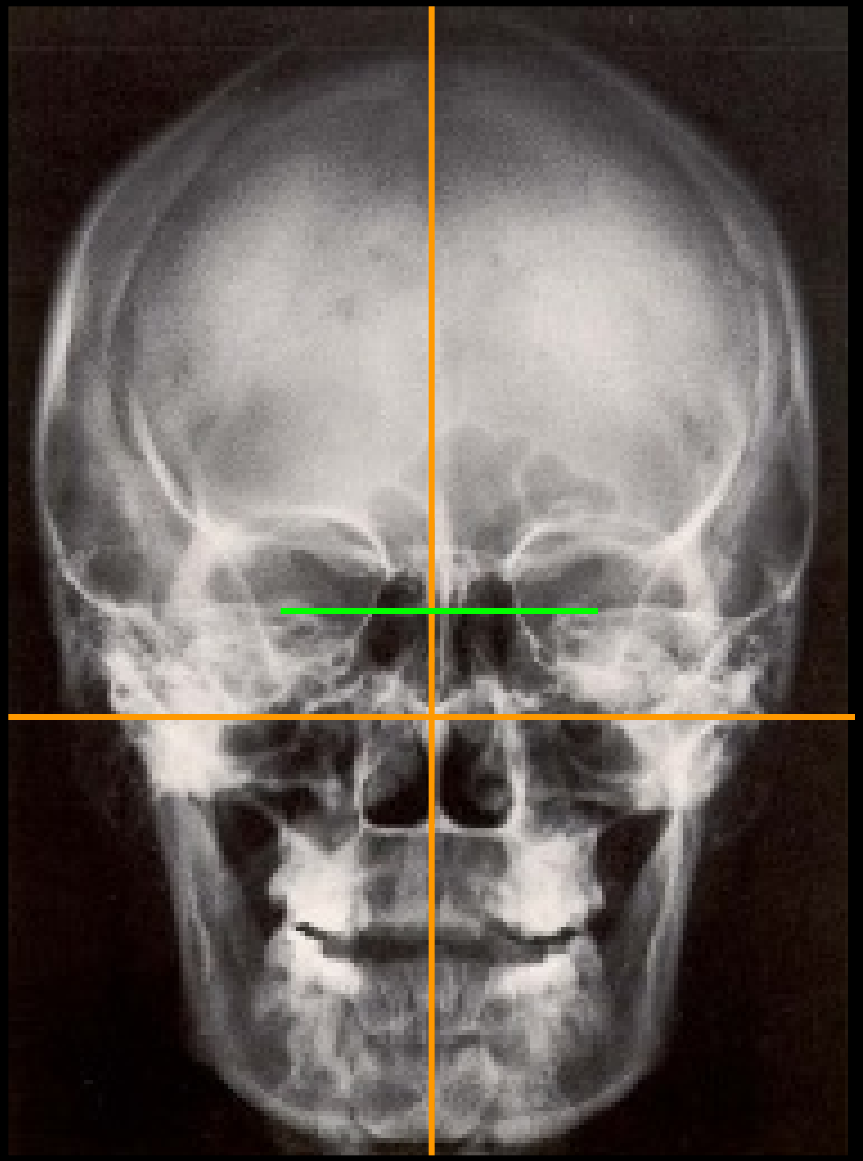
Transversal
axial project.



Sagital
profil project.

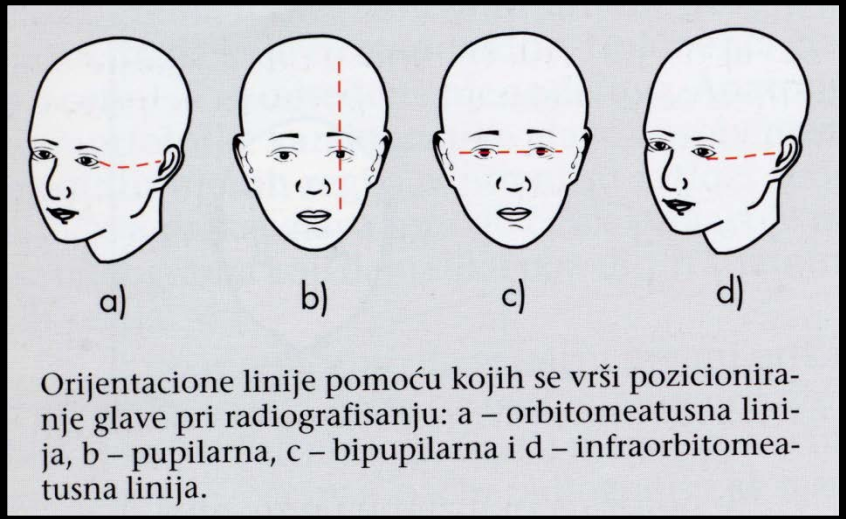


medijana, sagitala, čeona, frontalna



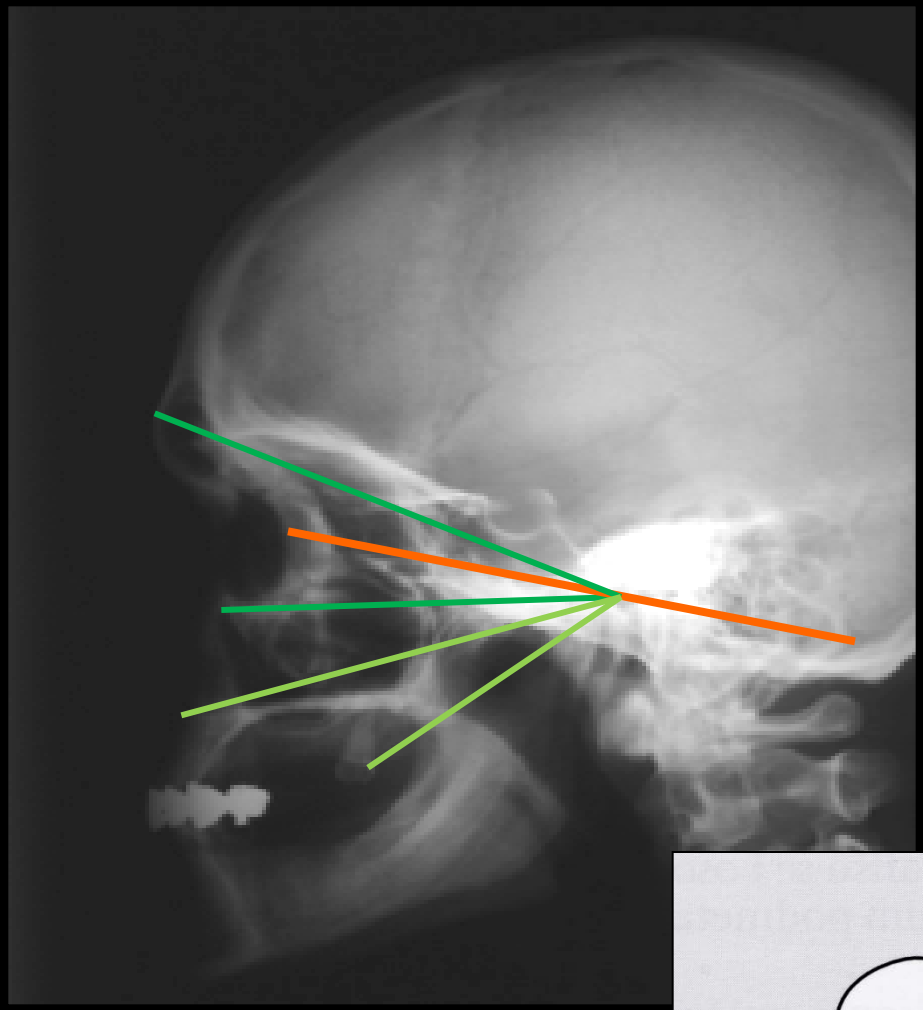
Orijentacione ravni glave

- Mediana
- Virchow
- Interpupilarna linija

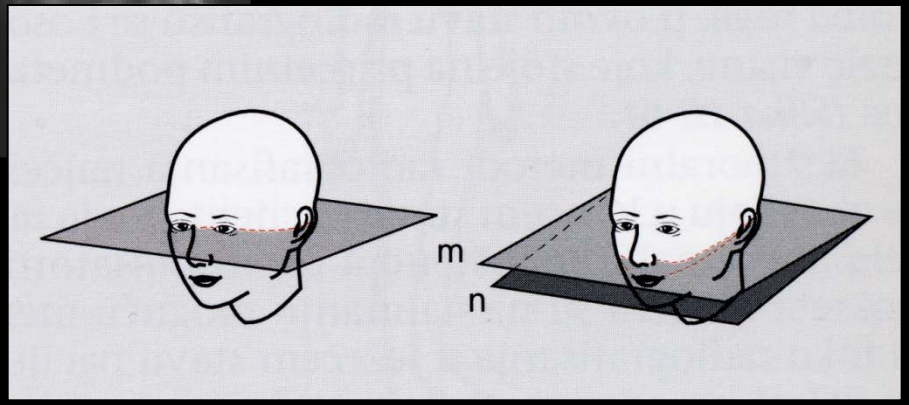


Orijentacione linije pomoću kojih se vrši pozicioniranje glave pri radiografisanju: a – orbitomeatusna linija, b – pupilarna, c – bipupilarna i d – infraorbitomeatusna linija.

