

RECONSTRUCTION OF LARGE POSTOPERATIVE DEFECTS AFTER LARYNGOPHARYNGECTOMIES FROM AN OTORHINOLARYNGOLOGIST'S POINT OF VIEW

PAVEL SMILEK¹, ROM KOSTŘICA¹, J. HLOŽEK¹ and J. VESELÝ²

¹Clinic of Otorhinolaryngology and Head and Neck Surgery

²Clinic of Plastic and Aesthetic Surgery Faculty of Medicine Masaryk's University,
Faculty Hospital of St. Anna, Brno, Czech Republic

Summary

The authors draw attention to controversial opinions of surgical treatment of advanced hypopharyngeal tumours including the possibility to cover large postoperative defects with flaps with a defined vascular pedicle. In the Department of Otorhinolaryngology and Head and Neck Surgery in Brno, 6 patients have been treated this way during recent 5 years. The authors report two cases of patients with hypopharyngeal carcinoma. They emphasize the benefit of cooperation with plastic surgeons and the necessity of individual indication for this way of treatment.

KEY WORDS: *hypopharyngeal carcinoma, replacement with a Chinese flap*

REKONTRUKCIJA VELIKIH POSTOPERATIVNIH DEFEKATA NAKON LARINGOFARINGEKTOMIJE SA STAJALIŠTA OTORINOLARINGOLOGA

Sažetak

Autori skreću pozornost na prijeporna mišljenja s obzirom na kirurško liječenje uznapredovalih tumora hipofarinksa i mogućnost prekrivanja velikih postoperativnih defekata režnjevima s definiranom vaskularnom peteljkom. U Odjelu za otolaringologiju i tumore glave i vrata u Brnu, Republika Češka, u posljednjih je pet godina tako liječeno 6 bolesnika. Autori opisuju dva bolesnika s karcinomom hipofarinksa liječenih na taj način. Ističu prednosti suradnje s plastičnim kirurzima te nužnost postavljanja pojedinačne indikacije za primjenu te metode liječenja.

KLJUČNE RIJEČI: *karcinom hipofarinksa, zamjena kineskim režnjem*

INTRODUCTION

The seriousness of head and neck tumours is a consequence of their location in a functionally and aesthetically important area. The depressing situation of patients with head and neck tumours was described in the report of Prof. Diefenbach from the beginning of the 20th century: „Unfortunate people deprived of the access of air and intake of food because of tumours as big as a fist, who constantly struggle against hunger and suf-

focation, express their torture by a wild look and inarticulate sounds“ (5).

In spite of great progress of medicine, according to our experience, even at present up to 82% of patients come up with an advanced stage of the disease (3rd and 4th). Hypopharyngeal carcinoma belongs to the tumours with the worst therapeutic results. Five-year survival in patients with advanced potentially resectable hypopharyngeal carcinoma has been reported to be up to 30% (8). Surgical treatment still remains an im-

portant part of comprehensive oncologic treatment.

METHODS OF SURGICAL TREATMENT OF HYPOPHARYNGEAL CARCINOMA

The tumour should be resected beyond the anatomical boundaries of the affected area together with radical removal of regional lymph nodes „en bloc“. On the other hand, there is a functional point of view – preservation of breathing and swallowing by natural routes. Radical surgery, however, is often highly mutilating at the same time – difficulties in speaking and swallowing, and aesthetic problems occur. Reconstruction is very important because the cervicofacial area is a dominant aesthetic area and it is impossible to



Figure 1. Patient with pharyngostoma, tracheostoma and nasogastric tube introduced into oesophagus

cover defects in this area with clothes (or only with great difficulties). In early history of operations of head and neck tumours, subsequent defects were managed with long-term treatment up to complete secondary healing. Subsequently, the defect was covered either with artificial replacements, i.e. plastic epitheses, or with autogenous ones, i.e. flap plasty.

Even Prof. V.Chládek in his publication from 1985 (4) recommends to create a pharyngostoma (see Fig.1). The mucosa of the resected oesophagus was stitched to the posterior margin of the resected trachea and to the skin. After healing, in the second stage, reconstruction of the pharynx made of skin that reattached to the prevertebral fascia (a tube with skin epithelium inside) or of Bakamjian's flap (deltopectoral flap – closure after 2-3 weeks) was performed. Another option was a transposition of the large intestine. Disadvantages of these reconstructions were skin retraction with subsequent stenosis requiring dilatations, impossibility to create flaps in the irradiated region (local skin flaps), and usually long-term healing (6–8 weeks). Moreover, large intestine transpositions resulted in a relatively high mortality. Creation of the pharyngostoma brought a long period of healing, nutrition disorders, cachexia, psychic and physical suffering for the patient. Free or pedicled skin flaps were the traditional way of reconstruction. Later on, flaps composed of muscle and skin were used. These reconstructions were usually carried out at least in two stages separated for a period of time (necessary for healing after the preceding part of the operation). The first myocutaneous flap was probably a frontal flap used by Sushruta in India 600-1000 years before Christ. The assumption that various vessels had specific areas to supply was expressed already by Manchot in 1889. In the past 2 – 3 decades, before 1980, many authors (Ariyan, Biller, Demergasse, Panje et al.) dealt with these flaps (1). Four muscles were most frequently used for reconstructions: the latissimus dorsi, pectoralis major, trapezius, and sternocleidomastoid muscles. Deltopectoral flaps (according to Bakamjian), temporal and sternocleidomastoid flaps (Ariyan) were used. Some of these flaps were disadvantageous because of the necessity to change the patient's position during the operation. The

