

## **Tonsillar Fossa Closure: A Quest in Tonsillectomy Pain Reduction**

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*Abstract.* Tonsillectomy is one of the most common surgical procedures; the search for efficiency and pain control is still undergoing. Suturing the tonsillar pillars after excision is thought to reduce pain; nevertheless, the concept itself is debatable. A prospective randomized double blinded study of 36 patients who had tonsillectomy in King Abdulaziz University Hospital. One of the pillars was sutured and the other was left un-sutured (control). The patient was asked to compare pain between both sides. The mean age was 14.2 (range 7-36), males 44.4% (n = 16), females 55.6% (n = 20). The pain was reduced in the site of the stitch in 55.6% (n = 20), and was increased in 22.2% (n = 8), but did not change in 22.2% (n = 8). Reduction in pain was observed at the site of the suture, especially in children. This theory needs further exploration with a larger population.

*Keywords:* Tonsillectomy, Tonsillar Fossa, Pain Control, Tonsillar Pillar, Suture.

### **Introduction**

Tonsillectomy is one of the most common surgical procedures in children. Yet, postoperative pain control is still a major concern for patients, families and surgeons<sup>[1,2]</sup>. The usual postoperative pain control is analgesics, and the most commonly prescribed is paracetamol. Occasionally, this is not enough and the need for adding another

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analgesic is required. The use of Non-Steroid Anti-inflammatory drugs (NSAID) are useful in pain control, but they carry the risk of prolonging bleeding time which may lead to postoperative bleeding, the most feared complication of tonsillectomy<sup>[3-5]</sup>.

The search of postoperative pain reduction has led to the invention of various surgical techniques and instruments. Some of these techniques are: Classic cold knife dissection, hot knife tonsillectomy, laser assisted tonsillectomy and coblation method<sup>[6-9]</sup>.

A study from the Royal College of Surgeons of England has reported that pain control post tonsillectomy was poorly managed in 46% of patients. Around 40% of the patients needed to seek medical attention after the procedure due to the pain<sup>[10]</sup>.

The problem with pain control is that it is a subjective matter<sup>[1]</sup>. There are numerous ways of assessing pain in an individual. These methods are: Visual analog scales, numeric pain intensity scales, simple descriptive pain intensity scales, graphic rating scales, verbal rating scales, and pain faces scales. Numeric pain intensity and pain distress scales, brief pain inventories, and memorial pain assessment cards<sup>[11]</sup>.

The aim of this study is to continue the search for optimum postoperative pain control. This paper will look into closing the tonsillar fossa by suturing the posterior pillar mucosa to anterior pillar mucosa as a way to reduce pain in the first 6 hours postoperatively.

### **Method and Materials**

This is a prospective randomized double blind study of 36 patients who had tonsillectomy in the period between November 2007 and December 2008, under the Otolaryngology Service in King Abdulaziz University Hospital. The inclusion criteria were; age not less than 7 years without any mental retardation and tonsillectomy alone without any accompanying procedure. The reason behind our inclusion criteria is to try to assess the pain properly. Children younger than 7 or who have mental retardation may give inaccurate results. In addition, patients going for myringotomy with or without grommets, or adenoidectomy may have pain on a certain site that could confuse the patient resulting in an inaccurate result. All patients and families were consented prior to the

procedure. All patients had the same protocol of anesthesia, which was an inhalant anesthesia and Fentanyl 2 microgram per kg.

All procedures were performed using cold dissection and snare technique while the patient was in Rose position. Homeostasis was maintained using wet gauzes for three minutes, and if needed, bipolar cautery at level of 25 was used. The procedures were carried out by a junior resident of Otolaryngology with the supervision of an attending consultant of Otolaryngology. The surgeon randomly selected one of the sides where a number of two sutures using 3/0 absorbable catgut vicryl were performed, one at the superior pole of the tonsillar fossa and another at the inferior pole. Sealing was performed by laying the posterior pillar mucosa over the tonsillar fossa and suturing it with anterior pillar mucosa. The surgeon was asked to fill out a form for each patient that included the medical record number, age, sex, date of procedure, and the site of the suture.

Postoperative regimen was the same in all patients. Amoxicillin clavunate 45 mg per kg per day divided into three doses and given every 8 hours, paracetamol 15 mg per kg every 6 hours.

The evaluator who was unaware of the sutured site interviewed the patients 6 hours postoperative. The questionnaire form was short and included the medical record number, age, sex, date of procedure, and the more painful side (whether right or left). The same form was used for evaluation of complication at 5 days and 10 days postoperatively.

During the data collection period all forms were held without review until the data analysis started, in which each patient was found to have 2 forms (a surgeon form and a questionnaire). Statistical analysis was performed using SPSS© 11.0.1 (15<sup>th</sup> November 2001). Mean, range and Chi-square tests were done.

## **Results**

36 patients were included in this study. The age range of patients was between 7 and 36 with a mean of 14.2. 6 (16.7%) were adult and 30 (83.3%) were children (Table 1). There were 16 (44.4%) males and 20 (55.6%) females. The closure of the tonsillar fossa was 20 (55.6%) on the right side and 16 (44.4%) on the left side. Pain was reduced on the site of suture in 20 (55.6%) patients. 8 (22.2%) patients had not noticed

any difference and 8 (22.2%) noticed an increased pain at the site of the suture (p value 0.09). In children pain was reduced in 18 patients (p value 0.052).

