SUCRALFATE IN ACCELERATING POST-TONSILLECTOMY WOUND HEALING

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ABSTRACT

Objective: Tonsillectomy produces large raw areas of exposed muscles in the oropharynx, resulting in considerable pain from muscle spasm, irritation of nerve endings and superficial inflammation and infection.

Method: A double blind, randomized study was conducted on three groups of forty three adult volunteers undergoing tonsillectomy. After the purpose and method of the study were described to the patients, 32 patients were radomly assigned to either group A or group C. 11 patients who were not given any medication or placebo served as controls and were assigned to group B. Group A patients were treated with sucralfate whereas group C patients received lactose powder as placebo. Patients were excluded if they failed to complete the study or missed their follow up.

Results: The subjective parameters otalgia, trismus and throat pain were compared in these three groups, and showed no significant differences. Other two parameters epithelisation and wound edema around the wound were significantly better in the sucralfate group compared to placebo and control groups.

Conclusion: Sucralfate binds with the fibrous exudation of duodenal ulcers, forming a protective barrier that promotes healing. If a similar buffer effect could be created in the tonsillar bed, morbidity may be diminished.

Key Words: Tonsillectomy, Wound healing, Sucralfate

INTRODUCTION

Pain following tonsillectomy is due to inflammation, nerve irritation and spasm of the exposed pharyngeal muscles. Several factors may influence duration and intensity of this pain. The use of a technique of minimal and precise dissection confined to natural planes, and use of anesthetic infiltrated into the peritonsillar tissue provides only short-term relief of postoperative pain. Perioperative antibiotics may reduce the severity of (probability of) infection that contributes to the inflammation and muscle spasm development causing pain. The pain does not completely subside until the tonsillar fossa becomes covered with mucosa 12-20 days after surgery.

Sucralfate is a basic aluminium salt of a sulfated disaccharide that forms a barrier with the mucoproteinaceous layer in duodenal ulcers (1). This barrier protects the regenerating tissue from the erosive and irritating effects of gastric acid and pepsin. Sucralfate forms a similar protective barrier in the tonsillar ulcer, and so the reepithelisation will be accelerated and the painful irritation and muscle spasm will be reduced (1).

MATERIAL AND METHODS

A double-blind randomized study was conducted on three groups of adult volunteers undergoing tonsillectomy at the Ear Nose Throat (ENT) Clinic PTT Education Hospital Istanbul from October 1993 to August 1994. The study was approved by our institutional review board. After the purpose and method of the study were described to the patients, 32 patients were randomly assigned to either group A or group C. 11 patients who were not given any medication or placebo served as controls and were assigned to group B. Group A patients were treated with sucralfate whereas group C patients received lactose powder as placebo. Patients were excluded if they failed to complete the study or missed their follow up. Patients with acute peritonsillar abscess were not included in the study.

Tonsillectomy was performed under local anesthesia using cold dissection and snare technique, by the same surgeon. At the completion of surgery, the

oropharynx was irrigated with a 50 ml solution containing either 1 g of sucralfate or 1 g of lactose, which they were told to repeat four times daily. The patients in the control group were not given any medication.

Each patient was given a tabulated paper and asked to evaluate and record 3 parameters each morning and evening for five days. The investigators previously trained for this study made a visual estimation of the percentage of reepithelisation and wound edema covering the tonsillar fossa.

Throat pain, otalgia and trismus were rated on a 0 to 4 scale with 0 corresponding to none, 1 to mild, 2 to moderate, 3 to severe and 4 to very severe. The data for each parameter in these 3 groups were compared using the statistical analysis of Kolmogorov-Smirnov. The parameters demonstrating a consistent P value less than or equal to 0.05 were considered to be statistically significant.

RESULTS

Forty three patients in three groups (A, B and C) were included in the study. Of the 20 patients of group A 11 were female, and 9 patients male. Average age was 26.5. The age and sex distribution of group B and C were very similar (B=20.5, C=19.09). Two patients in the sucralfate group had a history of peritonsillar abscess, and one patient treated with placebo previously had peritonsillar abscess. None of the patients with peritonsillar abscess were treated by emergency tonsillectomy.

All tonsillectomies were carried out under local anesthesia by the same surgeon in order to minimize surgical and technical differences.

The subjective parameters: otalgia, trismus and throat pain were compared in these three groups and showed no significant differences ($p>0.05$). Other two parameters: epithelisation and wound edema were significantly better ($p<0.05$) in the sucralfate group compared to placebo and controls. Detailed results can be obtained from Table-I and graphics.