flap was pushed through a tunnel created on the thorax; such a pedicle was vulnerable and the failure rate rather high.

Dynamic development of microsurgery revealed further possibilities in this field. Since microsurgery enabling to suture directly afferent and efferent vessels of the transferred flap to the vessels in the defect site has been introduced, these flaps with a vascular defined pedicle began to be frequently used even in the treatment of advanced head and neck tumours. These free tissue transfers enable restoration of both function and appearance in one stage and they enable the reconstruction of a defect of great extent. Complications in osteomuscular grafts have been reported in 20%, in cutaneous and visceral grafts in 4% (2).

At present, in our Department, major oncologic surgical operations in patients with advanced head and neck disease are performed in two stages immediately following one another within a single operation - resection stage and reconstruction stage. During the resection stage, radical surgical removal of the primary tumour (beyond the anatomical boundaries of the affected organ) is performed and regional lymph nodes are removed. Sufficient radicality is ensured among others by the fact that the surgeon performing resection is not subconsciously limited by the necessity to reduce the extent of the resection. The reconstruction stage is performed by a plastic surgeon.

CASE REPORTS

Since 1998, partial or complete replacements of the hypopharynx with a Chinese flap from the forearm have been performed in 6 patients after partial or total hypopharyngectomy with total laryngectomy – see Table 1. We will present two typical case reports.

Patient No 1, born 1944, presented with a sore throat – mainly at the right side- to his general practitioner. He was treated with penicillin – with a transitory effect only. Only two months later, a spinocellular carcinoma of the hypopharynx was verified and the patient was referred to our Department. Here we detected a hypopharyngeal tumour (T4N2M0). After a

Table 1.

LIST OF PATIENTS WITH HYPOPHARYNGEAL CANCER

Patient	Sex	Age	Extension of tumour	Surgery of hypopharynx	Overall survival (months)	Current situation
S. A.	M	54	T3 N1 M0	partial	31	died
B. J.	Ž	66	T4 N2c M0	total	10.3	died
H. S.	M	52	T3 N2c M0	total	26.3	alive with recurrence
M. P.	M	67	T4 N2b M0	total	2.5	died
S. A.	M	67	T3 N2c M0	total	20.3	died
S. J.	M	64	T3 N1 M0	total	15.5	died

neoadjuvant chemotherapy (2 cycles of Platidium, 5-fluorouracil regimen) which was not followed by a regression of the tumour, resection of the right internal jugular vein, total laryngectomy and partial pharyngectomy were performed. Out of the hypopharynx just a 15 mm wide strip of mucosa remained on the posterior wall (Fig. 2,3). Therefore the plastic surgeon took a Chinese flap from the left forearm and using this flap, he reconstructed the anterior and lateral hypopharyngeal walls. The vessels were sutured end to end to vasa thyreoidea superiora l. sin. Healing was uneventful; the nasogastric tube was removed on day 10 after surgery. The patient was then irradiated and administered adjuvant chemotherapy (1 cycle of Platidium, 5-fluorouracil regimen). The patient died 31 months after diagnosis had been made, with good comfort of life after termination of the treatment.

