UDC 616.833.17-006.55

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A rare case of a large tumour located under the facial nerve trunk

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Paediatric Surgery(Ukraine).2023.4(81):20-23; doi 10.15574/PS.2023.81.20

For citation: Tymofieiev OO, Ushko NO. (2023). A rare case of a large tumour located under the facial nerve trunk. Paediatric Surgery (Ukraine). 4(81): 20-23. doi: 10.15574/PS.2023.81.20.

Aim: to introduce a technique of total parotidectomy sparing the facial nerve branches based on a clinical case.

The article presents a **clinical case** of a large parotid tumour located under the facial nerve trunk, the stages of its surgical removal, and the postoperative course.

Parotidectomy is one of the most complicated operations in maxillofacial surgery. When performing this surgical intervention, a surgeon must observe the principles of ablastics, consider individual peculiarities of the facial nerve anatomy structure and relations of nerve and tumour, and be ready to expand the scope of the operation from subtotal to total parotidectomy.

Conclusions. To improve the treatment outcomes of patients with benign parotid tumours and to reduce the number of such postoperative complications as paresis and paralysis of the mimetic muscles caused by facial nerve injury, one should know and follow the technique of parotidectomy, especially in the case of a neoplasm located under the trunk or branches of facial nerve.

The research was adhered to the principles of the Declaration of Helsinki. The patient informed consent was obtained for the study.

No conflict of interests was declared by the authors.

Keywords: pleomorphic adenoma, parotidectomy, facial nerve.

Рідкісний випадок виявлення пухлини великого розміру, розташованої під стовбуром лицевого нерву

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Мета – на основі клінічного випадку ознайомити з технікою проведення тотальної паротидектомії зі збереженням гілок лицевого нерва.

Наведено **клінічний випадок** великої пухлини білявушної залози, розташованої під стовбуром лицевого нерва, описано етапи операції її видалення та перебіг післяопераційного періоду.

Паротидектомія вважається однією з найскладніших операцій у щелепно-лицевій хірургії. Під час проведення цього оперативного втручання хірург повинен дотримуватися принципів абластики, враховувати індивідуальні особливості анатомічної будови лицевого нерва та співвідношення нерва й пухлини, бути готовим до розширення обсягу втручання від субтотальної до тотальної паротидектомії.

Висновки. Для поліпшення результатів лікування хворих із доброякісними пухлинами білявушних залоз та зменшення кількості післяопераційних ускладнень у вигляді парезів і паралічів мімічних м'язів, зумовлених травмуванням лицевого нерва, слід знати та дотримуватися техніки виконання паротидектомій, особливо в разі розташування пухлини під стовбуром або гілками лицевого нерва.

Дослідження виконано відповідно до принципів Гельсінської декларації. На проведення досліджень отримано інформовану згоду пацієнта.

Автори заявляють про відсутність конфлікту інтересів.

Ключові слова: плеоморфна аденома, паротидектомія, лицевий нерв.

Introduction

Over the past five years, there has been an increase in the number of patients with benign salivary gland tumours, the most common of which is pleomorphic adenoma (polymorphic adenoma, mixed tumour). According to different sources, pleomorphic adenomas occur in 55–85% of all benign salivary gland lesions [1–3,5,6]. This tumour occurs more frequently in the parotid gland, rarely in the submandibular and minor salivary glands, and even more rarely in the sublingual gland [1–3,5,6]. The tumour occurs more often in women than in men, affecting people of all ages.

The structural peculiarity of pleomorphic adenoma is the irregular thickness of its sac (which may be absent in some parts of the tumour) and its ability to recur and malignise. In this regard, the radical method of surgical treatment for a patient with this pathology is the removal of a neoplasm together with the corresponding salivary gland [2–5,7]. If the tumour is located within the parotid salivary gland, it is subtotal or total parotidectomy, sparing the branches of facial nerve. The final scope of surgical intervention (subtotal or total parotidectomy) is determined intraoperatively and depends, in particular, on the relations of tumour and facial nerve branches. Most often (97% of cases), the mass lesion is located above the facial nerve and requires subtotal parotidectomy [2–5,7]. In rare (3%) cases, the neoplasm is located under the trunk or branches of facial nerve, which requires expanding the scope of the operation to total parotidectomy [2–5,7].

