

THE MINISTRY OF HEALTH OF UKRAINE
THE HIGHER STATE EDUCATIONAL INSTITUTION OF UKRAINE
"UKRAINIAN MEDICAL STOMATOLOGICAL ACADEMY"

Approved
at the meeting of orthodontics department
«____»_____20____y.
protocol №____by _____
Head of department_____ L.V. Smaglyuk

METHODICAL RECOMMENDATION
for independent work of students during the preparation
to practical lessons and on the lessons

Academic discipline	Orthodontics
Module №1	Orthodontia. Diagnostic of dentognathic anomalies and deformations.
The theme of the lesson № 12	Cephalometric methods (straight and lateral). Decoding by Schwarz, Downs, Ricketts et al. Basic anthropometric landmarks.
Course	III
Faculty	Preparation of foreign students

Poltava 2016

1. The relevance of the topic. To determine the form of malocclusion (dental-alveolar, gnathic or combined), and prognosis of orthodontic treatment, it is necessary to conduct cephalometric research. Therefore, the knowledge of the essence of the additional research methods realization, as well as the decoding and interpretation of the data is important in the training of a dentist orthodontist.

2. Specific objectives:

To know the method of the cephalometric;

To know indications for cephalometric research;

To know skin and bone points for decoding the side cephalometric;

To know the method of decoding cephalometric by Schwarz;

To know the normal values for linear and angular dimensions of cephalometric.

3. Basic knowledge's, abilities, skills necessary for studying the topic (interdisciplinary integration)

Name of previous disciplines	Skills
1. Anatomy	To find major bone and skin point
2. Roentgenology	To determine the type of radiographs. To identify landmarks of the skeleton and soft tissues.
3. Geometry	To measure linear and angular sizes.

4. Tasks for independent work during preparation to the lesson and on the lesson

4.1. A list of the main terms, parameters, characteristics that need to learn by the student during the preparation to the lesson:

Terms	Definition
1. Cephalometric	Conducting a research at large focal distance that provides the minimum distortions of sizes of explored organ.
2. The types of cephalometric	Lateral, strait.
3. The types of cephalometric points	The letters of skin points by small Latin letters, bone points – by large Latin letters.
4. X-ray forms of malocclusion	Gnathic, dento-alveolar, mixed forms.

4.2. Theoretical questions to the lesson:

1. The cephalometric method of research.

2. Indications for the cephalometric study.

3. Techniques of organizing and processing side of the head cephalometric.

4. Decryption techniques of cephalometric.

5. The decryption method of the cephalometric by Schwartz.
6. The essence of craniometrical study.
7. The main craniometrical parameters of the study.
8. The essence gnathometrics research.
9. The main parameters of the gnathometrics research.
10. The essence profilometric research.
11. The main parameters of the profilometric research.

4.3. Practical works (task) which are executed at the lesson:

1. To define indications for cephalometric research;
2. To determine the drawing of cephalometric skin point;
3. To determine the drawing of cephalometric bone point;
4. To conduct the drawing of the cephalometric main planes and lines for decoding;
5. To detect deviation from the normal angular indicators for cephalometric;
6. To identify deviations from the normal linear indicators for cephalometric;
7. To determine the type of the face by Schwarz;
8. To decoding the cephalometric according to the method by Schwartz.

The content of the topic:

A chance to study the skull structure appeared with introduction of roentgenologic researches and method of cephalometric.

Cephalometric or survey in the distance have given a possibility to decrease or take to the minimum twisting distortions of a photographed object. Under the term «cephalometric» we understand conducting a research at large focal distance that provides the minimum distortions of sizes of explored organ.

In 1956 at the congress of orthodontics in Boston (the USA) there was accepted a standard distance for cephalometric research of face profile that totals 150 cm. In our country we get cephalometric from the distance 190 and 265 cm.

Big attention during the contacting of cephalometric research is paid to the fixing of head by special adaptations – cephalostat or craniostat of different constructions. That provides the receipt of identical pictures. The head is fixed in craniostat in such a way, that the middle-sagittal plane of the head was parallel to the plane of cassette (tape). He should be lifted in such a way chin so that the back edge of lower jaw branch doesn't impose on the shade of the vertebrae.

Technique of receiving and treatment of lateral cephalometric. For the receiving of clear outlines of soft fabrics we use the method of contrasting. For this aim we apply viscous contrasting agents – barium suspensions mixed with a vaseline butter; tantalum powder, with vaseline butter. We put markers from the bridge of the nose through the tip of nose to the chin; in the cavity of mouth we contrast a line in the middle of the tongue and soft palate.

It is necessary to have distance from the object to the tape for the elimination

of distortions of image of object. We should follow the rules and terms of radial defense (use of leaden screens, aprons, skirts, etc.).

For the receiving of identical image it is necessary to following:

1. All cephalometric pictures must be made at one distance between x-ray photography tape and the tube (190 cm or 150 cm).
2. The fixing of the head should be in certain position in relation to the directed x-rays and cassette with tape by cephalostat (the cone of rays are aimed at the middle of external acoustic duct).
3. X-ray photography tape is set parallel to the middle-sagittal plane of the head and athwart to the ray.
4. The distance between the sagittal plane of the head and tape must make 7,5 cm in the average.
5. Exposure must be minimal.
6. Minimum distance between the object and with the purpose of diminishing of distortions.