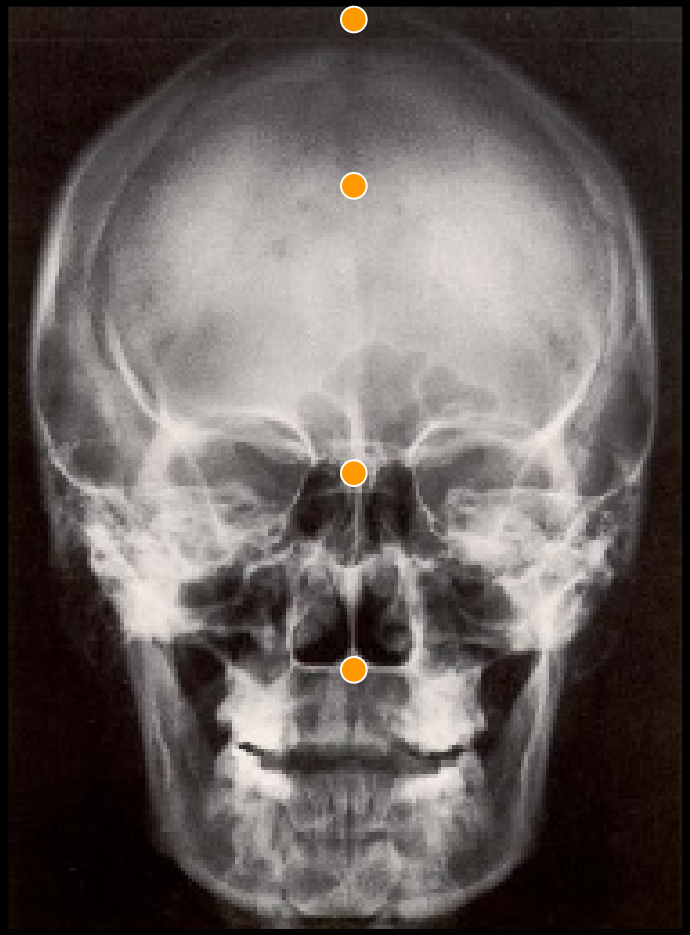
Orijentacione ravni glave

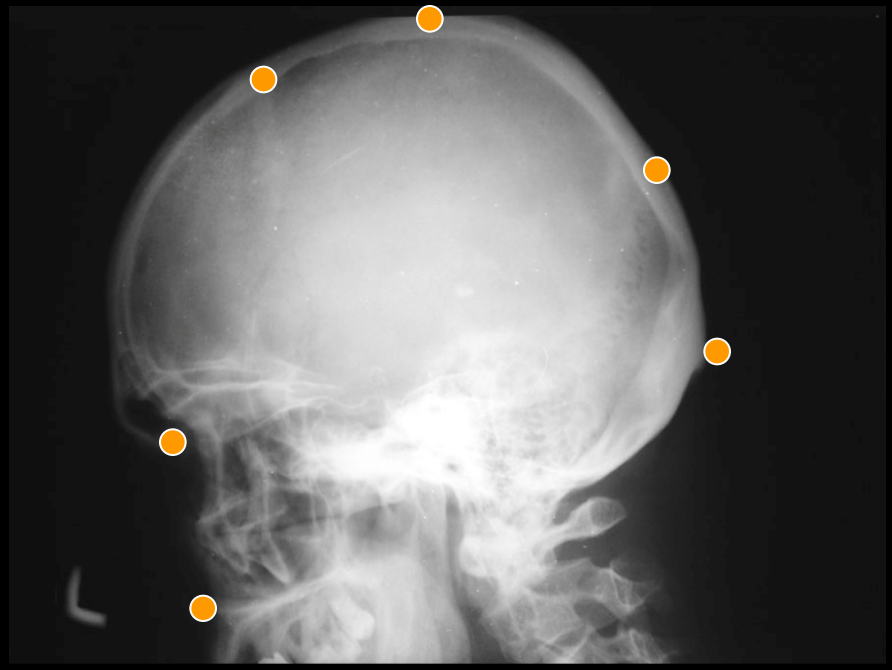


- Glabelo-meatusna
- Orbito-meatusna ravan baze lobanje
- Infraorbitalna
- Gornja okluzivna akanto-meatusna
- Donja okluzivna

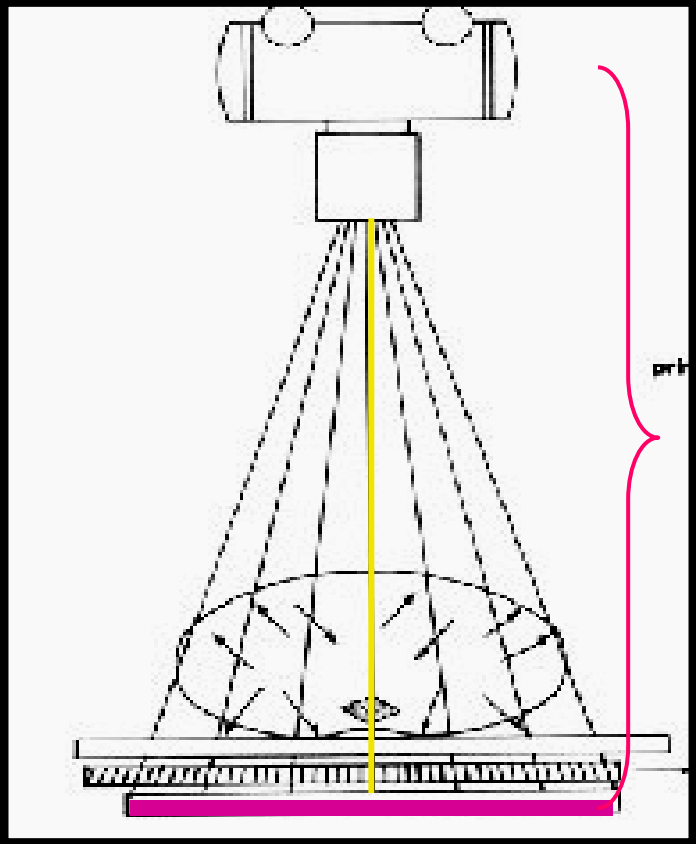


Kraniometrijske tačke





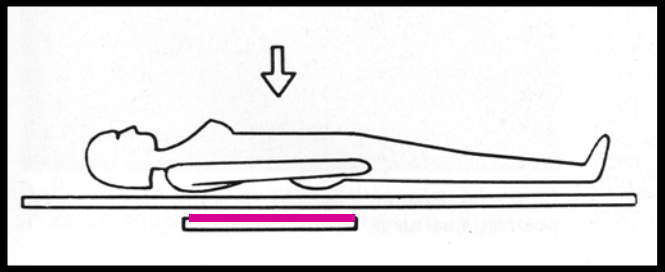
- Prednja nosna bodlja
- Nasion
- Bregma
- Vertex
- Lambda
- Protuberantia occ.ext.

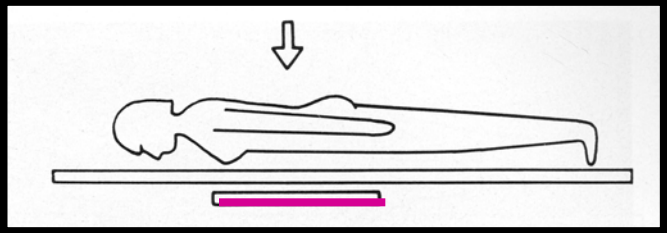


Centralni zrak

središnja linija zračnog snopa

Fokus - Film distanca





Kraniogram standard



PA

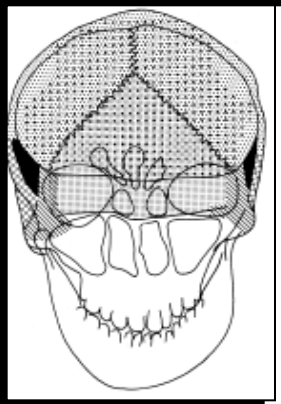
Ležeći stav, ventralni dekubitus.

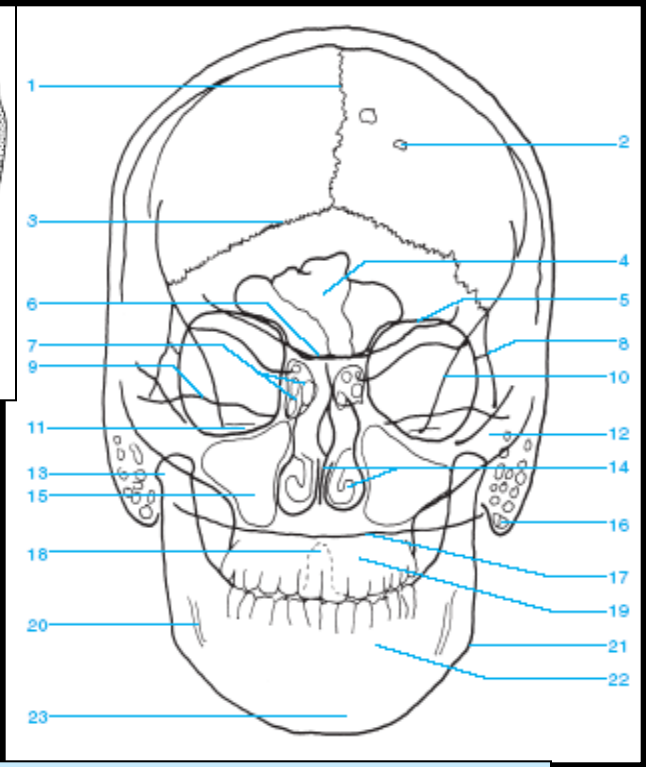
Glava čelo-nos.

