دور الميتوميسين سي في تقليل تكون الالتصاقات بعد جراحة المنظار الأنفي الوظيفي

دراسة تحليلية تجميعية

توطئه للحصول علي درجه الماجستير
في جراحة الأنف والأذن والحنجرة

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٢٠٠٩

Role of Mitomycin in Reducing Adhesion Formation after Endoscopic Sinus Surgery

(Meta-Analysis Study)

Submitted for Partial Fulfillment of Master Degree in Otolaryngology

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2009

بسم الله الرحمن الرحيم

"قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ"

صدق الله العظيم

سورة البقرة آية (32)

Acknowledgement

First and foremost I feel always indebted to ALLAH, the Most Beneficent and Merciful

I would first like to express my unlimited gratitude and thankfulness to my **Prof. Dr. Hesham El Sherbeny**, Professor of Otolaryngology, Faculty of Medicine, Ain Shams University, for his acceptance to supervise my work and for his continuous support, his valuable advises and encouragement without his encourage and help I would not have been able to finish this work.

Many thanks to **Prof. Dr. Osama Mahmoud**, Professor of Otolaryngology, Faculty of Medicine, Ain Shams University, who showed me the way and the first steps for going on into this work, who helped me much and for his continuous guidance.

My deepest gratitude and appreciation are to **Dr. Samia Fawaz**, Assistant professor of Otolaryngology, Faculty of Medicine, Ain Shams University, for her generous help and valuable comments during the preparation of this work.

Also, I cannot forget the motivation and help introduced by my friends and my family, who supported me in the production of this work.

Alaa El Dein Farouk

ROLE OF MITOMYCIN IN REDUCING ADHESION FORMATION AFTER ENDOSCOPIC SINUS SURGERY

ALAA EL DEIN FAROUK ABDEL HAMID ABDUL GHANI

Abstract

Currently, endoscopic sinus surgery is seen as the standard treatment in clinically challenging chronic rhinosinusitis (CRS) and in sinonasal polyposis.

Adhesions remain one of the most common causes of recurrent nasal symptoms necessitating revision sinus surgery.

Mitomycin C (MMC) has recently been used to reduce the stenosis and scar formation after surgery.

Searches for articles published in English language in Pubmed (Medline data base) for the role of Mitomycin C in reducing adhesion formation after endoscopic sinus surgery yielded **34** relevant articles, by removing repeated articles; the total relevant articles were **18**, of which only **6** articles were included according to specific inclusion criteria, **5** of them studying **164** patients who underwent ESS for treatment of CRS, sinus mucocele or nasal polypi in which all patients received topical MMC to the middle meatus of one side of the nasal cavity and saline (control) to the other cavity. Only **20** out of **164** patients receiving topical MMC showed synechiae and adhesion formation, while **40** out of **164** patients receiving saline (control side) showed synechiae and adhesion formation.

The 6th article studied **38** patients who underwent at least frontal sinusotomy as a part of functional endoscopic sinus surgery for treatment of CRS, in which all patients received topical MMC to the frontal recess of one side of the nasal cavity and saline (control) to the other side. The mean of the cross sectional area of the frontal recess was **28.8** and the standard deviation was **18.9** for the Mitomycin C side, while the mean was **24.5** and the standard deviation was **19.7** for the control side.

The other **12** articles were excluded as it did not fulfill inclusion criteria.

Our results as regards topical application of Mitomycin C to the middle meatus shows statistically significant difference ($P=0.006$ i.e. $P<0.05$) between the Mitomycin C side and the saline (control) side as regards reduction of synechia and adhesion formation after endoscopic sinus surgery.

Also our results as regards topical application of Mitomycin to the frontal recess shows that there is a difference between the Mitomycin side and the saline (control) side as regards the patency of the frontal recess after ESS favouring the Mitomycin C application, but does not reach statistically significant level ($P=0.33$ i.e. $P>0.05$).

Using Review Manager (RevMan 5) to analyze this data we concluded that:

- Topical application of Mitomycin C is effective in reducing adhesion and synechiae after endoscopic sinus surgery. It is also safe and no local or systemic complications were observed.
- Topical application of Mitomycin C has a trend towards reduced contracture of the frontal recess after frontal sinusotomy as a part of functional endoscopic sinus surgery.

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List of Abbreviations

AN..... **A**gger nasi

B..... **B**ulla ethmoidalis

BL ..... **B**asal lamella

C..... **C**entigrade (a unit for measuring temperature)

CEBM…..**C**enter of evidence based medicine

CI ..... **C**onfidence interval

CpG ..... **C**ytosine-phosphate-Guanine

CRS..... **C**hronic rhinosinusitis

CSF ..... **C**erebrospinal fluid

CT ..... **C**omputed tomography

DNA..... **D**eoxy ribonucleic acid

ESS..... **E**ndoscopic sinus surgery

F ..... **F**loor of the nose

FESS…….**F**unctional endoscopic sinus surgery

Fig…… **F**igure

FR…….**F**rontal recess

GpG……..**G**uanine-phosphate-Guanine

h……**h**our

IGS……**I**nternational global standardized

IT……. **I**nferior turbinate

LMA…….**l**aryngeal mask airway

LP…… **l**amina papyracea

mg…… **M**illigram (a unit of mass equal to one thousandth of a gram)

mL……**M**illiliter (a unit of volume equal to one thousandth of a liter)

mm……**M**illimeter (a unit of length equal to one thousandth of a meter)

MM. ……**M**iddle meatus

MMC..…. **M**itomycin C

MT. ……. **M**iddle turbinate

MTT. ……3-[4,5-di**m**ethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide

NQO1..… **N**AD [Nicotinamide Adenine Dinucleotide] (P) Quinone oxidoreductase-1

OF……**O**strum forceps(backbiting)

PB…… **P**alatine bone

S. ……. **S**eptum of the nose

SB. …….. **S**kull base

SS. ……**S**phenoid sinus

ST. …….. **S**uperior turbinate

SR…….**S**phenoethmoid recess

T. …… **T**orus

UP. …….. **U**ncinate process