Technique of cephalometric receiving. Cephalometric received is put on a tracing paper for the following decoding and analysis.

130 methods of analysis of lateral cephalometric exist nowadays. Different methods differ one from one by the types of measuring (angular, linear or their mix); by points that were chosen by authors for the analysis. Basic types of analysis of lateral cephalometric according to measuring are the following:

1. Determination of linear sizes between certain points and their interrelation. These are the methods by S.B. Ivanow, De Coster, Korkhaus and others.
2. The measuring of angular sizes (Bjork, Downs, Graber and other).
3. The determination of proportion of sizes of facial skeleton bones and their separate areas (May, Luzy).

More often we use the combination of different methods of analysis. It allows to take into account both linear and angular sizes and also proportion of facial skeleton structure .

In Europe the most widespread methods are Schwarz, A. El-Nofeli, R. Frenkel. In the USA the method of Downs is very popular.

Schwarz offered the combined method of analysis. In orthodontics references on cephalometric it is accepted since 1965 to write the initial letters of skinning points by small Latin letters and bone points – by large Latin letters.

Points:

A – is subspinale point of Downs, the most posterior located point on the front contour of apical base of maxilla;

ANS – is the top of frontal nose arista;

B – supramentale point of Downs, the most posterior located point on the front contour of apical base of the mandibular;

Gn – gnation – is place of connection of the mandibular lower edge contour with external contour of symphysis;

Go – gonion – is point on the external edge of the lower jaw at its crossing with bisectricess of the angle formed tangent to the mandibular lower edge of body and

back edge of ramus;

N – nasion – is point on crossing of the median plane with the naso-frontal suture;

Or – orbital point - is the lowest located point of lower edge of the orbits. It is situated on the eye socket edge of zygomaticus bone;

Pg – pogonion – is the most frontal point of chin protrusion in median crossing by the orientation of the head on Frankfurt horizontal line;

PNS is – a back nasal arista. This point is quite often badly seen on lateral cephalometric because of permanent molars follicles layering; in these cases it is necessary to be oriented on the lower end of the wing of pterigo-maxillary incisura and to find the point of PNS on its crossing with contour of the palate.

Po – porion – is situated on the above contour of external auditory. It is always deeper than auricularis points, is it locates on in the middle of acoustic channel;

Pr – prosthion – is the most frontal point of alveolar process of maxilla in the median crossing by the orientation of the skull on Frankfurt horizontal plane;

Se – is the point on the middle of the entrance on the Turkish saddle (ephippium);

sn – is a skin point, the most posterior located at the place of transition of lower nose contour into the upper lip;

C – condilon, point on a top to the contour of arthral heads;

Lines:

A-B – is a line, that connects points A and B (Downs);

A-Pg – is a line, that connects a point A and Pg (pogonion);

FH – is the Frankfurt horizontal line, passes through the lowest located point of left lower eyeing edge and the highest located point of the left external acoustic duct;

For the description of lower jaw arthral heads location we draw a line **H**.

H – from the point Or, to the point C.

MP – is a plane of lower jaw basis – between Gn and the highest point of the lower contour of the lower jaw body;

MT-1 – is tangent to lower contour of to the lower jaw;

MT-2 – is tangent to back contour of lower jaw ramus;

N-A – is a line, which connects the points N and A;

OcP – is an occlusal plane that is conducted so that it should touch not less three cusps of molars. It divides the middle of the incisors overlap and ceiling of last teeth cusps which are in the contacts. In the period of milk bite this plane passes through the middle of incisors ceiling of milk central incisors and cusps of the second milk molars; in the period of variable bite – through the middle of permanent central incisors and cusps of the first permanent molars, in the period of permanent bite – through the middle of permanent central incisors and cusps of first, second or third permanent molars, the last teeth which are in the occlusal contact;

Pn – is the nasal plane, offered by Dreijfus, perpendicular line to the plane of frontal part of scull basis conducted from the skinning nasal point n, namely from intersections of **N-Se** with the contour of skin;

Po – is orbital plane by Dreijfus is vertical line, is conducted from orbital point,

athwart to the plane of frontal part of skull basis and parallel to nasal planes of **Pn**;
The space between the planes of **Pn** and **Po** is named the field of Dreijfus (**KPF**).

N-Se – is the plane of frontal part of skull basis;

SpP – is a spinale plane, that connects points **ANS** and **PNS**;

T – is a tangent to the skinning points **sn** and **pg**;

Craniometry:

Determination of jaws location – the main aim of craniometric researches is in relation to the plane of frontal part of the skull basis, i.e. determination faces type and determination of deviations from middle sizes that are characteristic for a normal bite to the same type of face.

Craniometry helps to define:

1) Location of jaws, i.e. gnathic parts of facial skeleton in sagittal and vertical directions in their relation to the plane of frontal part of skull basis:

1) in sagittal direction: anterior, middle or posterior location of gnathic part;

2) in vertical direction: inclination of gnathic part upward, middle location and downward inclination;

2) Location of TMG in relation to basis of skull the plane;

3) Length of frontal cranial fossae on which in the process of gnathometric research it is possible to define the individual norm of length of jaws bodies and existing deformation of sizes.

The innate variants of jaws location – we define according to the sizes of angles:

1) Facial.

2) Inclinal.

3) Horizontal.