CZ - 2 cm iznad protuberantia occ.ext.









1	Sagittal suture	13	Condylar process of the mandible
2	Pacchionian granulations	14	Nasal septum and inferior nasal bones
3	Lambdoid suture	15	Maxillary sinus
4	Frontal sinus	16	Mastoid process
5	Roof of the orbit	17	Occiput
6	Sphenoid	18	Dens of the axis
7	Ethmoid sinus	19	Maxilla
8	Frontozygomatic suture	20	Mandibular canal
9	Petrous ridge	21	Angle of the mandible
10	Innominate line	22	Mandible
11	Internal auditory canal	23	Mental protuberance
12	Zygomatic arch		

Ocena radiograma:

kosti neurokranijuma (čeona kost), šavovi, orbite, piramide, gornja i donja vilica, nosni septum sa hodnicima.

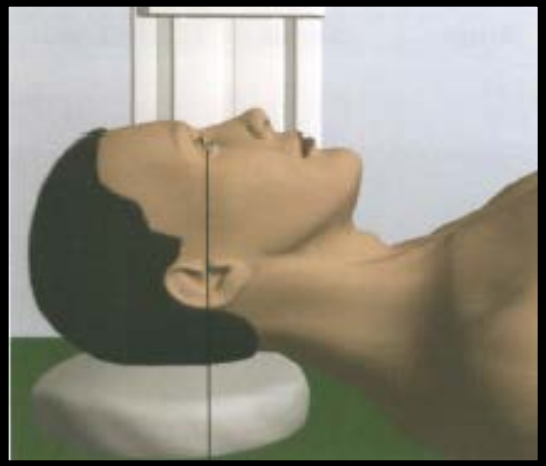


AP

Ležeći stav, dorzalni dekubitus.

Glava potiljkom prijanja.

CZ koren nosa.



Ocena radiograma:

(ukoliko pacijent nije u stanju da leži potrbuške)

promene u zadnjoj lob. jami i potiljačnom predelu, venski plexusi i kalcifikacije.

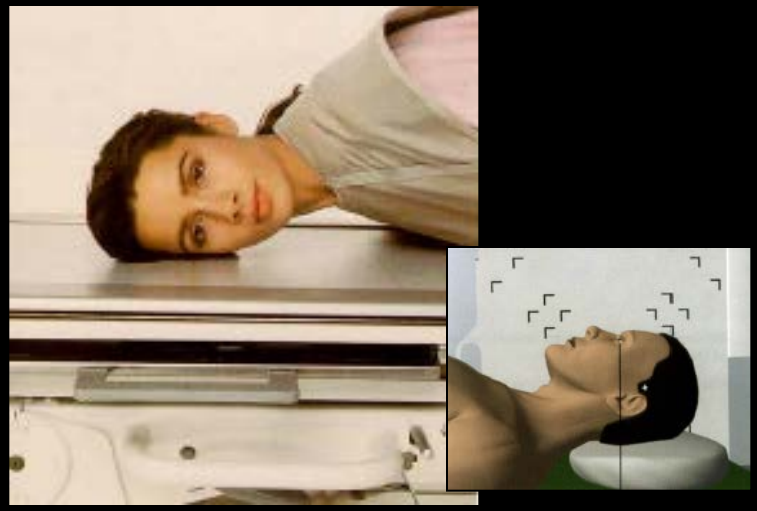


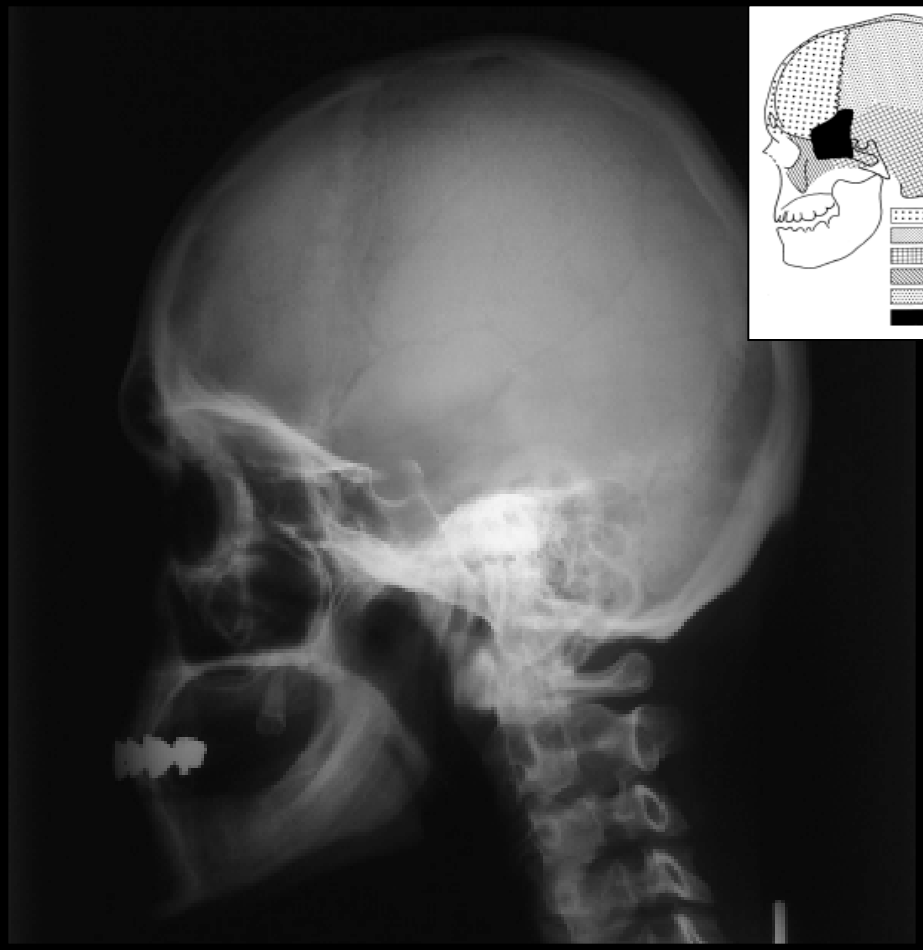
LL

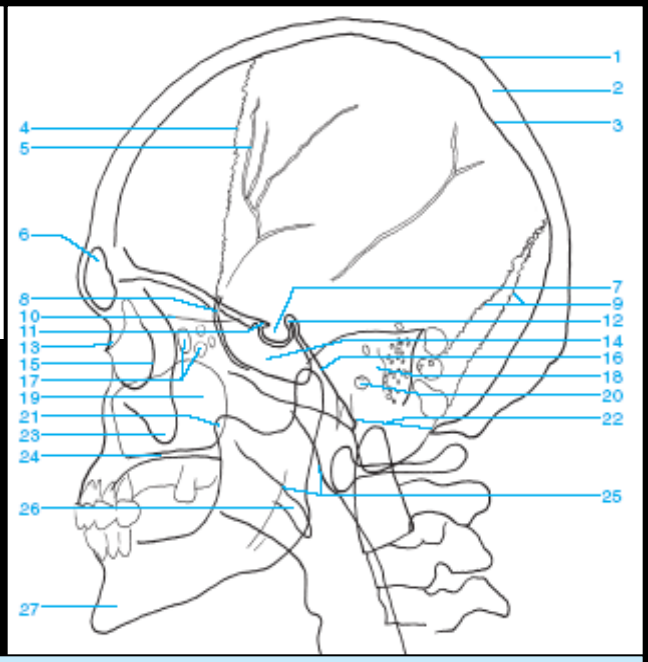
Ležeći stav, ventralni dekubitus.

Glava medijalna ravan paralelna sa ravni filma.

CZ - 2 cm iznad linije baze lobanje prolazi kroz sellu turcicu.







1 Outer table of the parietal bone
2 Diploe
3 Inner table of the parietal bone
4 Coronal suture
5 Groove of the middle meningeal artery
6 Frontal sinus
7 Pituitary fossa
8 Greater wing of the sphenoid
9 Lambdoid suture
10 Cribriform plate
11 Anterior clinoid process
12 Posterior clinoid process
13 Nasal bone
14 Sphenoid sinus
15 Zygomatic bone (lateral wall of the orbit)
16 Clivus
17 Ethmoid sinus
18 Petrous portion of the temporal bone
19 Maxillary sinus
20 Opening of the external auditory canal
21 Coronoid process of the mandible
22 Foramen magnum
23 Zygomatic process
24 Hard palate
25 Nasopharynx
26 Soft palate
27 Mandible

Ocena radiograma:

promene u projekciji neurokranijuma, planum sfenoidale, tursko sedlo, sfenoidni sinus, orbite, tvrdo nepce, maxila, mandibula.

