

The use of coffee powder as haemostatic agent in tonsillectomy-A pilot study

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Abstract

Background: Tonsillectomy is the commonest surgical procedure performed in otolaryngology, haemorrhage is one of the most important complications encountered in this method. There are many surgical techniques tried since tonsillectomy first performed by Celsius nearly before 2000 years, but still the dissection method is the most common used technique. This is a prospective study performed in AL-Sadr Teaching hospital in which 100 patients admitted for tonsillectomy with different indications.

Patient and Method: One hundred patients admitted for tonsillectomy for whom coffee powder covered by gauze applied to one tonsillar fossa while the other side packed with gauze soaked with normal saline after tonsil dissection then we observed the haemostatic effect of coffee and the possible need for other technique to control bleeding in both tonsillar fossae.

Results: this study showed 92% of patients in the coffee side got complete haemostasis by the application of coffee alone while 87% needs ligatures ranging from one to three for the non coffee side.

Conclusion: The local application of coffee as topical haemostatic agent during tonsillectomy is effective in reducing intra operative and postoperative haemorrhage and significantly reduced the need for ligation and thus decrease the time of surgery and time of exposure to anaesthesia in addition to its antimicrobial and antioxidant effect.

Keywords: Coffee powder, Haemostatic agent etc.

Introduction

Tonsillar surgery is a very common procedure performed in otorhinolaryngology^{1,2,3} and nearly most operating list contain this procedure which has two important complications; bleeding and postoperative pain. These two morbidities gives high sense to ENT surgeons to think about and try different surgical techniques and tools in the tonsil removal in order to decrease or avoid these disabilities.

Tonsil infection first recognized by Celsius who performed the first tonsillectomy by enucleating the tonsil by his fingernails before 2000 years¹. This is followed by progressive increase in the number of tonsillectomies until antibiotics introduced to treat infection where the procedure became less performed⁴. There are many methods for tonsillectomy. Diathermy, laser or blunt dissection all can perform dissection tonsillectomy⁵.

New procedures admitted to remove the tonsil like the use of bipolar scissor dissection, radiofrequency excision with probes, the use of harmonic knife, and

bipolar radiofrequency ablation. But In spite of all tonsillectomy techniques used, the dissection method still most commonly used procedure to remove the tonsil by using different surgical instruments⁶.

With Proper pre operative preparation of patients by taking good history, clinical examination, and investigations to rule out bleeding disorders (although some studies concluded that preoperative coagulation screening tests gives low sensitivity and low predictive value unless the medical history of bleeding tendency is suspected⁷) and ensure patient optimized for the procedure, bleeding remained a problem in a good percentage of cases which may happen at any time from time of operation to the 10th post operative day.

There are many techniques to control haemorrhage during tonsillectomy like the use of ligatures, diathermy, alum or adrenaline soaked gauze, or normal saline soaked gauze, of these electro-cautery and suture ligation are most commonly used⁶.

In general primary bleeding is considered mostly related to the surgical technique itself while environmental factors that influence healing of oropharynx causing secondary haemorrhage⁸, so this study introduced the coffee powder as a new material to be applied in the tonsillar fossa after removing the tonsil

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to see its effect in controlling bleeding and trying to avoid bleeders ligation and hence to reduce the time of operation depending on the fact that coffee is a safe and widely used beverage by all ages and has no significant side effects⁹.

Patients and Methods

This is a prospective study carried out in AL-Sader Teaching Hospital during the period from Jan. 2013 to May 2016 .

After full history, examination, and investigations including bleeding profile (full blood count, prothrombin and partial thromboplastin time) patients were admitted to the hospital and consents obtained from those patients or their parents for children.

One hundred patients were included in this study who presented to the outpatient or my private clinic with:

- 1- Obstructive sleep apnoea due to enlarged tonsils and adenoids
- 2- Recurrent tonsillitis not responding to medical treatment
- 3- Patient with three or more episodes of tonsillitis for the last year

Those with bleeding disorders, unilateral tonsil hypertrophy, or on aspirin were excluded from the study. Coffee powder obtained from the market which is not containing any additional substances (pure coffee).

The tonsil is dissected by the classical dissection procedure then coffee powder directly applied to the tonsillar fossa without sterilization, then a piece of gauze applied above the powder. The amount of coffee powder used depend on the size of the fossa itself which should cover the whole raw surface of the fossa.

