

шечного слоя подвздошной сосочка.

Ключевые слова: подвздошно-слепокишечный переход, новорожденные, человек.

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Morphological Features of the Iliaco-Cecalintestinal Transition in Newborns

Abstract. In newborns and set syntopy defined components iliac

cecalintestinal transition: diameter and wall thickness of the terminal ileum segment; the diameter of the ascending colon; diameter and thickness of the muscular layer of the caecum; the wall thickness of the muscle layer and the thickness of the iliac papilla.

Keywords: *iliac cecumintestinal transition, newborns, human.*

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Individual Specific Features and Variability of the Buccal Branches of the Facial Nerve

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Abstract. The purpose of our study was to review and evaluate the course, number, connections, individual specific features and relationship of the buccal branches of the facial nerve to the parotid duct.

Materials and methods

Twenty adult cadaveric semiheads fixed in formaldehyde solution were dissected and anatomical specific features of the buccal branches of the facial nerve, their course, divisions and connections were marked out.

Results

In 95% of cases the trunk of the facial nerve divided into temporofacial branch (TFB) and cervicofacial branch (CFB). The number of buccal branches (BB) originating from the facial nerve varied from 2 to 6. In one case the TFB gave rise to a single BB, in 7 cases it gave rise to 2 BB, in other 7 cases there were 3 BB and in 5 cases there were 4 BB. The CFB gave rise to 1 BB in 11 cases and to 2 BB in 7 cases, and in 2 cases no buccal branches originated in the CFB. More than 2 BB originated from the CFB was never mentioned. Variations of location of the buccal branches related to the parotid duct were marked out. In 3 cases 1 BB was located above the parotid duct, and in 7 cases the buccal branch was found below it. In 10 cases 2 BB were located above the parotid duct, and in 11 cases the same number was found below it. In 6 cases 3 BB were located above the parotid duct, and in 1 case 3 BB were located below the duct. In a single case 4 BB were located above the parotid duct, and in one case the same number was below it. Connections of the buccal branches were variable from linear to loop-shaped, and plexiform.

Conclusions

The buccal branches of the facial nerve are variable in number, origin, course, connections, and relationship to the parotid duct. No more than two BB were marked out to originate from the CFB. The number of BB given off by the facial nerve varies from 2 to 6 branches.

Key words: *facial nerve, buccal branches, parotid duct, connections.*

Problem statement and analysis of the latest research.

The individuality of the human body is still an amazing and unexplored area, therefore, we believe that any morphological news that can improve the quality of life even of a single person, has to be known by specialists in the field.

Nowadays, the demand for surgery in the maxillofacial region has considerably increased, and the morphological specific features of the facial nerve branches are of great clinical significance. On the one hand daily stress, pollution of the medium, fast food and other harmful factors have a negative

impact on the human body and definitely on its physiognomy, and, on the other hand, there is a high incidence of facial nerve palsy based on all etiologies of approximately 159,840 annually [1], tumors of the parotid gland, traumas of the facial region and last but not least is the human nature and society demand to have a good health and an attractive look, that make some people undergo plastic surgery.

The variation of divisions and connections of the facial nerve branches have been described by many researchers, but nevertheless, vulnerability of injury in surgical interventions of its buccal branches still remains high in comparison to the injury of other branches of the facial nerve. This can be explained by their location in the midface [2], a wider area of innervation, more connections between those branches and higher number of muscles that are supplied by the buccal branches.

Aim of study

The purpose of our study was to review and evaluate the course, number, connections, individual specific features and relationship of the buccal branches of the facial nerve to the parotid duct.

Materials and methods

Twenty embalmed adult cadaveric semiheads fixed in formaldehyde solution were dissected at the Department of Human anatomy of Nicolae Testemitanu State University of Medicine and Pharmacy from Chisinau, Republic of Moldova.

An incision from the temporomandibular joint was made towards the angle of the mandible. The posterior belly of the digastric muscle was used as a landmark for facial nerve trunk identification. The superficial tissues of the face were removed by dissection and the course, number, connections, anatomical specific features and relationship of the buccal branches of the facial nerve to the parotid duct were marked out.