Poluaksijalni snimci glave



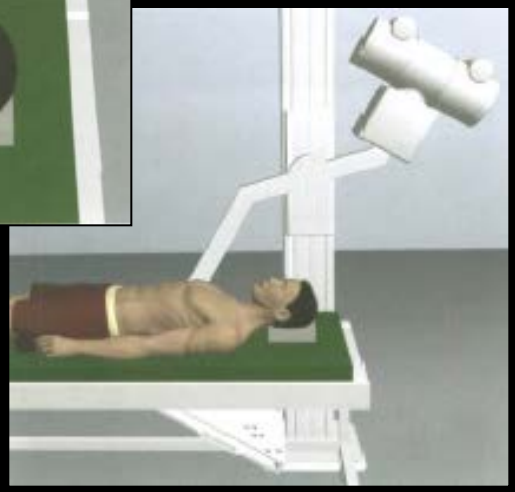
Towne

Ležeći stav, dorzalni dekubitus.

Glava potiljkom prijanja.

CZ na bregmu pod uglom od 30^0 sa cran-kaud. zakošenjem.



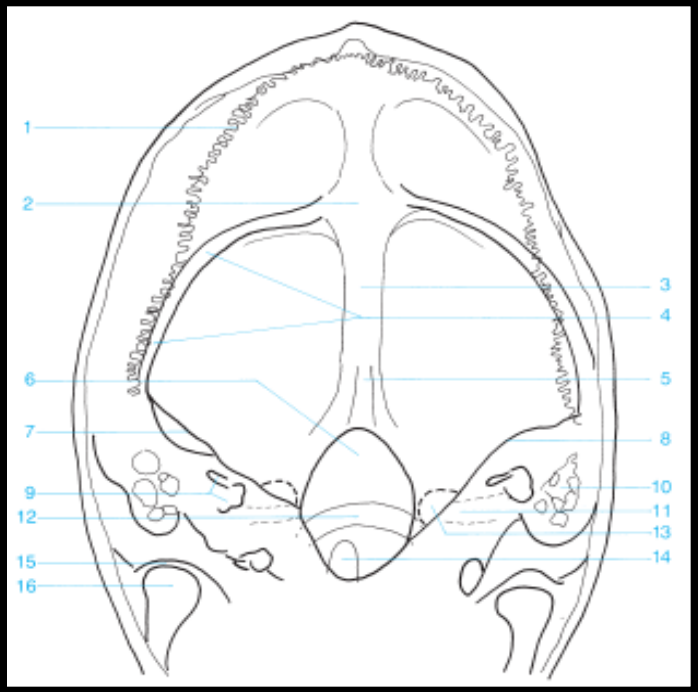


40^0 - Stewart

45^0 - Altschul

60^0 - Grashey





1 Lambdoid suture
2 Occipital protuberances (external and internal)
3 Occipital bone
4 Sulcus of the transverse sinus
5 Occipital crest
6 Foramen magnum
7 Petrous bone
8 Arcuate eminence
9 Semicircular canals
10 Mastoid air cells
11 Internal auditory canal
12 Posterior arch of the atlas
13 Jugular foramen
14 Dens
15 Temporomandibular joint
16 Condyle of the mandible

Ocena radiograma: (Altschul)

foramen occ.magnum, potiljačna kost, piramide, dorsum selle, zglobni nastavci donje vilice, jagodična kost.

Aksijalni snimci glave

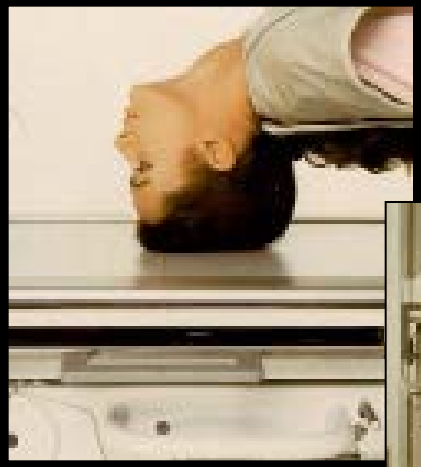


Hirtz

Ležeći ili sedeći stav, dorzalni dekubit.

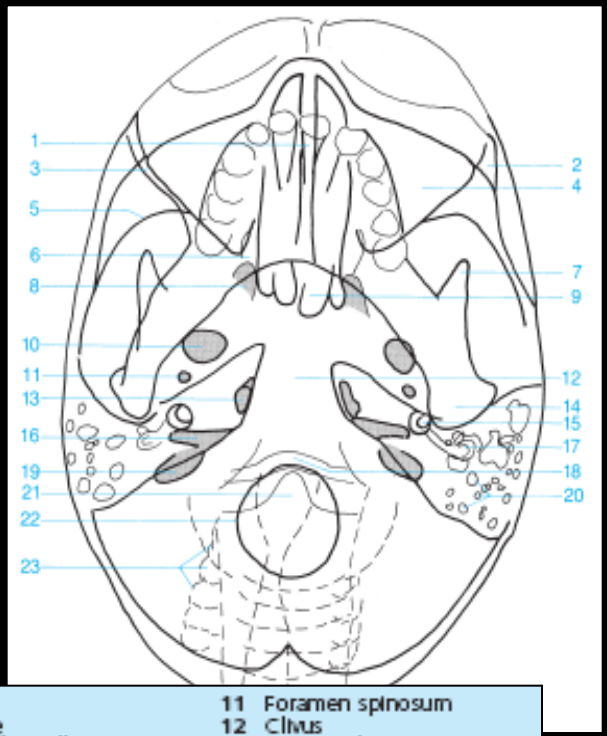
Glava max. zabačena temenom na sto.

CZ na centar horizontale između ramusa mandibule.









1	Nasal septum	11	Foramen spinosum
2	Zygomatic bone	12	Clivus
3	Posterior wall of maxillary sinus	13	Foramen lacerum
4	Maxillary sinus (with orbit, partially superimposed)	14	Condyle of the mandible
5	Middle cranial fossa, greater wing (anterior wall of middle cranial fossa)	15	Cochlea
6	Pterygopalatine fossa	16	Internal auditory canal
7	Coronoid process	17	Semicircular canals
8	Pterygoid fossa	18	Anterior arch of the atlas
9	Sphenoid sinus	19	Jugular foramen
10	Foramen ovale	20	Mastoid air cells
		21	Dens of the axis
		22	Foramen magnum
		23	Cervical spine

Ocena radiograma:

foramen occ.magnum, potiljačna kost, piramide, sfenoidni i max. sin.

Za prikaz jagodičnih kostiju smanjuju se doze.

Snimak PNŠ



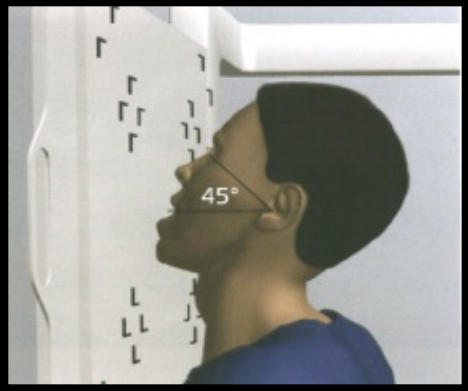
PA

Stojeći ili sedeći stav.

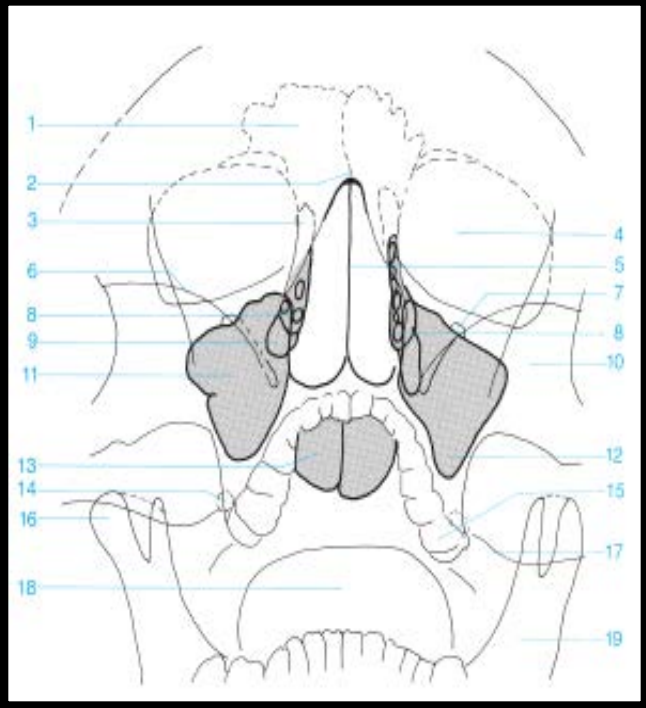
Glava licem prema filmu oslonjena brada- nos sa otvorenim ustima.

CZ 1,5 cm iznad protuberantie occ.ext.