DISCUSSION

Tonsil surgery was first attempted as early as 3000 BC Celsus in his book De Medicine in 10 AD described crude methods of tonsil surgery. The first tonsillectomy was described by Caque of Rheims in 1757 (2)

Tonsillectomy still remains one of the most common surgical procedures in otolaryngology. Estimates are that only in the United States 750000 tonsillectomies are done annually (3).

Tonsillectomy produces large raw areas of exposed muscle spasm, irritating nerve endings and causing superficial inflammation and infection. The pain inhibits chewing and swallowing, which leads to dehydration and malnutrition. Several studies have been done to evaluate the effect of topical or injected agents and oral medications so to ascertain their ability in alleviating the pain following tonsillectomy. In a double-blind placebo control study, Telian et al.

Table I. The results and statistical analysis from study parameters.

Study Parameters	Sucralfate (n:20)	Control (n:11)	Placebo (n:12)	Comment
Throat pain				
0-1	7	3	9	P>0.05
2 and up	13	8	3	
Otalgia				
0-1	13	6	8	P>0.05
2 and up	7	5	4	
Trismus				
0-1	17	7	10	P>0.05
2 and up	3	4	2	
Peritonsillar edema				
0-1	19	8	6	P<0.05
2 and up	1	3	6	
Epithelisation rate				
0-1	19	6	4	P<0.05
2 and up	1	5	8	

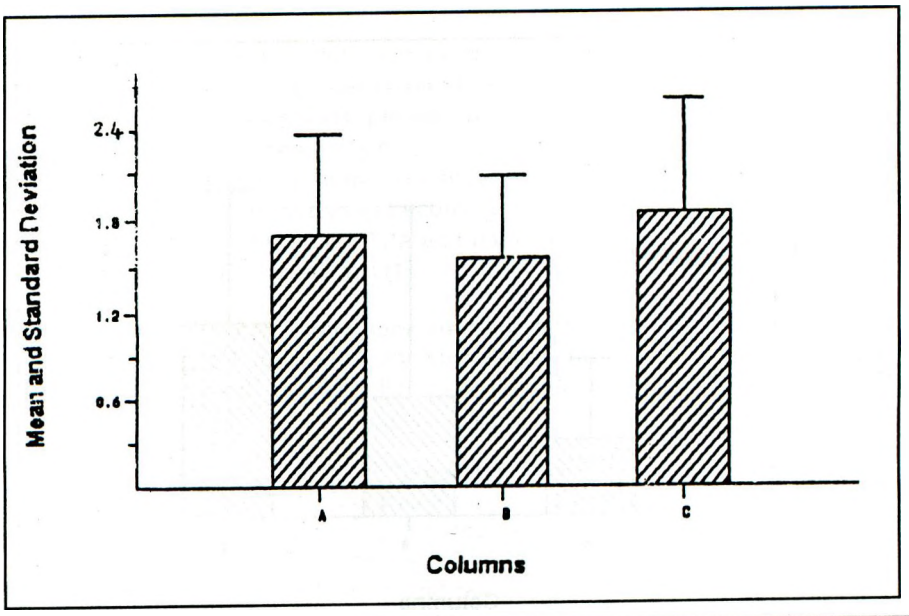

Fig. 1: Postoperative throat pain analysis of groups A,B,C.