1. Facial angle (F). We get it at crossing lines of N-Se and N-A (internal lower angle). The average size of facial angle is within the limits of $85 \pm 5^\circ$. His size characterizes the location of maxilla in relation to the skull basis: middle, displaced a little ahead in comparison with a face average (such location of jaws by Schwarz named “anteponition”), displaced a little back in comparison with a face average (this location of jaws Schwarz as named “retroponition”).

2. Inclinal angle (I). It is created by of crossing of lines Pn and SpP (internal upper angle). The average size is $85 \pm 5^\circ$. If angle I is more than average, then the jaws are inclined ahead more than at an average face, that was the author named “anteinclination”, if it is less, then jaws more inclined to back, this position is coned “retroinclination”.

3. Angle of horizontal line (H) is created by crossing of lines H and Pn (internal upper angle). It determines the position of lower jaw head in relation to basis of skull that influences on the shape of face profile. In average this angle is 90° . According to Schwarz, there is interdependence of depth of middle cranial fossae and location of TMJ. The flatter the fossa is, the higher joints are, and vice versa.

With the change of orbital point (Or) location and arthral heads inclination plane H and size of H-Pn angle changes. If angle H is less then average, arthral heads are in position of “supraposition”, closer to basis of skull, if it is more there,

arthral heads are in position of “infraposition”, below skull basis, than at an “average face”. Inclination H plane combines with the change of outlines of face profile. At supraposition of arthral heads and normal development of lower jaw chin is displaced to the back, at infraposition – ahead. That is why supraposition of arthral heads influences on the form of jaw type, as retroinclination, and infraposition – as anteinclination of jaws.

As the form of lower jaw is concerned, here can be observed smoothing of chin location due to the change of growth of lower jaw ramus in length, changes of length of lower jaw base and size of its angles. The change of lower jaw form can hide the high or low location of TMJ that is defined by gnathometry.

Gnathometry:

On the basis of data analysis of gnathometry it is possible:

- 1) To define the anomalies of the dento-facial system, which developed as a result of disparity of jaws sizes (lengths of jaws body, height of lower jaw ramus), anomaly of teeth position and alveolar process shape;
- 2) To find out influence of sizes and location of jaws, as well as anomalies of teeth position on the shape of face profile;
- 3) To define the degree of occlusal plane inclination to the plane of skull basis, that it is important for the aesthetically beautiful prognosis of treatment.

For the conduction of gnathometry analysis we use the following parameters:

1. Angle of Pn-OcP – (internal upper angle). By orientation on the position let 1st and 6th tooth (changeable bite) the average size of this angles more than by the orientation on the position of the 1st and 7th tooth (permanent bite). We choose the distal cusps of the last masticatory teeth located at central occlusion of a bite. If angles less than middle, then an occlusal plane is more up inclined in relation to skull basis, than at an “average face”, and it influences on the aesthetically beautiful prognosis of treatment of sagittal anomalies of bite. In particular, by treatment of distal bite, when the angle of occlusal planes less than 75°, the displacement of lower jaw ahead is not very effective. It is due to the fact, that the chin is displaced ahead insufficient in relation to the line Pn. If angle is more than average, after treatment of distal or a mesial bite we can expect improvement of face profile;

a) Angle of SpP-OcP. During the orientation at teeth 1-6 it is less, than during the orientation on 1-7 teeth. This angle reflects the vertical location of frontal and lateral teeth.

b) Angle of OcP-MP. By orientation on teeth 1-6, it is more than during the orientation at teeth 1-7.

2. Angle of Pn-MP is an internal upper angle. In average this angle is 65°. The size of this angle changes as a result of ante- and retroinclination of jaws, infra- and suprapositions of lower jaw arthral heads, and also at the anomalies of position or lower jaw development. By comparison of the craniometry and gnathometry measuring it is possible to determine the reason of this angle size changing.

3. A basal angle (B) is an angle of basis of jaws slope one to another (SpP-MP). Its characterized vertical position of jaws. It size is conditioned by the height of lateral teeth and size of mandibular angles. If this angle is more than average, the lateral areas of jaws are shortened, and the front ones are usually prolonged; the chin is displaced to the back, if this angle is less than average, there is an opposite correlation. The average size of angle is $20 \pm 5^\circ$.

4. Mandibular angle (G) is measured between the lines MT-1 and MT-2, e.g. by tangent to the lower edge of body of lower jaw and back surface of its branches. Its average size is $123 \pm 10^\circ$.

5. Angles of teeth inclination to maxilla to the plane SpP:

1|1 – Sp – 70° ,

3|3 – Sp – 80°

4|4 – Sp – 90° .

The increasing of these angles sizes is marked at retrusion of upper incisors. It is characteristically for a mesial bite, underdevelopment of maxilla frontal area (shortening of frontal length, palatal position of incisors), and also at the cleft of maxilla. Diminishing of angles sizes is observed at the protrusion of upper incisors.

We distinguish 4 degrees of upper incisors protrusion by Khoroshilkina (1976):

1 degree: is size of angle 1|1 – Sp – $56 - 61^\circ$;

2 degree – $51 - 56^\circ$;

3 degree – $46 - 51^\circ$;

4 degree – $41 - 46^\circ$.

6. Angles of teeth inclination to lower jaw to the plane MP.

1|1 – MP – 85° ,

3|3 – MP – 90° .

