Effect of Lidocaine-Soaked Nasal Packing on Pain Relief After Endoscopic Sinus Surgery

Thesis

Submitted for Partial Fulfillment of Master Degree in Otorhinolaryngology

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2017

Abstract

Introduction: Functional endoscopic sinus surgery (FESS) is the most commonly used surgical technique to treat medically unresponsive chronic sinusitis and other serious conditions of the nasal sinuses that result in impaired sinus drainage. FESS utilizes small fiberoptic tools to approach the nasal sinuses through the anterior nasal nares to remove diseased tissues and bones, resulting in opened sinus passageways, improved mucus drainage and promotion of healthy tissue growth**.**

Aim of the Work: In this study we aim at evaluating the effect of lidocaine-soaked nasal packing on postoperative pain for patients undergoing ESS for refractory chronic rhinosinusitis.

Methodology: The study is a prospective, randomized, single blinded trial of seventy adult patients who underwent elective functional endoscopic sinus surgery(FESS) for chronic sinusitis without nasal polyposis or chronic sinusitis with nasal polyposis refractory to appropriate medical treatment at Ain-shams university hospitals from January 2017 to May 2017.

Results: Group A: (35 patients) included patients with anterior nasal packs (merocel) following FESS. Packs are soaked with 2 cm lidocaine (2%) which is repeatedly applied by using a syringe every 12 hours for two days. Group B: (35 patients) included patients with anterior nasal packs (merocel) following FESS. Packs are soaked with 2 cm saline which is repeatedly applied by using a syringe every 12 hours for two days.

Conclusion: Therefore, we conclude that the application of lidocaine on nasal packs after FESS might be safe and it has a role in pain relief postoperatively especially at pack removal and it should be considered to use.

Recommendations: To achieve maximal clinical benefit without major side effects further investigation of lidocaine plasma concentrations to be measured to evaluate the systemic absorption of topical lidocaine will be needed to reach the maximal benefits.

Keywords: Lidocaine-Soaked, Nasal Packing, Pain Relief, Endoscopic Sinus Surgery

Acknowledgement

First of all, thanks to **Allah** whose magnificent help was the main factor in completing this work.

I would first like to express my unlimited gratitude and thankfulness to my **Prof. Dr. Mohamed Magdy Samir,** Professor of Otorhinolaryngology, faculty of medicine, Ain Shams University, for his acceptance to supervise my work and for his continuous support, his valuable advices and encouragement, without his encourage and help I would not have been able to finish this work.

Many thanks to **Prof. Dr. Yasser El Beltagy,** Professor of Otorhinolaryngology, 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.

Many thanks to **Dr. Ahmed Gamal,** Assistant professor of Otorhinolaryngology, 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.

Many thanks to all my professors and colleagues who helped me so much to collect the data of this study.

سورة البقرة الآية: ٣٢

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List of Abbreviations

CSF	Cerebrospinal fluid
CMC	Carboxymethylcollulose
CRS	Chronic rhinosinusitis
ENT	Expandable Nasal tamponade
ESS	Endoscopic sinus surgery
ET	Eustachian tube
FESS	Functional Endoscopic Sinus Surgery
GFT	Gummifingerling tamponades
GSP	Greater superficial petrosal
HR	Heart rate
HT	Hemostatic Tampon
NSAIDs	Non steroidal anti inflammatory drugs
OMC	Osteomomeatal complex
PVA	Polyvinyl alcohol
PVA-NT	Polyvinyl alcohol nasal packs
SBP	Systolic blood pressure
TSS	Toxic shock syndrome
VAS	Visual analogue scale
WHO	World health organization

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Introduction

Functional endoscopic sinus surgery (FESS) is the most commonly used surgical technique to treat medically unresponsive chronic sinusitis and other serious conditions of the nasal sinuses that result in impaired sinus drainage. FESS utilizes small fiberoptic tools to approach the nasal sinuses through the anterior nasal nares to remove diseased tissues and bones, resulting in opened sinus passageways, improved mucus drainage and promotion of healthy tissue growth **(Li et al., 2014).**

Nonabsorbable nasal packs have been used widely to control bleeding and to prevent accumulation of blood after ESS. Although modified techniques of nasal packing have been introduced to reduce pain during packing removal, the presence of nasal packing and subsequent removal is still uncomfortable and painful and often rated as the most unpleasant aspect of ESS surgical experience by patients **(Kim et al., 2012).**

Recently, absorbable packing materials are replacing non-absorbable ones and are commonly used to reduce pain by obviating the need of removal. However, headache and

facial pain are still common complains in the early postoperative period even when absorbable nasal packing is used **(Miller et al., 2003).**

Many people do not have much pain after sinus surgery, but every patient is different. Depending on the extent of surgery, we may prescribe stronger pain killer. Generally, postoperative discomfort, congestion and secretions should improve after the first few days, but sometimes they continue several weeks after the surgery (**Soler et al., 2012).**

Lidocaine is an amide local anesthetic used to decrease pain. It is on the WHO model list of essential medicines, the most important medication needed in a basic health care system **(Hamilton and Richart, 2015).**

The efficacy of lidocaine as a local anesthetic is characterized by a rapid onset of action and intermediate duration of efficacy. Therefore, lidocaine is suitable for infiltration, block and surface anesthesia. The buffering effect of lidocaine on PH makes the tissue less painful **(Cepeda et al., 2010).**

However, to our knowledge the effectiveness of lidocaine-soaked nasal packing on postoperative pain after ESS wasn't strongly studied before.

Aim of the Work

In this study we aim at evaluating the effect of lidocaine-soaked nasal packing on postoperative pain for patients undergoing ESS for refractory chronic rhinosinusitis.

Chapter 1

Vascular Anatomy of the Nose

The nose has blood supply from external and internal carotid arteries. The external carotid artery supplies the nose by branches from internal maxillary artery and branches from facial artery. The facial artery gives the superior labial artery which supplies the septum and nasal alae. The internal maxillary artery is divided to five terminal branches sphenopalatine, greater palatine, pharyngeal, superior alveolar and infraorbital arteries, from those branches only pharyngeal, sphenopalatine and greater palatine branches supply the nose. The inferior and middle turbinates and part of septum is supplied by sphenopalatine artery and its terminal branches, the inferior aspect of the lateral nasal wall is supplied by the pharyngeal artery, and the anterior aspect of the septum is supplied by greater palatine. The internal carotid branches which supply the nose are terminal branches of ophthalmic artery, the anterior and posterior ethmoid arteries. The ophthalmic artery branches descend from orbit to nasal cavity to supply lateral wall of nose **(Toriumi 1996).**

Concerning the vascular anastomosis inside the nose, there are two anastomotic areas which may be a source of nasal bleeding. One located on the inferior part of lateral wall posterior to the inferior turbinate called woodruff area which is formed of the anastomosis of pharyngeal and sphenopalatine arteries. It is a common site for nontraumatic bleeding because of its posterior location. The second anastomotic area is known by kiesselbach plexus. It is an anastomotic area between internal and external carotid arteries branches, those branches are the anterior ethmoid, greater palatine, sphenopalatine and superior labial arteries. The kiesselbach plexus is located in the anteroinferior part of septum which is a site of majority of nasal bleeding (fig.1) **(Jafek 1996).**