Aim: to introduce the technique of total parotidectomy sparing the facial nerve branches based on a clinical case.

Case Report

The *patient V.*, 50 years old, with the diagnosis of pleomorphic adenoma of the left parotid gland was routinely admitted to the Maxillofacial Unit of the Municipal Non-profit Organisation Kyiv City Clinical Hospital No. 12, which is a clinical site of the Department of Maxillofacial Surgery of the Shupyk National Healthcare University of Ukraine. On admission, the patient complained of a small painless mass in the left parotid area and pain in swallowing, which had intensified dramatically over the last month and made it impossible to eat. According to the past medical history, the patient had been ill for about six years when he first noticed pain during swallowing. After a while, the pain disappeared and reappeared only a few months ago. The patient did not consult a doctor. Clinical examination revealed a barely visible painless mass in the left parotid region. No dysfunction of the facial nerve was determined. Opening of the mouth was free. There was a significant deformation of soft tissues in the oropharynx on the left, and the soft palate was deviated to the right. On palpation, the mass was non-tender, had limited mobility and relatively distinct boundaries. MRI showed a mass lesion of a heterogeneous structure located in the peripharyngeal space, measuring about 5 cm. Based on the examination results and the established diagnosis, the surgical operation, parotidectomy with tumour removal, was indicated for the patient.

The operation was performed under endotracheal anaesthesia. As a surgical access, we used a Kovtunovych incision (1953), which starts from the temporal hairline in front of the auricle and the tragus, passes around the earlobe, and goes to the submaxillary fossa with the transition to the submandibular region parallel to the margin of the mandible, stepping downwards by 2–3 cm from the latter. After incising the skin and subcutaneous adipose tissue, the greater auricular nerve was isolated and transected, preserving the branches going to the auricle (the auricular branch) to avoid prolonged altered sensations of earlobe in the postoperative period. The parotid capsule was opened wide along its posterior margin. The posterior margin of the superior part of the gland was mobilised to the place of its attachment to the zygomatic arch. The gland was separated from the external auditory canal (its cartilaginous and osseous parts), the sternocleidomastoid muscle, and the posterior belly of digastric muscle using sharp and blunt dissections. As the wound deepened, we provided palpatory control of the mastoid process of the temporal bone as a landmark for the facial nerve trunk localisation. We found the facial nerve trunk located at the anterior margin of the mastoid process and the posterior belly of digastric muscle at a depth of approximately 1.5–2.0 cm from the skin surface. Its location was also indicated by the stylomastoid artery, which is a terminal branch of the posterior auricular artery. After identifying the trunk of facial nerve, an adipo-dermal flap was separated with the exposure and isolation of the external lobe of the parotid gland. The flap was covered with warm saline soaked gauzes to prevent its drying out. Further facial nerve dissection was performed along its branches from the centre to the periphery. It was revealed that the neoplasm was located directly under the trunk and branches of facial nerve (Fig. 1).

The trunk of facial nerve and its branches were separated from the soft tissues surrounding the tumour by sharp and blunt dissections and displaced to the lower pole of the neoplasm (Fig. 2).

The tumour was separated and removed (in a single block with the salivary gland) using sharp and blunt dissections, followed by haemostasis, removal of the deep lobe, ligation and crossing of the main parotid duct (Fig. 3).

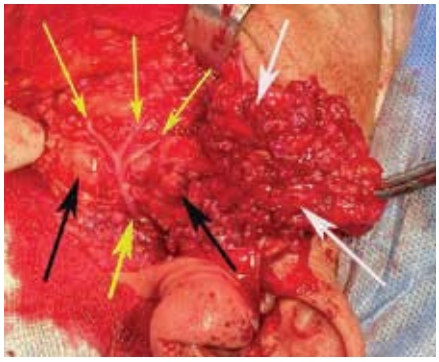

Fig. 1. Stage of total parotidectomy. The black arrows indicate tumour, the yellow arrows indicate trunk and branches of the facial nerve, the white arrows indicate separated and displaced parotid gland