At the distal bite change of incisors inclination to the plane MP is poorly expressed. At a mesial bite the average size of this angle can increase.

6. Inter-incisors angle (I - i) this angle is created by the longitudinal axes of central incisors of upper and lower jaw. The average size is $120-140^\circ$.

The size of basal angle influences on the relation of incisors (B). If size of basal angle is 40° , then lower incisors seem to be inclined forward, an inter-incisors angle diminishes to 120° and there is an impression of protrusion. Such protrusion Schwarz called a false one, when not only the relation of upper and lower incisors is changed but also their inclination to the plane of basis of jaws. The sagittal anomalies of bite are sometimes combined with pathology of vertical plane (by the open bite) and large size of basal angle B that can be conditioned by the genetic features of development. In such cases prognosis of apparatus treatment is unfavorable.

At the protrusion of upper incisors in connection with distal position of lower jaw (prognathic distal bite) the inter-incisors angle diminishes, and at mesial bite – it increases.

7. Angle of MM. The important value at cephalometric research has the

angle of MM that is created by crossing of lines APg – SpP. When measuring this angle, it is possible to define the location of chin in relation to the apical base of maxilla (point A). Line APg characterizes position of the lower jaw body; and the locations of alveolar process is determined by the size of angle AB – SpP. Equality of angles of APg-SpP and AB-SpP testifies to identical position of body and alveolar process of lower jaw in relation to the plane of basis of skull.

At the alveolar form of distal bite the line A – B on cephalometric is behind the line A – Pg. For differential diagnostics of alveolar process development anomalies and anomalies of lower jaw position we use a difference in the size of angles of APg – SpP and AB – SpP.

Study of linear sizes:

1. Determination of length of lower jaw body:

N – Se + 3 mm = average length of lower jaw body, jaw 68 ± 3 mm in a variable bite and 68 ± 6 mm in a permanent bite.

2. Ratio of maxilla basis length toward length of skull front basis is 7:10. Length of maxilla basis is measured from the intersection of perpendicular from a point A to SpP and to the point of PNS.

3. Ratio of lower jaw base length toward length of upper jaw base at orthognathic bite is **3 : 2**.

4. Ratio of lower jaw body length toward length of its ramus is 7:5. Length of lower jaw body is measured from the intersection of perpendicular to the point Pg on the plane of MT-1 (tangent to the body of lower jaw) to the intersection this line with tangent to the back surface of branches.

We measure the height of ramus from point-to-point crossing of MT-1 and MT-2 to point to crossing of MT-2 and plane of H.

The undevelopment of body and ramus of lower jaw in length results the form of lower face part supra position of arthral heads, and overdevelopment – as infraposition of.

5. Determination of width of ramus to lower jaw. For determination of degree of lower jaw ramus development it is necessary to take into account their width. The width of lower jaw ramus by Schwarz is $2/5$ to the length of jaw body.

Profilomhetry enables to explore the form of face profile, define and specify the following:

1. Influence of craniomhetryc correlations on the form of type of person.
2. True face profile.
3. Peculiarities jaw profile that violates harmony of face (position of lips, chin, subnasal point, etc.).

At the profilomhetryc analysis of lateral cephalometric by Schwarz suggests to study the form of jaw profile by:

1. Position of lips in relation to the lines Pn and Po and to mouth tangent (line T), that connects the skin points of **sn** and **pg**.
2. Proportion of the face parts.
3. Profile angle T.
4. Taking into account the thickness of face soft tissues.

The field of jaw profile after Schwarz (KPF) is between the lines Pn and Po (nasal and orbital planes). In the jaw profile field Schwarz defines three parts of face: frontal (overhead) from the point of trichion (tr) at the edge of hairy part of the head to the point nasion (n) on a skin in the area of nose bridge; nasal or middle – from point nasion (n) to subnasale (sn); jaw (lower) from point subnasale (sn) to gnathion (g) on the chin.

Proportion of the face is defined by correlation of its jaw and nasal parts (comparison in relation to nasal or middle), and also by width of biometrical profile field (a middle size is 15 mm). Jaw part can be a little bit more or less nasal one (within the limits of 10%).

Positions of lips determine according their attitude toward the line T – mouth tangent, which connects the skinning points of sn – pg. If this line divides the red framing of upper lip in half and runs into the external surface of the red framing of lower lip, positions of lips are called middle. If one or both lips are situated in one plane midposition, such position is called positive, if after the plane negative.

Position of lips in relation to the nasal plane, of Drejfus (Pn). In a norm the upper lip touches the line Pn, the lower lip doesn't touch line Pn (it lacks 2-3 mm) and the chin is between the lines Pn and Po.

Position of lips in relation to the nasal plane of Drejfus (Pn). In a norm the upper lip touches the line Pn, the lower will lip doesn't touch line Pn (it lacks 2-3 mm) and the chin is between the lines Pn and Po.

The intersection of Line Pn and Po forms the angle T that is called profile angle. Its average size is 10° . At such size of angle T profile is ideal in the aesthetically beautiful relation according to Schwarz and is named straight. At the size of profile angle more than 10° the type of profile is named sloped back, less than 10° – sloped forward.

At small variability of sizes T angle harmony face features is violated insignificantly, but its expression changes. The increase of profile angle gives the face the tenderness, and decrease expression of energy and courage.