The study was carried out according to the decision of the Ethics Committee of Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova.

Results and discussion

Identification of the facial nerve trunk and its branches still remains the greatest challenge for specialists in maxillofacial surgery. Many landmarks are used for this purpose, but due to a high variability of the course of the facial nerve trunk, its divisions

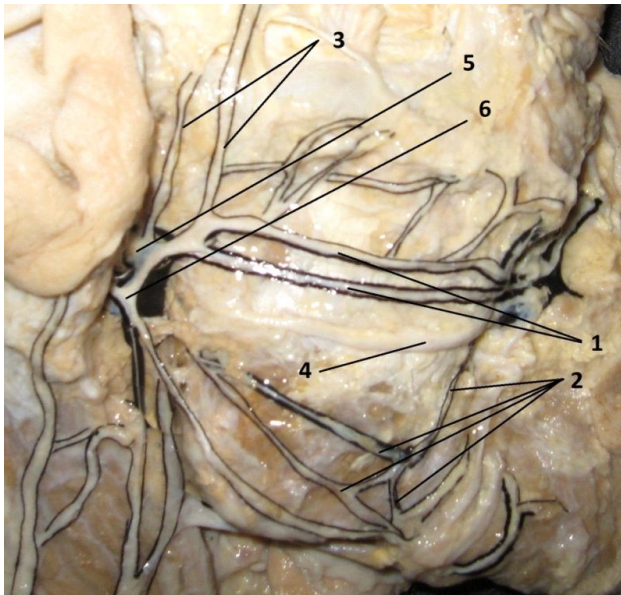


Fig. 1. Double facial trunk.

1 – superior buccal branches; 2 – inferior buccal branches and their connections; 3 – temporal branches; 4 – parotid duct, 5 – superior facial trunk, 6 – inferior facial trunk

and relationship with anatomical structures of the face, none of the landmarks is highly predictable for the identification of the facial nerve trunk. Among the most common landmarks there are: the posterior belly of the digastric muscle [3, 7], posterior auricular nerve [4], greater auricular nerve [5], parotid duct [2], tragus etc.

Many scientists are more confident of bony landmarks [8], such as the tympanomastoid fissure, stylomastoid foramen, mastoid process [6], external auditory meatus [4], zygomatic arch, angle of the mandible, etc., because these landmarks are less variable than soft tissues landmarks.

According to [4], «consistent location of the posterior auricular nerve behind the external auditory meatus makes it easily identifiable in superficial dissection, and therefore a potential landmark for identifying the facial nerve trunk».

In our study, the posterior auricular nerve had a descending course in 11 cases and horizontal course in 3 cases, and it was located behind the external auditory meatus, but and in 6 cases the course was ascending and the posterior auricular nerve originated from the trunk of the facial nerve in front of the external auditory meatus.

Many authors consider that the most veritable landmarks for identification of the facial nerve trunk are the mastoid process and posterior belly of the digastric muscle, and the last one is marked by [3] as “the most easily identifiable landmark with consistent anatomical relationship with the nerve trunk”. In our study on dissection the posterior belly of the digastric muscle was the main landmark for the identification of the facial nerve trunk.

According to [7] “the main point of reference is the isolation of the facial nerve in the posterior belly of the digastrics muscle”, but in difficult cases “isolation of the nerve via the distal nerve exploration from the buccal branches can be carried out”. We consider that the last approach is of high iatrogenic risk, because on retrograde identification of the facial nerve trunk microtraumas of the buccal branches of the facial nerve can be caused.

