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

Meta-Analysis Study

Submitted for Partial Fulfillment of
Master Degree in **Otorhinolaryngology**

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
2019

سورة البقرة الآية: ٣٢

Acknowledgments

First and foremost, I feel always indebted to **Allah** *the Most Beneficent and Merciful.*

I wish to express my deepest thanks, gratitude and appreciation to **Prof. Dr. Mohamed Magdy Samir**, *Professor of Otorhinolaryngology, Faculty of Medicine, Ain Shams University, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

Special thanks are due to **Prof. Dr. Tamer Abd El Wahab Abo El Ezz**, *Professor of Otorhinolaryngology, Faculty of Medicine, Ain Shams University, for his sincere efforts, fruitful encouragement.*

I am deeply thankful to **Dr. Peter Milad Mikachail**, *Lecturer of Otorhinolaryngology, Faculty of Medicine, Ain Shams University, for his great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Mohamed Khaled Shafeek Bassam

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List of Abbreviations

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

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