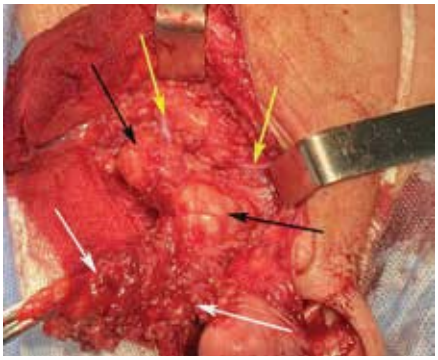

Fig. 2. Stage of total parotidectomy. The black arrows indicate tumour, the yellow arrows indicate displaced trunk and branches of the facial nerve, the white arrows indicate separated and displaced parotid gland

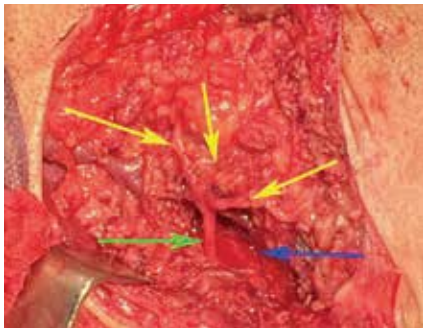

Fig. 3. Stage of total parotidectomy. External view of the postoperative wound. The green arrows indicate trunk of the facial nerve, the yellow arrows indicate branches of the facial nerve, the blue arrows indicate cavity formed after removal of the tumour and deep glandular lobe

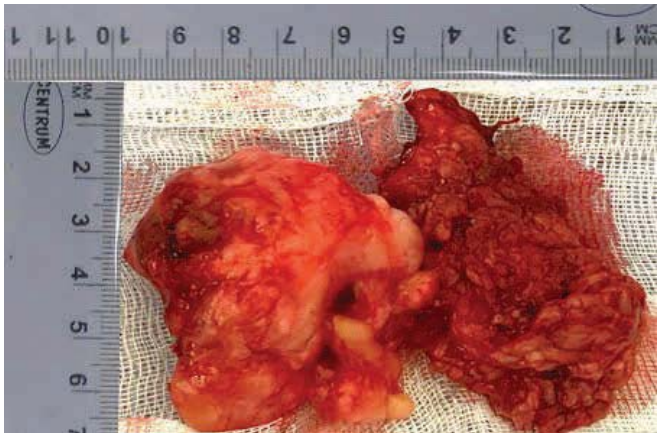

Fig. 4. External view of the removed tumour together with the salivary gland. Dimensions in cm

Fig. 5. Cross-sectional view of the tumour

a *b*

Fig. 6. Patient's general appearance on postoperative day 4 (a) and 10 (b). Functioning of the mimetic muscles was normal

a *b*

Fig. 7. Patient's general appearance on postoperative day 7 (a) (before suture removal) and 14 (b)

The surgical material was sent for histopathological examination (Fig. 4–5).

The adipo-dermal flap was put on its previous place and fixed with continuous sutures. The wound was not drained. A compression aseptic bandage was applied to the postoperative wound for five days (Fig. 6).

The postoperative period was uneventful. The sutures were removed on day 7 after the operation. The wound healed by primary intention.

Histopathology report: pleomorphic adenoma of the salivary gland with a predominance of mesenchymal component. The prognosis is favourable.

Parotidectomy is one of the most complicated operations in maxillofacial surgery. When performing this surgical intervention, the surgeon must not only observe the principles of ablastics while removing the tumour but also avoid injuring the facial nerve that passes through the thickness of the parotid gland. Of note, no diagnostic techniques currently exist that could determine the precise location of the nerve trunk and the relations between the nerve and tumour before the operation. When planning surgical intervention, the surgeon should be prepared for individual peculiarities of anatomy structure and location of the trunk and branches of facial nerve in relation to neoplasm, the need to expand the operation scope from subtotal to total parotidectomy.

Conclusions

To improve the treatment outcomes of patients with benign parotid tumours and to reduce the number of such postoperative complications as paresis and paralysis of the mimetic muscles caused by facial nerve injury, one should know and follow the technique of parotidectomy, especially in the case of a neoplasm located under the trunk or branches of facial nerve.

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Стаття надійшла до редакції 01.10.2023 р., прийнята до друку 11.12.2023 р.