15^0 cran-kaud zakošenje







1 Frontal sinus
2 Nasal bone
3 Anterior ethmoid sinus
4 Orbit
5 Nasal septum
6 Greater wing of the sphenoid
7 Infraorbital foramen
8 Foramen rotundum
9 Posterior ethmoid sinus
10 Zygomatic bone
11 Maxillary sinus
12 Alveolar recess of the maxilla
13 Sphenoid sinus
14 Foramen ovale
15 Alveolar process of the maxilla
16 Condyle of the mandible
17 Petrous ridge
18 Tongue
19 Mandible

Ocena radiograma

maxilarni, sfenoidalni, etmoidalni i čeoni sinusi;

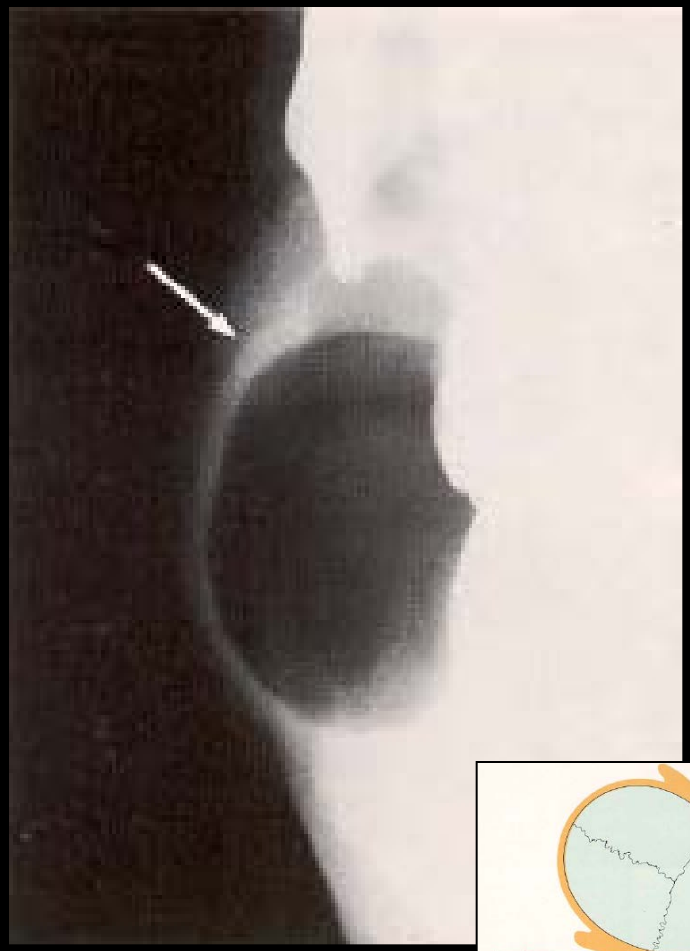
orbite, zigomatične kosti, septum nasi, mandibula.





Kraniogram - PNŠ

Snimak zigomatičnih kostiju

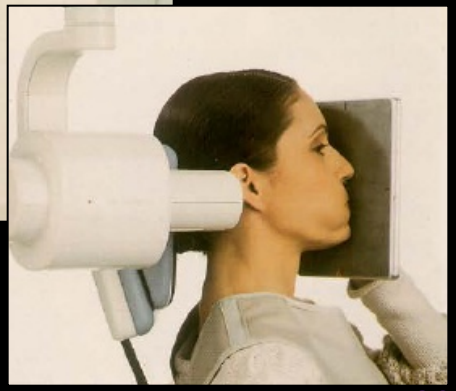


Sedeći stav.

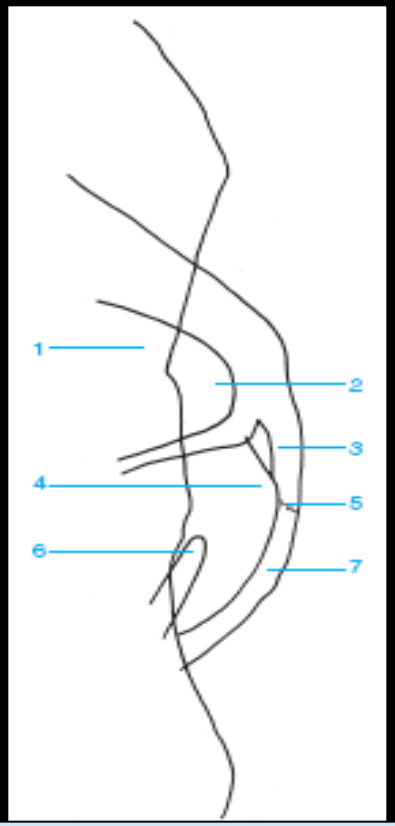
Glava polukoso, brada-nos.

CZ tangencijalno.









1 Maxillary sinus
2 Zygomatic recess (of the maxillary sinus)
3 Zygomatic arch
4 Temporal fossa
5 Temporozygomatic suture
6 Coronoid process (visualized end on)
7 Zygomatic process of the temporal bone

Ocena radiograma:

lukova jagodičnih kostiju.

Snimak nosnih kostiju



Axialna

Frontalna

Profilna

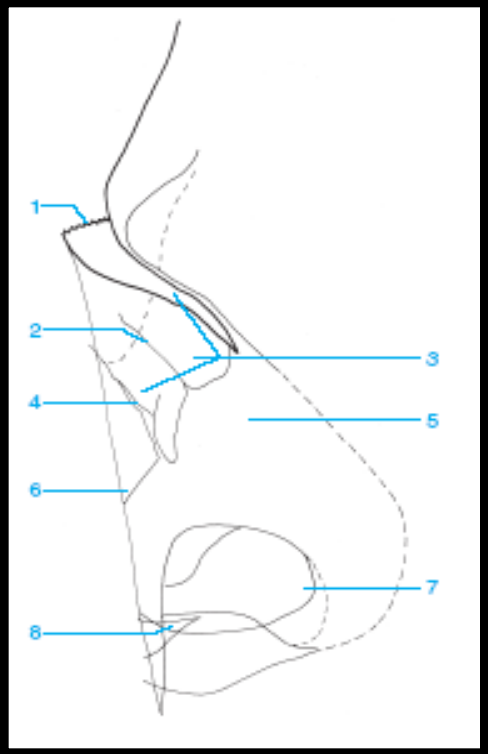
Sedeći ili ležeći stav.

Profilni položaj glave.

CZ na sredinu nosa.







1 Frontonasal suture
2 Ethmoidal groove
3 Nasal bone
4 Nasomaxillary suture
5 Nasal cartilage
6 Maxilla
7 Vestibule of nose
8 Anterior nasal spine

Ocena radiograma:

koštane i hrskavičave strukture nosa

Snimak facijalnog masiva



Waters - mačija glava

Sedeći ili ležeći stav, ventralni dekubitus.

Brada oslonjena, usta zatvorena, nos za 1,5 cm iznad stola.

CZ 2-3 cm iznad protuberantie occ.ext.





LL

Sedeći ili ležeći stav, ventralni dekubitus.

Glava u lateralnom položaju.

CZ na proc.zygomaticus.





Ocena radiograma:

orbite, nosna kost, maxila i sinusi, telo jagodične kosti.

