



The Effects of Preoperative Embolization on the Outcomes of Carotid Body Tumor Surgery

Meta-Analysis Study

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Presented by:

Mohamed Khaled Shafeek Bassam

M.B.B.Ch. 2012 - Ain Shams University

Supervised by

Prof. Dr. Mohamed Magdy Samir

Professor of Otorhinolaryngology

Faculty of Medicine - Ain Shams University

Prof. Dr. Tamer Abd El Wahab Abo El Ezz

Professor of Otorhinolaryngology

Faculty of Medicine - Ain Shams University

Dr. Peter Milad Mikachail

Lecturer of Otorhinolaryngology

Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Contents

Title	Page No.
List of Tables.....	Error! Bookmark not defined.
List of Figures	Error! Bookmark not defined.
List of Abbreviations.....	Error! Bookmark not defined.
Introduction.....	- 1 -
Aim of the Study	8
Review of Literature	
▪ Anatomy	12
▪ Clinical Evaluation.....	20
▪ Shamblin Classification	28
▪ Management	36
▪ Preoperative Embolization.....	46
Material and Methods.....	51
Results	55
Discussion.....	70
Summary	74
Conclusion	77
References	79
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table (1):	Potential complications of head and neck tumor embolization.....	50
Table (2):	The results of searching using the keywords.	56
Table (3):	Included articles.	57
Table (4):	Excluded articles.....	57
Table (5):	Summary of data collected from included articles.	58
Table (6):	Meta-analysis for blood loss	62
Table (7):	Meta-analysis for operative time	64
Table (8):	Meta-analysis for incidence of complications.....	67

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Arteries of the neck.....	13
Figure (2):	Superficial dissection of the right side of the neck, showing the carotid and subclavian arteries	14
Figure (3):	a: Glomus cells, b: sheath cells.....	15
Figure (4):	High power hematoxylin and eosin (<i>H&E</i>) stain showing a well-developed “zellballen” growth pattern	17
Figure (5):	A Strong reactivity with chromogranin staining by immunohistochemical technique is shown. b The sustentacular cell population at the periphery of the cell nests (“zellballen”) is highlighted by S-100 protein immunohistochemical staining.	18
Figure (6):	Shows a schematic diagram of the Shamblin grouping of CBTs into I, II, and III, as well as IIIb	33
Figure (7):	A schematic diagram demonstrating the measurement of the degree of circumferential contact between ICA and the tumor	34
Figure (8):	With subplatysmal flap elevation, wide exposure of the carotid system can be obtained with a cosmetic skin crease incision as outlined.....	39
Figure (9):	the hypoglossal nerve can be identified in the fascia on the lateral surface of the tumor.....	39

List of Figures cont...

Fig. No.	Title	Page No.
Figure (10):	The vascular envelope is dividied in all directions to expose the branches of the external carotid	40
Figure (11):	the vagus and hypoglossal nerves isolated from the surface of the internal carotid in a subadentital plane if the adventitia is involved with the tumor.	40
Figure (12):	A , The ascending pharyngeal artery, identified on the deep surface of the external cardotid artery just distal to the bifurcation, is ligated. B , The superior laryngeal nerve can be seen deep to both the external and internal carotid arteries after the resection is complete.....	41
Figure (13):	Dissection zones. Most serious neurovascular injuries occur in zone III.	41
Figure (14):	Resection of large carotid body tumors	42
Figure (15):	Carotid body tumor embolization.....	46
Figure (16):	Percutaneous embolization.....	47
Figure (17):	Transarterial embolization.....	48
Figure (18):	Forest plot illustrating the standardized mean difference (SMD) of blood loss	62
Figure (19):	Forest plot illustrating the standardized mean difference (SMD) of operative time	65
Figure (20):	Forest plot illustrating the odds ratio (OR) for incidence of complications	68