The size of profile angle T characterizes position of the chin in relation to subnasal point (sn) and determines the form of jaw profile, and consequently matters at planning of treatment at sagittal anomalies of bite.

The form of profile depends on the thickness of soft tissues. In the region (n – N) it is 6 mm in the average (true for a child and an adult), and in the region of sn – A – for children its size is 12-14 mm, and for adults – 15-17 mm, i.e. the considerable increase of thickness is observed.

At the location of sn at the front mark Pn the distance is marked with a sign plus (+), at the location behind with minus (-). The thickness of soft fabrics in the region of point of pogonion (pg) matters too.

The location of lips, influences on the form of profile. A lip angle is created by the tangent connecting the most protruding points of lips with a nasal line. If this angle equals zero, both lips are on the same level, if it is situated to the left of nasal line it is considered negative, if situated to the right – positive.

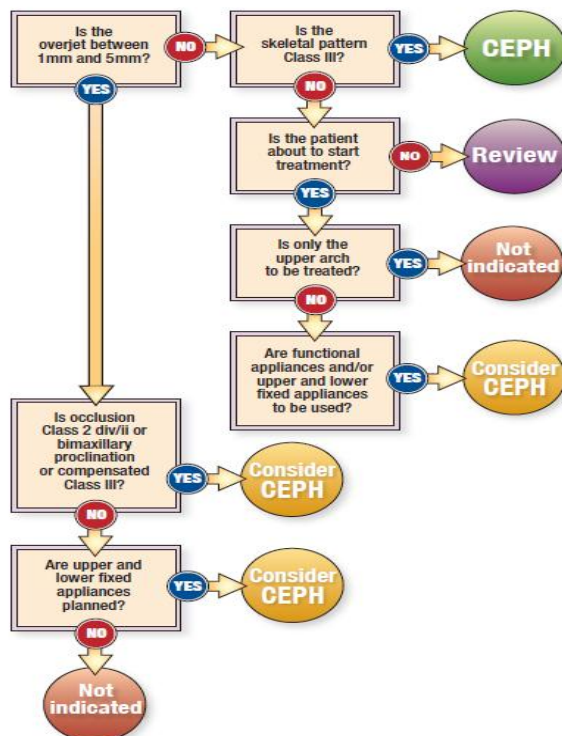
The form forehead influences also the form of profile (vertical, protuberant or flat). The form of forehead matters for estimation of length of front basis of skull. As we know, the distance **N – Se** grows up to the age of 9 in average according to Schwarz it makes 70 mm, for boys of 13 years – 73 mm, for girls of 13 years – 67 mm.

On the basis of cephalometric research information by Schwarz came to the conclusion, that it is possible to define, what is according kind of face profile is typical for, that is typical for this individual in accordance with skull formation.

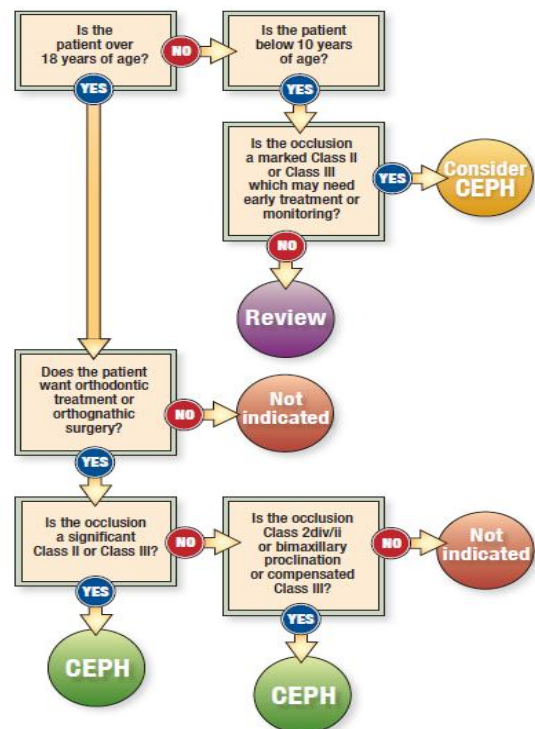
If a patient has the size of angles **I and H** is more or less than average, then the difference between the average size of these angles and that is of a patient is added to the average size of profile angle **T**.

$T = 10 + (I_i - I_n) + (H_i - H_n)$, where **I_i** is the size of patient inclination angle a; **I_n** is the normal size of angle of inclination; **H_i** is the size of angle of horizontal line at a patient; **H_n** is the normal size of angle of horizontal line.

 IS A PRE-TREATMENT LATERAL CEPHALOMETRIC RADIOGRAPH INDICATED IN A PATIENT AGED 10–18?



 IS A PRE-TREATMENT LATERAL CEPHALOMETRIC RADIOGRAPH INDICATED IN A PATIENT OVER 18 YEARS OR BELOW 10 YEARS?



Strait cephalometric.

In addition of cephalometric study of the skull in lateral projection study it also in frontal and axial projections. Such research is used to study the growth of the facial skull in the transverse direction and the detection asymmetries and the presence of pathology in the transversal plane. Especially valuable this method is for cross-bite, over the lateral displacement of the lower jaw and the uneven growth of the right and left halves of the face.