Snimak orbita

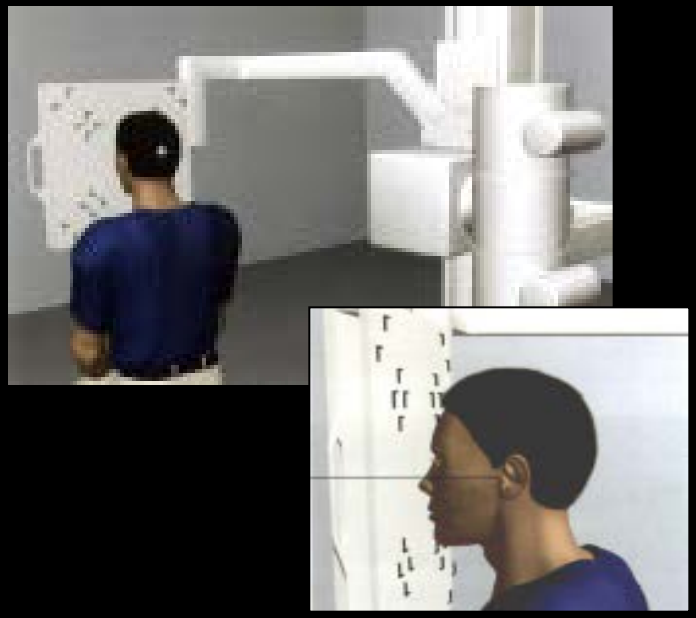


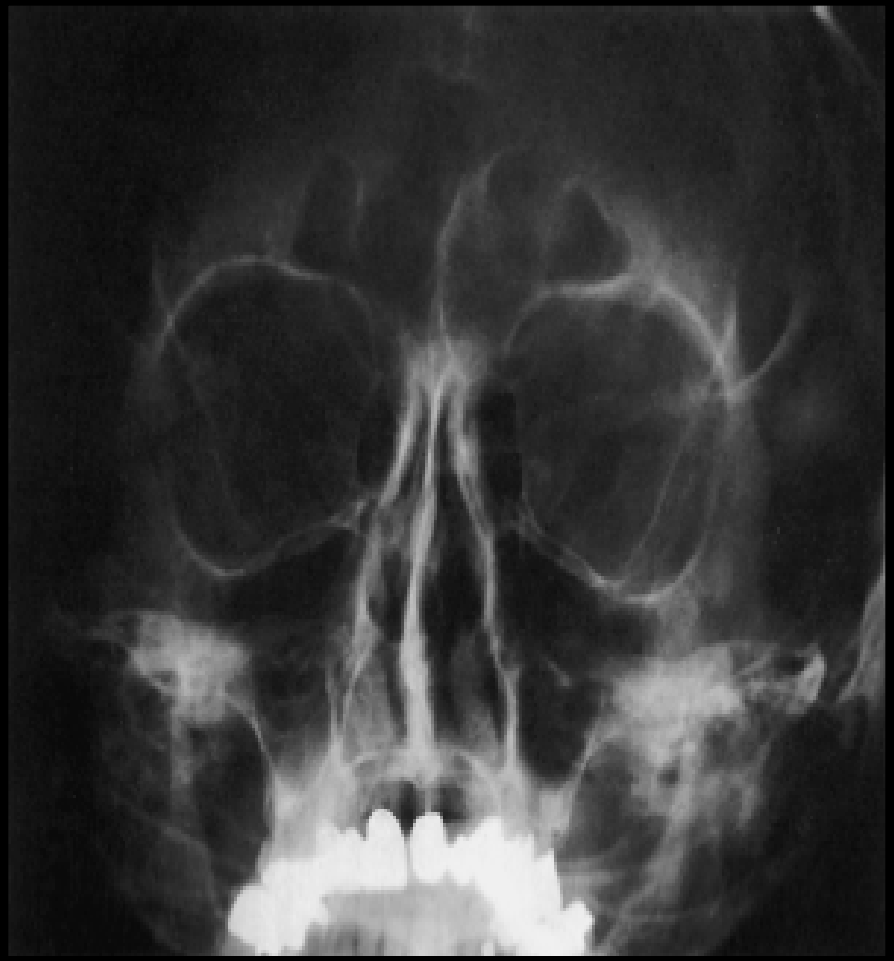
PA

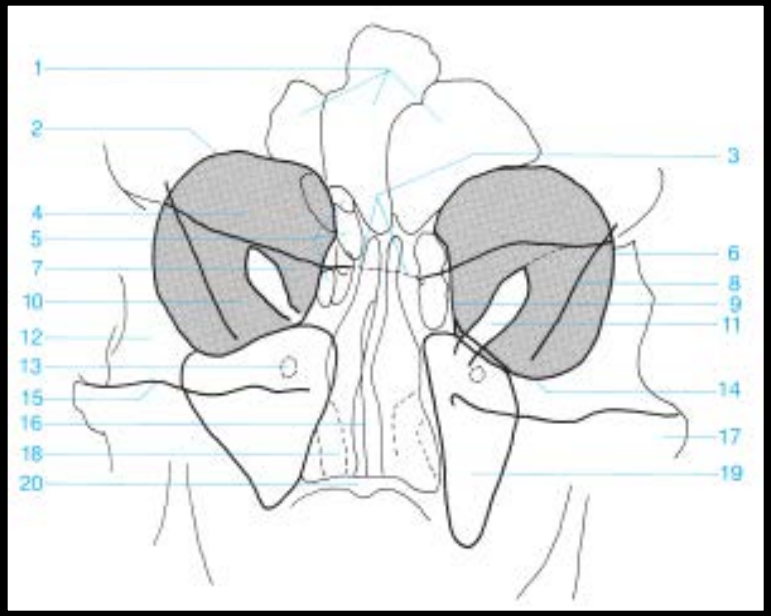
Sedeći stav.

Glava naleže brada-nos, zatvorena usta.

CZ 2 cm iznad protuberancije occ.ext.





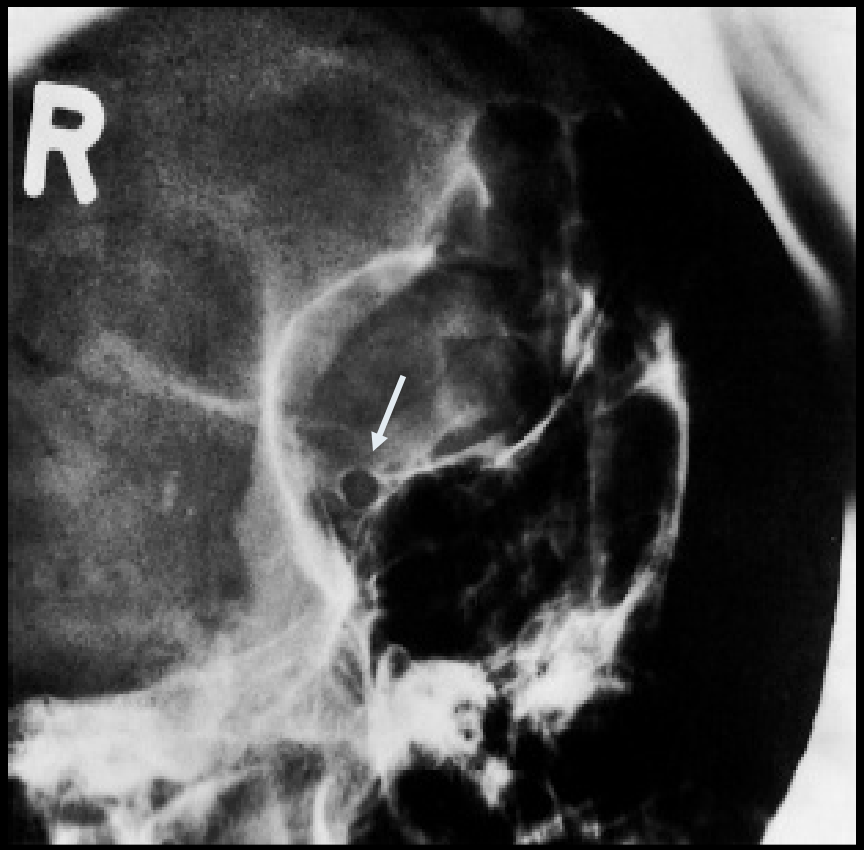


1	Frontal sinus	12	Frontal process of the zygomatic bone
2	Roof of the orbit	13	Foramen rotundum
3	Sphenoid	14	Floor of the orbit
4	Orbit (gray background)	15	Petrous ridge
5	Ethmoid sinus	16	Nasal septum
6	Lateral wall of the orbit	17	Zygomatic arch
7	Lesser wing of the sphenoid	18	Inferior turbinate
8	Innominate line	19	Maxillary sinus
9	Orbital plate	20	Hard palate
10	Greater wing of the sphenoid		
11	Superior orbital fissure		

Ocena radiograma:

u celosti prikazani rubovi orbita.

Snimak optičkih kanala



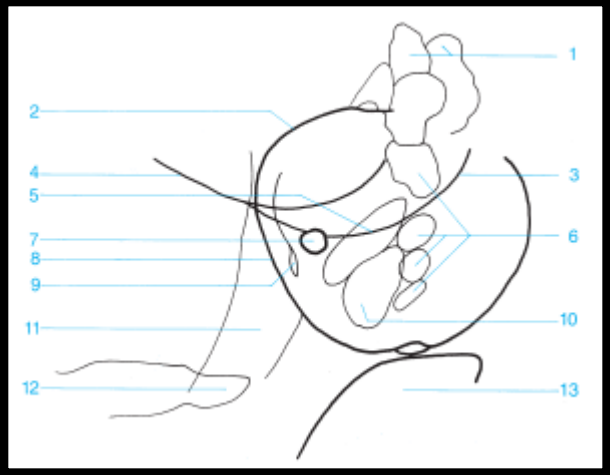
1 Frontal sinus
2 Roof of the orbit
3 Left lesser wing of the sphenoid
4 Right lesser wing of the sphenoid
5 Sphenoid
6 Ethmoid sinus
7 Optic canal
8 Lateral wall of the orbit
9 Superior orbital fissure
10 Sphenoid sinus
11 Zygomatic arch
12 Petrous portion of the temporal bone
13 Maxillary sinus