When leaving the stylomastoid foramen the course of the facial nerve trunk was descending in most cases, and in less cases the course was horizontal or ascending. In about 95% of cases the trunk divided into two primary temporofacial and cervicofacial branches. In one case the trunk was double. The

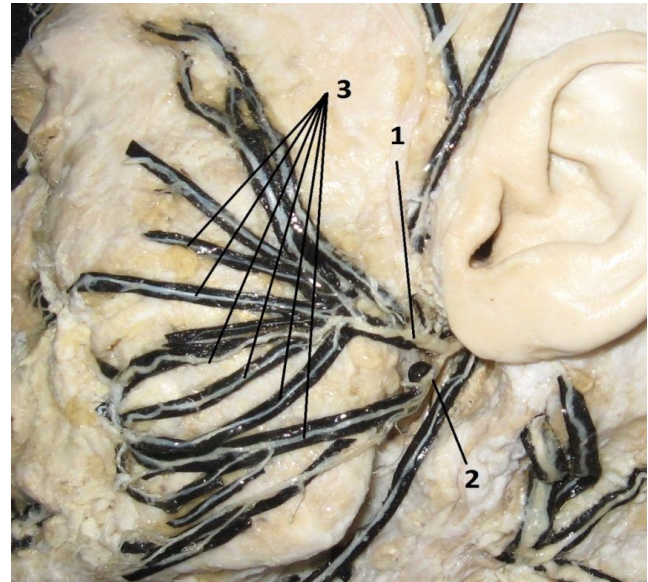


Fig. 2. Multiple buccal branches of the facial nerve.

1 – temporofacial branch; 2 – cervicofacial branch, 3 – buccal branches

inferior trunk was considerably thinner than the superior one and it was connected by a communicating branch with the upper trunk (Fig. 1).

According to [8] the temporofacial division of the facial nerve gave rise to the temporal and zygomatic branches, while the buccal branches, the marginal mandibular and the cervical one derived from its cervicofacial division.

In our study the temporofacial division of the facial nerve gave rise to the temporal and zygomatic branches, and in all cases it branched into the buccal branches the number of which varied from 1 up to 4, but in 90% from 1 to 2 buccal branches originated from the cervicofacial branch. The temporofacial branch gave rise to a single buccal branch in one case, but the cervicofacial branch gave rise to a single buccal branch in 11 cases.

In 7 cases, both temporofacial and cervicofacial branches gave rise to 2 buccal branches. Three buccal branches originated from the temporofacial branch in 7 cases, and 4 buccal branches were found in 5 cases. It was never mentioned that more than 2 buccal branches originated from the cervicofacial branch. The number of buccal branches that originate from the facial nerve varied from 2 to 6, which was marked out in a single case (Fig. 2).

The buccal branches are quite variable in length, course, divisions and connections between each other. Some of them are connected by wide loops (Fig. 3), and at the same time connections of other branches are irregular and of different size.

Considering the arrangement of the buccal branches towards the parotid duct one branch was located above the parotid duct in 3 cases, and below it - in 7 cases. Two buccal branches were located above the parotid duct in 10 cases, and below it in 11 cases. In 6 cases 3 branches were located above the parotid duct, and only in one case 3 buccal branches were located below the duct. In 1 case 4 buccal branches were located above the parotid duct, and in another case 4 buccal branches were located below it.

Prospects of further researches

Further scientific research should be focus on finding the most relevant landmarks for identification of the facial nerve trunk and its buccal branches in maxillofacial surgery.



Fig. 3. Connections of the buccal branches of the facial nerve.
1 – wide loop-shape connections of the buccal branches; 2 – transverse connections between the buccal branches; 3 – parotid duct

Conclusions

1. The number, origin, course, and connections of the buccal branches of the facial nerve are variable from case to case.
2. The relationship of the buccal branches to the parotid duct depends on the number of branches, but anyway more of them are located above the duct.
3. The least number of buccal branches was 2 and the highest was 6 branches.
4. No more than 2 buccal branches were marked out to originate from the cervicofacial branch.