The other tonsil is dissected in the same way then a piece of gauze applied (no coffee powder is used).Then we did a comparison between the two sides regarding the need for ligation of bleeders or not and the number of ligatures used if present.

Results

One hundred patients were included in this study 65 (65%) were males and 35 (35%) were females giving the male to female ratio = 1.9.

Table 1: Age Distribution

The age distribution was from 3 to 52 years with mean age was = ?	Number of patients	%
1-10	45	45%
11-20	30	30%
21-30	12	12%
31-40	8	8%
41-50 +	5	5%
Total	100	100%

Forty five (45%) patient were in the age group 1-10 years followed by 30% lies in the age group 11-20, as shown in table 1:

The number of patients admitted for adenotonsillectomy was 55 (55%) while 25 (25 %) was for those with recurrent tonsillitis as shown in table 2:

Table 2: Indications for tonsillectomy

Indications	Number of patients	%
Recurrent tonsillitis	25	25%
Chronic tonsillitis	20	20%
Adeno tonsillectomy	55	55%
Total	100	100%

This study revealed that application of coffee powder in the tonsil fossa after its removal gives good haemostatic effect as only 8 patients (8%) of the coffee sides needs ligation (one to two ligatures) while 87 (87%) of non coffee side needs bleeder ligation (one to three) as shown in table 3.

Table 3: No. of ligations used for each tonsillar fossa

Group	No. of Pt. need ligation	%	Range of ligatures
Non-coffee side	87	87%	1-3
Coffee side	8	8%	1-2

There was no evidence of reactionary, primary or secondary haemorrhage in our study, and all the patients were discharged home on the first post- operative day with no any post operative problems as the information gained from the first visit at the 5th post- operative day.

Discussion

This study showed the majority of patients lies in the age group of 1-20 years which goes with the fact that upper respiratory tract infection is commoner in young children than adults^{10,11}.

The commonest indication for tonsillectomy was for upper airway obstruction which goes with AO Ahmed et al who found 68.7% of patients has upper airway obstruction and 31.3% has tonsil infection as indication for tonsillectomy¹². It also correspond to the findings of other series (Arrow and Siemens, 2002; Juardo Ramos et al, 2006; Mora et al, 2003)¹³.

This study is the first ever done on haemostasis with coffee powder after tonsil removal depending on the fact that coffee is well known safe material that can be consumed by human for all age groups in addition to its safe usage as local medicine to treat wounds without any adverse effect. Coffee powder has haemostatic effect, (this is supported by the high percent of patients in whom bleeding stopped with coffee powder

application, table 3) and when mixed with body fluids gives a solution that have antimicrobial action with high anti oxidant contents. Coffee powder absorb fluids very fast and has the ability to stop bleeding because the fine grains of coffee powder make large surface and thus making the blood cells attached with easier stop of minor bleeders⁹.

Coffee is in expensive and due to its ability to stop haemorrhage, it can reduce intra operative bleeding and invariably decrease intra operative time. The study found coffee powder is very dependable in securing haemorrhage after tonsil removal and there is no need to do ligation or cautery and thus it will reduce the time of surgery through the rapid and effective control of diffuse bleeding and capillary oozing.

On the other hand Adoga A.A et al (2011)¹³ found local application of adrenalin as a topical haemostatic agent is effective in decreasing intra and post operative bleeding and hence decrease the time of surgery.

Ahmed M. AL-Abbasi (2009) demonstrated the local application of Alum on the tonsillar bed reduce the volume of blood loss, time of surgery and the number of ties used.

K.L.Shivkumar et al (2014)¹⁴ concluded the incidence of bleeding after using electrocautery is 4% less than ligation thus this will decrease time of surgery and exposure to anesthesia, this result correspond with Arif Raza Khan et al (2007)⁶ following the use of diathermy in comparison with ligation. On the other hand Rhona S et al found no significant effect of haemostatic glues on postoperative bleeding and pain in tonsillectomy¹⁵.

Conclusion

Coffee powder can be used safely as haemostatic agent for all age groups without the need to do any ligation thus reducing the intra-operative time and the time of exposure to general anesthesia and the risk of infection due to its antimicrobial and antioxidant activity.

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