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Role of Mitomycin in
Reducing Adhesion
Formation after
Endoscopic Sinus Surgery
(Meta-Analysis Study)

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Otolaryngology

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ"

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ROLE OF MITOMYCIN IN REDUCING ADHESION FORMATION AFTER ENDOSCOPIC SINUS SURGERY

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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:

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- 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..... lamina papyracea

mg..... Milligram (a unit of mass equal to one thousandth of a gram)

mL.....Milliliter (a unit of volume equal to one thousandth of a liter)

mm.....Millimeter (a unit of length equal to one thousandth of a meter)

MM.Middle meatus

MMC.....Mitomycin C

MT.Middle turbinate

MTT.3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide

NQO1..... NAD [Nicotinamide Adenine Dinucleotide] (P)
Quinone oxidoreductase-1

OF.....Ostrum forceps(backbiting)

PB..... Palatine bone

S.Septum of the nose

SB. Skull base

SS.Sphenoid sinus

ST. Superior turbinate

SR.....Sphenoethmoid recess

T. Torus

UP. Uncinate process