References

1. Sachs N. A. Electrical Stimulation of the Orbicularis Oculi to Restore Eye Blink. 2007, p. 22-27.
2. Saylam C., Ucerler H., Orhan M., Ozek C. Anatomic landmarks of the buccal branches of the facial nerve. *Surg Radiology Anat.* 2006, 28 (5):462-7.
3. Saha S., Pal S., Sengupta M., Ghoshdury K., Saha V. P., Mondal L. Identification of Facial Nerve During Parotidectomy: A Combined Anatomical & Surgical Study. *Indian J Otolaryngol Head Neck Surg* 2014, 66 (1):63-68.
4. Smith O. J., Ross G. L. Variations in the anatomy of the posterior auricular nerve and its potential as a landmark for identification of the facial nerve trunk: a cadaveric study. *Anat Sci Int* 2012, 87:101-105.
5. Colbert S., Parry D. A., Hale B., Davies J., Brennan P. A. Does the great auricular nerve predict the size of the main trunk of the facial nerve? A clinical and cadaveric study. *Br J Oral Maxillofac Surg.* 2014, Mar; 52 (3):230-5.
6. Bushey A., Queresby F., Boice J. G., Landers M. A., Baur D. A. Utilization of the Tympanomastoid Fissure for Intraoperative

Identification of the Facial Nerve: A Cadaver Study. *JOMS* 2011, vol. 69, Issue 9, p. 2473-2476.

7. Sharma R., Sirohi D. Proximal and distal Facial nerve exploration during superficial parotidectomy. *J. Maxillofac. Oral Surg.* 2010, 9 (2):150-154.

8. Davies J. C., Agur A. M. R., Fattah A. Y. Anatomic landmarks for localisation of the branches of the facial nerve. *OA Anatomy* 2013, 1 (4):33.

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Индивидуальные особенности и изменчивость щечных ветвей лицевого нерва

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Резюме. Целью нашего исследования было изучение хода, количества разветвлений, межнервных связей и индивидуальных особенностей щечных ветвей лицевого нерва и их взаимоотношение с околоушным протоком.

Материал и методы исследования

На двадцати сагиттальных распилах головы взрослого человека, фиксированных в растворе формальдегида, изучены направление, количество разветвлений, межнервные соединения и индивидуальные особенности щечных ветвей лицевого нерва, и их взаимоотношение с околоушным протоком.

Результаты исследования и их обсуждение

В 95% случаев ствол лицевого нерва делился на височно-лицевую и шейно-лицевую ветви. Количество щечных ветвей, ответвлявшихся от лицевого нерва, варьировала от 2 до 6. В одном случае от височно-лицевой ветви отходила одна щечная ветвь, в 7 случаях – 2 ветви, в других 7 - выявлены, а в 5 случаях ответвлялись 4 щечные ветви. Шейно-лицевая ветвь в 11 случаях отдавала 1 щечную ветвь, в 7 случаях по 2 ветви, а в 2 случаях совсем не отдавала ветвей. Необходимо отметить, что ни в одном случае от шейно-лицевой ветви не ответвлялось более 2 ветвей.

Расположение щечных ветвей по отношению к околоушному протоку также подвержено индивидуальной изменчивости. В 3 случаях единичная щечная ветвь была расположена над околоушным протоком, в 7 случаях щечная ветвь была под ним. В 10 случаях по 2 щечные ветви были расположены выше околоушного протока, а в 11 случаях то же количество ветвей ниже него. В 6 случаях 3 щечные ветви располагались выше околоушного протока, а в 1 случае 3 ниже протока. В одном случае 4 щечные ветви выявлены над околоушным протоком, а в другом такое же количество под протоком. Межнервные соединения щечных ветвей варьирует от линейных и широко-петлистых до различной формы сплетений.

Выводы

Для щечных ветвей лицевого нерва характерна индивидуальная изменчивость как относительно направления, количества ветвей, межнервных соединений, так и относительно их взаимоотношений к околоушному протоку. Количество щечных ветвей, отдаваемых лицевым нервом варьировала от 2 до 6 ветвей, при этом от шейно-лицевой ветви, ответвлялось не более двух щечных ветвей.

Ключевые слова: лицевой нерв, щечные ветви, околоушной проток, межнервные соединения.

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