In the follow-up period the sutures were found to be in place on all patients. None of the patients had any signs of infection whether at the site of the suture or the control. No complications from bleeding nor velopharyngeal insufficiency were noted.

**Table 1. Showing the sample distributed according to age group and the effect of suturing the pillar on the patients of each age group.**

	Age Range	Number	Reduced Pain	Equal Pain	Increased Pain
Children	7 - 16	30	18	6	6
Adults	23 - 36	6	2	2	2
<b>Total</b>	<b>7 - 36</b>	<b>36</b>	<b>20</b>	<b>8</b>	<b>8</b>

## Discussion

Medicine has been evolving and developing to include quality of life improvement in addition to disease control. Rehabilitation period after any surgery is a prime concern of every patient, family and surgeon. In post tonsillectomy patients, it is important to evaluate the site of the procedure, complications and the state of comfort of the patient. The latter is mainly addressed by pain control. The intensity of pain itself has its adverse effect on the patient as a whole. It raises the heart rate and blood pressure through the sympathetic autonomous nervous system. This results in an increase of the cardiac output hence the postoperative exhaustion period. If the pain is intense, the use of regular medication might not be sufficient, and the need of more aggressive medications may arise. These medications may have undesirable side effects (NSAID and postoperative bleeding)<sup>[3,4]</sup>.

This report addresses the theory of reduction of pain by covering the raw tonsillar fossa. Moreover, it is thought that closure of the fossa not only reduces pain but rather reduce the risk of postoperative bleeding. Since closure of the raw tonsillar fossa may improve homeostasis. These beliefs encouraged us to pursue this study.

The challenge in any pain reduction review is finding the proper way to assess the pain. Being a subjective matter, the only way to make it as objective as possible is to make both the sutured and the control on the same patient. By this way the difference in pain tolerance between

patients is eliminated. No specific pain scale was used as the patient was simply asked to tell the side of the most pain. The other challenge was to reduce the element of bias by a double blind study. This is why we opt for an immediate postoperative pain (6 hours postoperative) to reduce the chance of the patient knowing the site of the suture.

Although the results of this paper are not statistically significant, the observed reduction in pain, especially in children, was very interesting. As much as 60% of children involved in this study had the pain reduced at the site of the suture. A previous trial of this technique was explored by Genc *et al.*<sup>[2]</sup>, where patients had a sutured side and a control side on the same patient. They were followed for 10 days postoperatively. The pain was recorded according to the Wong-Baker faces scales<sup>[11,12]</sup>. Genc's review showed almost similar pain in the first 24 hours between both sides, but the site of suture started to show pain reduction there after<sup>[2]</sup>. The differences between the setup of Genc's study that our study has neglected the pain degrees for being subjective, concentrated more on the immediate pain control postoperatively, and had a criteria of exclusion of any patient who had another accompanying procedure (*e.g.* myringotomy or adenoidectomy) to avoid any confusion to the patient.

None of the patients had velopharyngeal insufficiency, postoperative bleeding or infections. While in Genc's review 5.1% of the patients had infections of the tonsillectomy site<sup>[2]</sup>. This may be explained by the use of prophylaxis antibiotics given in the postoperative period in our study.

Although tonsillectomy is a common procedure in the Otolaryngology practice, our limited number was largely due to consent reasons. Other factor that may have contributed on the results of this study is that junior Otolaryngology residents who may lack the experience of an attending consultant performed all procedures.

Since none of patients in this study suffered from any complication, this encourages us to consider exploring this technique further in the future. With a larger number of patients and concentrated adult or children review, more informative results can be obtained.

### Conclusion

Tonsillectomy is one of the most common surgical procedures. Postoperative pain control is an important matter for every

Otolaryngologist and it is an area that needs further developments. This study reveals some hints in pain control. And although the pain reduction was observed at the site of the suture, in children mainly, it was not of statistical significance. This theory requires further exploration with a larger population.

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## إغلاق الفجوة اللوزية: رحلة بحث في تقليل آلام عملية جراحة اللوز

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المستخلص. جراحة استئصال اللوز هي من أكثر العمليات في علم الجراحة، والبحث ساري عن أفضل الطرق التقنية لتطويرها. ويعتقد أن إغلاق الفجوة اللوزية بعد استئصال اللوزة له دور في تقليل آلام ما بعد العملية. تم اختيار ٣٦ مريضاً عشوائياً وتم إغلاق الفجوة اللوزية في جهة واحدة وطلب من المريض تحديد الجهة الأكثر ألماً بدون معرفة المريض أو فريق جمع المعلومات عن الجهة المغلقة. تبين أن الألم قل عند ٥٥,٦٪ من المرضى في الجهة المغلقة، ولم يلاحظ أي تغير في ٢٢,٢٪ من المرضى. في حين أن ٢٢,٢٪ من المرضى كان الألم أشد في الجهة المغلقة. كان من الملاحظ تحسن مستوى الألم في الجهة المغلقة خاصة في الأطفال. وهذه النظرية تحتاج إلى بحث أكثر بعدد مرضى أكبر.