List of Abbreviations

Abb.	Full term
<i>CBT</i>	<i>Carotid body tumor</i>
<i>CCA</i>	<i>Common carotid artery</i>
<i>CI</i>	<i>Confidence interval</i>
<i>DF</i>	<i>Degree of freedom</i>
<i>DPT</i>	<i>Percutaneous direct puncture techniques</i>
<i>ECA</i>	<i>External carotid artery</i>
<i>FEM</i>	<i>Fixed effects method</i>
<i>H&E</i>	<i>Hematoxyclin and eosin</i>
<i>ICA</i>	<i>Internal carotid artery</i>
<i>MRI</i>	<i>Magnetic resonance imaging</i>
<i>PGL1</i>	<i>Hereditary paraganglioma-pheochromocytoma syndrome 1</i>
<i>PGL2</i>	<i>Hereditary paraganglioma-pheochromocytoma syndrome 2</i>
<i>REM</i>	<i>Random effects method</i>
<i>SDHD</i>	<i>Succinate dehydrogenase complex</i>
<i>SMD</i>	<i>Standardized mean difference</i>
<i>TAGM</i>	<i>Trisacryl gelatin micropheres</i>
<i>TE</i>	<i>Echo time</i>
<i>TR</i>	<i>Repetition time</i>

ABSTRACT:

Background: Carotid body tumors (CBTs) are situated at the bifurcation of the common carotid artery within the adventitia, and are reported to be the most common head and neck paragangliomas. Surgery is the gold standard for curative treatment of resectable CBTs and is recommended in otherwise healthy patients because of the risk of local complications related to tumor size and a small but definite risk of malignancy. Preoperative embolization has been shown to reduce potential intraoperative blood loss and provide the surgeon with greater ease and safety in excising the tumor, thus reducing the operation time and morbidity. However, other physicians have stated that although blood loss may be reduced after preoperative embolization, transfusion requirements are not affected, and that the embolization procedure adds a significant risk for stroke. Therefore, the purpose of the current study was to compare the surgical outcomes of patients undergoing CBT surgical resection with and without preoperative embolization.

Aim: To evaluate the need for preoperative embolization for the treatment of carotid body tumor.

Methodology: A meta-analysis study is done to compare the surgical outcomes of patients undergoing CBT surgical resection with and without preoperative embolization.

Results: Our meta-analysis for evaluation of the effects of preoperative embolization on the outcomes of carotid body tumor surgery, included (14) studies with a total number of patients (n=477). The results of these studies showed no statistically significant difference between preoperative embolization group and non embolization group in carotid body surgery for (blood loss & operation time). Preoperative embolization did not reduce risk of postoperative complications.

Conclusion: Preoperative embolization shows no statistically significant reducing in blood loss and operation time, also embolization does not decrease incidence of postoperative complications. It seems that embolization should not be a routine part of carotid body tumor surgery especially with the known potential risks and complications of this procedure .

Keywords: Carotid Body Tumor, Preoperative Embolization, Vascular Tumors Management, Carotid Body Tumor Surgery, Carotid Body Tumor Radiotherapy

Introduction

Introduction

Carotid body tumor is the commonest paraganglioma tumor of head and neck region. The tumor is a benign vascular tumor originates from carotid body which located in the adventitia at the bifurcation of common carotid arteries.

The carotid body is a well circumscribed, round, reddish-brown highly vascular organ. It's feeding vessels from branches of external carotid artery but may receive branches from internal carotid artery bulb and innervated through glossopharyngeal and vagus cranial nerves. ⁽¹⁾

Carotid body tumors are usually unilateral and presented sporadically but may also be a part of multiple endocrine neoplasia. They commonly presented as painless slow growing mass at angle of mandible and more specific symptoms are caused by impairment of the adjacent cranial nerves. Their neurosecretory function may cause palpitation, headache, dizziness and flushing. The percentage 5% of carotid body tumor have a malignant course.

Surgical excision is still recognized to be the first choice of treatment for carotid body tumor. Preoperative embolization has been shown to reduce potential intraoperative blood loss and provide the surgeon with greater ease and safety in excising the tumor, thus reducing the operation time and morbidity. However, others physicians have stated that although blood loss may be reduced after preoperative embolization, transfusion requirements are not affected, and that the embolization procedure adds a significant risk for stroke. ⁽²⁻³⁾

AIM OF THE WORK

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To evaluate the need for preoperative embolization for the treatment of carotid body tumor.

Review of Literature

Chapter 1

Anatomy