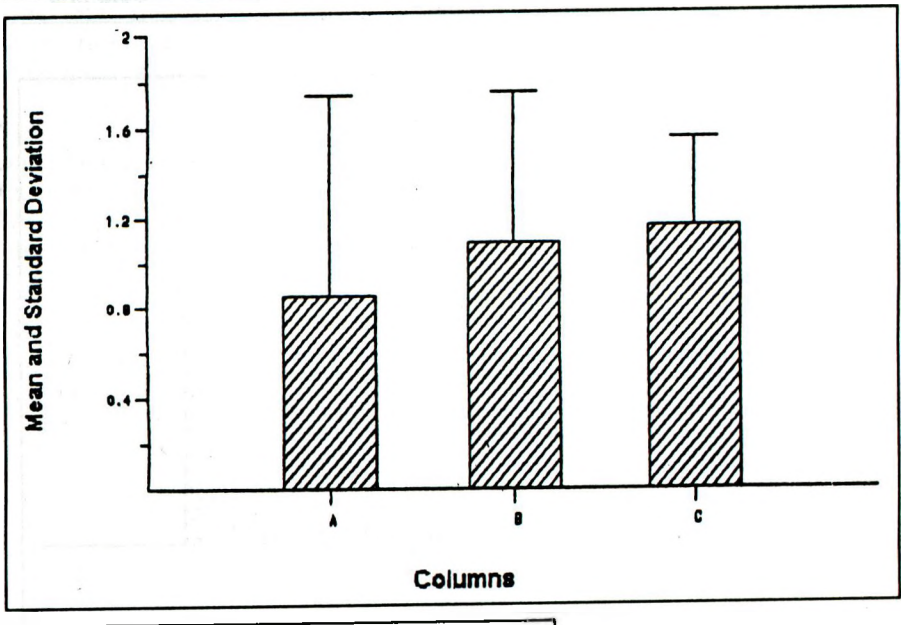

Fig. 2: Postoperative otalgia analysis of groups A,B,C.

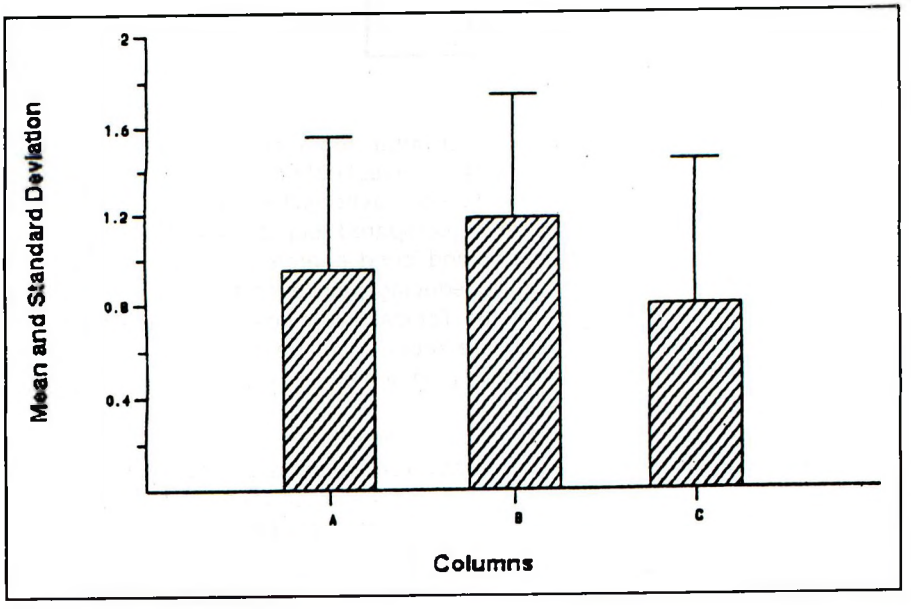

Fig. 3: Postopertive trismus analysis of groups A,B,C.

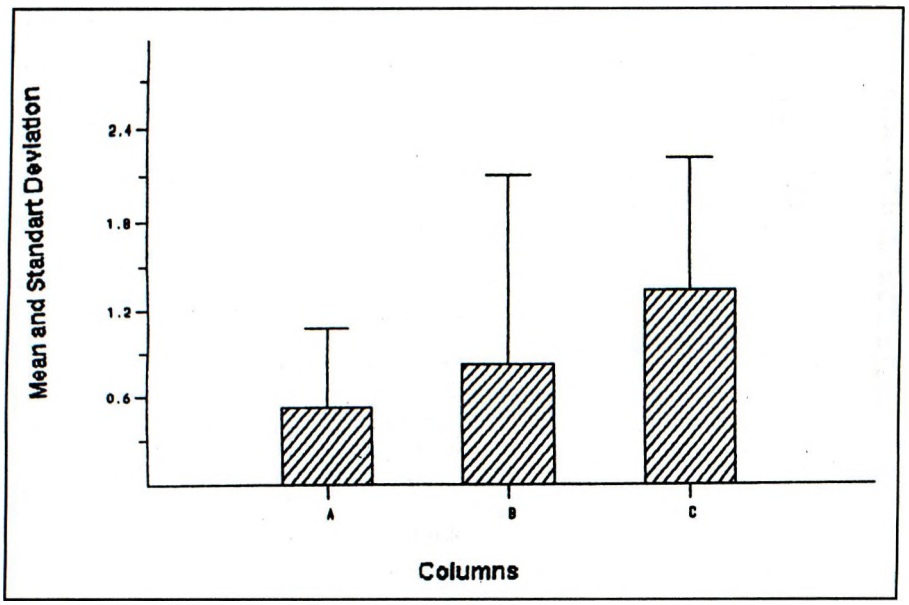

Fig. 4: Postoperative peritonsillar edema analysis of groups A,B,C.