The patient No 2 had undergone an oncologic treatment formerly (chemotherapy and

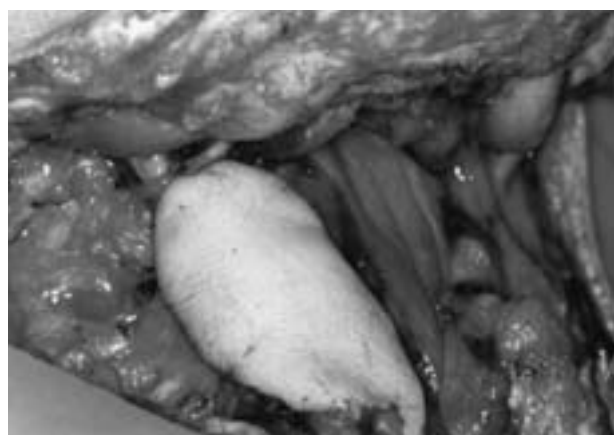


Figure 2. Reconstruction of the residuum of the hypopharynx with chinese flap



Figure 3. Chinese flap rolled-up like a funnel

surgery for ovarian cancer). Patient gave up smoking (20 cigarettes per day for 40 years). At the beginning of August, she incidentally noticed an abnormal mass on the left side of the neck; a fortnight later she went to the general practitioner who referred her to an otorhinolaryngologist, where a hypopharyngeal carcinoma on the left side (classification: T4N2cM0) was verified by laryngoscopy. 1.5 months after the first symptoms, total hypopharyngolaryngectomy with bilateral neck dissection and total replacement of the hypopharynx by a Chinese flap were performed at our Department. The skin flap, rolled-up like a funnel, is shown in Fig.3. Subsequently, the patient was irradiated postoperatively (51 Gy in a hyperfractionated regimen). The healing was successful, the patient could swallow soon. She died 10 months after the operation.

DISCUSSION

Many oncologists use combined therapy – neoadjuvant chemotherapy and surgical therapy with subsequent radiotherapy in more advanced stages of head and neck cancer. The role of chemotherapy has not yet been elucidated completely.

In advanced hypopharyngeal carcinomas it is not realistic to expect a significant effect of chemotherapy. Therapeutic outcomes have not been successful until recently, despite of increasing number of new antitumour drugs and administration regimens. The introduction of new efficient antitumour drugs created conditions for the

development of new regimens aimed not only at an increased percentage of clinical remissions, but also at prolongation of life and better quality of life for patients with head and neck tumors (9).

Radiotherapy is a less mutilating modality although it has also serious adverse effects and some hypopharyngeal carcinomas are not sufficiently sensitive to irradiation. Therefore, monotherapy with irradiation is suitable only for early stages of tumours and for surgically poorly accessible tumours (e.g. nasopharynx).

The advantage of flaps with a defined vascular pedicle is faster healing and a favourable functional outcome. The use of flaps with a defined vascular pedicle also increases the possibility of a sufficient removal of tumours with wide margins of healthy tissue. The detection of local recurrences, however, is more difficult.

Therefore this surgery requires a highly skilled surgeon for the destruction part of the surgery to avoid recurrence under the flap. We perform repeated postoperative MRI examinations for early detection of local recurrences. The choice of the treatment procedure depends also on the patient's general condition and last but not least on the wish of the patient himself.

In patients treated at our Department both surgically and within the "conservative" protocol with curative intent, the 5-year survival rate was 18.5 %. The comparison of patients treated conservatively and those who underwent surgery has not shown significant differences in total survival; patients treated conservatively had, however, a higher Karnofsky index (6).

A general agreement on the term *operable* versus *inoperable* tumour has not been reached yet. The opinion of operability is influenced by the possibility of surgical reconstruction of the operated area and depends on multidisciplinary cooperation within reconstruction and rehabilitation. Most authors regard tumours in which there is a doubt about the possibility of their removal in safe boundaries as inoperable. Typically, such tumours affect cervical vertebrae, plexus brachialis, deep cervical muscles, the carotid artery, both internal jugular veins and the skull base. If distant metastases are present, we mostly regard the tumour as inoperable as well, although the local finding would suggest surgical treatment (7). There is a certain trend to aban-

don superradical interventions in favour of a functionally and cosmetically preferable treatment (saving of organs) ensured by radiotherapy or chemotherapy. It is questionable whether we can justify worsening quality of life of the patients through a superradical surgery which on the one hand removes the tumour within safe surgical boundaries, but at the same time significantly deteriorates the patient's quality of life and on the other hand does not influence the real cause of the disease (changes in the cellular genome).

We believe, however, that even with a relatively shorter life expectancy, patients with advanced laryngopharyngeal tumours may benefit from a radical surgery – if left without treatment, the patient would suffocate soon, suffer from pain and could not take food.

CONCLUSION

Radical surgery with subsequent coverage in cooperation with plastic surgeons enables to extend the indications for operability, shorten the time of healing, and improve the patient's comfort and the chance of survival. It is one of the possible therapeutic methods and should be used individually, after careful consideration of all circumstances. If there is good clinical response of the tumour to neoadjuvant therapy (and there are not other contraindications) "conservative" procedure – concomitant chemoradiotherapy saving the pharynx and larynx - is indicated. In other cases, radical surgical resection with simultaneous removal of regional lymph nodes, subsequent plastic reconstruction and postoperative irradiation are indicated.

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Author's address: Pavel Smilek, M.D., Ph.D., ENT Clinic of Masaryk's University, Pekařská 53, 656 91 Brno, Czech Republic, Phone: ++543 18 2923, Fax: ++ 543 18 2925, E-mail: smilek@med.muni.cz