For orthodontic treatment of patients with a significant degree of the upper dentition and apical base narrowing, curvature of the nasal septum and volume

reduction of the nasal cavity using the method of accelerated disclosure of palatal suture by Derichsweiler, the analysis of direct cephalometric of the skull allows to estimate changes of the not only of the maxillary bones location, but other bones of the facial skeleton. Strait projection is used for determining the indications for reconstructive surgical interventions in the maxillofacial region.

The basis of the study purpose is the recognition of asymmetry, due to uneven development of facial skeleton both halves or its individual parts.

The main line used the mid-sagittal line of the skull. Wustrow suggested to connect both tragus and in the middle of the line drop the perpendicular TME (Tragus-Mitten-Ebene). In addition to this cranial median Gerlach suggested using the front median GM through the points nasion and spalnu that for the symmetric structure of the face and dental arches takes place between the upper central incisors and through the median point of the chin.

In the process of studying direct cephalometric Chairman marks such laterally located point: Lo, T, Or, W, Co, Fe, Mx, Go, the points on the chewing surfaces of the first permanent molars.

In addition to medium- sagittal line, horizontal hold, connecting the same dots with the lines: Lo-Lo, (the intersection of the oblique orbital lines with the outer edge of the lateral wall of the orbit); T-T – the point on the pyramid of the temporal bone; Or-Or – point on the lower edge of the orbit; W-W – lower point of the mastoid; Co-Co – lateral point of the articular heads on zygomaticus arcs; Zj-Zj – lateral point on zygomaticus arcs; Mx-Mx – mesial points on the outer contour of the alveolar process of the maxilla; Go-Go – the corner points of the lower jaw, and others. Indicate also the median points: nasion, spinal, chins. enter-incisors on the upper jaw and connect with them the same name lateral points. Drawings, naso-orbital, orbital, spinal and other triangles allow visualizing and exploring symmetry and asymmetry in development of the face. To study the asymmetry of both halves of the face is carried out with laterally spaced points of the perpendiculars at the mid-sagittal line, and map the location of the points on the right and left sides.

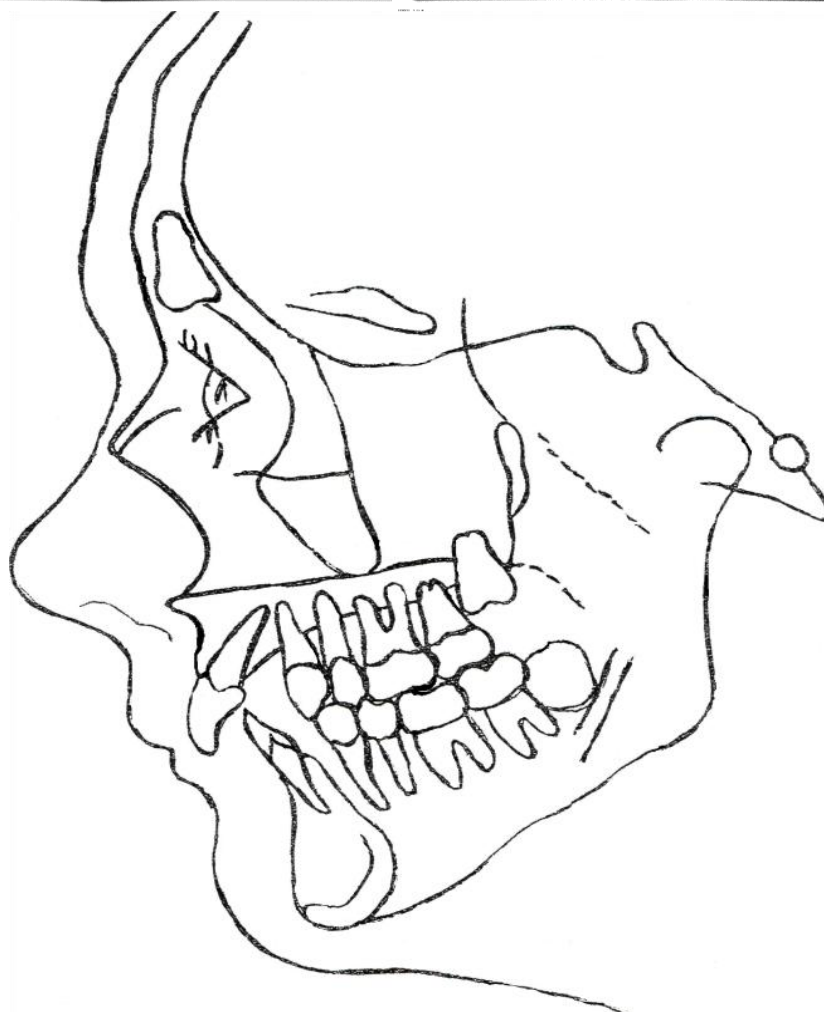
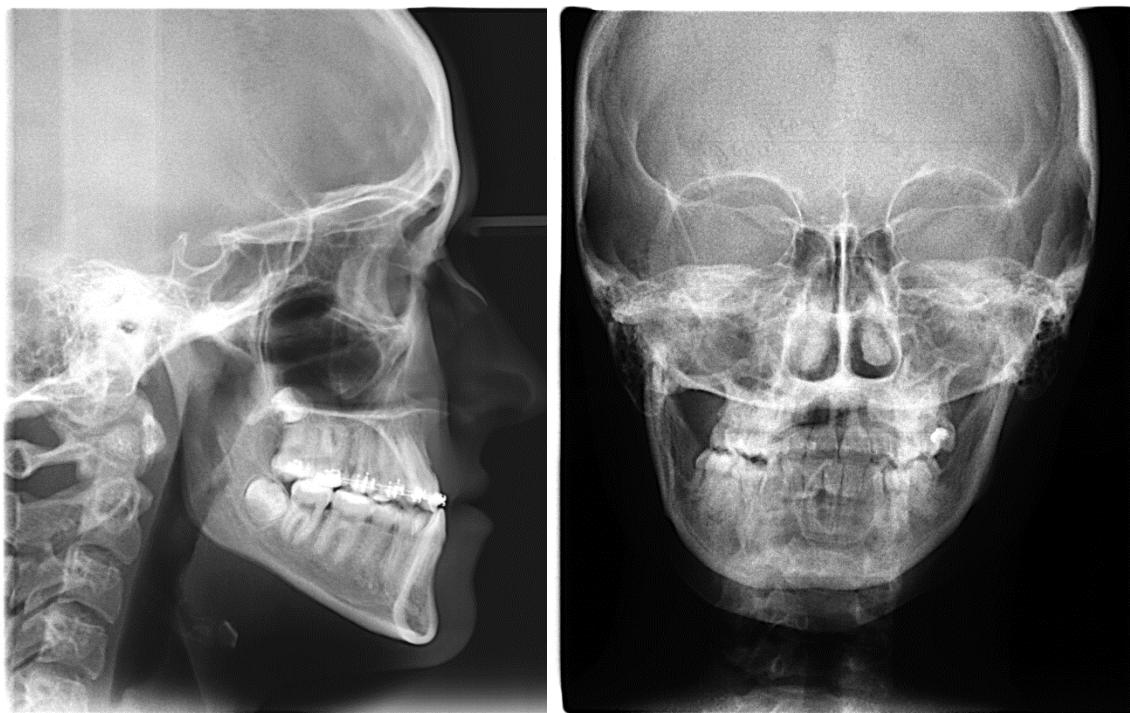
H. A. Rabukha and co-authors proposed a vertical plane of symmetry for the basis of cockscomb point nasion, anterior nasal protrusion and a horizontal line through the point Lat. The point of intersection of these planes is adopted by the authors for middle point of linear values.

