

Short Communication

Safety and Efficacy of Modified Radical Neck Dissection in Treatment of Node-Positive Squamous Cell Neck Cases

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Abstract

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Type of neck dissection in cases with squamous cell neck cancer /SCNC/ remains controversial. In the last century the techniques of neck dissection have changed dramatically to the organ sparing one. The aim of the study is to compare the safety and efficacy of modified radical neck dissection /MRND/ with radical one in node positive cases with SCNC. We compare the complications rate and completeness of both types of neck dissection in 10 patients with N1 and N2 who underwent supraomohyoid and lateral modified radical neck dissections with 10 patients underwent radical one in the last 10 years. In the group of MRND we have one patient with neck hematoma which resolved spontaneously and another one with lymph leak lasting 3 weeks. In the control group we registered loss of sensitiveness on the affected neck side in all patients as well as severe hemorrhage in one patient leading to reoperation, loss of full range shoulder movements in the whole group of patients. Comparing the number of nodes removed in the MRND group the average number was 18 ± 1.2 , as well as in the control group was 21 ± 0.8 . MRND is much more functional than radical one with relatively same radicalness.

Keywords: Neck dissection, Squamous cell neck cancer, Complications, neck hematoma, lymph leak, Effectiveness

INTRODUCTION

SCNC metastasizing primarily in the regional neck lymph nodes. So the aim of the treatment is to remove the primary tumor along with all the lymph node groups draining the region (Robbins et al., 1991). In the last century golden standard was to perform radical neck dissection described by Crile in 1906. The aim of this operation is an en block removal of the cervical lymph nodes invaded, or at risk of being invaded by cancer cells and involves resection of the sternocleidomastoid muscle, internal jugular vein, and accessory nerve (Arne et al., 2017). Latter with introduction of both chemo and radiotherapy the need of such traumatic procedure was discussed. In 1991 a standardized classification of

Academy's Committee for Head and Neck Surgery and Oncology was published by Robbins et al and was worldwide accepted (Robbins et al., 1991).

This system is based on four concepts.

1. RND is the standard basic procedure for cervical lymph adenectomy against which all other modifications are compared.
2. Modifications of the RND which include preservation of any non-lymphatic structures are referred to as modified radical neck dissection (MRND).
3. Any neck dissection that preserves one or more groups or levels of lymph nodes is referred to as a selective neck dissection (SND).

4. An extended neck dissection refers to the removal of additional lymph node groups or non-lymphatic structures relative to the RND.

As a result of this conceptual approach is the Academy's

Classification

1. Radical neck dissection (RND)
2. Modified radical neck dissection (MRND)
 - MRND Type I: excision of all lymph nodes routinely removed by radical neck dissection with preservation of the SAN.
 - MRND Type II: excision of all lymph nodes routinely removed by radical neck dissection with preservation of the SAN and IJV.
 - MRND Type III (functional or comprehensive neck dissection): excision of all lymph nodes routinely removed by radical neck dissection with preservation of the SAN, IJV and SCM.
3. Selective neck dissection (SND)
 - Supra-omohyoid type
 - Lateral type
 - Posterolateral type
 - Anterior compartment type
4. Extended radical neck dissection

AIM

The aim of the study is to compare safety /complications rate/ and efficacy /number of nodes removed/ in two groups of patients – group of patient treated with radical neck dissection /RND/ and a group of patient treated with modified radical neck dissection type 3 /MRND/.

MATERIAL AND METHODS

For a period of one year 2017, 10 patients with node-positive neck and laryngeal cancer were treated by MRND in the Clinic of Ear-Nose-Throat Diseases of the University Hospital "Kaspela"-Plovdiv, Bulgaria. The type of MRND depended on the localization of the primary laryngeal tumor. Bilateral supraomohyoid dissection with removal of I, II and III level lymph nodes was applied in three patients with supraglottic localization of the cancer. In two patients with same cancer localization an expanded supraomohyoid dissection with extirpation of II, III and IV level lymph nodes was performed. The other five patients had cancer in the region of the rima glottis and were treated by lateral neck dissection with extirpation of II, III and IV level lymph nodes. The comparable group of 10 patients with RND was selected from patients

treated in the same clinic for a period of 2010-2017.

RESULTS

Ten patients underwent MRND in our clinic for a period of one year. Males aged between 35 and 65 were enrolled in the study. The primary tumor was staged T3 with lymph node involvement N1, N2 a,b,c. During the same year no local recurrences were observed. In the group of MRND we have one patient with neck hematoma which resolved spontaneously and another one with lymph leak lasting 3 weeks. In the control group we registered loss of sensitiveness on the affected neck side in all patients as well as severe hemorrhage in one patient leading to reoperation, loss of full range shoulder movements in the whole group of patients. Comparing the number of nodes removed in the MRND group the average number was 18 ± 1.2 , as well as in the control group was 21 ± 0.8 .

DISCUSSION

The present study is restricted to patients with clinical and histological data of cervical metastases that have been subjected to MRND. In cases in which the RND ensured regional control and increased survival of the patients the complications associated with it would be an acceptable price. In our series of patients the complications rate in the group of MRND was statistically significant lower than in the group of RND. It is in concordance with the results in latest literature (Arne et al., 2016; Dana et al., 2014; James et al., 2014; Thomas et al., 2012; Kellen and Christopher, 2013).

However, the facts attest to something different according to the data of a survey of RND performed by authors. Regional recurrences occur in 54.3% of the node-positive patients and in 71.3% of the node-positive patients with several levels of lymph nodes involved (James et al., 2014; Marc Hamoir et al., 2012; Yuan et al., 2011; Graham et al., 2013; Alfio and Alessandra, 2009; Alessandra et al., 2008). Motivated by these unfavorable results of RND and the pressing necessity of functional and cosmetic postoperative effect the oncologists treating head and neck neoplasms abandoned the routine use of RND and initiated modification of the method. This however was not a random proceeding but was based on solid anatomical and oncological principles that were not considered when RND was first described 100 years ago. An early inducement of RND modification was the understanding that the operation itself was not a real en bloc excision because structures like hypoglossal nerve and carotid artery were preserved. Besides, the macroscopic and histological analyses of surgical and autopsied materials show that the neck lymph nodes are confined in completely isolated fascial compartments containing

neither intramuscular nor intraadventitial lymph nodes. Other anatomical studies have found that the neck lymphatic system lies in a system of aponeurotic compartments, which ensheath the muscles and, despite the close proximity, are not connected with these structures. Bocca refers to these principles when recommending the functional neck dissection in which the lymph nodes of all levels are removed while the other neck structures are preserved (Alfio and Alessandra, 2009). What about the effectiveness the results of our groups showed not significant differences. Selective neck dissection is based on the fact that the laryngeal cancer is predictable in its metastasizing and hence only nodes threatened by cancer cell invasion need to be removed. Selective neck dissection is not a widely applied approach in node-positive neck although a lot of facts confirm the benefit of this surgical technique.

CONCLUSIONS

Modified radical neck dissection is based on profound anatomical and oncological principles, which have been clarified since the RND was first described. The study results suggest that MRND is much more functional than RND with comparable short and long term oncological results.

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