Rhese

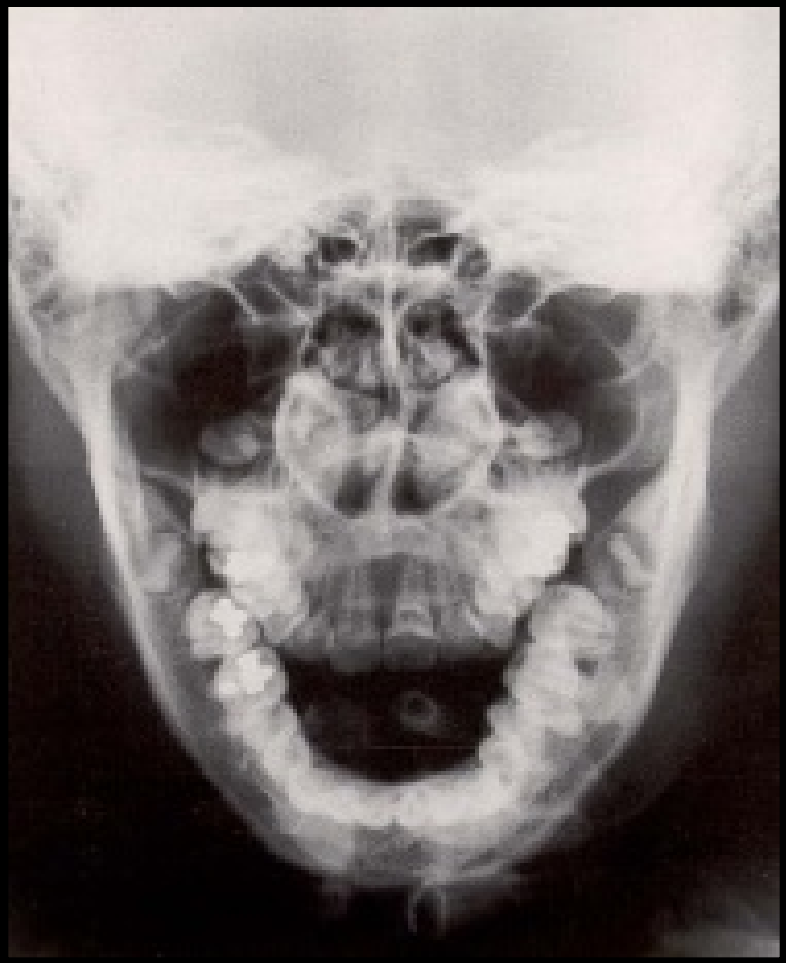
Ležeći stav, ventralni dekubitus.

Glava rotirana za 37^0, oslonjena nosom gornjim delom orbite i zigomatičnom kosti.

CZ na temporoparijetalni tuber a izlazi kroz suprotnu orbitu.



Snimci maxille



Frontalna

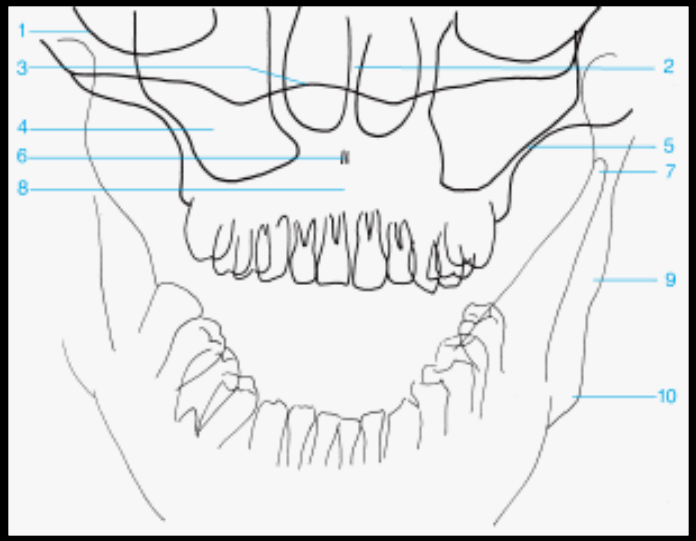
Sedeći ili ležeći stav, ventralni dekubitus.

Glava položena čelo-nos, otvorena usta.

CZ na protuberantiu occ.ext.







1 Floor of the orbit
2 Nasal septum
3 Base of the skull
4 Maxillary sinus
5 Lateral wall of the maxilla
6 Anterior nasal spine
7 Coronoid process
8 Maxilla
9 Ramus of the mandible
10 Angle of the mandible

Ocena radiograma:

gornja vilica, sinusi, nosna duplja sa svim srukturama koje im pripadaju

Snimci mandibule

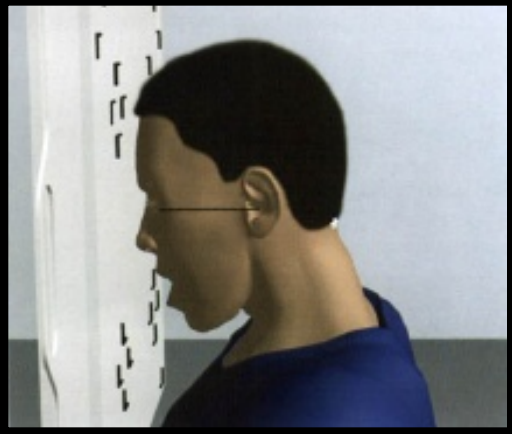


PA

Ležeći ili sedeći stav, ventralni dekubitus.

Glava čelo-nos, otvorena usta.

CZ 4 cm ispod protuberantie occ.ext.



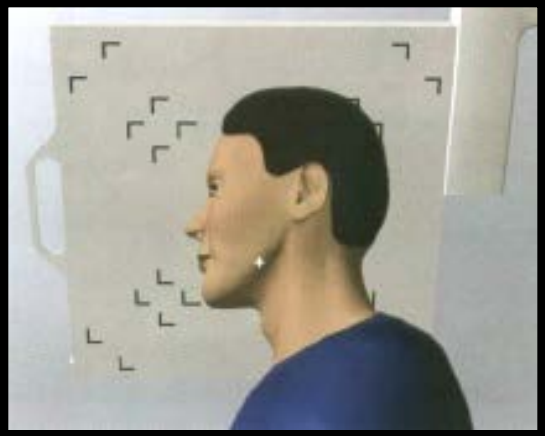


Ramus

Ležeći stav, ventralni dekubitus.

Glava u profilu.

CZ na sredinu dalje mandibule sa kaudo-cran. 30^0.





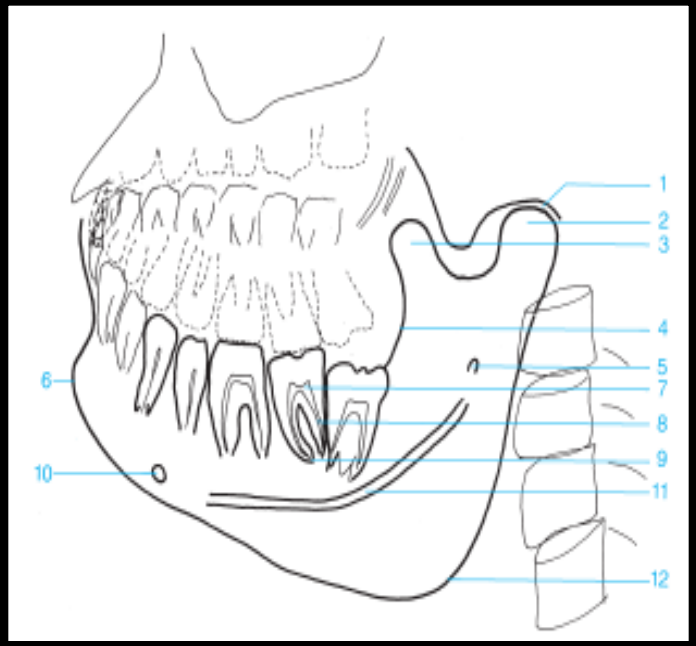
Modifikacija

Ležeći stav, ventralni dekubitus.

Glava u profilu pod nagibom 15^0.

CZ na sredinu dalje mandibule sa kaudo-cran. 25^0.





1	Temporomandibular joint	7	Pulp cavity
2	Condyle of the mandible	8	Root canal
3	Coronoid process	9	Apical foramen of the tooth
4	Cortex of ramus of the mandible	10	Mental foramen
5	Mandibular foramen	11	Mandibular canal
6	Mental protuberance	12	Angle of the mandible

Ocena radiograma:

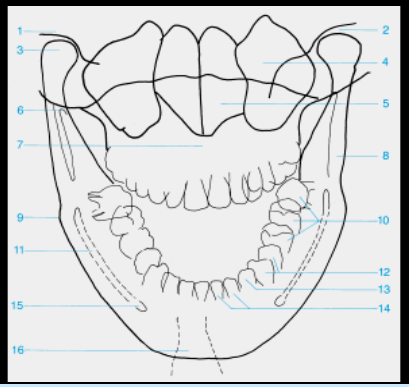
vilična grana sa otvorom, zglobni nastavak



Clementschisch - simfize

Sedeći stav, bradom se oslanja na kasetu.

CZ na sredinu simfize sa cran-kaud. zakošenjem 45^0.

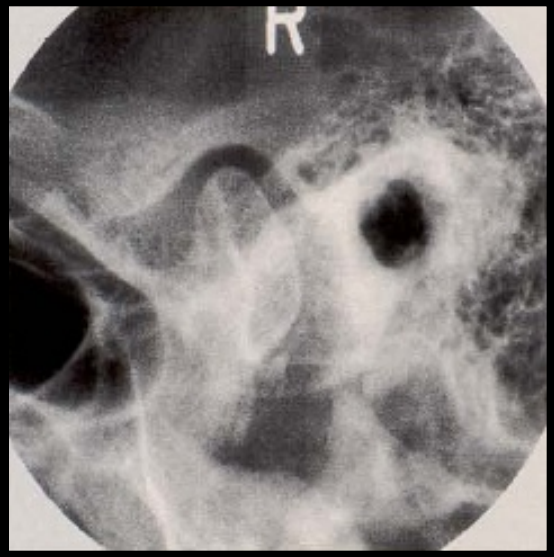


1 Temporal bone
2 Temporomandibular joint
3 Condyle of the mandible
4 Maxillary sinus
5 Nasal cavity
6 Coronoid process
7 Maxilla
8 Ramus of the mandible
9 Angle of the mandible
10 Molars
11 Mandibular canal
12 Premolars
13 Canines
14 Incisors
15 Mental foramen
16 Mental protuberance (trachea superimposed as radiolucent band)

Ocena radiograma:

izbegava se superponiranje, prikazuje se bradni deo vilice.