Materials for self-control:

A. Tasks for self-control (tables, diagrams, drawings, graphs):

1. Write down the rules for a cephalometric of human head making;
2. To draw in albums the features of cephalometric of human head decoding;
3. Write down the main forms of malocclusion;
4. To draw in albums the angles of gnathic form of malocclusion;

5. To draw in albums the angles of dento-alveolar form of malocclusion;
6. To draw in albums the angles of mixed form of malocclusion.



B. Tasks for self-control:

1. The method of cephalometry research in contrast to panoramic radiography allows to:

- to reduce or minimize distortion of the object that is shooting
- to determine the status of the TMJ
- to display the upper jaw
- to display the lower jaw
- to display the maxillary sinuses

2. The technique of decoding cephalometry Schwartz provides a definition of such parameters:

- angular and linear
- linear
- corner
- digital
- graded

3. Schwartz suggested that the analysis of cephalometry in such projections:

- lateral
- frontal
- corner
- transversal
- axial

4. The holding side of the cephalometry is shown in the anomalies of occlusion in these planes:

- sagittal and vertical
- sagittal and transversal
- sagittal and occlusal
- sagittal and Frankfurt
- axial and transversal

5. When conducting cephalometry lateral distance object-film should be:

- minimum
- maximum
- middle
- relative
- proportional

6. With correct cephalometry it turns out this image:

- 1 : 1
- 1 : 2
- 1 : 3

1 : 4

1 : 5

7. To obtain an image of the soft tissues contours of the face when conducting side of the cephalometry should:

contrasting

fixation of the head with craniostat

the increase of the distance object – film

reduction in the distance object – film

concealed

8. When conducting side of cephalometry x-ray beam directed to:
the middle of the external auditory canal

the nose

the chin

the tip of the nose

the angle of the mouth

9. The analysis of the cephalometry by Schwartz represents:

combined analysis method

analysis of the angular dimensions

analysis of the linear dimensions

analysis of the location points

analysis of the correlation lines

10. In the analysis of cephalometry by Schwartz skin dots such letters:

small Latin

capital Arabian

capital Latin

small Arabian

Greek

11. In the analysis lateral of the cephalometry Schwarz bone dots such letters:

capital Latin

small Latin

small Arabian

capital Arabian

capital Greek

12. Point A represents:

the most posterior located point on the anterior contour of the apical basis of
the upper jaw

the most posterior located point on the anterior contour of the apical basis of

the lower jaw
the top of the anterior nasal spine
apex of hind nasal spine
wedge-shaped incisura

13. Point B represents:

the most posterior located point on the anterior contour of the apical basis of the lower jaw
the most posterior located point on the anterior contour of the apical basis of the upper jaw
the top of the anterior nasal spine
apex of hind nasal spine
wedge-shaped incisura

14. Point ANS represents:

the top of the anterior nasal spine
the most posterior located point on the anterior contour of the apical basis of the upper jaw
the most posterior located point on the anterior contour of the apical basis of the lower jaw
apex of hind nasal spine
wedge-shaped incisura