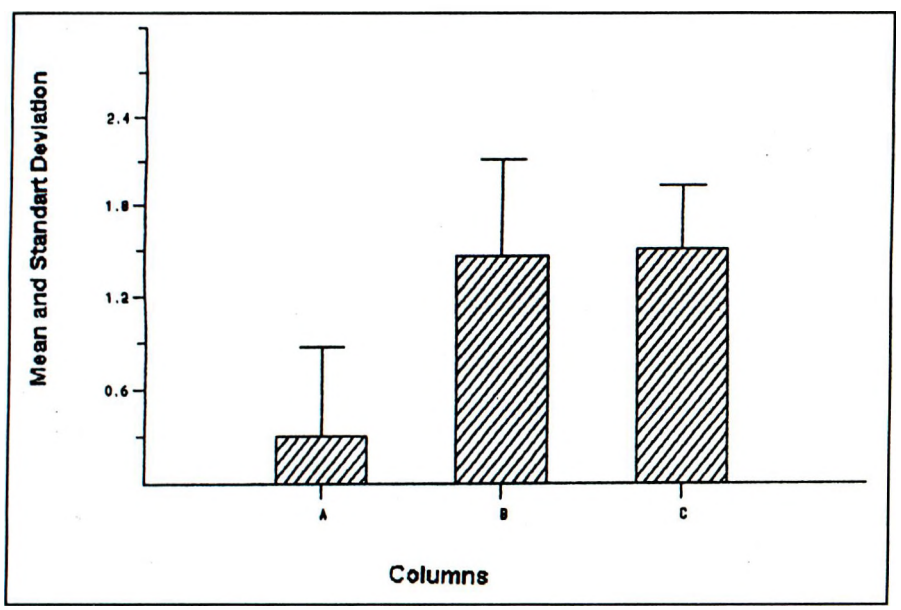

Fig. 5: Postoperative epithelisation rate analysis of groups A,B,C.

found that the perioperative use of intravenous Ampicillin followed by oral Ampicillin for 7 days in children diminished the number of days with pain and promoted a quicker return to usual activities. The antibiotics probably reduce the incidence of peritonsillar cellulitis by decreasing the oral flora and pathogens present in the fibrinous exudate adherent to the tonsillar fossa and alleviated wound ephitelisation (4).

Some investigators compared the efficacy of various analgesics or pain relievers in reducing postoperative pain after tonsillectomy (5). Saaruvara, et al. compared paracetamol and pentazosine suppository for pain relief after tonsillectomy in adults (6). Anderson, et al. investigated the effecs of injected deposteroids on posttonsillectomy morbidity (7). Parker, et al. compared ibuprofen with both aspirin and placebo and found ibuprofen to be safe and more effective in reducing pain during the postoperative night only (8). Topical and injected anesthetics during operation are reported to be effective in reducing postoperative pain and blood loss (9-11).

Sucralfate is a water soluble, sulfated disaccharide synthetic complexed to an aluminium salt, which provides an antacid component. The negatively charged polyanions of sucralfate form a protective

barrier over the damaged mucosa in the tonsillar fossa (1). This chemical barrier covers the exposed raw muscle and nerve endings, promote healing and ephitelisation thereby reducing muscle spasm and pain. Although there is some doubt about the possibility of the chemical barrier becoming a media for the colonization of the oral flora and pathogens, no evidence is found to prove this (1).

Freeman, et al. in their study compared sucralfate and placebo in 34 patients and found sucralfate to be effective in reducing posttonsillectomy pain and wound healing (12).

In our study the difference in throat pain relief between the sucralfate and other two groups became significant after the morning of the second postoperative day. In the sucralfate group; trismus was immediately significantly less and remained so for the whole study period. The total amount of required analgesic medication required was significantly lower in the sucralfate group compared to the other two groups.

The promotion of healing was measured as a percentage of the tonsillar fossa covered by the mucosa at 10 days postoperatively. In the sucralfate group this parameter proved to be the highest as compared to the other two groups.

All these significant findings strongly support the concept that sucralfate is very effective in accelerating wound healing following tonsillectomy.

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