Snimak temporalnih kostiju





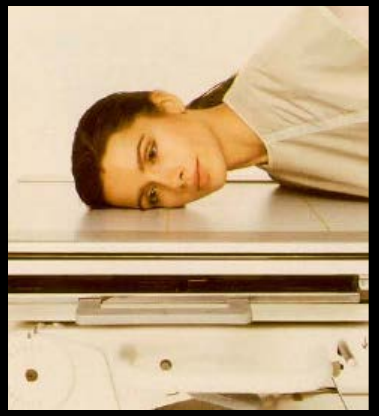
Schüller

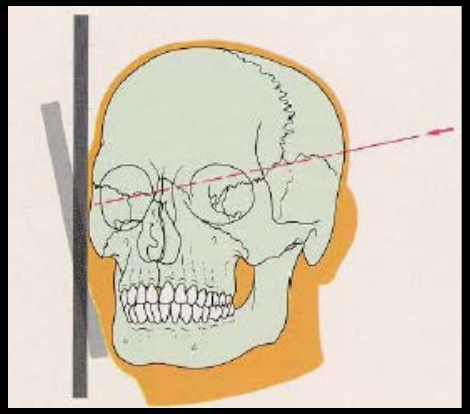
Ležeći stav, dorzalni dekubitus.

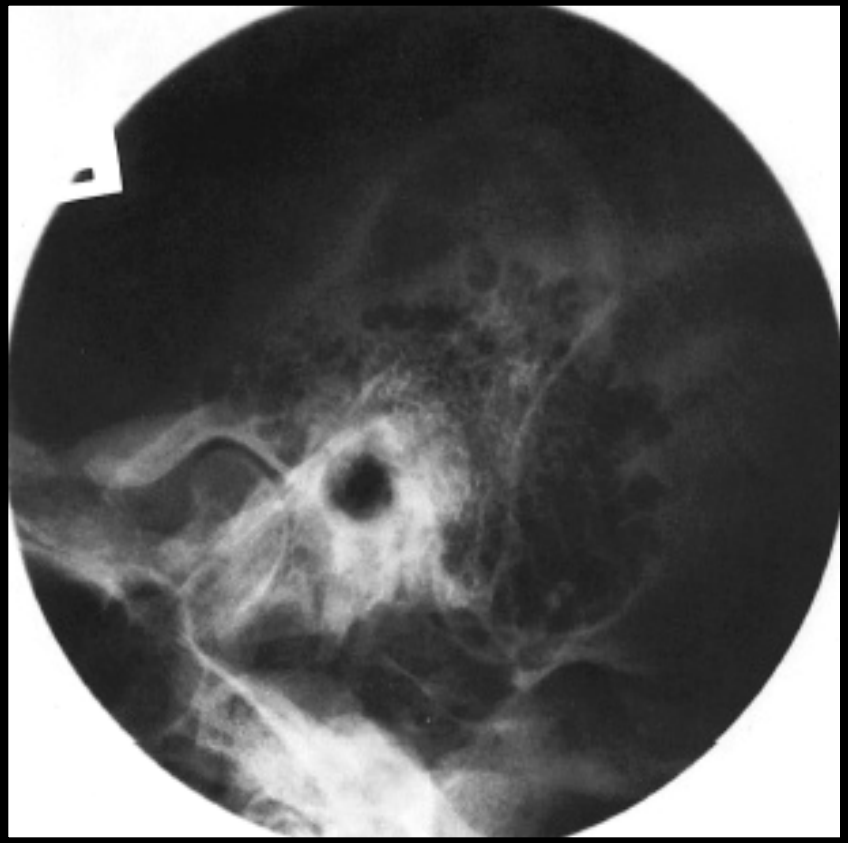
Glava u profilu.

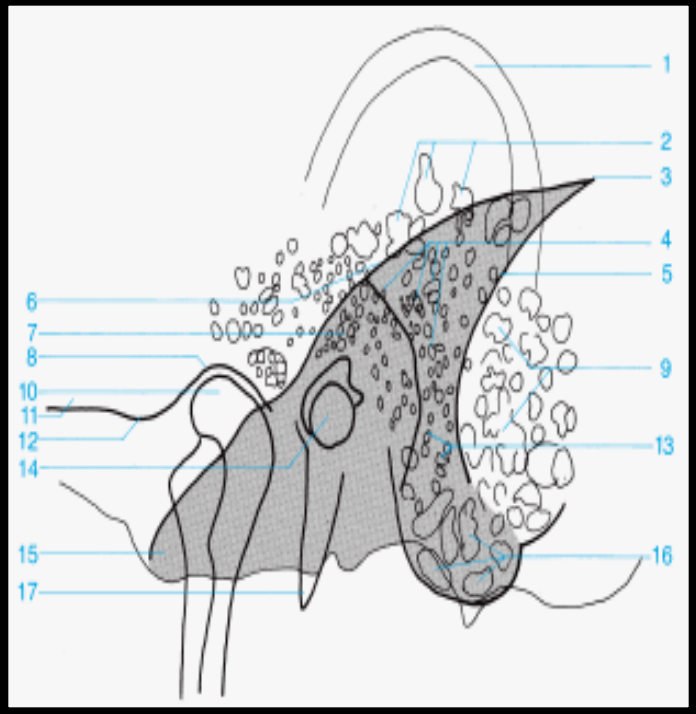
CZ za 4 cm iznad suprotnog temporo-mandibularnog zgl. 25^0-30^0 cran-kaudal. zakošenja.

Obavezno zatvorena i otvorena usta.









1 Outer ear
2 Squamous air cells
3 Angle of Citelli
4 Periantral air cells
5 Sulcus of the sigmoid sinus
6 Anterior margin of the petrous bone
7 Antrum of the mastoid
8 Temporomandibular joint fossa
9 Marginal air cells
10 Condyle of the mandible
11 Zygomatic process of the temporal bone
12 Articular tubercle
13 Retrofacial air cells
14 Internal and external auditory canal
15 Apex of the petrous bone
16 Air cells in the tip of the mastoid process
17 Styloid process

Ocena radiograma:

spoljašnji ušni otvor, mastoidne ćelije, tegmentum timpani;

TM zglob, koren zigomatičnog luka.

Uloga rtg metoda dento-maksilofacijalne regije

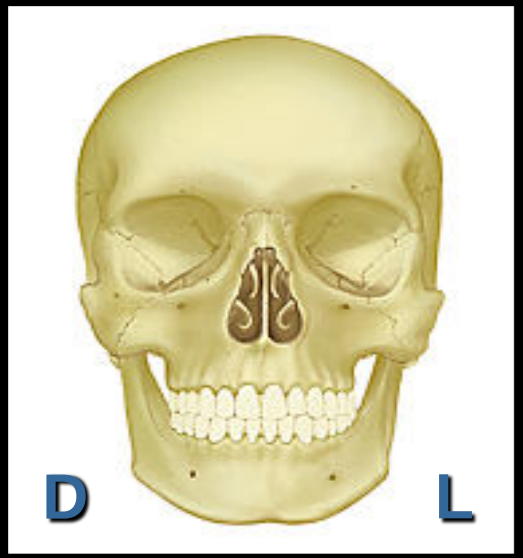
Mane:

- Ograničena mogućnost - zbog preklapanja.
- Kombinacija metoda - morfološka specifičnost.
- Radiografski metodi biraju se na osnovu usvojenih načeja, kl.slike, iskustva, modifikacije metoda.

Prednosti:

- Mogućnost prikazivanja organa u celini.
- Koštani masiv se prikazije kao anatomski i funkcionalni kompleks.
- Prikaz patologije u nosnoj šupljini.

Analiza extraoralnih radiograma



Identifikacija

ime i prezime, datum, ustanova

Orijentacija

- koja Strana (D-L)

  lekar-pacijent licem u lice
- koja Metoda

  (kraniogram, poluaksijalni i aksijalni snimci glave, PNŠ, orbite, optičkih kanala, zigomatičnih kostiju, snimci kostiju lica, nosnih kostiju, maxile, mandibule, TM zgloba, pluvačnih žlezda)

Zaglavlje

vrsta snimka, u kojoj projekciji

Pr. radiogram PNŠ u PA projekciji, radiogram facijalnog masiva u Woters-ovoj projekciji, ...

Nalaz

- Koštana forma (broj, položaj, veličina, oblik kostiju)
- Koštana struktura (kompakta, kortikalis, spongioza)

LOVIHO

- Vidljivi zglobovi (zglobne površine, zglobni prostor)
- Okolna meka tkiva

Zaključak

diferencijalna dijagnostika ili mišljenje sa daljom preporukom



http:// www.med.pr.ac/katedra/interna-medicina.php
e-mail: nikolicsimon@ikomline.net