15. Point PNS represents:

the top of the back nasal spine
the top of the anterior nasal spine
the most posterior located point on the anterior contour of the apical basis of the upper jaw
the most posterior located point on the anterior contour of the apical basis of the lower jaw
wedge-shaped incisura

16. Point C is:

point on the top of the articular heads contour
point at the intersection of the median plane with naso-labial fold
connection point of the mandible lower edge contour and the outer contour of the symphysis
point at the outer edge of the lower jaw at the point of its intersection with the bisector of the angle formed by tangent to the lower edge of the body and the rear edge of the ramuses
top of the anterior nasal spine

17. Point Gn is:

connection of the mandible lower edge contour and the outer contour of the

symphysis

top of the anterior nasal spine

point at the outer edge of the lower jaw at the point of its intersection with the bisector of the angle formed by tangent to the lower edge of the body and the rear edge of the ramuses

point on the top contour of the articular heads

top of the anterior nasal spine

18. Point of Go is a:

point at the outer edge of the lower jaw at the point of its intersection with the bisector of the angle formed by tangent to the lower edge of the body and the rear edge of the ramuses

connection point of the mandible lower edge contour and the outer contour of the symphysis

point on the top contour of the articular heads

external auditory canal

apex of hind nasal spine

19. Point N is:

point at the intersection of the median plane with naso-labial seam

top of the anterior nasal spine

apex of hind nasal spine

point on the top contour of the articular heads

apex of hind nasal spine

20. The point Or represents:

the most low-lying point of the lower edge of the orbit

point on the top contour of the articular heads

point at the intersection of the median plane with nasolabial seam

apex of hind nasal spine

top of the anterior nasal spine

21. Point Pg represents:

the most anterior point of the mental eminence in the median section

point at the outer edge of the lower jaw at the point of its intersection with the bisector of the angle formed by tangent to the lower edge of the body and the rear edge of the ramuses

connection point of the mandible lower edge contour and the outer contour of the symphysis

point in the middle of the entrance to the Turkish saddle

top of the anterior nasal spine

22. Point Se represents:

point in the middle of the entrance to the Turkish saddle

point in the center of the Turkish saddle
point on the medial slope of the Turkish saddle
point on the distal slope of the Turkish saddle
top of the anterior nasal spine

23. Line N-Se represents:
the plane of the frontal base of the skull
the plane of the upper jaw base
the plane of the mandible base
the occlusal plane
vertical plane

24. Line A-B represents:
the line that connects the most posterior point located on the anterior circuit
of the apical basis of both jaws
tangent to the rear contour of the ramus
the occlusal plane
tangent to the lower contour of the mandible
spinal plane

25. Plane FH represents:
Frankfurt horizontal
occlusal plane
cranial plane
mandibular plane
spinal plane

26. Plane H is used for:
characteristics of the articular heads of the mandible location
correct orientation of the head when cephalometry shooting
determine the angle of teeth of the upper jaw inclination
characteristics of the sagittal fissure
to determine the ratio of the lips

27. Plane SpP represents:
the plane of the upper jaw base
base of the skull plane
the plane of the mandible base
the plane of the nose base
caudal plane

28. Plane MP represents:
the plane of the mandible base
the plane of the upper jaw base

the plane of the anterior skull base
the plane of the nose base
the plane of the rear skull base

29. Plane MT1 is:

tangent to the lower contour of the mandible
tangent to the rear contour of the ramus
tangent to the entrance of the Turkish saddle
tangent to the ridge of not less than three molars
the plane of the anterior skull base

30. Plane MT2 represents:

tangent to the rear contour of the ramus
tangent to the entrance of the Turkish saddle
tangent to the lower contour of the mandible
tangent to the ridge of not less than three molars
tangent to the cutting edge

31. The plane is called the OcP:

occlusional plane
plane of the mandible base
spinal plane
cranial plane
plane of the base of the upper jaw

32. Line OcP date:

through the middle of cutting overlap and touching cusps of three molars
through the frontal and posterior nasal spine
through the top of the articular head and the orbital point
touching the lower edge of the mandibular body
touching of the articular process

33. Line Pn represents:

oral tangent
bow line of the Downs
nasal plane of Dreyfus
cranial plane
occlusion plane

34. The line Pn is thus:

from the skin nasal point perpendicularly to the base of the skull plane
from the skin nasal point perpendicularly to the plane of the upper jaw
from the skin nasal point perpendicularly to the plane of the mandible
from the skin nasal point perpendicularly to the Frankfurt horizontal

from the point A to the basal arch of the upper jaw

35. When decoding of the cephalometry by Schwarz are studying the following:

cranio-, gnato- and profilometric
anthropo-, photo and profilometric
cranio-, gnato- and anthropometric
profilo-, gnato- and physiognomic
morphometric, aesthetic, physiology

36. The purpose of craniometrical research is:

determination of the jaws relative position to the plane of the frontal base of the skull

determining the position of the jaws relative to the Frankfurt plane

determination of the position of the jaws relative to the occlusal plane

determination of the position of the jaws relative to the Dreyfus plane

determination of the width and the shape of the face

37. When conducting craniometrical studies is the determination of the sizes of the following angles:

facial, horizontal, inclination

mandibular, basal profile

horizontal, convexity of profile, inclination

inclination, profile, basal

gonial, basal

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